



# Obesity Health Alliance

Treatment of Overweight and Obesity  
Position Statement & Evidence Review

# Contents

---

Background & Document Purpose	3
Principles, Vision & Tackling Stigma	4
Executive Summary	5
Recommendations	6
Context	12
Economic Case for Action on Reducing Obesity Rates	13
Evidence:	
Behavioural (tier 2) and Specialist (tier 3) Overweight & Obesity Management Services	14
Pharmacotherapy for Overweight & Obesity	16
Surgical Interventions	19
Children's Services	20
Mental Health and Overweight & Obesity Management	22
Stigma and Overweight & Obesity management	23
Inequalities	25
Fertility & Maternity Care (including Breastfeeding)	29
Appendices	31
References	36

# Background & Document Purpose

The Obesity Health Alliance (OHA) is a coalition of 60 health organisations representing leading health charities, campaign groups and medical royal colleges. The goal of the OHA is to reduce obesity-related ill-health by supporting evidence-informed population-level policies that will reduce the prevalence of excess weight across the UK.

The OHA is clear that there is a pressing need for action to support people already living with overweight and obesity with effective and equitable treatment services. This must be done alongside effective population-wide measures to prevent the development of obesity.

This document outlines the known evidence base for action by policymakers to improve the system of treatment services for people living with overweight and obesity in England. It includes a series of recommendations that outline top-level principles and desired outcomes, as well as tangible policy recommendations for government and health systems leaders. Services in other UK nations are devolved, and unless stated otherwise this document relates to England only.

This document was created by a Working Group of representatives from members of the OHA,

including healthcare professionals (HCPs), academics, policy experts and people with lived experience of overweight and obesity. The member organisations of this working group were Diabetes UK, British Medical Association, Association for the Study of Obesity, Cancer Research UK, British Dietetic Association, All About Obesity, British Obesity & Metabolic Surgery Society, British Heart Foundation, Royal College of Physicians and Food Active. The document was shared for review with external academic, policymaker and healthcare professional stakeholders.

**No funding or sponsorship was received by the authors, reviewers or the OHA in the development of this document in any form.**



# Principles, Vision & Tackling Stigma

---

The OHA's vision is for a fully resourced system that offers and delivers equitable access to appropriate, tailored and sustained management and support services to people living with overweight and obesity. This means guaranteeing a consistent, equitable and evidence-informed treatment pathway based on individual needs, providing appropriate person-centred support for all in a non-stigmatising way.

Action to address overweight and obesity must be part of an overarching objective from government, the health and care services and other policymakers to reduce the clear and unacceptable inequalities in health outcomes between the most and least deprived communities. This should include action on both the social and commercial determinants of health and on access to care. This must be done alongside effective population-wide measures to prevent the development of obesity – which will also have benefits for people currently living with obesity by making it easier to prevent weight-regain amongst people who reduce their weight via treatment.

We explicitly condemn any presentation, including by political and media stakeholders, of policies to prevent and treat overweight and obesity as being inherently in competition with each other. In order to improve population health, to address inequalities in health outcomes, and to improve the long-term sustainability of the NHS, co-ordinated action must be taken across both prevention and treatment of overweight and obesity.

Despite being the majority of the population, people living with overweight and obesity often experience stigma and discrimination, with 'fat shaming' common and rarely questioned or challenged. This stigma can profoundly affect an individual's mental health and willingness to seek

care for health conditions, and the discrimination can affect an individual's access to support, engagement in social activities and restrict life chances at work and in education.

- This stigma must be challenged in all settings, including within the healthcare system, and steps must be taken to ensure that government communications and campaigns do not perpetuate weight stigma and policies and strategies relating to healthy weight actively refute stigma.
- Any and all action must include people living with overweight and obesity in both policy development and implementation.

# Executive Summary

---

- 1. Obesity underpins a significant amount of the UK's rising levels of ill-health, driving multiple serious health conditions with large-scale impacts on health outcomes inequalities and pressure on severely stretched NHS resources.** This harm is preventable and will require both cross-government upstream policies to prevent the development of excess weight and effective treatment services to help people maintain a healthy weight.
- 2. Most people living with overweight or obesity do not receive the recommended level of support from overweight and obesity management services.** Provision of all levels of evidence-based services is insufficient and unavailable to a significant number of people.
- 3. Our evidence review, covering the entire scope of treatment services in England, found that there is strong evidence for a number of interventions.**
  - a. There is clear evidence of clinical effectiveness for dietary interventions, digital and community-based programmes to treat overweight and obesity at scale and relatively low-cost.
  - b. New National Institute for Health and Care Excellence (NICE) approved pharmaceutical treatments are highly effective, but funding them for all who are eligible has unprecedented financial implications for the NHS. The current significant barriers to provision within NHS settings is resulting in existing access coming primarily through private rather than public health care systems which risks increasing health inequalities.
  - c. Bariatric surgery is safe and cost-effective for people with severe and complex obesity but is not being deployed at the same scale as in comparable European countries. There is variable provision around the country and even where available, access is limited.
  - d. There is currently weaker evidence for existing specialist-led "Tier 3" multidisciplinary team programmes, for effective psychological support services, and for best practice in delivering children's services at scale.
- 4. A comprehensive independent review, delivered in partnership with central government, NHS England leadership, and leading third sector experts, is needed to establish better joined up services, best practice in the provision of services and establish the cost-savings case for expansion of treatment services.**
  - a. The existing tiered system needs urgent review to create more patient-centred pathways that increase referral rates and are easier for both patients and clinicians to navigate. There is a widespread lack of understanding or agreement about what 'good' looks like with a clear need for central leadership on the issue with widely available responsible and trained prescribers to increase availability of effective treatment.
  - b. New pharmaceutical treatments have resulted in unprecedented public demand for services and added enormous pressure on already stretched commissioning structures. As acknowledged by NHS England in their proposed implementation plan for Tirzepatide (October 2024), action to address longstanding issues and establish a system for clinical prioritisation across the entire scope of treatment services is an immediate and unavoidable priority.
  - c. Major funding reform is needed to address these issues, which should be supported with a clear cost-saving case for expanded services to secure the necessary buy-in from system leaders and government Departments.

## Executive Summary

---

5. **Significant numbers of people living with obesity report experiencing weight stigma in healthcare settings.** Improved clinical and health systems training is required to address this so that medically appropriate and non-stigmatising interventions can happen effectively and constructively.
6. **There are major inequalities in the access to and uptake of overweight and obesity treatment between different socio-economic groups and people living in different parts of the country.** Action to address this via targeted outreach and specialist programmes commissioned to encourage uptake from identified groups must be a priority.
7. **The National Obesity Audit (NOA) should continue to be developed** to monitor and evaluate the effectiveness of obesity services and the impact on health inequalities to enable continuous improvement in service delivery. To date there has been slow progress with the NOA which needs to be rectified.
8. **Significant evidence gaps were identified by our evidence review, and research commissioners should look to address these gaps urgently.** This includes the delivery of children's services at scale, the impact of different treatments on particular population groups (particularly people from deprived backgrounds, people with a mental illness and women of reproductive age) and the clinical and cost effectiveness of a number of interventions such as psychological support.

# Recommendations

---

## Overarching Central Guidance

The UK's high prevalence of excess weight, and the resultant impacts on people's health and pressure on NHS services and the wider economy, has made it a necessity for NHS England and the government to prioritise effective overweight and obesity treatment.

This will require longer term sustainable funding and guidance to support access to services, workforce training, closing of health inequalities and more data-informed policies. However, a necessary first step requires foundational guidance from the Secretary of State for Health and Social Care to give clear direction for all policymakers in both government and NHS England.

### Recommendations for Policymakers:

1. Guidance from the Secretary of State for Health and Social Care should be issued, and cascaded through all levels of government and the NHS, which stipulates:
  - a. That overweight and obesity are complex, chronic and relapsing conditions driven primarily by the interaction of an obesogenic environment and individual vulnerabilities (including life circumstances and variations in human biology) rather than failures of individual willpower and 'lifestyle choices'.
  - b. For all Integrated Care Boards (ICBs) to publish an overweight and obesity management pathway for adults and children that covers public health, primary, secondary and community partners and to appoint an obesity lead who works across the pathway. These pathways must meet the needs of people with different classes and complexity of obesity.
  - c. This should include a specific direction to ensure that all government communication and policymaking actively refutes weight stigma, and that weight-related communication and policymaking acknowledges the need to both prevent and treat obesity.

## Delivering Person-Centred Pathways

Overweight and obesity are chronic, relapsing conditions and the overweight and obesity management pathway should reflect this by providing person-centred, joined up care across a person's life. The pathway should be a whole system approach which provides the right level and type of intervention based on individual's circumstances and needs, with appropriate person-centred decision-making.

The introduction of a range of new novel medical therapies and the legal obligations of health systems to provide them, is stretching an already complex commissioning pathway, with services grappling with who should provide treatments and where treatments should be provided. NHS England are reacting to some new medical therapies by proposing phased access and development of support in primary care settings. This also presents an opportunity to review the existing tiered system more broadly and consider a more streamlined, patient-centric series of pathways focusing on better working across the system including local authorities, primary, secondary, and community care.

### Recommendations for Policymakers:

1. Department of Health and Social Care (DHSC), in coordination with NHS England, should lead a rapid holistic review of existing overweight and obesity management services within six to twelve months, led by an independent expert with the support of relevant academic and third sector stakeholders. The three objectives of this review should be to:
  - a. Establish a comprehensive overview of existing service provision across regional and national levels, and the evidence for best practice pathways that can be introduced at scale and pace to provide effective person-centred care.
  - b. Outline the optimal overweight and obesity management pathway and the associated long-term cost-savings case for greater treatment interventions with a view to secure necessary buy-in from health systems

# Recommendations

---

leadership and relevant Government Departments, particularly the Treasury.

- c. Specifically address the growing concerns from NHS Commissioners about the challenges they are facing as a result of novel medical therapies, and also cover the entire provision of effective and evidence-based obesity and overweight management services to address longstanding issues with the current system for all patients and make recommendations on the optimal pathway design.

## Creating a Fully Funded System

The Government should centrally mandate the baseline provision of all levels of effective overweight and obesity management services in every local health system across the country, ensuring there is embedded multimodal care including access to psychological support at every level, and the delivery of a range of virtual and face to face services depending on the needs of the population.

NHS England must tackle the chronic problem of “short-termism” in the funding of services, putting funding across the entire range of overweight and obesity management services on a more sustainable footing. This must also include thorough and fair evaluation of services based on what is realistic to achieve with the interventions available and appropriate to each patient.

### Recommendations for Policymakers:

1. The UK Parliament should use the NHS Mandate to require every Integrated Care Board (ICB) and Local Authority to provide the entire range of effective overweight and obesity management services.
2. The above should include guaranteeing a minimum guaranteed funding term of at least three years for any commissioned service, and NHS England guidance to ICBs should be updated accordingly.

## Ensuring Access to Services

All people living with overweight and obesity should have equitable access to the care and services and treatments they are eligible for within NICE guidance (including dietary and behavioural interventions, physical activity support, medication, endoscopic interventions, bariatric surgery and psychological support). This should include ensuring access to safe and appropriate medical equipment.

Whilst the DHSC rapid review is underway, NHS England, ICBs, and Local Authorities should work together to improve pathways and provision of overweight and obesity management services. NHS England and ICBs should set out the baseline of provision for specialist overweight and obesity management services across the country, increasing access to services where support is currently lacking.

### Policy Recommendation:

1. NHS England should issue guidance to assist ICBs, which should include:
  - a. Clarifying the baseline level of provision which should be met across the pathway and how to ensure that it is person-centred and joined up.
  - b. The basis on which services should be provided under resource limitations.
    - i. Where provision of services and treatments are not equitably accessible for all, prioritisation should be based on those with greatest risk of adverse complications from weight related comorbidities.
    - ii. These services must be provided according to medical need and not, as has been suggested in some settings, on the potential economic output of the patient.
2. As per the central guidance recommended above, NHS England should ensure that there is:
  - a. A patient pathway for both children and adults, that can be kept in line with best practice guidance.



# Recommendations

---

- i. This should be supported by a clear risk stratification tool, developed by NHS England with appropriate support from NICE.
- b. A specialist Obesity Lead in every ICB who can work across the pathway with NHSE and Local Authorities to review provision of services, establish a baseline of support, and prioritise services based on greatest clinical need.

## Training the Healthcare Professional Workforce

Healthcare professionals (including Allied Health Professionals) are a trusted source of information, and the NHS should harness this to help people feel empowered with the information they need to manage their weight. Healthcare professionals should feel empowered to provide treatment and give advice to patients in a way that is well-informed, non-stigmatising, and effective.

A common theme reported during the OHA's evidence review, by both people with lived experience and healthcare professionals, was a lack of appropriate communication on this subject in healthcare settings. Patients frequently reported experiencing stigma within healthcare settings, and HCPs frequently reported not feeling confident in raising the subject of weight with patients. There is therefore a gap between what healthcare professionals in postgraduate training are learning, and what should be received by patients. Professional bodies (such as the General Medical Council for Doctors and the Nursing and Midwifery Council for nurses and midwives) establish what should be known by new healthcare graduates and is a basis for the development of curricula, and therefore have a key role in resolving this issue.

The emergence of novel medical therapies and endoscopic interventions has highlighted the need for rapid production of easily accessible online training modules for NHS prescribers and wider medical staff.

The Making Every Contact Count (MECC) approach encourages health and social care staff to use the opportunities arising during their routine

interactions with patients to have conversations about how they might make positive improvements to their health or wellbeing. For Allied Health Professionals, such as dietitians, radiographers, and occupational therapists, and community pharmacists this can be a useful framing for how to have a constructive conversation with a patient about their weight. The sometimes-negative experience of patients with obesity in health services suggests this framework is not being used as universally as it should be.

### Policy Recommendation:

Medical schools, medical royal colleges and faculties, NHS England, the Nursing and Midwifery Council and the General Medical Council should re-examine undergraduate and relevant postgraduate curricula and relevant e-learning programmes to ensure appropriate learning outcomes relating to nutrition, obesity and related co-morbidities are in place and being delivered to meet the needs of today's population. Those providing primary, secondary and community care services should have the necessary knowledge and skills to, where appropriate to their role, assess nutritional status, provide advice on dietary behaviour, and where possible use practical behaviour change techniques. This must include a focus on how to communicate with patients on this subject in a confident and non-stigmatising way.

Undergraduate, postgraduate medical training and e-learning modules should be reviewed to establish what changes are necessary to ensure health services:

1. Support lifestyle, nutritional and pharmacological management of and care for people living with overweight and obesity
2. Improve awareness of the overweight and obesity management pathway and referral options
3. Improve stigma awareness and best practice for communicating with patients, including raising the subject and discussing options for support
4. Better understand the range of factors which cause obesity and recognise that it is chronic and relapsing in nature
5. Understand the implications on the wider determinants of health and wellbeing across the life course, and the value of early interventions and preventing future ill-health.

# Recommendations

---

## Data-Informed Decisions

Overweight and obesity management services should be data informed and ensure they capture long term outcomes so that the best services can be identified and replicated.

The National Obesity Audit (NOA), currently in development aims to capture data on who is accessing services within the overweight and obesity pathway and what outcomes are being achieved. This is a vital resource for future development of services.

### Policy Recommendation:

1. NHSE should continue to fund and provide appropriate resources to the NOA so that the best possible evidence can be developed on which services are most effective for different demographics.
  - a. DHSC should use the NOA to underpin their rapid review of the overweight and obesity pathway.
  - b. All providers of care within the overweight and obesity management pathway should be supported to comply with the NOA.
  - c. ICSs should factor in their regional demographics when commissioning services to ensure they are tailored to the needs of the population.
  - d. The NOA must take specific measures to fully gather data on the existing provision of services to children, and where examples of best practice currently exist.
2. A direct line of reporting should be established between the NOA and policymakers in the Department of Health and Social Care, to ensure that all national decisions are data-informed.

## Closing Inequalities

The overweight and obesity management pathway should aim to reduce health inequalities by ensuring it is accessible and culturally appropriate for underserved and disadvantaged socioeconomic groups, including people with learning disabilities, physical disabilities and people with a mental illness.

### Policy recommendation:

1. Commissioners of overweight and obesity management services should ensure that provision is in line with Core20PLUS5 (which lays out a systematic approach to addressing health inequalities). Where practical:
  - a. These should include targeted outreach campaigns (in culturally sensitive and accessible language and formats) to encourage uptake from under-represented demographic groups, and encouraging healthcare professionals, allied professionals and support staff to take up training and development opportunities about discussing overweight, obesity and health with patients.
2. Commissioners should consider alternative models of services that are specifically tailored to encourage uptake of services by under-represented demographic groups, such as programmes aimed at men built around community sport.
  - a. The promising models currently under development to encourage the uptake of services amongst men provide a case study that could be developed further to improve uptake amongst other under-served socio-economic groups. However, further research is needed to establish best practice.

# Recommendations

---

## Research Priorities

During the evidence review for this document, a number of key research gaps were identified. In order for policymakers to make informed decisions to address these points, greater research is needed and we call on research commissioners to actively work to close these knowledge gaps.

Key research gaps identified include:

- The impact of different approaches in real world settings (including barriers, long term support and weight maintenance) for different demographics with potential implications for health inequalities, including:
  - Different age groups and families
  - People from different socio-economic backgrounds and ethnicities
  - People with a mental illness, neurodivergence, and learning disabilities
- The evidence base for best practice in children's services at scale, given significant limitations on what interventions are appropriate and effective for children.
- The impact of medications for other health conditions on appetite, hunger and weight gain, and the impact of this obesity-related outcomes for populations with above average rates of medication.
- Best practice for integration of NHS and local government commissioned services under the Integrated Care Board model.
- The extent of, and best regulatory response to, the market for counterfeit and illicit versions of pharmaceutical interventions for overweight and

obesity.

- The clinical and cost effectiveness of specific approaches including:
- Technology and digital support options to support a person or family's weight management journey in the long-term, including to increase uptake from people with additional accessibility requirements
- Risk stratification tools to identify those people living with overweight and obesity, who are at greatest risk of developing complications and for identifying best treatment options or combinations of treatment
- Multidisciplinary teams approaches under the existing 'Tier 3' model, particularly how workforce shortages and other resource limitations may be impacting existing services
- Overweight and obesity management interventions at preconception, especially relating to infertility, pregnancy and post-pregnancy, management of obesity-related malignancy and supporting women with breastfeeding success

### Policy recommendation:

1. Research commissioners (particularly National Institute for Health and Care Research) and researchers should actively look to close these knowledge gaps to enable policymaking on areas where the evidence base is insufficient for action.

# Context

---

- For people living with overweight and obesity, weight loss can improve or lead to remission of obesity related complications, improve quality of life and extend life expectancy.<sup>1</sup>
  - This includes improvement in blood pressure and deranged lipid profile, reducing the risk of developing type 2 diabetes and remission from type 2 diabetes<sup>2</sup>, reduced cardiovascular risk factors<sup>3</sup>, reduced cancer risk<sup>4,5</sup>, reduced back and joint pain and sleep apnoea<sup>6</sup>, improved physical function/mobility<sup>7</sup>, and improved mental health.<sup>8,9</sup>
  - Generally, evidence shows that greater total weight loss leads to better physical and mental health outcomes.<sup>10</sup>
- Treatment of overweight and obesity should not be the sole focus of policy interventions to reduce obesity rates. People's social economic status, genetics, physical activity levels and the wider food environment they are exposed to all play a strong role in determining their weight<sup>11,12,13</sup> and have been shown to make obesity management more difficult, even for those actively engaged in overweight and obesity management services.<sup>14</sup>
  - Losing weight and maintaining weight loss require constant effort, self-regulation, support networks and monitoring in this wider unsupportive context.<sup>15,16,17</sup>
  - When the incentives for less healthy eating exist everywhere, both individual attempts and well-designed overweight and obesity management services will have limited impact on long-term efforts at weight loss and weight loss maintenance.<sup>18</sup>
  - For overweight and obesity management services to be successful in the long term, policy changes to the wider socio-economic factors that contribute to obesity need to be enacted.<sup>19,20</sup>
- Overweight and obesity management services in England are currently loosely organised into a tiered system.<sup>21</sup>
  - Different tiers of overweight and obesity management services cover different activities. Definitions vary locally but usually tier 1 covers universal services and primary care activity (such as health promotion, provision of relevant information regarding overweight, obesity and associated topics, and primary care referrals to appropriate services); tier 2 covers lifestyle interventions; tier 3 covers specialist overweight and obesity management services; and tier 4 covers bariatric surgery.<sup>21</sup>
  - NICE guidance (in development at time of writing) now refers to tier 2 services as 'behavioural overweight and obesity management services', and tier 3 and 4 services as 'specialist overweight and obesity management services'.<sup>22</sup>
  - Moreover, NICE have moved away from the term 'weight management services' (previously commonly used to describe services supporting people living with overweight and obesity) in favour of 'overweight and obesity management services', the terminology used in this document supports and reflects these updates.
- NICE guidance sections updated in 2023 include a move towards encouraging greater flexibility within the treatment pathway. Draft guidance due to be published in 2024 emphasises the importance of personalised, stigma free care, delivered on an ongoing basis.
- In 2022 the Government provided funding for a National Obesity Audit to be established by NHSE. The audit, which is still being developed, aims to collect a range of data on overweight and obesity management services for adults and children to help drive improvements in quality of care.

## Context

---

- The emergence, and recent NICE approval, of new obesity medications (including GLP1 receptor agonists) has brought a significant amount of public, political and media attention to the treatment of obesity. This increased interest can and should be used as impetus for action to resolve longstanding issues across the entire system of overweight and obesity management services, not just those related to pharmaceutical treatments. Further details of this are discussed in the “Pharmacotherapy for obesity” section of this document.

# Economic Case for Action on Reducing Obesity Rates

---

## A healthy population is the foundation of a strong economy

- Organisation for Economic Co-operation and Development (OECD) analysis found that the average UK tax bill is £500 per person per year more than if everyone was a healthy weight.<sup>22</sup>
- Frontier Economics estimated in 2023 that the total economic impact of obesity rates is £98 billion, accounting for the costs to the NHS and social care, lost productivity, workforce inactivity and welfare payments.<sup>23</sup>
- The Institute for Government estimated the economic impact of obesity was equivalent to 1-2% of UK GDP, and that lack of government intervention is resulting in significantly reduced economic productivity and labour force participation.<sup>24</sup>
- 2020 Modelling by the Institute for Public Policy Research estimated that obesity levels among the current cohort of children - over the course of their lifetime – will cost the wider society an estimated £405 billion overall.<sup>25</sup>
  - People living with obesity take four extra sick days a year annually – approximately equivalent to an extra 37 million sick days across the UK working population. An additional £4 billion is spent on welfare payments for obesity-related workforce inactivity.<sup>26</sup>

## A healthy population relieves enormous pressure from our NHS and allows resource to be targeted at those most in need.

- Frontier Economics estimates that the NHS (across the UK) spends £6.5 billion annually on treating obesity-related ill health<sup>27</sup>, with Government analysis in 2017 projecting this to reach £9.7bn by 2050.<sup>28</sup>
- The Institute For Public Policy Research (IPPR) predict that excess weight amongst the current cohort of children will cost the NHS £74 billion over their lifespan.<sup>29</sup>
- Diabetes care alone accounts for nearly 10% of the NHS budget<sup>30</sup>, and the number of Type 2 diabetes diagnoses has doubled in the last 15 years. 87% of people diagnosed with Type 2 diabetes are living with overweight or obesity.<sup>31</sup>
- Excess weight is the second biggest preventable cause of cancer, after smoking. Over 1 in 20 UK cancer cases are due to excess weight and obesity is predicted to overtake smoking as the main preventable cause of cancer in women by 2035.<sup>32</sup>

# Evidence: Behavioural (tier 2) and Specialist (tier 3) Overweight & Obesity Management Services

## Context

- NICE guidance states overweight and obesity management programmes should include behaviour change strategies to increase physical activity or decrease inactivity, improve eating behaviour and the quality of the person's diet. Treatments should be chosen taking into account the person's individual preference, social circumstances, and previous treatments as well as their degree of overweight/obesity and related comorbidities.

## Evidence

- Commercial interventions are community-based interventions that aim to achieve weight loss through changes to diet and a recommendation to increase physical activity. Systematic reviews of five interventions (including well-known commercial programmes) found an average weight loss of 2.2kg after 12 months.<sup>33</sup>
- As part of an extra funding initiative in 2021 for behavioural overweight and obesity services, evidence was collected from local authorities in receipt of the extra funding over the financial year. Forty-three per cent of all participants enrolled on programmes in 21/22 lost weight at the end of their active intervention when compared to their weight at the beginning of the service. 17% of participants enrolled on services lost a minimum of 5% of their body weight at the end of the active intervention (usually 12 weeks but can vary).<sup>34</sup>
- Longer-term follow up studies have found that longer commercial interventions result in better results after 5 years, though these programmes are not available on the NHS.<sup>35</sup>
- The NHS Digital Weight Management Programme is a 12 week online programme offering diet and physical activity advice for people who have a BMI of 30 or more – lowered

to 27.5 for people from Black, Asian and minority ethnicities – and are diagnosed with diabetes, hypertension, or both. It has found that of the 14,268 who complete the course between 2021-22, a mean weight loss of 3.9kg was achieved at intervention end.<sup>36</sup>

- A 2023 systematic review of systematic reviews found that digital weight loss programmes are comparable to face to face interventions in effectiveness, with the most significant weight loss results observed in programmes that include personal counselling or coaching from a qualified professional.<sup>37</sup>
- Multi-component programmes deliver individual or group sessions that include several different interventions, including exercise classes, psychological support and motivational interviewing. There is evidence of effectiveness across a wide range of age groups over and above the effectiveness of either dietary intervention or physical-activity intervention alone.<sup>38,39,40</sup>
  - Systematic reviews of tier 3 interventions have found that they have a short to mid range positive effect on obesity.<sup>41</sup>
- Very low (<800kcal/day) and low energy (800–1200kcal/day) diet programmes are based on a calorie-restricted diet, provided either solely through meal-replacement products (known as total diet replacement, TDR) or with the addition of food. There is evidence that they can lead to greater weight loss when included in a behavioural change programme than behaviour change alone and can lead to significant weight loss and type 2 diabetes remission.<sup>42</sup> Draft NICE guidance does not recommend using very low energy diets (defined as under 800kcal/day) outside of specialist overweight and obesity management services due to risks such weight regain and potential adverse events.

# Evidence: Behavioural (tier 2) and Specialist (tier 3) Overweight & Obesity Management Services

---

- Draft NICE guidance does not recommend specific macronutrient diets (such as low fat over low carbohydrate) due to the lack of available evidence. Diabetes UK and the Scientific Advisory Committee on Nutrition (SACN) recommend lower carbohydrate diets as a short-term effective option for adults with type 2 diabetes who have obesity or overweight.<sup>43</sup>
- Systematic reviews of diets for overweight and obesity management in people with type 2 diabetes have identified minimal differences by dietary macronutrient content, and a clear benefit from structured programmes which include a period of formula diet 'total diet replacement' to induce substantial weight loss.<sup>44</sup>
- Physical activity is recommended in NICE guidance for overweight and obesity management. While there is no strong evidence that physical activity alone can result in significant weight loss at a population level, the benefits to health overall are well evidenced as well as evidence that it can contribute to preventing weight regain. The further details of this topic are beyond the scope of this document, and we refer stakeholders to the Royal College of Nursing's evidence briefing on the subject<sup>45,46</sup>
- Social factors, such as isolation and loneliness, play a key role in the health outcomes of individuals living with obesity. The findings demonstrate that reducing social isolation can decrease obesity-related mortality by as much as 36%.<sup>47</sup>
  - There is a growing focus on the role of social prescribing, with emerging evidence that when implemented with skilled link workers and tailored support, can be an impactful intervention for reducing loneliness and enhancing well-being. The mixed methods approach, combining quantitative analysis with qualitative insights, strengthens the evidence by showing both statistical improvements and positive feedback from participants.<sup>48</sup>

## Diabetes Programmes

- The NHS Diabetes Prevention Programme (DPP) has resulted in a 7% reduction in the number of new diagnoses of type 2 diabetes in England between 2018 and 2019, which equates to around 18,000 people. Of the people who were referred to the DPP, between June 2016 and December 2018, the 36% who attended at least one of the group-based interventions achieved an average weight loss of 2.3kg (24% of participants lost over 5% of their baseline weight).<sup>49</sup> The DPP incorporates support for physical activity and other behavioural changes, including direct coaching and peer-support sessions, which have been effective in leading to weight loss and blood-glucose reductions in 35% of patients attending at least one session, with those who attended more sessions achieving greater reductions.<sup>50</sup> The DPP has been shown to reduce the risk of developing type 2 diabetes by 20% for those who take part.
- The NHS Diabetes Path to Remission Programme was introduced in England to support selected people with type 2 diabetes to achieve remission via low calorie diets. In clinical trials almost half of those who went on low calorie diets achieved remission after one year. A quarter of participants achieved a 15kg or more weight loss, and of these, 86% put their type 2 diabetes into remission at intervention end.<sup>51,52</sup>

## Barriers

- The extent and range of the provision of specialist overweight and obesity management services is variable across the UK.
- Lack of appropriate and sustained funding is an ongoing barrier to accessing treatment. In England, local authorities have experienced historic year-on-year public health budget cuts, which is likely to have had an impact on their ability to commission services. There has been a consistent problem of 'short-termism'

## Evidence: Behavioural (tier 2) and Specialist (tier 3) Overweight & Obesity Management Services

---

in funding for overweight and obesity services. The resulting commissioning system is highly complex and leaves services reliant on multiple funding sources, which is itself a barrier both for clinicians and patients to navigate when seeking to access treatment and for local health systems looking to develop new capacity for services.<sup>53,54</sup>

- In 2021 the UK Government announced an additional £100 million of funding to councils in England and NHS England to expand access to tier 2 services – but this was not a long-term funding package and was discontinued after a year.
- A 2018 inquiry from the All Party Parliamentary Group on Obesity found there was a “postcode lottery” to service with patchy access at all levels. It highlighted a freedom of information request that was submitted to its inquiry that found that only 52% of local authorities commissioned tier 1 services, while 82% commissioned tier 2. 57% of Clinical Commissioning Groups commissioned tier 3 services and 73% commissioned tier 4 services.<sup>56</sup>
- People with lived experience of attending these services report that the system is confusing and challenging to navigate, with little control over decisions about their own treatment, and the intervention available may not be sufficiently long term.<sup>57</sup>
- An observational cohort study of access to overweight and obesity management services in England found that only 3.13% of people with a recorded body mass index (BMI) that met criteria for a referral received one between January 2007 and June 2020.<sup>55</sup>

## Evidence: Pharmacotherapy for Overweight & Obesity

---

### Context

- In the last few years there have been major advances in the field of pharmacotherapy for obesity. A number of new agents have been approved by NICE in view of their clinical and cost effectiveness. These medications are recommended for people living with obesity and its complications (as well as type 2 diabetes).
- The recent licensing by the MHRA of semaglutide (Wegovy) as a treatment to prevent cardiovascular disease in people with overweight and obesity at high risk based on a large cardiovascular outcome trial is a recent high-profile example of this (see [appendix 1](#) for further details). There are several active research projects on this topic which should be closely monitored.<sup>58</sup>
- NICE approved medications for obesity are deemed cost effective because they improve quality of life and reduce the progression of obesity related complications, for example the progression from non-diabetic hyperglycaemia to type 2 diabetes.<sup>59</sup>
- The last Government pledged £40m for a two-year pilot to explore ways of providing obesity pharmacotherapy outside hospital settings in June 2023. The Government estimated that specialist overweight and obesity management



# Evidence: Pharmacotherapy for Overweight & Obesity

services currently treat 35,000 people per year; the pilots planned to support an uptake in provision in some areas but were not intended to provide access to all who are eligible.<sup>60</sup> NICE estimates that there is an eligible population of over 4 million for Wegovy and that services could be able to treat 49,000 people per year by 2028 under current trends.<sup>61</sup>

- o The status of these pilots as of August 2024 is unclear – participants in their oversight have been stood down and the rollout paused, but it is not currently known if they have been formally scrapped.
- NICE has recommended several providers who can support prescribing and monitor obesity pharmacotherapy (while further evidence is gathered on their effectiveness).<sup>62</sup>

As of October 2024, NICE are consulting on a proposed Funding Variation submitted by NHS England for the appraisal of Tirzepatide for obesity.<sup>63</sup> NHS England are proposing to phase in access to Tirzepatide, prioritising by clinical need over a period of 12 years. This is due to the cost implications and lack of services in primary care to support access for all who are eligible under the draft guidance.

- The advent of these interventions has generated an enormous amount of public, political and media interest. Whilst much of that discussion is out of scope of this document, OHA members have raised particular concerns about revelations in the Guardian about conversations between the manufacturer of the most prominent type of pharmaceutical intervention for obesity and a previous Secretary of State for Health and Social Care.
  - o According to these reports, suggestions were made during those conversations that limited supplies of drug treatments could (and should) be targeted to those most likely to remain in or return to the labour force.<sup>64</sup>
  - o While it is important to factor the wider economic and societal benefits of interventions when assessing their cost effectiveness, OHA members wished to

strongly note their opposition to prioritising any NHS services based on a person's potential economic output over their medical need.

## Evidence

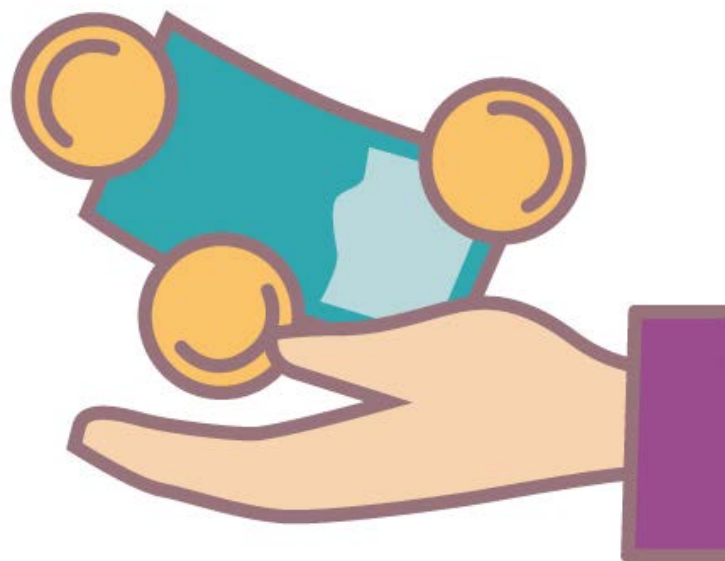
See [appendix 1](#) for a breakdown of the evidence base for pharmacotherapy for obesity.

## Barriers

- Obesity pharmacotherapy can currently only be accessed on the NHS via specialist overweight and obesity management services; however, the provision of services is not sufficient to meet the number of people who are eligible for treatment. Many healthcare professionals who provided testimony to OHA directly state that this has added a significant increase in demand on already overstretched services, with waiting lists now routinely reaching three to five years. Some services are also now closed to referrals due to capacity exceeding demand.
- Tirzepatide (Mounjaro®) for treating obesity (at time of writing) has not been approved by NICE for use in the NHS in England. The draft technology appraisal recommends that it could be made available within a range of services and not require 'specialist overweight and obesity management services'. It is currently unclear what level of support will be expected to be delivered alongside a prescription.<sup>65</sup>
- Without action to ensure that medication is accessible to more people living with obesity and related complications there is a risk that medication will be the treatment choice of those who can afford private prescriptions, further increasing inequalities in the management of obesity.<sup>66</sup>
- Research from Nesta estimates that halving and maintaining obesity at 6 million adults (in England) using semaglutide alone (though likely to save the NHS money in the long term due to £6.5 billion annual estimated cost of obesity to the NHS) would have a total cost of at least £115 billion by 2030.<sup>67</sup>

# Evidence: Pharmacotherapy for Overweight & Obesity

- Funding the medicines even just for those with severe obesity (BMI > 40 kg/m<sup>2</sup>, 3% of the adult population in England or around 1.3 million people) would still incur an ongoing annual cost of £3.8 billion (with accompanying behavioural support - or £2.2 billion for the drugs only).
- These cost estimates are based on an annual medicine cost of £1,560 per person - or £130 per month. That's the current wholesale cost of semaglutide - the NHS has a commercial arrangement with Novo Nordisk, but dosage prices are confidential. It does not take into account potential cost savings to the NHS.
- It assumes a further £100 per person per month for accompanying support.
- People living with obesity have a chronic recurring condition that requires long-term care. To maintain clinical effectiveness, people with obesity need to continue taking medications long term, as is the case for any chronic condition. At the time of writing, NICE has currently only approved liraglutide (Saxenda) and semaglutide (Wegovy) for a maximum of 2 years (the same restriction for Wegovy has not been made in Scotland).<sup>68,69</sup>
- There is currently a lack of long term data on the effect of coming off medication, including the psychological and mental health impact of weight-regain as a result of ceasing to use the medications. This also includes a lack of data on the risks associated with deprescribing of the medications.
- Media has reported on illegal and counterfeit versions of weight loss drugs being administered, causing significant health harms in many cases. However, no official assessment has been made of the extent of the issue as of October 2024.<sup>70</sup>
- New obesity pharmacotherapy options are gaining increasing attention and demand from the general public. Off label prescribing for Ozempic (a lower dose of semaglutide licensed for type 2 diabetes but also beneficial for weight loss) has seen a big uptake. This has contributed to significant supply issues in type 2 diabetes medications.<sup>71</sup> People accessing these medications in this manner also may not receive the appropriate wrap-around support necessary for the medicines to be taken safely and effectively.
- Healthcare professionals involved in the creation of this document specifically cited concerns around malnutrition in people accessing pharmaceuticals without appropriate support and wrap-around care.<sup>72,73,74</sup>



# Evidence: Surgical Interventions

---

## Context

- In England, metabolic and bariatric surgery (MBS) is recommended by NICE for adults with a BMI over 40 kg/m<sup>2</sup> and those with a BMI of between 35 and 39.9 kg/m<sup>2</sup> who also have a significant health condition that could be improved with weight loss such as type 2 diabetes (and at a lower BMI threshold of 30kg/m<sup>2</sup> for recent onset diabetes), hypertension, cardiovascular disease, non-alcoholic fatty liver disease, obstructive sleep apnoea, polycystic ovary syndrome and others. As part of the recommendation, patients must also agree to the necessary lifelong follow up necessary after surgery.<sup>75</sup> Further details of the existing NICE recommendation are:
  - Individuals of South Asian, Chinese, other Asian, Middle Eastern, Black African and Afro-Caribbean backgrounds should be considered based on a lower BMI threshold which is a reduction of 2.5 BMI points in view of their higher cardiovascular risks at lower BMIs. They should also be offered an expedited assessment.
  - Expedited assessment is recommended for people with a BMI of 35 kg/m<sup>2</sup> or more who have recent onset type 2 diabetes (diagnosed within the last 10 years).
  - A multidisciplinary team discussion within a specialist overweight and obesity management service including dietetic, psychological and medical expertise should take into account patient suitability and needs with regards to bariatric surgery.
  - Patients must be followed up by the bariatric service for two years after surgery. After discharge from this follow-up, at least annual monitoring of nutritional status and appropriate supplementation after bariatric surgery as part of a shared care model with primary care should be offered.<sup>76,77</sup>
  - In the most recent update to the NICE guidelines, drug treatments to maintain or reduce weight loss if waiting times are excessive can be considered.
  - Guidelines by NICE have approved Endoscopic Sleeve Gastroplasty for individuals with a BMI above 30kg/m<sup>2</sup> who do not qualify or do not wish to have bariatric surgery.<sup>78</sup>

## Evidence

- MBS is the most effective treatment for severe obesity, often leading to remission of obesity-related conditions and improved life expectancy. For example, there is evidence that bariatric surgery can lead to remission of type 2 diabetes in 30-62% of individuals following surgery. In adults, a gastric bypass (roux-en-y gastric bypass or one anastomosis gastric bypass) produces the greatest long-term weight change of any intervention or weight-management programme, delivering significant cost-benefit over 30 years.<sup>79,80,81,82</sup>

## Barriers

- Modern bariatric surgery is very safe (with mortality similar to gallbladder removal) and is one of the most cost-effective healthcare interventions assessed by NICE. However, the NHS currently offers surgery to less than 5000 of the 3.2 million potentially eligible adults each year, one of the lowest rates of any high-income country and results in large waiting lists frequently exceeding 12 months. Less than 1% of those who could benefit receive this treatment option, and there is significant regional variation in patients' ability to access bariatric surgery within the UK.<sup>83,84</sup>
  - France, which has a similar population to the UK, carries out more than 60,000 State-funded bariatric procedures per year.<sup>85</sup>
  - Healthcare professionals involved in the provision of overweight and obesity management services have widely noted that a contributing factor to date has been the lack of access to specialist weight management services which historically patient needed to have completed before being referred for MBS.

## Evidence: Surgical Interventions

---

- Lack of access has led to people with the means to do so seeking surgery privately, including outside of the UK. This can result in people not receiving the level of support and care recommended by NICE and being unable to access the necessary follow up support from NHS services. There is also a lack of post-operative care capacity and commissioned services, which is essential to ensure safe approach to new dietary habits and micronutrient status.<sup>86</sup>
  - The current situation also further risks increasing health inequalities between those that can afford private care and those that cannot.
  - There have been growing concerns about the rising numbers of “surgical tourism” cases, with people from the UK going overseas for bariatric surgery. There are significant concerns about the safety of these procedures, and the level of follow-up support available when returning to England. Many leading organisations have expressed their concerns regarding this situation.<sup>87,88,89</sup>
- The OHA’s lived experience insight work, convened for our 2021 Turning the Tide report, reported that many patients felt that the current tiered system felt more like a “series of hurdles to be cleared” than a patient-centred pathway designed for what was most appropriate for their medical needs.<sup>90</sup>

## Evidence: Children’s Services

---

### Context

- NICE recommends that clinicians be aware that overweight and obesity management programmes for children can vary, with focus being different according to level of obesity, age and pubertal stage. There will be significant variance in the level and speed of weight loss that is appropriate. The speed of weight loss again should be determined by the level of risk for the child or young person, alongside age and pubertal status. Holistic bio-psychosocial family orientated interventions which focus on multi-component behaviour change and not just diet is recommended. Pharmacotherapy should only be considered by specialist teams and is not recommended for children under 12. Metabolic and bariatric surgery may be considered for young people only in exceptional circumstances.<sup>91</sup>
  - Further recent changes to the overweight and obesity management pathway include funding for Complications from Excess Weight Clinics (funded until March 2025). These now include 30 centres based across England which offer person-centred multidisciplinary care to children between the ages of two and eighteen who are experiencing health complications due to living with obesity. As part of this pilot core outcomes have been agreed which incorporate physical, mental health and social outcomes. The programme aims to provide more information about the demographics of this cohort, evidence on best practice, and will be evaluated by an independent NIHR partner.<sup>92</sup>
  - Treatment interventions in children are highly controversial, though guidance is clear that the NHS should offer appropriate treatments for children’s medical, developmental and emotional needs.<sup>93</sup>

# Evidence: Children's Services

---

## Evidence

- There are also clear and prevalent inequalities in relation to weight outcomes for different ethnicities and socio-economic groups; child obesity prevalence is strongly correlated with socio-economic status and is highest among children living in the most deprived local areas<sup>94</sup>.
- There is a strong association between the weight status of children and parental BMI. Data from the National Child Measurement Programme indicates that obesity is most common in children when their mothers are living with obesity, but either parent living with excess weight has an impact of the risk for a young person<sup>95</sup>.
- There is some evidence that treatment options, including pharmaceutical and surgical options, can have a beneficial impact on children living with very high levels of excess weight but more research is needed to investigate both short-term and longer-term impacts of these interventions.<sup>96,97,98</sup>
- It is important to note that a significant minority of children (about 5%) with early onset severe obesity (onset younger than 5 years) may have an identifiable underlying genetic cause; genetic screening tests are available via a national programme. Some of these patients may be eligible for specific pharmacotherapy such as leptin and setmelanotide, so it is important that they are identified at an early stage.<sup>99</sup> In some cases, screening in adulthood may be appropriate as this knowledge is fairly recent; most adults with early onset obesity will not have had genetic testing for obesity in childhood.
- Individual examples of best practice do exist, with particular evidence coming from the Children's Obesity Clinic, Copenhagen University Hospital Holbæk, Denmark, which delivers a clinic based structured treatment programme. The model established in the clinic has successfully been applied in other Danish clinics<sup>100</sup> and community settings.<sup>101</sup>
- A comprehensive review of 10 years of data from the clinic found that family-based weight management programmes had a wide range of positive effects on overweight and related complications. Approximately 75% of patients reduced their degree of obesity, while also seeing reductions in dyslipidaemia, hypertension, fatty liver and sleep apnoea.<sup>102</sup>
- In the initial assessment of the programme, a total of 617 children or youths were included; 325 were girls and 292 were boys. At entry, the mean age was 11.6 years and the mean BMI standard deviation score (SDS) was 3.0. Seventy stopped treatment, 547 were in treatment, 125 had 1 examination, and 492 had two or more examinations, with a mean visit interval of six weeks. After 12 months, the mean BMI SDS decreased by 0.23 ( $P < 0.0001$ ) in girls and by 0.32 ( $P < 0.0001$ ) in boys. After one year, the retention rate was 90.2%, and 68.7% had reduced BMI SDS. After two years, the retention rate was 75.0%, of which 62.5% had reduced BMI SDS. The reductions in BMI SDS were independent of baseline adiposity, age (in boys), puberty stage, and social class, but were dependent on sex, age (girls), and place of referral.<sup>103</sup>
- The impact of the clinic's support on parent's weight was also measured. Data on changes in BMI were available in 606 mothers and 479 fathers. At baseline, the median BMI of the mothers was 28.1 kg/m<sup>2</sup> (range: 16.9–66.6), and of the fathers was 28.9 kg/m<sup>2</sup> (range: 17.2–48.1). Seventy percent of the mothers and 80% of the fathers were living with overweight or obesity at the time of their child's treatment initiation. Both the mothers and fathers lost weight during their child's treatment with a mean decrease in BMI in the mothers of 0.5 (95% CI: 0.2–0.8,  $p = 0.0006$ ) and in the fathers of 0.4 (95% CI: 0.2–0.6,  $p = 0.0007$ ). Of the parents living with overweight or obesity, 60% of the mothers and 58% of the fathers lost weight during their child's treatment.<sup>104</sup>

## Evidence: Children's Services

---

- A Swedish developed medical technology (Evira) has been shown to be effective in helping young people manage their weight as part of a multi-disciplinary intervention. The technology is now being trialled in countries outside of Scandinavia including in England, as part of the NHSE Complications from Excess Weight (CEW) services.<sup>105</sup>

### Barriers

- Much less research and investment into intervention and evaluation for children's and young people's services means that the evidence base is significantly weaker for these than for interventions for adults, and many outstanding

concerns around the impact of these treatments on children remain under researched and unknown. There is also an absence of evidence for best practice in engaging parents and carers on children living with overweight and obesity. Many interventions used for adults for both behavioural or medical interventions are either untested in children or proven to be inappropriate and potentially harmful.<sup>106,107</sup>

## Evidence: Mental Health and Overweight & Obesity Management

---

### Context

- There is a bi-directional relationship between obesity and mental illness. People living with a mental illness have a 2-3 times higher risk of obesity and people living with obesity have a 30-70% increased risk of mental illness. This is influenced by many social, physiological and psychosocial factors, including comorbidities, the wider food environment, lifestyle factors associated with living with a mental illness, the adverse impacts of medication used to treat mental illnesses and diagnostic overshadowing.<sup>108</sup>
- Eating disorders and disordered eating patterns such as emotional eating, binge eating, and night eating syndrome are more common in people living with obesity.<sup>109</sup>
- Obesity is associated with many mental illnesses including mood disorders, anxiety, binge eating

disorder, trauma, and schizophrenia. Medications used to treat mental illnesses, in particular psychotropics, can also lead to obesity.<sup>110</sup>

- Weight regain can also lead to negative psychological effects, emphasising the need for psychological support in obesity management services.<sup>111</sup>
- A significant proportion of adults living with obesity who access specialist overweight and obesity management services in the UK have had adverse childhood experiences (ACE).<sup>112</sup>
  - There is evidence of an association between adverse childhood experiences and childhood obesity. Certain forms of ACEs, and co-occurrence of multiple ACEs, appear to have a greater impact on childhood obesity. The effect of ACEs on development of childhood obesity may take 2–5 years to manifest.<sup>113</sup>

# Evidence: Mental Health and Overweight & Obesity Management

---

## Evidence

- Psychological therapy for people living with overweight and obesity may include, for example, cognitive behavioural therapy (CBT), either in individual or group settings. A meta-analysis from 2018 found that in addition to weight loss, current evidence suggests that CBT for weight loss is an efficacious therapy for increasing cognitive restraint and reducing emotional eating.<sup>114</sup>
  - Moderate weight loss is associated with significant improvements in mood and quality of life.<sup>115</sup>
- Weight neutral approaches to overweight and obesity management services have been found to lead to an improvement in bulimia symptom severity but not for other outcomes. Evidence suggests that follow-up support from clinical psychology is important in successful behaviour change.<sup>116</sup>
- Current NICE guidance recommends that bariatric surgery should only be carried out with the involvement of a multidisciplinary team that can provide psychological support before and after surgery.<sup>117</sup>
  - The pre-surgery psychological assessment helps to identify factors that may cause challenges to surgical outcomes, and recommendations to support the patient in addressing these. However, access to psychological support after surgery is less common.<sup>118</sup>

## Barriers

- There is currently very limited information available on the number of psychologists working within NHS overweight and obesity management services.
- NICE guidance recommends that all overweight and obesity management interventions include or have access to a psychological component, such as by ensuring that community groups are delivered by people equipped with the skills to support behaviour change or by providing psychological input alongside medication or surgery. However, this support is inconsistent, and some people face delays and lengthy waits for follow-up appointments.<sup>119</sup>
- People accessing services report their psychological needs are not being met and that they would like more support. There is little clarity on what best support should entail however and many providers do not feel equipped to deliver.<sup>120</sup>



# Evidence: Stigma and Overweight & Obesity management

---

## Context

- It is a commonly-held view that stigma can encourage weight loss, but this is a profound misconception: the reverse is true with stigma being a significant barrier to weight loss.<sup>121,122</sup> Many members of the lived experience panel convened by the OHA recounted experiences of weight stigma in healthcare settings, and the All Party Parliamentary Group on Obesity's 2018 survey found that only a quarter of people living with obesity felt that they were treated with dignity and respect when seeking advice or treatment related to their weight.<sup>123</sup>
- In England, a survey by the APPG on Obesity found that 88% of people living with obesity who completed the survey reported being stigmatised due to their weight.<sup>124</sup>
- Weight bias is persistent in a number of settings such as education, the workplace, the media and healthcare settings.<sup>125</sup>

## Evidence

- The evidence is clear that weight stigma damages individuals' health, compromising psychosocial wellbeing and lowering self-esteem, worsening mood and increasing metabolic risk factors.<sup>126</sup> In addition, weight stigma can lead to counter-productive responses, including increased consumption of high-calorie foods<sup>127</sup> and avoidance of physical activity,<sup>128</sup> with the consequence that experiencing weight stigma is associated with future weight gain.<sup>129</sup>
- The impacts of stigma are keenly felt by children and young people, and include bullying, poorer educational outcomes,<sup>130</sup> increased risk of depression, anxiety, social isolation, decreased physical activity and worsening obesity.<sup>131</sup>
- When health professionals hold stigmatising views, this can impact the support and care received by patients<sup>132</sup> and may result in people with obesity being even more reluctant to seek medical care (for obesity or any other condition),<sup>133</sup> which can lead to further negative

health outcomes<sup>134</sup>. This can exacerbate already increased risk from conditions such as cardiovascular disease and certain cancers associated with obesity.

- Evidence shows that people with obesity respond positively to discussions about weight and health related behaviours that are supportive and empathetic.<sup>135</sup> Evidence shows that when discussing weight more neutral words such as "weight", "unhealthy weight" or "BMI" are the most preferred weight related terms, with "obese" and "fat" being disliked.<sup>136</sup> When discussing medical terms and diagnoses, international consensus and patient advocacy groups recommend that person-first language is used i.e. person living with obesity. Though terms vary between individuals and therefore it is important to speak with the patient about what weight-related terms they prefer.<sup>137</sup>
- Research suggests that current training in universities, hospitals and other organisations involved in the care of patients with obesity lacks adequate teaching on the causes of obesity and the impact on patient lives, which can lead to increased stigma from health care professionals. Proper education through a set of core obesity care competencies, including a focus on the genetic and social determinants, can help to reduce weight stigma and look to discuss sources, implications and impact of stigma.<sup>138,139,140</sup>

## Barriers

- Weight bias in health settings is compounded by health facilities with inadequate provision for people living with obesity: research has highlighted patient experiences of the embarrassment of being unable to sit in the chairs provided, of inappropriately sized gowns, a lack of equipment such as hoists and standing aids and of equipment such as blood pressure cuffs and speculums being too small. There are also weight limits on devices such as many scales, CT<sup>141</sup> and MRI scanners that prevent some patients from accessing them.<sup>142</sup>



## Evidence: Stigma and Overweight & Obesity management

---

- o Allied Health Professionals have highlighted that there are particular impacts on individual services, such as radiography.<sup>143</sup>
- UK data from an international study found that people living with obesity waited a median of six years after starting to struggle with their weight before having a discussion with

a health professional, compared with around three years in other higher-income countries. The study's authors concluded that reducing the delay, by addressing the broader narrative around personal responsibility and encouraging people to seek treatment, could help prevent the development of comorbidities.<sup>144</sup>

## Evidence: Inequalities

---

### Context

- The impact and uptake of overweight and obesity management services, across all forms of interventions, varies between different population groups. The improved provision of services has the potential to address major inequalities in health outcomes across a number of different areas, while flawed provision will likely exacerbate these inequalities.
  - o There are also inequalities in access to wider relevant services beyond overweight and obesity management services.<sup>145</sup>
- There is a significant differential uptake of services across socioeconomic and ethnic groups. Services are not always designed or targeted to meet the needs (behavioural, cultural, psychosocial, economic) or circumstances of specific population groups.
  - o OHA's Health Inequalities Position Statement identified particular concerns about low uptake of overweight and obesity management services amongst certain groups, particularly men, people with mental health conditions, older people, people with learning disabilities and people from minoritised ethnic backgrounds.
  - o There are significant geographic variations in referrals rates to overweight and obesity

management services, with rates being highest in the West Midlands and lowest in the North East.<sup>146</sup>

- o Recent European Society for Clinical Nutrition and Metabolism (ESPEN) and European Association for the Study of Obesity (EASO) guidance has identified the need for further research into Sarcopenia and Obesity and its implications on treatment needs and efficacy.<sup>147,148</sup>
- The NHS Digital Weight Management Programme has seen significantly higher uptake in people from minoritised ethnic and more deprived backgrounds.<sup>149</sup>
- **Please note:** The inequalities outlined below are not exhaustive and are reflective of the evidence available for this review.

### Race and Ethnicity

- Black children and adults, and Asian children, have higher obesity rates than the national average.<sup>150</sup>
- Uptake of overweight and obesity management services and other programmes designed to support people to achieve healthier weight are lower amongst certain groups, especially older men and people from ethnic minority backgrounds.<sup>151</sup>

# Evidence: Inequalities

---

## Women's Health

- Women living with obesity are more at risk of cardiovascular disease than men living with obesity<sup>152</sup>, and obesity is associated with adverse pregnancy and reproductive outcomes, such as gestational hypertension, gestational diabetes, infertility<sup>153</sup> and miscarriage.<sup>154</sup> Health conditions such as these can increase women's risk of a stroke and adverse cardiovascular event later in life.<sup>155</sup>

## Men's health

- Overweight and obesity in the UK for men is 68.6% compared to 59% for women, but only 11-18% of men use commercial weight loss programmes and only 10% of men are referred to obesity services by the GP or nurse.<sup>156</sup>
- There are particularly low rates of uptake and referral to overweight and obesity management services amongst older men and men from ethnic minority backgrounds.<sup>157</sup>
- There have been a number of services established specifically to address the poor uptake of services amongst men, particularly Tier 2/behaviour change interventions. These have largely focussed on the role of community sport and are therefore structured very differently to traditional Tier 2 models.<sup>158,159</sup> These groups have been well received and have encouraged significant uptake amongst target demographics, though there has been less analysis of the long term health gains from these projects in comparison to traditional Tier 2 programmes.<sup>160,161</sup>
- The Men's Health Forum's 'Game of Stones' trial has produced highly relevant data that could inform commissioners' decision making.<sup>162</sup>
  - This was a random clinical trial conducted to determine whether an intervention that combined text messaging with financial incentives attained significant weight loss at 12-month follow-up compared with a control group and whether an intervention of text messaging alone attained significant weight loss at 12-month follow-up compared with the control group.

- Among men with obesity, an intervention with text messaging with a financial incentive significantly improved weight loss compared with a control group, whereas text messaging alone was not significantly better than the control condition. These findings support text messaging combined with financial incentives to attain weight loss in men with obesity.

## People Living with Severe Obesity in Need of Long-term Care

- The numbers of people living with severe obesity (BMI  $\geq$  40 kg/m<sup>2</sup>), with need for community health and long-term care services, are increasing, but there is insufficient data available on the number of people impacted by this across the country, the care and support required and the impacts on health outcomes.
  - People with severe obesity may need sustained care from multiple community care services. Research has found that long-term care, occupational therapy, and district nursing services provided the highest amount of care to participants. Weight management input was limited.<sup>163</sup>

## Learning Disabilities

- Levels of obesity are higher amongst people with learning disabilities across all life stages. In 2022-2023, 37% of people with a learning disability were classified as living with obesity compared to 32% of people without a LD.<sup>164</sup>
- Life expectancy for people with a learning disability is 20 years younger than the general population with an increased mortality risk being from a preventable condition.<sup>165</sup>
- Guidance on obesity management for people with learning disabilities recommends using annual health checks to assess obesity management and makes recommendations for overweight and obesity management services to be more accessible.<sup>166</sup>
- Numerous mainstream support programmes and community exercise initiatives are not accessible to individuals with a LD. Furthermore,

## Evidence: Inequalities

---

the majority of health promotion materials, such as healthy recipes and exercise guides, assume literacy skills and lack individualisation.<sup>167</sup>

- Stopping over medication of people with a learning disability and autistic people (STOMP) is a national NHS England work programme to stop the inappropriate prescribing of psychotropic medications, an identified priority in the NHS Long Term Plan. As noted above, there is an established link between some medications (particularly psychotropics) and excess weight, and higher levels of medication amongst people with a learning disability are likely to be a contributing factor in higher levels of excess weight.<sup>168</sup>
- A 'Systematic Review of Health Promotion Programs to Improve Nutrition for People with Intellectual Disability' found that health promotion interventions to date were predominantly at the individual level of the socio-ecological model and of varying effectiveness. Of the non-individually focused interventions, those targeting the physical environment or considering multiple socio-ecological levels achieved the greatest improvements in nutrition outcomes.<sup>169</sup>
  - The key conclusion of the research was that nutrition and obesity prevention research and policy need to include intellectual disability as part of equity considerations, while intellectual disability policy needs to consider the broader food environment.
- A non-randomised pilot study recruited participants with a learning disability attending Slimming World for an 8-week period. Six of the nine participants attended Slimming World for eight weeks and lost weight (1.4 kg to 6.6 kg, reduction in BMI between 0.5 and 1.7 kg/m<sup>2</sup>). Two participants dropped out because they felt uncomfortable in a mainstream group and another left because they lacked control over food choice in their residential setting. While this study indicates success for those who completed the 8-week period, the 33% dropout highlights some of the challenges faced by this population group.<sup>170</sup>
- A dietary education programme was conducted for residential home staff who support individuals with LD. The intervention had a mean duration of 28.15 weeks and involved guidance on healthy eating, portion control, and menu adjustments provided by a specialist learning disability dietitian. Upon completion of the programme, 66.7% of residents living with overweight and obesity experienced weight loss. Among these individuals, 46.7% achieved a clinically significant weight reduction of at least 5% of their initial body weight. On average, a weight loss of 5.75 kg was observed across the participants.<sup>171</sup>
- Involvement in mainstream programmes often relies on carer involvement. These programmes typically focus on individual behaviour modification, yet some individuals with a learning disability lack the independence to alter their surroundings for healthier eating choices. Additionally, individuals with a learning disability may encounter stigma and discrimination, which can reduce their likelihood of participating in health-promoting activities.

### Older People

- BMI categories should be interpreted with caution in older adults (65 years+).
  - Weight management services must consider the individualised needs of older adults by considering any comorbidities or issues related to functional status and deliver advice that does not compromise on diet quality or increase risk of developing malnutrition, sarcopenia (muscle loss) and frailty.
  - The overweight category appears to be most protective for health outcomes and mortality and lower BMI cut offs are slightly higher at a BMI of 22kg/m<sup>2</sup>.<sup>172</sup>

### Severe Mental Illness

- The term severe mental illness (SMI) is used to describe people with a group of conditions that are often chronic and so debilitating that their ability to engage in functional and occupational activities is severely impaired.<sup>173,174</sup>

## Evidence: Inequalities

---

- People with SMI have a markedly higher prevalence of obesity than the general population.<sup>175</sup> When compared with the general population, people living with severe mental illness (SMI) are 1.8 times more likely to have obesity while in adult mental health secure units, rates of obesity are 20 % higher than the general population. In England, there are currently 490 000 people living with SMI.<sup>176</sup>
  - This can be because of a number of common risk factors for being overweight, such as reduced access to healthy food, lower incomes and health conditions that limit their mobility. In addition, they have risk factors not typically faced by the general population, such as weight gain related to psychiatric medication and admission to inpatient wards with few opportunities to be physically active and access to less healthy food options.<sup>177</sup>
- NICE CG 185 and CG 178 recommend that adults on SMI registers receive a comprehensive physical health check at least annually. This check includes measures of adiposity including weight and BMI.<sup>178</sup> NICE CG 178 also recommends that the mental health provider offers “people with psychosis or schizophrenia, especially those taking antipsychotics, ... a combined healthy eating and physical activity programme by their mental healthcare provider”.<sup>179</sup>
- Weight gain associated with antipsychotic medication may be a reason why some people stop taking their antipsychotic medication potentially leading to relapse of antipsychotic illness and hospitalisation. Patients carry the double stigma of their SMI and excess weight.<sup>180</sup>
- For people with a SMI, mainstream overweight and obesity management services are not tailored to their specific and complex needs. Many have found the experience ineffective and stigmatising, with little emphasis on the psychological element of weight gain and loss.<sup>181</sup>
- NHS England has produced commissioning guidance for Integrated Care Systems for services to include tailored support and reasonable adjustments for people who are on SMI physical health check registers to address barriers they may face in accessing physical health checks and follow-on interventions (e.g. obesity management services) in a timely manner. SMI registers include people with bipolar disorder, schizophrenia or other psychoses. However, NHS England strongly encourages ICBs to offer to all people affected severely by their mental illness.<sup>182</sup> An obesity management initiative across two mental health trusts is cited as an example of collaboration between services including community and inpatient mental health service to improve the physical health of people with SMI.<sup>183</sup>
- NHS England has funded outreach strategies for people to access the SMI physical health check to overcome barriers faced. NHS England commissioned Equally Well UK and the Centre for Mental Health to research successful strategies used with this money, they published their report and recommendations in Jan 2024.<sup>184</sup>



# Evidence: Fertility & Maternity Care (including Breastfeeding)

## Context

- Preconception maternal and paternal obesity can impact on fertility, sperm quality and reduces the success of assisted fertility therapies.<sup>185</sup> NICE guidelines recommend that women with a BMI over 30kg/m<sup>2</sup> who are not ovulating lose weight to increase their chances of conception, and weight-loss to below this threshold is frequently a condition of provision of assisted fertility therapies.<sup>186</sup>
- Maternal obesity is associated with increased health risks for mothers and their babies<sup>187</sup> including gestational diabetes mellitus (GDM), hypertension during pregnancy, preeclampsia, preterm birth, and in the longer term developing heart disease, hypertension, future obesity, and type 2 diabetes<sup>188</sup>. Approximately half of women have excessive gestational weight gain (GWG)<sup>189</sup> which has similar short- and long-term risks.<sup>190,191,192</sup> Maternal obesity and excessive GWG significantly reduce breastfeeding initiation and duration.<sup>193</sup>
- There are increasing numbers of young adults living with Early Onset Type 2 Diabetes with more pregnancies in women with type 2 diabetes now recorded than in women with type 1 diabetes. Diabetes in pregnancy is associated with a range of adverse outcomes for both mother and child, including miscarriage, still birth, premature delivery, NICU admission, congenital anomalies, c/section rates, neonatal deaths. Women with history of gestational diabetes have up to 70% lifetime risk of developing T2D yet are often not supported to reduce that risk (e.g. GDM is not included in the QOF NDH register).
- There are significant inequalities in women who are most at risk of having obesity during pregnancy, including living in areas of high deprivation and women from Black ethnic groups.<sup>194</sup> Women also report experiences of obesity stigma during pregnancy.<sup>195</sup>
- Current NICE guidance (due to be updated in 2024) for healthcare professionals states that women living with a BMI classified as obese should be supported to lose weight before and after pregnancy, and during pregnancy recommendations are for a *healthy diet and exercise*.<sup>196</sup>
- BMI is suggested to be calculated at the antenatal booking appointment and if clinically justified, women can be weighed regularly throughout pregnancy. Regular weighing on its own is also not enough to influence weight gain but can be part of overweight and obesity management services<sup>197</sup>.

## Evidence

- A number of systematic reviews and meta-analyses evaluating the effects of weight management interventions in pregnancy have reported reduction in GWG and postnatal weight retention, and some improved health outcomes for both mother and baby.<sup>198</sup> Those based on structured dietary advice appear to be the most effective<sup>199,200</sup>, particularly the Mediterranean diet which consistently reduces the odds of developing GDM by over 30% (with lifelong obesity prevention benefits to women and their children).<sup>201,202</sup> Coupled with evidence of cost-effectiveness, the integration of structured diet and physical activity interventions alongside routine antenatal care and policy can improve the health of mothers and babies.
- A meta-analysis published in 2023 broadly reports that diet and physical activity interventions delivered by an allied health professional appeared most effective. Physical activity and mixed behavioural interventions were beneficial but associated with less change in GWG; they therefore may benefit from earlier commencement and a longer duration for a more effective association with GWG reduction.<sup>203</sup>

## Evidence: Fertility & Maternity Care (including Breastfeeding)

---

- A systemic review of radiographic interventions for women living with overweight or obesity concluding that a co-design approach could optimize mammographic participation.<sup>204</sup>
- Multiple systematic reviews and meta-analyses consistently demonstrate postnatal interventions consistently result in weight loss and reduce postnatal weight retention.<sup>205</sup> Interventions using a combination of diet and physical activity and those targeting women with postnatal overweight.<sup>206,207,208</sup>
- There is a lack of evidence-based strategies and existing care options to support women with infertility to lose weight to be eligible for NHS-funded fertility treatment.
- UK guidelines recommend that midwives have a key role in providing weight management advice and support during pregnancy, but high workload and lack of expertise is a barrier to practice.<sup>210,211,212</sup>
- Excessive GWG is a known risk factor for short- and long-term health of women and their babies, including obesity development. However, there are currently no UK guidelines on appropriate GWG ranges, which is a barrier to health professionals supporting women with managing GWG.
- There is a lack of evidence on effective interventions to support women living with overweight or obesity to achieve breastfeeding success.<sup>213</sup>

### Barriers

- Theoretically, supporting women with their weight management before pregnancy would have a positive life course obesity impact for women and their babies. However, reviews have identified a lack of explicit preconception overweight and obesity management intervention evidence and further research is needed in this area.<sup>209</sup>

# Appendices

## Appendix 1 - Obesity Pharmacotherapy Evidence

Drug	Evidence	Availability
Liraglutide	<p>SCALE was a 56-week double blinded randomised controlled trial (RCT) which assessed the efficacy of liraglutide 3.0mg for obesity management in 3731 patients without T2DM and a BMI of at least 27 kg/m<sup>2</sup>. The mean weight loss was 8.0±6.7% in the liraglutide group and 2.6±5.7% in the placebo group. Just over 63% of patients in the liraglutide group achieved 5% total body weight loss (TBWL) compared to 27.1 % in the placebo group, with 14% of patients receiving liraglutide achieving &gt;15% weight loss compared to 3.5% in the placebo group. This improvement was associated with a more favourable impact on glycaemic control and other cardiometabolic factors as well as greater health related quality of life.</p>	<p>In 2014, liraglutide 3.0 mg was the first glucagon-like peptide 1 (GLP-1) analogue to be licensed to treat obesity.</p> <p>NICE recommend as an option for managing overweight and obesity alongside a reduced-calorie diet and increased physical activity in adults, only if:</p> <ul style="list-style-type: none"> <li>• BMI of at least 35 kg/m<sup>2</sup> (or at least 32.5 kg/m<sup>2</sup> for members of minority ethnic backgrounds               <ul style="list-style-type: none"> <li>○ Have non-diabetic hyperglycaemia or a fasting plasma glucose level of 5.5 mmol/litre to 6.9 mmol/litre) and</li> <li>○ Have a high risk of cardiovascular disease based on risk factors such as hypertension and dyslipidaemia and</li> </ul> </li> <li>• It is prescribed in secondary care by a specialist multidisciplinary tier 3 weight management service.</li> </ul>

## Appendices

Drug	Evidence	Availability
Semaglutide	<p>In STEP-1 trial, 1961 adults from 16 countries with BMI of at least 27 kg/m<sup>2</sup> without T2DM achieved a TBWL of 14.9% with weekly SC semaglutide 2.4mg compared to a TBWL of 2.4% in the placebo group at 68 weeks. Half of participants achieved ≥ 15% TBWL at 68 weeks vs 4.9% in placebo. In patients with T2DM and BMI of at least 27 kg/m<sup>2</sup>, 2.4 mg weekly semaglutide reduced body weight by 9.6% relative to 3.4% in the placebo group at 68 weeks.</p> <p>The SELECT trial has been investigating the effect of 2.4 mg SC weekly semaglutide on MACE in patients with overweight or obesity and established cardiovascular disease. The final results of the study demonstrated a 20% reduction in the incidence of fatal and non-fatal events.</p> <p>The SELECT trial demonstrated that Semaglutide 2.4mg weekly (Wegovy) reduced the incidence of fatal and non-fatal cardiovascular events in people with obesity and established cardiovascular disease. This has resulted in a change in the licensed indication announced by the MHRA on 23/7/2024), as a treatment to prevent cardiovascular disease in people with overweight (BMI&gt;27kg/m<sup>2</sup>) and obesity with established cardiovascular disease.</p> <p>The STEP-1 trial extension found that one year after withdrawal of once-weekly subcutaneous semaglutide 2.4 mg and lifestyle intervention, participants regained two-thirds of their prior weight loss, with similar changes in cardiometabolic variables. Findings confirm the chronicity of obesity and suggest ongoing treatment is required to maintain improvements in weight and health.</p>	<p>In the UK, NICE has recommended Semaglutide 2.4mg weekly as an option for weight management, including weight loss and weight maintenance, alongside a reduced-calorie diet and increased physical activity in adults, only if:</p> <ul style="list-style-type: none"> <li>• it is used for a maximum of 2 years, and within a specialist weight management service providing multidisciplinary management of overweight or obesity (including but not limited to tiers 3 and 4), and             <ul style="list-style-type: none"> <li>○ they have at least 1 weight-related comorbidity and:</li> <li>○ a body mass index (BMI) of at least 35.0 kg/m<sup>2</sup>, or</li> </ul> </li> <li>• a BMI of 30.0 kg/m<sup>2</sup> to 34.9 kg/m<sup>2</sup> and meet the criteria for referral to specialist weight management services in NICE's guideline on obesity: identification, assessment and management.</li> </ul>



## Appendices

Drug	Evidence	Availability
	<p>The OASIS-1 trial of oral semaglutide (Rybelsus) 50mg/day reported mean weight loss 15.1% at 68 weeks, Adverse event profile was similar to the injected form, with almost twice as many gastrointestinal adverse events (mostly mild/moderate) as with placebo.<sup>214</sup></p> <p>In the STEP TEENS trial adolescents (12 to &lt;18 years of age) with obesity (a body-mass index [BMI] in the 95th percentile or higher) or with overweight (a BMI in the 85th percentile or higher) and at least one weight-related coexisting condition. Participants were randomly assigned in a 2:1 ratio to receive once-weekly subcutaneous semaglutide (at a dose of 2.4 mg) or placebo for 68 weeks, plus lifestyle intervention. The mean change in BMI from baseline to week 68 was -16.1% with semaglutide and 0.6% with placebo.<sup>215</sup></p>	
Orlistat	<p>A systematic review of 12 RCTs showed orlistat plus lifestyle intervention leads to greater weight loss and improved glycaemic control in patients with T2DM and a BMI greater than 25 kg/ m<sup>2</sup> compared to lifestyle alone with overall mean weight reduction of 4.25 kg in the orlistat group.</p> <p>When studied in children, orlistat decreased BMI by 0.5 to 4.2 kg/ m<sup>2</sup> compared with either placebo or baseline. Chanoine et al conducted a large multicentre, randomized, double-blind study with 539 adolescents with obesity aged 12 to 16 years at 32 centres in the United States and Canada.<sup>216</sup></p>	<p>NICE includes orlistat as part of weight management along with lifestyle modifications in those with obesity or BMI &gt;28kg/m<sup>2</sup> with associated risk factors like hypertension or T2DM. If at least 5% TBWL after 3 months is not achieved, it is recommended to discontinue orlistat. This goal is less strict in patients with T2DM since the rate of weight loss might be slower in this group.</p>

## Appendices

Drug	Evidence	Availability
Setmelanotide	<p>The pivotal study by Kuhnen et al demonstrated that Setmelanotide administration to patients with POMC deficiency resulted in major weight loss of 20.5 kg and 51.0 kg over 12 and 42 weeks respectively, highlighting the potent impact of the melanocortin pathway on body weight regulation. Subsequently a phase 3 trial which included individuals with POMC and Leptin receptor deficiency found that Setmelanotide significantly reduced body weight and hunger scores in both groups.</p>	<p>Setmelanotide is approved by the MHRA and the National Institute for Health and Care Excellence (NICE) as a treatment for obesity and hyperphagia specifically caused by POMC deficiency, including proprotein convertase subtilisin/kexin type 1 or leptin receptor deficiency in people aged 6 years and over.</p> <p>Approved as first-line treatment for TD by FDA, Approval sought for Obesity indication 2023.</p>
Naltrexone/ Bupropion	<p>Contrave Obesity Research (COR)-I, COR-II, Contrave Obesity Research-Behaviour Modification (COR-BMOD), and Contrave Obesity Research-Diabetes (COR-DM) trials were four double-blinded RCTs in USA that assessed the safety and efficacy of Naltrexone/Bupropion (NB) in more than 4500 people with overweight or obesity in addition to lifestyle interventions for up to 56 weeks. In COR-I, mean change in body weight was <math>-1.3 \pm 0.3\%</math> in the placebo group, <math>-6.1 \pm 0.3\%</math> in the naltrexone 32 mg plus bupropion group. 48% of participants achieved <math>\geq 5\%</math> weight loss with naltrexone 32mg /bupropion 360mg (NB32), compared to 39% on lower dose of treatment (naltrexone 16mg /bupropion 360mg) and 16% in placebo group.</p>	<p>Naltrexone is a <math>\mu</math>-receptor opioid antagonist which is commonly used for treatment of opioid dependence. Bupropion is a norepinephrine and dopamine reuptake inhibitor which has been used as an anti-depressant and an aid for smoking cessation. Neither medication is licensed for weight management as monotherapy; however, in combination they treat obesity by reducing appetite through the arcuate nucleus of hypothalamus <i>and</i> reducing cravings as well as reward-based eating.</p> <p>NICE undertook a review of the data and this treatment was not considered cost-effective so is not available for use in the NHS in England although it does have a product license (ie MHRA approval) in the UK.</p>

## Appendices

Drug	Evidence	Availability
Tirzepatide	<p>Tirzepatide is the first dual GLP-1 and GIP receptor agonist approved for T2D management by the MHRA based on the SURPASS programme findings.<sup>18</sup> Mean HbA1c reduction ranged between 1.87% - 2.59% with the different tirzepatide doses and 62-86% achieved HbA1c <math>\leq</math>6.5%. The weight loss with the highest doses of tirzepatide (10-15mg) ranged between 9.5-12.9 kg with 40%-69% achieving <math>\geq</math>10% WL.<sup>18</sup> Tirzepatide was more efficacious both for glycaemic improvement and WL compared to placebo and other glucose-lowering agents including semaglutide 1mg.<sup>24-28</sup></p> <p>In a large phase 3 clinical trial (SURMOUNT-1) people with obesity assessed the safety and efficacy of tirzepatide 5, 10 and 15mg once weekly vs placebo.<sup>31</sup> After 72 weeks of treatment, mean weight loss was 20.9% vs 3.1% with placebo, and 57% of participants achieving <math>\geq</math>20% weight loss.<sup>31</sup> 95% of people with prediabetes reverted to normoglycaemia.<sup>31</sup></p> <p>SURMOUNT-OSA showed that in people with obesity and moderate to severe obstructive sleep apnoea (OSA), treatment with tirzepatide 10 or 15 mg resulted in significant weight loss and s in several measures of OSA severity, including the apnoea-hypopnea index<sup>217</sup>. Potentially up to 50% of patients had sufficient improvements that they would no longer require CPAP therapy.</p>	<p>Tirzepatide has not been approved yet for obesity management on the NHS – it is currently being assessed by NICE.</p>

# References

---

- 1 N. Vidra et al. 2019 'Impact of obesity on life expectancy among different European countries: secondary analysis of population-level data over the 1975–2012 period' *BMJ Open* 9: e028086 <https://doi.org/10.1136/bmjopen-2018-028086>
- 2 M. Lean et al. 2019 'Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DiRECT open-label, cluster-randomised trial' *Lancet Diabetes & Endocrinology* 7(5): 344–55 [https://doi.org/10.1016/S2213-8587\(19\)30068-3](https://doi.org/10.1016/S2213-8587(19)30068-3) and N.M. Astbury et al. 2018 'Doctor Referral of Overweight People to Low Energy total diet replacement Treatment (DROPLET): pragmatic randomised controlled trial' *BMJ* 362: k3760 <https://doi.org/10.1136/bmj.k3760>
- 3 E. Zomer et al. 2016 'Interventions that cause weight loss and the impact on cardiovascular risk factors: a systematic review and meta-analysis' *Obes Rev* 17: 1001–11 <https://doi.org/10.1111/obr.12433>
- 4 [Intentional Weight Loss and Obesity-Related Cancer Risk | JNCI Cancer Spectrum | Oxford Academic \(oup.com\)](#)
- 5 [Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery - Schauer - 2017 - Obesity - Wiley Online Library](#)
- 6 NICE 2015 'Clinical Knowledge Summaries: Obesity' <https://cks.nice.org.uk/topics/obesity/#!scenario>
- 7 M Kosiborod et al (2023). Semaglutide in Patients with Heart Failure with Preserved Ejection Fraction and Obesity. *New England Journal of Medicine/the New England Journal of Medicine*, 389(12), 1069–1084. <https://doi.org/10.1056/nejmoa2306963>
- 8 A. Fabricatore et al. 2011 'Intentional weight loss and changes in symptoms of depression: a systematic review and meta-analysis' *International Journal of Obesity* 35: 1363–76 <https://doi.org/10.1038/ijo.2011.2>
- 9 Deborah B. Horn, Jaime P. Almandoz & Michelle Look (2022) What is clinically relevant weight loss for your patients and how can it be achieved? A narrative review, *Postgraduate Medicine*, 134:4, 359–375, DOI: [10.1080/00325481.2022.2051366](https://doi.org/10.1080/00325481.2022.2051366)
- 10 D.H. Ryan and S.R. Yockey 2017 'Weight loss and improvement in comorbidity: differences at 5%, 10%, 15%, and over' *Curr Obes Rep* 6(2): 187–94 <https://doi.org/10.1007/s13679-017-0262-y>
- 11 Swinburn B, Sacks G, Vandevijvere S, et al. INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): overview and key principles. *Obes Rev*. 2013; **14**(Suppl 1): 1-12.
- 12 Romieu I, Dossus L, Barquera S, et al. Energy balance and obesity: what are the main drivers? *Cancer Causes Control*. 2017; **28**(3): 247-258. <https://doi.org/10.1007/s10552-017-0869-z>
- 13 Forouzanfar MH, Alexander L, Anderson HR, et al. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015; **386**(10010): 2287-2323.
- 14 Neve, K.L., and Isaacs, A. How does the food environment influence people engaged in weight management? A systematic review and thematic synthesis of the qualitative literature. 2022; **23**(3): e13398 <https://doi.org/10.1111/obr.13398>
- 15 Greaves C, Poltawski L, Garside R, Briscoe S. Understanding the challenge of weight loss maintenance: a systematic review and synthesis of qualitative research on weight loss maintenance. *Health Psychol Rev*. 2017; **11**(2): 145-163.
- 16 Spreckley M, Seidell J, Halberstadt J. Perspectives into the experience of successful, substantial long-term weight-loss maintenance: a systematic review. *Int J Qual Stud Health Well Being*. 2021; **16**(1):1862481.
- 17 Marie Spreckley, Judith de Lange, Jaap Seidell & Jutka Halberstadt [2023] Primary Care-Led Weight-Management Intervention: Qualitative Insights into Patient Experiences at Two Year Follow Up, *International Journal of Qualitative Studies on Health and Well-being*. [doi.org/10.1080/17482631.2023.2276576](https://doi.org/10.1080/17482631.2023.2276576)
- 18 Neve, K.L., and Isaacs, A. How does the food environment influence people engaged in weight management? A systematic review and thematic synthesis of the qualitative literature. 2022; **23**(3): e13398 <https://doi.org/10.1111/obr.13398>
- 19 Vandenbroeck I, Goossens J, Clemens M. *Foresight: Tackling Obesities: Future Choices – Obesity System Atlas*. London: Department of Innovation Universities and Skills; 2007.

## References

---

- 20 Guzelgun N, Sissoko F, Ko UJ, et al. *Qualitative opportunities into user experiences of tier 2 and tier 3 weight management services*. London: Public Health England, Innovation Unit; 2017.
- 21 NICE 2021 'Obesity management in adults' <https://pathways.nice.org.uk/pathways/obesity/obesity-management-in-adults.pdf>
- 22 OECD (2019) The Heavy Burden of Obesity : The Economics of Prevention <https://www.oecd-ilibrary.org/sites/6cc2aacc-en/index.html?itemId=/content/component/6cc2aacc-en>
- 23 Frontier Economics (2023) Estimating the Full Cost of Obesity <https://www.frontier-economics.com/media/hgwd4e4a/the-full-cost-of-obesity-in-the-uk.pdf>
- 24 Institute for Government (2023) Tackling obesity: Improving policy making on food and health <https://www.instituteforgovernment.org.uk/publication/tackling-obesity>
- 25 IPPR (2020) The Whole Society Approach <https://www.ippr.org/articles/the-whole-society-approach>
- 26 Frontier Economics (2022) Estimating the Full Cost of Obesity <https://www.frontier-economics.com/media/hgwd4e4a/the-full-cost-of-obesity-in-the-uk.pdf>
- 27 *ibid*
- 28 PHE (2017) Health matters: obesity and the food environment <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2>
- 29 IPPR (2020) The Whole Society Approach <https://www.ippr.org/articles/the-whole-society-approach>
- 30 NHS Digital (2020) National Diabetes Audit 2018-19 Full Report 1, Characteristics of People with Diabetes <https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-audit>
- 31 BJC (2015) The fraction of cancer attributable to modifiable risk factors in England, Wales, Scotland, Northern Ireland, and the United Kingdom in 2015 <https://www.nature.com/articles/s41416-018-0029-6>
- 32 Cancer Research UK (2018) Obesity could overtake smoking as biggest preventable cause of cancer in women [https://news.cancerresearchuk.org/2018/09/24/obesity-could-overtake-smoking-as-biggest-preventable-cause-of-cancer-in-women/#:~:text=Obesity%20could%20overtake%20smoking%20as%20biggest%20preventable%20cause%20of%20cancer%20in%20women,Category%3A%20Press%20release&text=These%20new%20projections%20calculate%20that,23%2C000%20cases\)%20by%20excess%20weight.](https://news.cancerresearchuk.org/2018/09/24/obesity-could-overtake-smoking-as-biggest-preventable-cause-of-cancer-in-women/#:~:text=Obesity%20could%20overtake%20smoking%20as%20biggest%20preventable%20cause%20of%20cancer%20in%20women,Category%3A%20Press%20release&text=These%20new%20projections%20calculate%20that,23%2C000%20cases)%20by%20excess%20weight.)
- 33 J. Hartmann-Boyce et al. 2014 'Behavioural weight management programmes for adults assessed by trials conducted in everyday contexts: systematic review and meta-analysis' *Obes Rev* 15: 920–32 <https://doi.org/10.1111/obr.12220> and J. Hartmann-Boyce et al. 2014 'Diet or exercise interventions vs combined behavioral weight management programs: a systematic review and meta-analysis of direct comparisons' *Nutrition and Dietetics* 114(10) 1557–68 <https://doi.org/10.1016/j.jand.2014.07.005>
- 34 Office for Health Disparities, adult tier 2 WMS provisional data for quarters 1 to 4, 2021 to 2022 Adult tier 2 weight management services: short statistical commentary July 2022 - GOV.UK ([www.gov.uk](http://www.gov.uk))
- 35 Effectiveness and cost-effectiveness of referral to a commercial open group behavioural weight management programme in adults with overweight and obesity: 5-year follow-up of the WRAP randomised controlled trial – *The Lancet Public Health*
- 36 Taylor, K. et al. (2024). Early outcomes of referrals to the English National Health Service Digital Weight Management Programme. *Obesity*. <https://doi.org/10.1002/oby.24024>
- 37 Kupila, S.K.E., Joki, A., Suojanen, LU. et al. The Effectiveness of eHealth Interventions for Weight Loss and Weight Loss Maintenance in Adults with Overweight or Obesity: A Systematic Review of Systematic Reviews. *Curr Obes Rep* 12, 371–394 (2023). <https://doi.org/10.1007/s13679-023-00515-2>
- 38 J.A. Batsis 2017 'Weight loss interventions in older adults with obesity: a systematic review of randomized controlled trials since 2005' *JAGS* 65: 257–68 <https://doi.org/10.1111/jgs.14514>
- 39 J.L. Colquitt et al. 2016 'Diet, physical activity, and behavioural interventions for the treatment of overweight or obesity in preschool children up to the age of 6 years' *Cochrane Database of Systematic Reviews* <https://doi.org/10.1002/14651858.cd012105>
- 40 S.S. Selvendran et al. 2018 'Treatment of obesity in young people – a systematic review and meta-analysis' *Obes Surg*, 28: 2537–49 <https://doi.org/10.1007/s11695-018-3285-x>

## References

- 41 Tier 3 specialist weight management service and pre-bariatric multicomponent weight management programmes for adults with obesity living in the UK: A systematic review - Alkharaji - 2019 - Endocrinology, Diabetes & Metabolism - Wiley Online Library <https://onlinelibrary.wiley.com/doi/full/10.1002/edm2.42>
- 42 H.M. Parretti et al. 2016 'Clinical effectiveness of very-low-energy diets in the management of weight loss: a systematic review and metaanalysis of randomized controlled trials' *Obes Rev* 17: 225–34 <https://doi.org/10.1111/obr.12366>
- 43 SACN report: lower carbohydrate diets for type 2 diabetes [SACN report: lower carbohydrate diets for type 2 diabetes - GOV.UK \(www.gov.uk\)](https://www.gov.uk)
- 44 Churuangasuk, C., Hall, J., Reynolds, A. et al. Diets for weight management in adults with type 2 diabetes: an umbrella review of published meta-analyses and systematic review of trials of diets for diabetes remission. *Diabetologia* 65, 14–36 (2022)
- 45 Shaw KA, Gennat HC, O'Rourke P, Del Mar C. Exercise for overweight or obesity. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No: CD003817. DOI: 10.1002/14651858. CD003817. pub3.
- 46 RCN (2019) PA and Obesity <https://www.rcn.org.uk/-/media/Royal-College-Of-Nursing/Documents/Clinical-Topics/Public-Health/M2M/Obesity.pdf>
- 47 Zhou J, Tang R, Wang X, Li X, Heianza Y, Qi L. (2023) Improvement of Social Isolation and Loneliness and Excess Mortality Risk in People With Obesity. *JAMA Netw Open*. 2024;7(1):e2352824. doi:10.1001/jamanetworkopen.2023.52824
- 48 Foster A, Thompson J, Holding E, Ariss S, Mukuria C, Jacques R, Akparido R, Haywood A. (2021) Impact of social prescribing to address loneliness: A mixed methods evaluation of a national social prescribing programme. *Health Soc Care Community*. 2021 Sep;29(5):1439-1449. doi: 10.1111/hsc.13200. Epub 2020 Oct 20. PMID: 33084083.
- 49 National Institute for Health and Care Research, March 2023, [NHS programme linked to 20% cut in Type 2 Diabetes risk | NIHR](https://www.nhs.uk)
- 50 NHS England, March 2022, [NHS England » NHS Prevention Programme cuts chances of Type 2 diabetes for thousands](https://www.nhs.uk)
- 51 M. Lean et al. 2019 'Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DiRECT open-label, cluster-randomised trial' *Lancet Diabetes & Endocrinology* 7(5): 344–55 [https://doi.org/10.1016/S2213-8587\(19\)30068-3](https://doi.org/10.1016/S2213-8587(19)30068-3) and N.M. Astbury et al. 2018 'Doctor Referral of Overweight People to Low Energy total diet replacement Treatment (DROPLET): pragmatic randomised controlled trial' *BMJ* 362: k3760 <https://doi.org/10.1136/bmj.k3760>
- 52 6. S. Taheri et al. 2020 'Effect of intensive lifestyle intervention on bodyweight and glycaemia in early type 2 diabetes (DIADEM-I): an open-label, parallel-group, randomised controlled trial' *Lancet Diabetes & Endocrinology* 8(6): 477–89 [https://doi.org/10.1016/S2213-8587\(20\)30117-0](https://doi.org/10.1016/S2213-8587(20)30117-0)
- 53 PHE 2015 National Mapping of Weight Management Services, pp. 7–9 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/484115/Final\\_Weight\\_Management\\_Mapping\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/484115/Final_Weight_Management_Mapping_Report.pdf)
- 54 Public Health Matters 2021 Investing in Weight Management Services <https://publichealthmatters.blog.gov.uk/2021/03/25/investing-in-weightmanagement-services/>
- 55 Coulman, K. D et al (2023). Access to publicly funded weight management services in England using routine data from primary and secondary care (2007–2020): An observational cohort study. *PLoS Medicine*, 20(9), e1004282. <https://doi.org/10.1371/journal.pmed.1004282>
- 56 APPG on Obesity 2018 The Current Landscape of Obesity Services: a Report from the All-Party Parliamentary Group on Obesity <https://static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5af9b5cb03ce64f8a7aa20e5/1526314445852/APPG+on+Obesity+-+Report+2018.pdf>
- 57 J.M. Hazlehurst et al. 2020 'Developing integrated clinical pathways for the management of clinically severe adult obesity: a critique of NHS England policy' *Curr Obes Rep* 9: 530–43 <https://doi.org/10.1007/s13679-020-00416-8>
- 58 Melson, E., Ashraf, U., Papamargaritis, D. et al. What is the pipeline for future medications for obesity? *Int J Obes* (2024). <https://doi.org/10.1038/s41366-024-01473-y>
- 59 NICE, [TA875 Semaglutide for managing overweight and obesity: resource impact report 26/10/2023 \(nice.org.uk\)](https://www.nice.org.uk), updated October 2023
- 60 Department of Health and Social Care, June 2023, [New drugs pilot to tackle obesity and cut NHS waiting lists - GOV.UK \(www.gov.uk\)](https://www.gov.uk)
- 61 NICE, [TA875 Semaglutide for managing overweight and obesity: resource impact report 26/10/2023 \(nice.org.uk\)](https://www.nice.org.uk), updated October 2023
- 62 NICE, [1 Recommendations | Digital technologies for delivering multidisciplinary weight-management services: early value assessment | Guidance | NICE](https://www.nice.org.uk)

## References

---

- 63 NICE Project documents | Tirzepatide for managing overweight and obesity [ID6179] | Guidance | NICE
- 64 The Guardian (2023) Revealed: obesity jab maker discussed targeting benefit claimants with UK government <https://www.theguardian.com/business/2023/nov/18/obesity-jab-maker-data-to-profile-benefits-claimants>
- 65 NICE: Project information | Tirzepatide for managing overweight and obesity [ID6179] | Guidance | NICE
- 66 Reuters, November 2023, How well-off Brits still buy Ozempic online for weight loss | Reuters
- 67 NESTA (2023) Can weight loss drugs 'solve' obesity? <https://www.nesta.org.uk/blog/can-weight-loss-drugs-solve-obesity/>
- 68 NICE, TA875 Semaglutide for managing overweight and obesity: resource impact report 26/10/2023 ([nice.org.uk](https://www.nice.org.uk)), updated October 2023
- 69 SMC semaglutide-wegovy-final-dec-2022-amended-010923-for-website.pdf ([scottishmedicines.org.uk](https://www.scottishmedicines.org.uk))
- 70 BBC News (2023) Weight loss injection hype fuels online black market <https://www.bbc.co.uk/news/health-67414203>
- 71 Accessing Wegovy for weight loss: Everything you need to know - Department of Health and Social Care Media Centre ([blog.gov.uk](https://www.blog.gov.uk))
- 72 Barazzoni, R. "Double burden of malnutrition in persons with obesity." *Reviews in Endocrine and Metabolic Disorders* 21 (2020): 307-313.
- 73 Aasheim ET. Vitamin status in morbidly obese patients: a cross-sectional study. *Am J Clin Nutr.* 2008;87:362-369.
- 74 Christensen, S, et al. "Dietary intake by patients taking GLP-1 and dual GIP/GLP-1 receptor agonists: A narrative review and discussion of research needs." *Obesity Pillars* (2024): 100121
- 75 Obesity: identification, assessment and management. London: National Institute for Health and Care Excellence (NICE); 2023 Jul 26. PMID: 36719951.
- 76 O'Kane M, Parretti HP, Pinkney J, et al. British Obesity and Metabolic Surgery Society Guidelines on perioperative and postoperative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery; 2020 update DOI: 10.1111/obr.13087
- 77 O'Kane M, Parretti HM, Hughes CA, et al. Guidelines for the follow-up of patients undergoing bariatric surgery. *Clin Obes* 2016; 6:210-224.
- 78 NICE, 1 Recommendations | Endoscopic sleeve gastroplasty for obesity | Guidance | NICE
- 79 F. Rubino et al. (on behalf of the delegates of the 2nd Diabetes Surgery Summit) 2016 'Metabolic surgery in the treatment algorithm for type 2 diabetes: a joint statement by international diabetes organizations' *Diabetes Care* 39(6): 861-77 <https://doi.org/10.2337/dc16-0236>
- 80 A. Avenell et al. 2018 'Bariatric surgery, lifestyle interventions and orlistat for severe obesity: the REBALANCE mixed-methods systematic review and economic evaluation' *Health Technol Assess* 22(68): 1-246 <https://doi.org/10.3310/hta22680>
- 81 Courcoulas AP, King WC, Belle SH, et al. Seven-year weight trajectories and health outcomes in the Longitudinal Assessment of Bariatric Surgery (LABS) study. *JAMA Surg.* 2018;153(5):427-434. [Crossref], [PubMed], [Web of Science®], [Google Scholar]
- 82 Long-Term Outcomes After Bariatric Surgery: a Systematic Review and Meta-analysis of Weight Loss at 10 or More Years for All Bariatric Procedures and a Single-Centre Review of 20-Year Outcomes After Adjustable Gastric Banding - PubMed ([nih.gov](https://pubmed.ncbi.nlm.nih.gov))
- 83 R. Welbourn et al. 2016. 'Why the NHS should do more bariatric surgery; how much should we do?' *BMJ* 353: i1472 <https://doi.org/10.1136/bmj.i1472>
- 84 Long-Term Outcomes After Bariatric Surgery: a Systematic Review and Meta-analysis of Weight Loss at 10 or More Years for All Bariatric Procedures and a Single-Centre Review of 20-Year Outcomes After Adjustable Gastric Banding - PubMed ([nih.gov](https://pubmed.ncbi.nlm.nih.gov))
- 85 Obesity surgery: 20 times more procedures since 1997 | Directorate of Research, Studies, Evaluation and Statistics ([solidarites-sante.gouv.fr](https://solidarites-sante.gouv.fr))
- 86 British Obesity and Metabolic Surgery Society, 'Statement on going abroad for weight loss surgery' [BOMSS-Statement-on-Bariatric-Tourism-Jan-2023-v2.pdf](https://www.bomss.org/wp-content/uploads/2023/04/joint_baapsbomss_statement_1.pdf)
- 87 BOMSS/BAAPS (2023) Joint BAAPS/BOMSS statement on surgical tourism - CONSULT A UK SURGEON FIRST [https://bomss.org/wp-content/uploads/2023/04/joint\\_baapsbomss\\_statement\\_1.pdf](https://bomss.org/wp-content/uploads/2023/04/joint_baapsbomss_statement_1.pdf)

## References

---

- 88 EASO (2023) EASO, IFSO – EC and ECPO Joint Statement on Surgical Tourism <https://easo.org/easo-ifso-ec-and-ecpo-joint-statement-on-surgical-tourism/>
- 89 BMJ (2024) Weight loss surgery: Patients need clearer warnings of risks from overseas care, say doctors <https://www.bmj.com/content/384/bmj.q583>
- 90 Obesity Health Alliance (2021) Turning the Tide <https://obesityhealthalliance.org.uk/wp-content/uploads/2021/09/Turning-the-Tide-A-10-year-Healthy-Weight-Strategy.pdf>
- 91 NICE Recommendations | Obesity: identification, assessment and management | Guidance | NICE
- 92 National Institute for Health and Care Research ENHANCE - Evaluating the NHs engLAND Complications from Excess weight clinics for children and young people - NIHR Funding and Awards
- 93 National Institute for Health and Care Excellence 2021 'Obesity management in children and young people' <https://pathways.nice.org.uk/pathways/obesity/obesity-management-in-children-and-young-people.pdf>
- 94 Public Health England. Fingertips Data. Obesity Profile. Available at <https://fingertips.phe.org.uk/profile/national-child-measurement-programme/data>
- 95 Public Health England. Guidance: Health matters: obesity and the food environment. <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2>
- 96 E. Mead et al. 2017 'Diet, physical activity and behavioural interventions for the treatment of overweight or obese children from the age of 6 to 11 years' Cochrane Database of Systematic Reviews 6, art. no. CD012651 <https://doi.org/10.1002/14651858.CD012651>
- 97 E. Axom et al. 2016 'Drug interventions for the treatment of obesity in children and adolescents' Cochrane Database of Systematic Reviews 11, art. no. CD012436 <https://doi.org/10.1002/14651858.CD012436>
- 98 Torbahn et al. 2024, Pharmacological interventions for the management of children and adolescents living with obesity—An update of a Cochrane systematic review with meta-analyses, *Pediatric Obesity*, 19(5). <https://doi.org/10.1111/ijpo.13113>
- 99 NICE 1 Recommendations | Setmelanotide for treating obesity caused by LEPR or POMC deficiency | Guidance | NICE
- 100 Most et al (2015) Adoption of the children's obesity clinic's treatment (TCOCT) protocol into another Danish pediatric obesity treatment clinic <https://bmcpediatr.biomedcentral.com/articles/10.1186/s12887-015-0332-9>
- 101 Holm et al (2017) A hospital-based child and adolescent overweight and obesity treatment protocol transferred into a community healthcare setting <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0173033>
- 102 US National Library of Medicine (2021) Holbæk Obesity Treatment (HOT) Versus Conventional Obesity Treatment (COT) in Children With Overweight or Obesity. (HOT vs COT) <https://classic.clinicaltrials.gov/ct2/show/NCT05038683>
- 103 Holm et al (2011) Chronic care treatment of obese children and adolescents *International Journal of Pediatric Obesity Chronic care treatment of obese children and adolescents - HOLM - 2011 - International Journal of Pediatric Obesity - Wiley Online Library*
- 104 Holm et al. (2016) Effects of a Family-Based Childhood Obesity Treatment Program on Parental Weight Status *Effects of a Family-Based Childhood Obesity Treatment Program on Parental Weight Status | PLOS ONE* <https://pubmed.ncbi.nlm.nih.gov/27560141/>
- 105 Hagman, E., Johansson, L., Kollin, C. et al. Effect of an interactive mobile health support system and daily weight measurements for pediatric obesity treatment, a 1-year pragmatical clinical trial. *Int J Obes* 46, 1527–1533 (2022). <https://doi.org/10.1038/s41366-022-01146-8>
- 106 A.S. Kelly et al. 2020 'NN8022-4180 Trial Investigators. A randomized, controlled trial of Liraglutide for adolescents with obesity' *N Engl J Med.* 382(22): 2117–28 <https://doi.org/10.1056/NEJMoa1916038>
- 107 L. Stewart, S. Easter and the BDA's Obesity Specialist Group 2021 'British Dietetic Association's Obesity Specialist Group dietetic obesity management interventions in children and young people: review & clinical application' *J Hum Nutr Diet* 34: 224–32 <https://doi.org/10.1111/jhn.12834>
- 108 A.J. Cameron et al. 2012 'A bi-directional relationship between obesity and health-related quality of life: evidence from the longitudinal AusDiab study' *International Journal of Obesity* 36(2): 295–303 <https://doi.org/10.1038/ijo.2011.103>



## References

---

- 109 McCuen-Wurst C, Ruggieri M, Allison KC. Disordered eating and obesity: associations between binge eating-disorder, night-eating syndrome, and weight-related co-morbidities. *Ann N Y Acad Sci*.2018;1411(1):96
- 110 Avila, C., Holloway, A.C., Hahn, M.K. et al. An Overview of Links Between Obesity and Mental Health. *Curr Obes Rep* 4, 303–310 (2015). <https://doi.org/10.1007/s13679-015-0164-9>
- 111 Sarwer DB, Polonsky HM. The Psychosocial Burden of Obesity. *Endocrinol Metab Clin North Am*. 2016 Sep;45(3):677-88.
- 112 Hughes, K., Bellis, M., Hardcastle, K. et al. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. *Lancet Public Health*, 2(8), 356–66; Sominsky, L. & Spencer, S. (2014). Eating behavior and stress: A pathway to obesity. *Frontiers in Psychology*, 5, 434
- 113 Schuler et al (2021) The association between adverse childhood experiences and childhood obesity: A systematic review <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8192341/>
- 114 Jacob, A., Moullec, G., Lavoie, K. L., Laurin, C., Cowan, T., Tisshaw, C., Kazazian, C., Raddatz, C., & Bacon, S. L. (2018). Impact of cognitive-behavioral interventions on weight loss and psychological outcomes: A meta-analysis. *Health Psychology*, 37(5), 417–432.
- 115 Castelnuovo, G., Pietrabissa, G., Manzoni, G. et al. (2017). Cognitive behavioral therapy to aid weight loss in obese patients: Current perspectives. *Psychology Research and Behavior Management*, 6(10), 165–173.
- 116 Jaslyn A Dugmore, Copeland G Winten, Hannah E Niven, Judy Bauer, Effects of weight-neutral approaches compared with traditional weight-loss approaches on behavioral, physical, and psychological health outcomes: a systematic review and meta-analysis, *Nutrition Reviews*, Volume 78, Issue 1, January 2020, Pages 39–55, <https://doi.org/10.1093/nutrit/nuz020>
- 117 <https://www.nice.org.uk/guidance/qs127/chapter/quality-statement-5-referring-adults-for-bariatric-surgery-assessment>
- 118 Sogg S, Lauretti J, West-Smith L. Recommendations for the presurgical psychosocial evaluation of bariatric surgery patients. *Surg Obes Relat Dis*. 2016 May;12(4):731-749. doi: 10.1016/j.soard.2016.02.008. Epub 2016 Feb 12. PMID: 27179400
- 119 British Psychological Society 2018 Briefing Paper: Understanding Obesity: The Psychological Dimensions of a Public Health Crisis <https://www.bps.org.uk/psychologist/helping-policy-makers-understand-obesity>
- 120 Brown T et al, (2023), Psychological support within Tier 2 Adult Weight Management Services, are we doing enough for people with mental health needs? A mixed-methods survey. *Clinical obesity* <https://doi.org/10.1111/cob.12580>
- 121 A.J. Tomiyama et al. 2018 'How and why weight stigma drives the obesity "epidemic" and harms health' *BMC Medicine* 16(1): 123 <https://doi.org/10.1186/s12916-018-1116-5> and B. Major et al. 2014 'The ironic effects of weight stigma' *Journal of Experimental Social Psychology* 51: 74–80 <https://doi.org/10.1016/j.jesp.2013.11.009>
- 122 Chadwick, P., Chater, A., Gillison, F., Llewellyn, C., Moffat, H., Newsome, L., ... & Snowden-Carr, V. (2019). Psychological perspectives on obesity: Addressing policy, practice and research priorities.
- 123 APPG on Obesity 2018 The Current Landscape of Obesity Services <https://obesityappg.com/inquiries>
- 124 APPG on Obesity 2018 The Current Landscape of Obesity Services <https://obesityappg.com/inquiries> and J.M. Hunger and B. Major 2015 'Weight stigma mediates the association between BMI and self-reported health' *Health Psychol* 34(2): 172–5 <https://doi.org/10.1037/hea0000106>
- 125 Phelan, S., Burgess, D., Yeazel, M., Hellerstedt, W., Griffin, J. & van Ryn, M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obesity Reviews*, 16(4), 319–26.
- 126 M.E. Eisenberg et al. 2006 'Weight-teasing and emotional well-being in adolescents: longitudinal findings from Project EAT' *J Adolesc Health* 38(6): 675–83 <https://doi.org/10.1016/j.jadohealth.2005.07.002>
- 127 N.A. Schvey et al. 2011 'The impact of weight stigma on caloric consumption' *Obesity* 19(10): 1957–62 <https://doi.org/10.1038/oby.2011.204>
- 128 L.R. Vartanian and S.A. Novak 2011 'Internalized societal attitudes moderate the impact of weight stigma on avoidance of exercise' *Obesity* 19(4): 757–62 <https://doi.org/10.1038/oby.2010.234>

## References

- 129 R. Puhl and Y. Suh 2015 'Stigma and eating and weight disorders' *Current Psychiatry Reports* 17(3):10 <https://doi.org/10.1007/s11920-015-0552-6>; J.M. Hunger and A.J. Tomiyama 2014 'Weight labeling and obesity: a longitudinal study of girls aged 10 to 19 years' *JAMA Pediatrics* 168(6): 579–80 <https://doi.org/10.1001/jamapediatrics.2014.122> and S.E. Jackson et al. 2014 'Perceived weight discrimination and changes in weight, waist circumference, and weight status' *Obesity* 22(12): 2485–8 <https://doi.org/10.1002/oby.20891>
- 130 WHO 2016 Report of the Commission on Ending Childhood Obesity <https://apps.who.int/iris/bitstream/handle/10665/259349/WHO-NMH-PNDECHO-17.1-eng.pdf>
- 131 R.M. Puhl and J.D. Latner 2007 'Stigma, obesity, and the health of the nation's children' *Psychol Bull* 133(4): 557–80 <https://doi.org/10.1037/0033-2909.133.4.557>; C. Greenleaf et al. 2014 'Relationship of weight-based teasing and adolescents' psychological well-being and physical health' *J Sch Health* 84(1): 49–55 <https://doi.org/10.1111/josh.12118> and S.J. Pont et al. 2017 'Stigma experienced by children and adolescents with obesity' *Pediatrics* 140(6): e20173034 <https://doi.org/10.1542/peds.2017-3034>
- 132 M.R. Hebl and J. Xu 2001 'Weighing the care: physicians' reactions to the size of a patient' *Int J Obes Relat Metab Disord* 25(8): 1246–52 <https://doi.org/10.1038/sj.ijo.0801681>
- 133 R. Puhl et al. 2013 'Motivating or stigmatizing? Public perceptions of weight-related language used by health providers' *International Journal of Obesity* 37(4): 612–19 <https://doi.org/10.1038/ijo.2012.110>
- 134 Tamburrini & Lockwood (2024) Obesity bias in diagnostic radiography students: A survey of attitudes, perceptions and technical confidence <https://www.sciencedirect.com/science/article/pii/S1078817423002225>
- 135 C. Albury et al. 2020 'The importance of language in engagement between health-care professionals and people living with obesity: a joint consensus statement' *The Lancet Diabetes & Endocrinology* 8(5): 447–55 [https://doi.org/10.1016/S2213-8587\(20\)30102-9](https://doi.org/10.1016/S2213-8587(20)30102-9)
- L.E. Hayward et al. 2020 'Discussing weight with patients with overweight: supportive (not stigmatizing) conversations increase compliance intentions and health motivation' *Stigma and Health* 5(1): 53–68 <https://doi.org/10.1037/sah0000173>
- 136 Brown & Flint, 2020 *Clinical Obesity*; Puhl, 2020, *Obes Rev* 21 (6);
- 137 Rubino et al., *Nature Medicine*, 2020; Brown & Flint 2020 *Clinical Obesity*
- 138 Capehorn, M. S., Hinchliffe, N., Cook, D., Hill, A., O'Kane, M., Tahrani, A. A., ... & Feenie, J. (2022). Recommendations from a working group on obesity care competencies for healthcare education in the UK: a report by the Steering Committee. *Advances in therapy*, 39(6), 3019-3030.
- 139 P.C. Diedrichs and F.K. Barlow FK 2011 'How to lose weight bias fast! Evaluating a brief anti-weight bias intervention' *Br J Health Psychol*. 16(4): 846–61 <https://doi.org/10.1111/j.2044-8287.2011.02022.x>, K.S. O'Brien et al. 2010 'Reducing anti-fat prejudice in preservice health students: a randomized trial' *Obesity* 18(11): 2138–44 <https://doi.org/10.1038/oby.2010.79>
- S. Persky and C.P. Eccleston 2011 'Impact of genetic causal information on medical students' clinical encounters with an obese virtual patient: health promotion and social stigma' *Annals of Behavioral Medicine* 41(3): 363–72 <https://doi.org/10.1007/s12160-010-9242-0>
- 140 Talumaa B, Brown A, Batterham RL, Kalea AZ. Effective strategies in ending weight stigma in healthcare. *Obes Rev*. 2022 Oct;23(10):e13494. doi: 10.1111/obr.13494. Epub 2022 Aug 7. PMID: 35934011; PMCID: PMC9540781.
- 141 Wiles et al (2017) Are English CT departments and radiographers prepared for the morbidly obese patient? <https://www.sciencedirect.com/science/article/abs/pii/S1078817417300135>
- 142 E. Merrill and J. Grassley 2008 'Women's stories of their experiences as overweight patients' *J Adv Nurs* 64(2): 139–46 <https://doi.org/10.1111/j.1365-2648.2008.04794.x>
- 143 Oliveira et al (2023) Modification of [18F]-FDG PET/CT imaging protocols in obese oncology patients: A nationwide survey <https://www.sciencedirect.com/science/article/abs/pii/S1078817422001730>
- 144 C.A. Hughes et al. 2021 'Changing the narrative around obesity in the UK: a survey of people with obesity and healthcare professionals from the ACTION-IO study' *BMJ Open* 11: e045616 <https://doi.org/10.1136/bmjopen-2020-045616>
- 145 Sokolovskaya & Shinde (2016) Comparison of utilization rate of CT scans of the abdomen and pelvis in patients with elevated BMI compared to patients with normal BMI presenting to the ER with gastrointestinal symptoms <https://www.sciencedirect.com/science/article/abs/pii/S1078817415000516>

## References

---

- 146 Coulman et al (2023) Access to publicly funded weight management services in England using routine data from primary and secondary care (2007–2020): An observational cohort study <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1004282>
- 147 Donini et al (2022) Definition and Diagnostic Criteria for Sarcopenic Obesity: ESPEN and EASO Consensus Statement <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9210010/#:~:text=1%20Definition%20of%20Sarcopenic%20Obesity,accompanied%20by%20low%20muscle%20function>
- 148 Lundqvist et al (2009) Use of dual-energy X-ray absorptiometry in obese individuals: The possibility to estimate whole body composition from DXA half-body scans <https://www.sciencedirect.com/science/article/abs/pii/S1078817408000126>
- 149 NHS England » NHS online weight loss programme highlighted as a success in new study
- 150 PHE (2019) Overweight children: Facts & Figures <https://www.ethnicity-facts-figures.service.gov.uk/health/diet-and-exercise/overweight-children/latest>  
PHE (2019) Overweight Adults: Facts & Figures <https://www.ethnicity-facts-figures.service.gov.uk/health/diet-and-exercise/overweight-adults/latest>
- 151 Ahern et al (2016) Inequalities in the uptake of weight management interventions in a pragmatic trial: an observational study in primary care <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4809709/>
- 152 Wilson, P., D'Agostino, R.B., Sullivan, L., Parise, H., Kannel, W.B. Overweight and obesity as determinants of cardiovascular risk: the Framingham experience. *Arch Intern Med* 2002, 162: 1867–72.
- 153 Seif MW, Diamond K, Nickkho-Amiry M. Obesity and menstrual disorders. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2015 May 1;29(4):516-27.
- 154 Cavalcante MB, Sarno M, Peixoto AB, Araujo Junior E, Barini R. Obesity and recurrent miscarriage: A systematic review and meta-analysis. *Journal of Obstetrics and Gynaecology Research*. 2019 Jan;45(1):30-8.
- 155 NICE. Hypertension in pregnancy: Long-term health implications. *Clinical Knowledge Summaries*. 2020. Available from: <https://cks.nice.org.uk/topics/hypertension-in-pregnancy/background-information/long-term-health-implications>
- 156 <https://commonslibrary.parliament.uk/research-briefings/sn03336/>
- 157 Ahern et al (2016) Inequalities in the uptake of weight management interventions in a pragmatic trial: an observational study in primary care <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4809709/>
- 158 University of Edinburgh (2023) Football Fans in Training – walking towards increased physical activity <https://www.ed.ac.uk/education/rke/making-a-difference/football-fans-in-training>
- 159 Leeds United (2024) Positive Goals <https://www.leedsunited.com/en/foundation/health-and-wellbeing>
- 160 Sport England (2018) Massive losers are the real winners <https://www.sportengland.org/news/sport-england-funded-man-v-fat-lost-100-000-pounds-in-29-months>
- 161 Health Action Campaign (2019) Can sports clubs help tackle male obesity? <https://www.healthactionresearch.org.uk/assets/documents/can-sports-clubs-help-tackle-c#:~:text=Studies%20suggest%20that%20football%20club,who%20haven%27t%20been%20active>
- 162 Hoddinott et al (2024) JAMA Text Messages With Financial Incentives for Men With Obesity A Randomized Clinical Trial <https://jamanetwork.com/journals/jama/article-abstract/2818966>
- 163 Williamson et al (2023) Overlooked and under-evidenced: Community health and long-term care service needs, utilization, and costs incurred by people with severe obesity <https://onlinelibrary.wiley.com/doi/10.1111/cob.12570>
- 164 Health and Care of People with Learning Disabilities, *Experimental Statistics 2022 to 2023 - NHS Digital* [Internet]. [cited 2024 Mar 17]. Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/health-and-care-of-people-with-learning-disabilities/experimental-statistics-2022-to-2023>
- 165 Learning from Lives and Deaths - people with a learning disability and autistic people (LeDeR) - King's College London [Internet]. [cited 2024 Mar 17]. Available from: <https://www.kcl.ac.uk/research/leder>
- 166 Public Health England, September 2020, Obesity and weight management for people with learning disabilities: guidance - GOV.UK ([www.gov.uk](http://www.gov.uk))
- 167 Morris J, Julian S. Preventing people with a learning disability from dying too young. 2024;
- 168 NHS England (2024) Stopping over medication of people with a learning disability and autistic people (STOMP) and supporting treatment and appropriate medication in paediatrics (STAMP)

## References

---

- 169 Dean et al (2021) A Systematic Review of Health Promotion Programs to Improve Nutrition for People with Intellectual Disability <https://pubmed.ncbi.nlm.nih.gov/34893970/>
- 170 Croot L, Rimmer M, Salway S, Hatton C, Dowse E, Lavin J, et al. Adjusting a mainstream weight management intervention for people with intellectual disabilities: A user centred approach. *Int J Equity Health* [Internet]. 2018 Oct 22 [cited 2024 Mar 17];17(1):1–12. Available from: <https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-018-0871-4>
- 171 Weight management for people with learning disabilities [Internet]. [cited 2024 Mar 17]. Available from: <https://www.bda.uk.com/resource/weight-management-for-people-with-learning-disabilities.html>
- 172 BDA (2023) Eating, drinking and ageing well <https://www.bda.uk.com/resource/eating-drinking-ageing-well.html>
- 173 Public Health England (2018) Severe mental illness (SMI) and physical health inequalities: briefing <https://www.gov.uk/government/publications/severe-mental-illness-smi-physical-health-inequalities/severe-mental-illness-and-physical-health-inequalities-briefing#:~:text=The%20phrase%20severe%20mental%20illness,an%20SMI%20%5Bfootnote%201%5D>.
- 174 NICE (2014) Antenatal and postnatal mental health: clinical management and service guidance <https://www.nice.org.uk/guidance/cg192/ifp/chapter/severe-mental-illness>
- 175 M Fazal (2021) Prevalence of Overweight and Obesity in People With Severe Mental Illness: Systematic Review and Meta-Analysis
- 176 Stevens et al (2023) Weight management interventions for adults living with overweight or obesity and severe mental illness: a systematic review and meta-analysis <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10331435/>
- 177 Equally Well (2020) Healthy Weight Management in People with a Severe Mental Illness <https://equallywell.co.uk/wp-content/uploads/2020/05/Equally-Well-Healthy-Weight-Management-Review-1.pdf>
- 178 NICE (2014) Bipolar disorder: assessment and management <https://www.nice.org.uk/guidance/cg185>
- 179 NICE (2014) Psychosis and schizophrenia in adults: prevention and management <https://www.nice.org.uk/guidance/cg178>
- 180 Cooper SJ, Reynolds GP; With expert co-authors (in alphabetical order);; Barnes T, England E, Haddad PM, Heald A, Holt R, Lingford-Hughes A, Osborn D, McGowan O, Patel MX, Paton C, Reid P, Shiers D, Smith J. BAP guidelines on the management of weight gain, metabolic disturbances and cardiovascular risk associated with psychosis and antipsychotic drug treatment. *J Psychopharmacol*. 2016 Aug;30(8):717–48. doi: 10.1177/0269881116645254. Epub 2016 May 4. PMID: 27147592.
- 181 Ibid.
- 182 NHS England (2024) Improving the physical health of people living with severe mental illness <https://www.england.nhs.uk/long-read/improving-the-physical-health-of-people-living-with-severe-mental-illness/#the-smi-register-and-smi-annual-physical-health-checks>
- 183 NHS England (2024) Improving the physical health of people living with severe mental illness Guidance for integrated care systems. <https://www.england.nhs.uk/long-read/improving-the-physical-health-of-people-living-with-severe-mental-illness/#dedicated>
- 184 Centre for Mental Health, January 2024, [Reaching out - Centre for Mental Health](#)
- 185 Fleming, T. P et al (2018). Origins of lifetime health around the time of conception: causes and consequences. *Lancet*, 391(10132), 1842–1852. [https://doi.org/10.1016/s0140-6736\(18\)30312-x](https://doi.org/10.1016/s0140-6736(18)30312-x)
- 186 NICE, [Overview | Fertility problems: assessment and treatment | Guidance | NICE](#)
- 187 Public Health England. 2019. Health of women before and during pregnancy: health behaviours, risk factors and inequalities. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/844210/Health\\_of\\_women\\_before\\_and\\_during\\_pregnancy\\_2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844210/Health_of_women_before_and_during_pregnancy_2019.pdf)
- 188 Leddy MA, Power ML, Schulkin J. The impact of maternal obesity on maternal and fetal health. *Rev Obstet Gynecol*. 2008;1(4):170–178.
- 189 Deputy, Nicholas P. MPH; Sharma, Andrea J. PhD, MPH; Kim, Shin Y. MPH; Hinkle, Stefanie N. PhD. Prevalence and Characteristics Associated With Gestational Weight Gain Adequacy. *Obstetrics & Gynecology* 125(4):p 773–781, April 2015
- 190 Santos S, et al. Impact of maternal body mass index and gestational weight gain on pregnancy complications: an individual participant data meta-analysis of European, North American and Australian cohorts. *BJOG* 2019; 126: 984–995,

## References

---

- 191 Voerman E, Santos S, Patro Golab B, Amiano P, Ballester F, et al. (2019) Maternal body mass index, gestational weight gain, and the risk of overweight and obesity across childhood: An individual participant data meta-analysis. *PLOS Medicine* 16(2): e1002744
- 192 Mustafa et al. Gestational weight gain below instead of within the guidelines per class of maternal obesity: a systematic review and meta-analysis of obstetrical and neonatal outcomes. 2022. 4(5), 100682
- 193 Huang et al. Maternal Prepregnancy Body Mass Index, Gestational Weight Gain, and Cessation of Breastfeeding: A Systematic Review and Meta-Analysis. *Breastfeeding Medicine* 2019 14:6, 366-374
- 194 Nguyen et al. Addressing inequalities and improving maternal and infant outcomes: the potential power of nutritional interventions across the reproductive cycle. *Proceedings of the Nutrition Society*. 2023;82(3):241-252
- 195 Heslehurst N, Evans EH, Incollingo Rodriguez AC, Nagpal TS, Visram S. Newspaper media framing of obesity during pregnancy in the UK: A review and framework synthesis. *Obesity Reviews*. 2022; 23(12):e13511
- 196 NICE Public health guideline [PH27]: Weight management before, during and after pregnancy [Recommendations | Weight management before, during and after pregnancy | Guidance | NICE](#)
- 197 Daley A, Jolly K, Jebb SA, Roalfe A, Mackillop L, Lewis A, et al. Effectiveness of a behavioural intervention involving regular weighing and feedback by community midwives within routine antenatal care to prevent excessive gestational weight gain: POPS2 randomised controlled trial. *BMJ Open*. 2019;9(9):e030174.
- 198 Hayes et al. The Effectiveness of Smoking Cessation, Alcohol Reduction, Diet and Physical Activity Interventions in Improving Maternal and Infant Health Outcomes: A Systematic Review of Meta-Analyses. *Nutrients* 2021, 13, 1036
- 199 Thangaratinam S, Rogozińska E, Jolly K, Glinkowski S, Roseboom T, Tomlinson J W et al. Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence *BMJ* 2012; 344 :e2088 doi:10.1136/bmj.e2088
- 200 Teede HJ, Bailey C, Moran LJ, et al. Association of Antenatal Diet and Physical Activity–Based Interventions With Gestational Weight Gain and Pregnancy Outcomes: A Systematic Review and Meta-analysis. *JAMA Intern Med*. 2022;182(2):106–114. doi:10.1001/jamainternmed.2021.6373
- 201 H. Al Wattar B, Dodds J, Placzek A, Beresford L, Spyrelli E, et al. (2019) Mediterranean-style diet in pregnant women with metabolic risk factors (ESTEEM): A pragmatic multicentre randomised trial. *PLOS Medicine* 16(7): e1002857
- 202 Assaf-Balut C, García de la Torre N, Durán A, Fuentes M, Bordiú E, et al. (2017) A Mediterranean diet with additional extra virgin olive oil and pistachios reduces the incidence of gestational diabetes mellitus (GDM): A randomized controlled trial: The St. Carlos GDM prevention study. *PLOS ONE* 12(10): e0185873
- 203 Harrison CL, Bahri Khomami M, Enticott J, Thangaratinam S, Rogozińska E, Teede HJ. Key Components of Antenatal Lifestyle Interventions to Optimize Gestational Weight Gain: Secondary Analysis of a Systematic Review. *JAMA Netw Open*. 2023;6(6):e2318031. doi:10.1001/jamanetworkopen.2023.18031
- 204 McBride (2024) Co-design of an intervention to optimize mammographic screening participation in women with obesity and/or physical disabilities Co-design of an intervention to optimize mammographic screening participation in women with obesity and/or physical disabilities
- 205 Nguyen et al. Addressing inequalities and improving maternal and infant outcomes: the potential power of nutritional interventions across the reproductive cycle. *Proceedings of the Nutrition Society*. 2023;82(3):241-252
- 206 Lim, S, O'Reilly, S, Behrens, H et al. (2015) Effective strategies for weight loss in post-partum women: a systematic review and meta-analysis. *Obes Rev* 16, 972–987.
- 207 Dodd, JM, Deussen, AR, O'Brien, CM et al. (2018) Targeting the postpartum period to promote weight loss: a systematic review and meta-analysis. *Nutr Rev* 76, 639–654
- 208 Lim, S, Liang, X, Hill, B et al. (2019) A systematic review and meta-analysis of intervention characteristics in postpartum weight management using the TiDieR framework: a summary of evidence to inform implementation. *Obes Rev* 20, 1045–1056.

## References

---

- 209 Nguyen et al. Addressing inequalities and improving maternal and infant outcomes: the potential power of nutritional interventions across the reproductive cycle. *Proceedings of the Nutrition Society*. 2023;82(3):241-252
- 210 Teede HJ, Bailey C, Moran LJ, et al. Association of Antenatal Diet and Physical Activity–Based Interventions With Gestational Weight Gain and Pregnancy Outcomes: A Systematic Review and Meta-analysis. *JAMA Intern Med*. 2022;182(2):106–114. doi:10.1001/jamainternmed.2021.6373
- 211 Walker et al. Weight management across pregnancy and postpartum care: The need for interprofessional education and collaboration. *Nurse Education in Practice*. 2019, 41, 102651
- 212 Olander et al. H. Healthcare Professional Training Regarding Gestational Weight Gain: Recommendations and Future Directions. *Curr Obes Rep*. 2021. 10, 116–124
- 213 Fair et al. Interventions for supporting the initiation and continuation of breastfeeding among women who are overweight or obese. *Cochrane Database of Systematic Reviews* 2019, Issue 9. Art. No.: CD012099
- 214 Knop et al (2023) Oral semaglutide 50 mg taken once per day in adults with overweight or obesity (OASIS 1): a randomised, double-blind, placebo-controlled, phase 3 trial [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(23\)01185-6/abstract](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(23)01185-6/abstract)
- 215 Weghuber D et al, STEP TEENS Investigators. Once-Weekly Semaglutide in Adolescents with Obesity. *N Engl J Med*. 2022 Dec 15;387(24):2245-2257. doi: 10.1056/NEJMoa2208601. Epub 2022 Nov 2. PMID: 36322838; PMCID: PMC9997064.
- 216 Chanoine JP, Hampl S, Jensen C, Boldrin M, Hauptman J. Effect of orlistat on weight and body composition in obese adolescents: a randomized controlled trial. *JAMA*. 2005;293(23):2873–83
- 217 Malhotra et al NEJM 2024 DOI: 10.1056/NEJMoa2404881

[www.obesityhealthalliance.org.uk](http://www.obesityhealthalliance.org.uk)  
[info@obesityhealthalliance.org.uk](mailto:info@obesityhealthalliance.org.uk)

October 2024

