ROYAL COLLEGE OF PHYSICIANS OF IRELAND

An expert report on how to clinically manage and treat obesity in Ireland

Policy Group on Obesity

October 2015

Contents

The document was revised to be age-attuned by the RCPI Policy Group on Ageing in April 2017.

The Service Users' Experience

Paul Winters, Patient at Adult Weight Management Clinic

"Obesity is a real life-threatening condition that should be treated in the same manner as any other illnesses that threaten a person's mortality. It can be a symptom of something else and the person is suffering and slowly retreating from a worthwhile life.

"I found getting help through the present system slow and at times disheartening. I am on a medical card and to pay for sessions with a commercial weight loss group is not really an option for me given that finances are so tight.

"As a patient who is on social welfare, the option of a commercial weight loss group is a big expense. To know that I could be helped through my GP, I may have been caught sooner and perhaps I wouldn't have needed to be on a waiting list for sugery.

"I believe that if GPs had an immediate tool to help their patients, who need real guidance, the patient would be engaged with sooner than the present waiting list system, and the specialist units would be free to deal with the extreme cases.

"I actually forgot I was on a waiting list for the Weight Management Clinic until the letter arrived after a number of years".

"Obesity is a real life threatening condition that should be treated in the same manner as any other illnesses that threaten a person's mortality.

It can be a symptom of something else and the person is suffering and slowly retreating from a worthwhile life".

Annette Forde, mother of Matthew aged 12 who attended the W82GO Healthy Lifestyle Service

"Matthew is a success story. He now has a perfect BMI of 20. He lost the weight within one year and enjoyed the programme. It was a wakeup call for him and for me.

"Now he is very careful about what he eats, he checks the labels for fat content for example. He made changes to his life and sticks to them and now they are part of his daily life.

"He was being bullied about his weight. We went to see the GP and within 3 months we got the first appointment at W82GO.

"Since then he has cut out weekend treats, he has a regular exercise schedule and is playing rugby in secondary school. Matthew found the group situation really good, it was very important for him - that made him feel like he wasn't the only one.

"He really wanted to make changes, he wanted to do that for his own self esteem and it has made a huge difference.

"The W82GO programme is great because it is joined-up so you are seeing a team of specialists. It has been brilliant for Matthew".

Leo Mackey, Patient at Adult Weight Management Clinic

Leo is currently waiting for gastric bypass surgery. His weight is 156 kgs and he hopes it will fall to under 100 kgs after the surgery.

"It took a long time to get a GP referral to the Weight Management Clinic. Every time I got sick I was told to lose weight. I have tried all of the weight loss programmes and lost a lot of weight in 2007 but put it all back on again.

"I have COPD (Chronic Obstructive Pulmonary Disease) sleep apnoea, high blood pressure and depression. I was let off from work on health and safety grounds because they were afraid something would happen to me given my weight. I am hoping to get back to work after the surgery.

"I have received great support at the Weight Management Clinic, particularly from the other patients. I have been overweight since my early 20s and this was the first time that I really got help".

Grace Collins, mother of Abbie aged 9 who attended the W82GO Healthy Lifestyle Service

"The Programme involved attending the dietician once a week and I took on board everything they said, about portion size, exercise and about treats. It was really, really very difficult but we got there in the end. Abbie is now a normal weight. I appreciate everything they did for us.

"Abbie always had a big appetite and never had that feeling of fullness in her stomach. It was partly my fault because I was the one who was feeding her. So we just changed what we were doing at home so that Abbie never knew that she was on a diet, it just became part of her daily routine. I was overweight as a child myself and I was always on a diet and I never wanted that for Abbie.

"We had smaller plates, a treat once a week and lots of fruit. Smaller plates worked brilliantly. I had to be firm and tell grandparents and aunties that she couldn't have sweets and to give her fruit instead. It can be difficult to be firm in front of other people.

"It was very hard when the ice cream van came around when the children are all playing outside.

"I would see other mothers in the clinic and they would be saying how difficult it was and how they would give in to the tears and that they couldn't get their children out to play. I felt like telling them: 'this is what you have to do. It's not easy but it does work.'

"Now, Abbie never has sweets during the week. She has breakfast, lunch and dinner and something small before going to bed. We have a movie night on a Saturday after all their activities and I give them a treat and she really looks forward to that".

"Abbie always had a big appetite and never had that feeling of fullness in her stomach.

It was partly my fault because I was the one who was feeding her".

Niamh, lady in her mid 50s who attended an Adult Weight Management Clinic

"I was at a critical stage as I was pre-diabetic when my GP told me about the Weight Management Clinic. When he asked would I like to attend I said 'Yes please' straight away. It took another 14 to 18 months to get there but once I arrived it was the start of the beginning of a wonderful new life for me.

"If I had access to this type of programme earlier, it would have made a huge difference to my health and to my life.

"The programme offered an all encompassing service with a non-judgmental approach which was very important. They looked after all areas, health, movement, mind, nutrition which was exactly what I needed.

"Weight has been a challenge for me all of my life. It has been up and down since the time I was a teenager and I had tried everything to lose weight.

"I have taken some very good learnings from the programme and I think about them a lot. There are a couple of mantras that I use – vigilance, for example is one that is with me now.

"I felt some trepidation at the end of my time there as I wondered how I would cope without that support. But they have structures in place and while I am no longer attending I can go to the cookery classes and be weighed.

"My health has improved so much. I am now very well and feel very well. I am a totally different person than 3 years ago. I started running at 53 and now I run 3 or 4 times a week and do a 5k park run every Saturday".

"If I had access to this type of programme earlier, it would have made a huge difference to my health and to my life".

Foreword

Obesity is the most prevalent disease in Ireland. The health and economic costs of not addressing obesity now will lead to significantly greater costs in the future. We are publishing this report with recommendations on the clinical treatment and management of obesity to highlight the urgent needs of those who are affected by overweight, obesity and related chronic conditions. There is a severe lack of healthcare staff, facilities and equipment to treat people who are overweight and obese. There is a shortage of treatment programmes across the country and there is insufficient training of health care professionals in detecting, treating and managing obesity.

The challenge of obesity requires an integrated approach across community, primary and secondary care. Evidence shows that treatment of obesity must be multi-component. All weight management programmes must include lifestyle changes including improved diet, increased physical activity and behavioural interventions. Individuals with severe obesity need to have access to more intensive treatments including pharmacological treatments, psychological support and specialist weight management programmes. Surgery to aid weight reduction must be considered when there is complete evidence that a patient who has morbid obesity has fully engaged in a structured weight loss programme and that all appropriate non-invasive measures have been tried for a sufficient period but have failed to achieve and maintain a clinically significant weight loss for the patient's clinical needs.

Physicians and those in the health caring professions require adequate training in obesity, healthy eating, physical activity and behaviour change techniques for the prevention and management of obesity. This will help tackle the issue of stigma around obesity in the medical professions.

We believe our recommendations for the treatment and management of obesity provide a comprehensive roadmap for how to best clinically manage and treat obesity in Ireland in the years ahead and strongly call for their adoption and implementation as part of a National Obesity Strategy.

Prof Donal O'Shea — Co-chair

Prof Catherine Hayes — Co-chair

1. Introduction

1.1 About the Royal College of Physicians of Ireland

The Royal College of Physicians of Ireland leads excellence and quality in health and medical practice through world class education and training, healthcare improvements and better care for all. Established in 1654, the College trains, educates and continuously develops doctors for society's current and future health needs.

The Royal College of Physicians of Ireland houses six of the 13 postgraduate training bodies in Ireland:

- Irish Committee on Higher Medical Training
- Faculty of Occupational Medicine
- Faculty of Pathology
- Faculty of Paediatrics
- Faculty of Public Health Medicine
- Institute of Obstetricians and Gynaecologists

The College also has a joint Faculty of Sports and Exercise Medicine with the Royal College of Surgeons in Ireland.

Through these training bodies the College delivers postgraduate specialist training to doctors. It provides Basic Specialist Training and Higher Specialist Training programmes to over 1,200 doctors in 26 specialities annually. This training takes place in structured rotations at hospitals across Ireland and is supported by our network of local trainers and National Speciality Directors.

The Royal College of Physicians of Ireland also develops and delivers a high-quality and extensive programmes of continuing professional development courses, events, workshops and conferences covering a wide range of clinical and non-clinical topics for doctors, consultant and healthcare professionals.

The College is a strong advocate on public health issues through its policy groups on alcohol, tobacco and obesity. New policy groups will focus on physical exercise and ageing. It also collaborates with other organisations and leaders to drive improvement in health and

healthcare and to develop and maintain standards and guidelines to support best medical practice.

With over 10,000 Members, Fellows and Doctors-in-training, the Royal College of Physicians is developing new models to deliver attractive international medical education programmes to overseas doctors who want to train in Ireland. We also lead 23 groundbreaking Clinical Care Programmes in conjunction with the HSE which are instrumental in transforming healthcare in Ireland.

1.2 The Royal College of Physicians of Ireland's Policy Group on Obesity

The Policy Group on Obesity began its work in June 2013 and published its first report on obesity prevention - *The race we don't want to win, Tackling Ireland's obesity epidemic* - in September 2014. It detailed recommendations to tackle the obesity epidemic under public policy measures, actions in specific settings and actions for health professionals.

This second policy statement follows on from obesity prevention and focuses specifically on the clinical management and treatment of obesity. A consultation with stakeholders engaged in the clinical treatment and management of obesity from public and private sectors informed this policy statement. The recommendations outlined in this document must be considered together with those for obesity prevention as previously highlighted by the Policy Group.

1.3 Members of the RCPI Policy Group on Obesity

Name	Representing
Prof Catherine Hayes (Co-chair)	Faculty of Public Health Medicine
Prof Donal O'Shea (Co-chair)	Royal College of Physicians of Ireland, St Vincent's University Hospital and St. Columcille's Hospital
Ms Cathy Breen	Irish Nutrition and Dietetic Institute
Mr Donal Buggy	Irish Cancer Society
Dr Vivion Crowley	Faculty of Pathology
Dr Cliodhna Foley-Nolan	Safefood
Prof Hilary Hoey	Faculty of Paediatrics
Dr Siobhan Jennings	Health and Wellbeing Division, Health Service Executive
Prof Cecily Kelleher	School of Public Health, Physiotherapy & Population Science, UCD
Dr Abbie Lane	College of Psychiatrists of Ireland
Dr Andrew Maree	Irish Cardiac Society
Prof Walter McNicholas	The Irish Thoracic Society
Mr Owen Metcalfe	Institute of Public Health
Ms Maureen Mulvihill	Irish Heart Foundation
Dr Jean O'Connell	Postgraduate Specialist Training, Royal College of Physicians of Ireland
Dr Tom O'Connell	Faculty of Occupational Medicine
Prof Humphrey O'Connor	Irish Society of Gastroenterology
Ms Pauline O'Reilly*	National Cancer Control Programme
Dr Brendan O'Shea	Irish College of General Practitioners
Dr Gillian Paul	Faculty of Nursing and Midwifery, Royal College of Surgeons of Ireland
Prof Ivan Perry	Centre for Diet and Health Research, HRB

Prof John Ryan	Faculty of Sports and Exercise Science, Royal College of Surgeons of Ireland/ Royal College of Physicians of Ireland
Prof Michael Turner	Institute of Obstetricians & Gynaecologists
Ms Ruth Yoder	Psychological Society of Ireland
Ms Maebh Ní Fhallúin	Policy Specialist, Royal College of Physicians of Ireland
Ms Siobhán Creaton	Head of Public Affairs and Advocacy, Royal College of Physicians of Ireland

* Up to April 2015

1.4 RCPI Subcommittee on Clinical Management and Treatment of Obesity

- Prof Donal O'Shea (Chair)
- Prof Catherine Hayes
- Dr Brendan O'Shea
- Prof Hilary Hoey, Faculty of Paediatrics, Royal College of Physicians of Ireland
- Dr Abbie Lane, College of Psychiatrists of Ireland
- Ms Cathy Breen, Irish Nutrition and Dietetic Institute
- Dr Vivion Crowley, Faculty of Pathology, Royal College of Physicians of Ireland
- Prof Walter McNicholas, The Irish Thoracic Society
- Prof Humphrey O'Connor, Irish Society for Gastroenterology
- Dr Tom O'Connell, Faculty of Occupational Medicine, Royal College of Physicians of Ireland
- Mr Andrew Maree, Irish Cardiac Society
- Dr Francis Finucane, Galway University Hospitals
- Dr Sinéad Murphy, Temple Street Hospital

2. Executive Summary & Recommendations

Prevention of obesity addresses risk factors which cause overweight and obesity in the general population. Treatment focuses on those who already suffer from overweight and obesity. This document addresses the needs of the one in four Irish children and two out of three Irish adults who are overweight or obese. Existing treatments for obesity are of limited effectiveness but there have been some successes.[1] Evidence shows that obesity has a tipping point - once gained, weight is difficult to lose. Prevention is the key to turning the tide of obesity. The public policy measures recommended in the RCPI policy statement on obesity prevention[2] are necessary to ensure the success of the measures for the clinical treatment and management of obesity outlined in this statement.

The number of Irish people who are obese and require treatment is significant and the numbers are likely to continue to rise. Modest weight loss (by 5–10% of initial weight) reduces the risk of developing type 2 diabetes, improves blood pressure and reduces total cholesterol. An understanding of the causes of obesity is critical to the success of clinical treatment strategies. Obesity is caused by a complex multifaceted system of factors which include high calorie diet, lack of physical activity and psychological, emotional and genetic factors. Some determinants are within the control of individuals but the majority are not.[1] Research shows that many people find it difficult to maintain weight loss and there is often a gradual weight regain.

All recommendations on the clinical treatment and management of obesity are underpinned by the principle of equity in recognition of the distribution of obesity among socially disadvantaged groups and long waiting lists for access to specialist services within the Irish public health care system. Furthermore, specific population groups including children, adolescents, pregnant women, older people, individuals with mental illness and those with intellectual and physical disabilities must be considered as high risk and resourced appropriately. The following recommendations aim to provide an integrated health service and appropriate models of care for adults and children who are overweight and obese.

2.1 High Level Recommendations

1. Ensure children and adults who are overweight/obese have access to an integrated obesity treatment and weight management service within community, primary and secondary care settings providing evidence-based models of care according to their need.

2. Appoint a National Clinical Lead for Obesity with responsibility for overseeing the implementation of the treatment and management aspects of the National Obesity Strategy.

3. Identify and scale up budgetary allocations for obesity treatment.

4. Support ongoing data collection and surveillance of overweight/obesity as a key component of Ireland's ehealth Strategy. Collate data on all sections of the population and across all healthcare settings via a centralised obesity data hub.

5. Educate all healthcare professionals on the management of obesity at undergraduate and postgraduate levels and educate all relevant government department and non-governmental organisational staff.

6. Resource adequate levels of healthcare staff and appropriate equipment to deal with individuals who are obese in all healthcare facilities.

2.2 Recommendations for Primary Care and Community

1. Resource primary care teams (PCTs) so they can effectively and sensitively manage patients presenting for support in the management of overweight/obesity. The primary care team managing overweight and obesity in adults and children must consist of, or have access to, when clinically required:
    - General Practitioner
    - Practice Nurse
    - Public Health Nurse
    - Community Dietician
    - Physiotherapist
    - Psychologist
    - Community Pharmacist
    - Paediatrician
    - Medical Social Worker
    - Occupational Therapist
    - Child, Adolescent and Adult Psychiatrist
    - Geriatrician
2. Provide appropriate equipment and facilities for individuals who are obese (e.g. bariatric chairs and large blood pressure cuffs).
3. Implement the HSE/ICGP Weight Management Treatment Algorithms for Children and Adults so that all individuals who require it have access to a suitable model of care.
4. Record children's height and weight at ages two and five years as per the new GP contract.
5. Support timely data collection to measure the prevalence of overweight/obesity and ensure ongoing population surveillance.
6. Integrate all services for the clinical treatment and management of overweight/obesity across community, primary and secondary care.
7. Resource and promote necessary support services outside primary care including:
    - Self Help Peer support groups
    - GP exercise referral
    - Weight management support by phone and video conference with qualified health professionals
    - Physical Activity Specialist

- Workplace wellbeing initiatives

8. Ensure provision and access to community programmes and services for the management and treatment of overweight/obesity. Evidence for these programmes is evolving and where possible they should be demonstrated to be clinically sound, independently evaluated and delivered by professionals. Successful programmes must be rolled out nationally.
9. Support evidence-based commercial weight management programmes, particularly those that operate in tandem with the public health system. The state must play a leading role in providing adequate overweight/obesity treatment services to all members of society because of the high burden of overweight/obesity among lower socio-economic groups who may not be able to afford self-funded programmes.
10. Promotion of specialised diets or very low calorie diets (VLCDs) need to be carefully considered in individual cases, by health care professionals, to ensure they are utilised appropriately, effectively and safely. They must not be promoted directly to individuals nor should they be used routinely to manage obesity.

2.3 Recommendations for Secondary Care

1. Develop six specialist weight management centres, one within each HSE Hospital Group throughout the country as a priority, ensuring equity of care regardless of geographical region. Specialist centres must be consultant-led dedicated weight management centres with full multidisciplinary teams modelled on the existing two adult centres, St Columcille's and Galway University Hospital.
2. Resource paediatric weight management teams in each hospital group. Existing childhood obesity interventions such as Temple Street's W82GO Healthy Lifestyle Service needs to be evaluated and the efficacy and effectiveness of implementation in the community setting assessed.
3. Ensure access to and availability of surgery as a treatment modality for adults through each centre. Every hospital group must have the capacity to prepare and refer individuals for surgery and carry out long term follow up.
4. In adolescents, access to bariatric surgery must be through a single centre, most likely the National Children's Hospital, with appropriate psychological, paediatric endocrine, dietetic and child and adolescent mental health services (CAMHS) assessment prior to surgery.
5. Ensure effective management of patients who are overweight/obesity and provision of appropriate equipment and facilities particularly in Emergency Care. This must include bariatric trolleys and beds, as well as basic equipment such as blood pressure cuffs.
6. There must be equity of access to obesity medication for suitable patients.

2.4 Recommendations for Pre-Pregnancy, Pregnancy and Postnatal

1. Encourage all women and their partners to have their BMI calculated accurately before they plan their pregnancy. This is best undertaken in primary care. At this time all women who are obese need to be actively encouraged to lose weight prior to becoming pregnant and provided with information on folic acid supplementation. Appropriate weight advice is also required for partners. Advice on nutrition and physical activity during pregnancy is needed and encouragement given to breastfeed.
2. Advise women who are obese to take high dose folic acid for at least three months before conception and for three months after conception if they are trying to conceive or at risk of conceiving.
3. Measure weight and height of all women and their partners at their first antenatal visit. At this time all women need to be actively encouraged and supported in breastfeeding and provided with accurate information on healthy weaning practices.
4. Calculate the BMI of all women and their partners postpartum, ideally in a primary care setting during the first primary immunisation visit, with follow up visits to provide opportunities for review and brief interventions.

2.5 Recommendations for Older People

1. Programmes for older people with obesity need to be developed in concert with geriatricians and dieticians with gerontological expertise.
2. Ensure dialogue between specialist service for older people and obesity services to ensure that obesity in later life is managed used a synthesis of best practice from both disciplines.
3. Professionals need to be aware of the limitations of BMI measurement among older adults, and incorporate other anthropometric measures (waist circumference, waist-hip ratio).
4. All services for older people need to be bariatrically-attuned, and obesity services for older people gerontologically-attuned.
5. Access to obesity service should be equitable at all ages.
6. Further research is needed to clarify best practices in Ireland for assessment and management of obesity among older people.

2.6 Recommendations for Individuals with Mental Health Problems

1. Consider the physical health needs of those with mental health problems at every review and conduct weight monitoring in a structured fashion in accordance with current evidence.
2. Consider the potential for rapid development of obesity as a side effect of certain drugs and the mitigation of those effects, addressing in particular, the immediate period after starting medication as this is the time of greatest weight gain.
3. Provide specific behaviour change programmes addressing healthy eating and increased physical activity using motivational interviewing or similar techniques for individuals with mental illness within primary and community settings. Subsidised exercise or exercise on prescription programmes must be considered.
4. Educate patients with mental illness on weight management. Training in the physical and mental factors in the aetiology and management of overweight/obesity is necessary for all relevant health professionals.
5. Ensure regular improvement in physical health care for people with mental illness is a key component of current mental health policy.

2.7 Recommendations for Individuals with Special Needs including Intellectual and Physical Disability

1. Establish appropriate BMI cut-off values for the subgroups of the population with different physical characteristics, where the standard BMI cut-off values do not apply (e.g. adults with Down syndrome and wheelchair users).
2. Train all health professionals (undergraduate and in-service levels) in contact with people with intellectual or physical disability on lifestyle weight management strategies with a particular focus on the generic and specific needs of these population groups.
3. Establish alternative methods to measure body composition of those with intellectual or physical disability and integrate those methods into standardised measurement protocols.
4. Ensure all overweight/obesity prevention, treatment and management services are equally accessible and available to people with intellectual or physical disability. Examination and treatment rooms must be accessible to all people with disabilities, including those who use wheelchairs or mobility aids, to ensure equal access to all citizens. All clinics need to have access to a hoist, wheelchair or hoist scales and adjustable height exam table for the accurate measurement of body composition.
5. Ensure that people with intellectual or physical disability have the same access rates to all future weight and lifestyle-related screening programmes as others in the general population.
6. Educate people with intellectual or physical disability, their families and support staff on healthy lifestyles and risks associated with overweight and obesity. Ensure health promotion materials on healthy eating, physical activity and public health topics are available in accessible and literacy-friendly formats.
7. Encourage community-based organisations and service providers to work in partnership and build their capacity to promote healthy behaviours and health promotion programmes that are accessible to everyone in the community. A good example of this is the HSE-Special Olympics Ireland-Daughters of Charity Health Promotion Project for people with intellectual disabilities.
8. Support surveillance of overweight/obesity in people with disability that is essential for service planning. The feasibility of collection of BMI data as part of the National Intellectual Disability Database and the National Physical and Sensory Database needs to be explored.

2.8 Recommendations for Education and Training

1. Ensure training and ongoing continuing professional development (CPD) of all health professionals (HPs) in the causes, measurement and treatment of obesity at undergraduate, postgraduate and in-service levels.
2. Encourage professionals involved in disseminating information regarding obesity to use patient-first language and avoid pejorative or accusatory language when discussing obesity with professionals, clients and the general public.
3. Train HPs on how to raise and discuss the issue of overweight/obesity in a non-judgemental and empathetic manner. Ensure that all professionals are trained in evidence-based behaviour change methods such as motivational interviewing.
4. Raise awareness of risk factors of obesity such as the food and physical activity environment as well as genetic and biological determinants of energy balance and satiety. This will lead to reduced obesity stigmatization in health care settings.
5. Train all HPs on basic anthropometric measurements, accurate techniques and equipment.
6. Educate all relevant government department and non-governmental organisational staff on overweight/obesity to increase understanding and improve public health campaign design and delivery.

3. **Background**

The steady increase in the prevalence of overweight and obesity in Ireland during the last three decades mirrors trends in other countries[3] and represents a huge public health challenge because of the associated morbidity and mortality from diseases like diabetes, cancer and heart disease. Health gains achieved as a result of measures which addressed smoking, high blood pressure and high lipid levels are in danger of being reversed by obesity. Recent data for Ireland indicates that:

- 1 in 4 Irish children are overweight or obese.[4,5]
- 25% of three year olds, 25% of nine year olds and 26% of thirteen year olds are overweight or obese.[4]
- 2 out of every 3 Irish adults are overweight or obese.[6]
- Three quarters of older Irish adults are overweight (44%) or obese (34%) with higher rates seen in men.[7]
- 2 in 3 Irish adults with intellectual disability over 40 are overweight or obese (66.7%).[8]
- A prospective study in Dublin on maternal obesity where Body Mass Index (BMI) was measured in the first trimester found 19% of women were categorised as obese.[9]
- One in four people will be affected by mental or neurological disorders at some point in their lives. Treatment for mental health problems can cause overweight/obesity and overweight/obesity can impact negatively on mental health.[10]
- Education and wealth are negatively associated with BMI. Among older Irish adults, there is a much stronger relationship between obesity and socioeconomic status for Irish women than for Irish men.[7]
- By 2030, 89 % of Irish men and 85 % of Irish women will be overweight or obese, the highest projected level of any European country.[11]

This policy document on the clinical treatment and management of obesity focuses on individual level interventions including lifestyle interventions, pharmacological interventions, and bariatric surgery for adults. The specific training needs for health professionals and for government and non-government bodies in overweight/obesity will also be discussed. Specific attention will be given to the following across the life course:

A. Pre-Pregnancy, Pregnancy and Postnatal – Obesity in pregnancy is associated with an increased lifelong risk of diabetes and cardiovascular disease for the woman and increased risk of childhood obesity for her offspring.[9]

B. Infants, Children and Adolescents – Obesity causes diabetes, heart disease and cancer and the trajectory is set from childhood when eating patterns and physical activity behaviours are established.[12] Childhood obesity is a principal predictor of adult obesity.[13] Growth assessment of children is a core part of detecting obesity and overweight and offers opportunities for early intervention to prevent establishing an obesity pattern over the life course. Cut off points for BMI based on height and weight by sex and age based on international data are used to measure obesity in children.[14]

C. Adults - In Ireland there are three treatment options available for adults according to the BMI range they fall into - dietary and lifestyle interventions, pharmacotherapy, and bariatric surgery, and a combination of those treatment options may be offered. Issues relevant to older adults include, but are not limited to, ascertainment of adiposity, diagnostic accuracy of obesity, link with adverse outcomes and mortality, focus on quality of life and function, sarcopenic obesity, weight-loss induced sarcopenia, osteoporosis and nutritional deficiencies.

D. Individuals with Mental Health Problems - The life expectancy of those with mental illness is 20% lower than the general population and obesity is one of the key contributory factors. While we have no specific data for Ireland, the international literature suggests that only a quarter to a half of patients with mental health problems have adequate physical health monitoring and assessment.[15] Good mental health is important as both a driver and as an outcome of healthy weight management.[16]

E. Individuals with Special Needs – Higher levels of obesity are found in populations with special needs including those with intellectual disability and those with physical impairments, particularly due to impaired mobility (e.g. cerebral palsy and spina bifida) as compared with those in the general population. People with special needs require higher levels of support, information and interventions on obesity tailored to their specific needs, and inclusive and accessible services.[17]

4. **Situation Analysis**

While Ireland's obesity crisis is far from unique[18], the WHO prediction that by 2030 Ireland will be one of the most overweight countries in the EU is stark.[11] As rates of obesity rise exponentially, we will see a parallel increase in healthcare costs from associated non-communicable diseases (NCDs). The cost of overweight and obesity in Ireland in 2009 including direct and indirect costs was estimated at €1.13 billion. The direct costs represented 2.7% of total healthcare costs for that year.[19] Thirty-five per cent of that cost was accounted for by hospital care and drugs costs for obesity-related co- morbidities including cardiovascular disease, type 2 diabetes, colon cancer, stroke and gallbladder disease. Sixty-five per cent were indirect costs including productivity losses from absenteeism and premature mortality. If prevalence of overweight and obesity reaches the 90% predicted by 2030, direct healthcare costs alone will reach €5.4 billion.[20]

To date, health policies and resources have targeted disease outcomes of obesity rather than addressing prevention and treatment of obesity. There is growing recognition of the need to reorient health services and resources in order to tackle the risk factors that cause obesity and other chronic diseases and to offset significant economic health costs further down the line. It is broadly agreed that this can be best achieved in the primary care setting. As set out in *The race we don't want to win,* there is increasing evidence for strong public policy measures to tackle the toxic environment of processed food and unrestrained marketing practices by the food and beverage industries, and to provide the infrastructure needed to encourage greater levels of physical activity.[2] Treatment will have limited success in an environment where physical activity is inhibited and consumption of high-energy food is promoted.[21] In parallel with the creation of an environment that is conducive to healthy living, individuals need to be continuously encouraged through clinical interactions, schools and the media to make the lifestyle changes necessary to maintain a healthy weight and a nutritious diet.

Individuals suffering from overweight/obesity require a fully resourced model of care to manage their condition and co-morbidities and to prevent further serious health and healthcare costs. This policy statement focuses specifically on the significant cohort of Irish children and adults who suffer from overweight/obesity and whose quality of life is now dependent on effective clinical treatment and weight management.

4.1 National Policy

4.1.1 Healthy Ireland Framework[22]

The major theme of the *Healthy Ireland Framework* is a whole-of-government and whole-of-society approach to address risk factors and social determinants of health and reduce health inequalities. It commits to progressing policy and legislation across Government departments to facilitate the implementation of evidence-based actions on health and wellbeing. The framework recognises the importance of investing in research to develop new technologies and treatments. This framework does not specifically address the clinical treatment or management of overweight/obesity but represents an important step in recognising the need for a cross-sectoral approach to obesity and other chronic diseases.

4.1.2 Tackling Chronic Disease Policy Framework[23]

The Department of Health's 2011 policy framework Tackling Chronic Disease highlighted the importance of putting in place disease management programmes to treat and delay the onset of complications for patients with a chronic condition. It recommended models of shared care between primary care and specialised services in which:

- Criteria and protocols are established and followed to determine the pathways of care and the most appropriate setting where patients must be managed.
- Clinical networks in the primary and acute care settings exist to provide integrated care for patients.
- Patients have access to treatment which is appropriate to their needs and to differing levels of services.
- Stages of the condition, required interventions and how these will be provided are clearly outlined.
- Patients' commitments to comply with the achievement of treatment goals are included.

To date, these models of care have not materialised.

4.1.3 National Obesity Taskforce[24]

The 2005 Report of the National Taskforce on Obesity provided a blueprint for the development of a strategy to reverse the prevalence of obesity in Ireland. It set out the need for a facilitated population shift in attitudes and practices around food consumption

underpinned by legislation where necessary. Recommendations for the health sector included:

- Calculation of BMI as part of routine clinical healthcare practice in primary care and in hospitals.
- Use of the Weight Management Treatment Algorithms for Adults and Children developed by the Health Service Executive (HSE)/Irish College of General Practitioners (ICGP).
- Establishment of a national database for growth measurements for children and adults and the expansion of systems to collect required data for obesity surveillance.
- Development and implementation of an education and training programme for health professionals in the appropriate and sensitive management of overweight and obesity.
- Requirement for ongoing evaluation of detection, prevention and treatment programmes for overweight/obesity.
- Expansion of support mechanisms for breastfeeding mothers.

In July 2015, free GP care was given to all Irish children under six including a provision for weight and height assessments at age two and six. The HSE/ICGP Treatment Algorithm has provided a useful tool for health professionals detecting obesity, however, the absence of coordinated and fully resourced referral options and pathways has limited its practicability. Many of the report's other recommendations remain unimplemented.

In addition, the HSE algorithm predates serious study of obesity in older adults. For example, BMI categories may not be appropriate in older adults. For instance, a BMI between 25-27kg/m2 has been shown to have the lowest inflection point for mortality[25,26,27.] The categories may not be accurate. Alternative anthropometric measures – waist circumference, waist-hip ratio - may also be useful. There are also differences in approach compared to younger adults. The old adage, start low, go slow is extremely important for older adults; while 5-10% weight loss has been widely recommended, often this is impractical in a general adult population and no studies have demonstrated its efficacy in older adults in a clinic setting; all have been in a research centre. [28]This should be partially modified to 5%.

4.2 International Policy

WHO Commission on Ending Child Obesity[29]

In 2014 the WHO established the Commission on Ending Childhood Obesity to advise on effective strategies to tackle childhood and adolescent obesity in different contexts around the world. The Commission recently published its interim report for online consultation (March 2015). It makes the following policy recommendations in relation to treatment:

- Provision of family-based and care-environment-based lifestyle weight management services for children and young people affected by obesity. Weight management services must be multi-component with nutrition, physical activity and psychosocial aspects.
- Training of health professional staff to ensure they have the necessary knowledge and skills to provide these services.

The Commission states that primary health-care services are important for the early detection and management of obesity in children and its associated complications, such as diabetes. It highlights that little is written on models of health service delivery for the provision of obesity treatment in children and adolescents but recommends the implementation of NICE guidelines on same (see Section 4.3). The Commission is due to deliver its final report with recommendations in late 2015.

4.3 UK Policy

NICE Guideline on Obesity[30]

The UK National Institute for Health and Clinical Excellence (NICE) provides detailed guidelines to assess and treat adults who are overweight/obese. It examines the evidence on treatment options including lifestyle, behavioural, physical activity, dietary, pharmacological and surgical interventions.

The NICE guidelines include the following recommendations for health professionals in relation to both adults and children:

- Base treatment on the person's individual preference, social circumstance, experience and outcome of previous treatment, the person's level of risk and co-morbidities.

- Use clinical judgement to decide when to measure a person's height and weight – at registration, during consultation for related conditions or during other routine health checks.
- Manage co-morbidities when they are identified, not waiting until the person has lost weight.
- Use UK-WHO growth charts to calculate BMI but take caution when interpreting BMI in children.
- Assess the person's view of their weight and possible reasons for weight gain, exploring eating patterns, physical activity levels and environmental, social and family factors.
- Assess the person's attitudes towards weight management.
- Be aware of population subgroups that are at greater risk of obesity.

Under the UK National Child Measurement Programme (NCMP), schoolchildren aged 4-5 years and 10-11 years have their weight and height measured to inform local planning and delivery of services for children and to provide population-level surveillance data for analysis of obesity and growth patterns. This programme is delivered to children on an opt-out basis.

4.4 Consultation meeting with patients and other stakeholders

Obesity is a challenge for everyone in society and it is important that the cross-sectoral and cross-societal nature of the problem was reflected during all stages of the consultation process.

On 15th May 2015 the Royal College of Physicians of Ireland Policy Group on Obesity held a consultation meeting with a range of stakeholders from the public and private sector and patients to inform its new policy statement on the clinical management and treatment of obesity. We are extremely grateful to all who participated and offered valuable feedback on our policy discussion document. Their feedback is incorporated in this report.

Our policy consultation included representatives from the following organisations:

RCPI Policy Group on Obesity	Other Organisations / Individuals
RCPI Faculty of Public Health Medicine	Diabetes Ireland
St Vincent's University Hospital	Weight Watchers Ireland
St Columcille's Hospital	Unislim
Irish Nutrition and Dietetic Institute	Counterweight
Irish Cancer Society	Irish Pharmacy Union
RCPI Faculty of Pathology	National Children's Hospital
Safefood	Bon Secours Hospital
RCPI Faculty of Paediatrics	Slimming World
Prevention of Chronic Diseases Programme	Association for the Study of Obesity on the Island of Ireland (ASOI)
College of Psychiatrists of Ireland	Dublin City University
Irish Cardiac Society	Motivation Weight Management
The Irish Thoracic Society	Overeaters Anonymous
Department of Health	National Paediatric Hospital
Institute of Public Health	VHI
Irish Heart Foundation	Clinical Science Institute, NUIG
Postgraduate Specialist Training, Royal College of Physicians of Ireland	Slimming World
Irish Society of Gastroenterology	Tallaght Hospital
National Cancer Control Programme	Trinity College Dublin
Irish College of General Practitioners	Psychological Society of Ireland
Faculty of Nursing and Midwifery, Royal College of Surgeons of Ireland	Temple Street Hospital
Centre for Diet and Health Research, HRB	Galway University Hospital
Faculty of Sports and Exercise Science, RCSI/ RCPI	Paul Winters

RCPI, Institute of Obstetricians & Gynaecologists	Lipotrim
Psychological Society of Ireland	University College Dublin
HSE	Medfit
Cheeverstown	National Rehabilitation Hospital

4.5 Resource Environment

The capacity of primary care teams (PCTs) to treat obesity is currently severely limited. For example, over 32% of primary care teams have no one-to-one dietetic service which affects 345,000 patients with obesity.[31] Similarly, PCTs around the country have unequal staffing for psychology, physiotherapy, occupational therapy and medical social work. Effective management of obesity in the primary care setting will hinge on patients accessing the necessary services in a timely manner and for those participating in weight loss programmes, to be regularly reviewed. To this end, standardised measurement, data recording and timely availability of data at a centralised level for surveillance, intervention delivery and research is required.

An audit in 2011/12 found that there were only three publically funded weight management services available in Ireland for adults with a BMI>30kg/m^2.[32] An estimated €2.3 billion in public funding and thousands of staff were taken out of the health sector between 2008 and 2013.[33] While evidence points to greater levels of efficiency achieved in the immediate aftermath of those cuts, the prolongation of austerity has put a significant strain on services with waiting lists rising sharply and patient safety issues arising. It is recognised that there is an urgent need for structural reform to move chronic disease care out of hospitals and into primary care settings.

5. Evidence of Clinical and Cost-Effectiveness of Interventions

5.1 Lifestyle & Behavioural Interventions

A systematic review of the clinical and cost-effectiveness of long-term multi- component weight management interventions for adults found that they generally promoted weight loss in overweight and obese adults and were likely to be cost- effective.[34]

In its review of the evidence for dietetic-led interventions, the Irish Nutrition and Dietetic Institute (INDI) concluded that there is good evidence to show they are clinically and cost-effective in the management of obesity and obesity related co-morbidities with the strongest evidence relating to interventions for adults with diabetes.[35] INDI also found evidence that intensive lifestyle intervention programs, including a combination of dietary therapy and exercise to achieve weight loss, were both clinically and cost-effective in reducing the diabetes risk in high-risk individuals.[36] A number of studies have shown the benefits of structured lifestyle interventions in those with non-diabetic hyperglycaemia or those with established cardiovascular disease.[37,38] There are a variety of dietary-based approaches to managing overweight / obesity and interventions must be tailored to individuals.[31]

The evidence supporting geriatric obesity interventions to improve physical function and quality of life is of low to moderate quality. Well-designed trials are needed in this population. [39]

There is emerging evidence that structured weight loss and life style interventions for obesity in people with serious mental illness can result in clinically significant reductions in weight and diabetes risk even when delivered by routine community mental health services. This has now been replicated in a number of countries and is also effective in those taking anti-psychotic medications with between 38% and 49% achieving clinically significant weight loss and decreased cardiovascular risk. A reduced rate of medical hospitalisation in intervention groups has been reported.[40,41,16]

There is ongoing evaluation of specific weight management programmes for individuals and families in primary care, hospital and commercial settings including Weight Watchers, Counterweight and W82GO for children. The strongest evidence of effectiveness to date relates to Weight Watchers[42], however, early evaluations of Counterweight in adult obesity[43] and W82GO[44] show promising signs. A UK randomised controlled trial in 2011 found commercial programmes achieved significantly greater weight loss and were less costly to provide than primary care programmes.[37] Most of the studies reviewed which examine effectiveness of interventions for obesity are limited by drop-out rates.

A Cochrane Review on *Exercise for overweight or obesity* (2009) found that while exercise can prevent weight gain and has a key role in weight maintenance after weight loss has been achieved, the evidence to support the efficacy of exercise to achieve weight loss is weak.[45] Exercise has a positive effect on mental health, body weight and cardiovascular disease risk factors in people with overweight or obesity, particularly when combined with diet. The review concluded that exercise improves health even if no weight is lost.

5.2 Pharmacotherapy

Orlistat is a medicine used in the clinical treatment and management of obesity. NICE guidelines state that overall, people taking orlistat were 33% (28% to 37%) more likely to achieve at least a 5% weight loss at 12 months than people taking placebo.[26] For people with type 2 diabetes and for people with hypertension, a minimum 5% weight loss was also more likely. However, the use of orlistat does not guarantee weight loss. In one trial, approximately 8% of the orlistat group and 18% of the control group did not lose any weight or actually put weight on. Orlistat (120 mg three times a day) in combination with a weight reducing diet is more effective for weight loss than placebo and diet: a change of approximately –3.3 kg at 12 months.

There are pharmacotherapy issues that are specific to older adults that should be considered. Older adults tend to have multiple chronic conditions and polypharmacy which complicates drug management. Randomized controlled trial evidence is limited, particularly in older adults. A recent systematic review[46] found 28 studies whose median age was 46 years (range 40.0-59.8years). It is difficult to make any definitive recommendations to implement into practice in a population excluded from such trials. Orlistat has significant gastrointestinal issues which is prevalent in older adults. Additionally, it leads to nutritional deficiencies which is problematic in older adults. The insert for Phentermine/Topiramate

notes that it did not include sufficient numbers of elderly subjects to determine whether they respond differently from younger subjects and suggest that selecting a dose is cautioned. The same was noted for naltrexone/bupropion and loracaserin. Liraglutide's efficacy appears to be similar in older adults although the risks of hypoglycaemia are much higher. This information should be considered for older adults and the GP should have reservations about pursuing such options in this population.

5.3 Bariatric Surgery

A 2009 systematic review for the UK National Institute of Health Research (NIHR) concluded that bariatric surgery appears to be a clinically and cost-effective intervention for people who are moderately to severely obese compared with non- surgical interventions.[47] An audit of the first 100 bariatric surgery cases performed between 2001 and 2008 in a single publicly funded Irish centre reported an average of 60% excess weight loss that was maintained years after the operation. Other beneficial outcomes included reversal of diabetes, increased ability to exercise, improvement in psychosocial status and the ability to stop medications for chronic diseases. The results also point to a need for long-term follow-up as in certain instances weight loss and metabolic parameters which improved during the first year postoperative started to deteriorate thereafter.[48]

A recent Scottish study suggested that adults who are severely obese need to lose 15% of their bodyweight in order to derive health benefit.[49] Given the paucity of effective drug therapy for obesity at present, some patients will only achieve this weight loss with bariatric surgery. Numerous large studies have confirmed that bariatric surgery is life-saving[50], causes remission of type 2 diabetes and other co- morbidities[51] and is not just cost-effective but cost-saving[52].

Bariatric surgery in older adults poses specific concerns however. Careful selection of older adults who would most benefit from the procedure is needed, although no guidelines are present. The European Obesity guidelines suggest careful selection of older adults for surgery.

The literature shows that bariatric surgery can fund itself through the associated cost savings of conservative therapy and the prevention of co-morbidities in patients with morbid obesity.[53,54,55,56]

6. **Gap Analysis**

From the findings of our consultation process and working group discussions, the following issues were identified as necessary components of an integrated management and treatment response for addressing obesity. On each point, special provision is required for individuals with special needs including those with mental health problems.

6.1 Defining Treatment Success

Consensus is needed on how to define success in terms of treatment for overweight and obesity. Often there are significant benefits observed with treatment other than weight loss such as reduction in co-morbidities and improvement in cardiovascular risk. The definition of a successful treatment may be different for different population subgroups. A comprehensive evidence review will help establish indicators of successful treatment for overweight and obesity. This research is necessary in order to undertake accurate economic analyses.

6.2 Services in Primary and Secondary Care

There is a severe shortage of availability and access to obesity treatment services across the country.[57] Resources are required across the healthcare services to fully implement the HSE/ICGP Weight Management Treatment Algorithms for children and adults.

6.3 Data

There is an urgent need for a national data strategy, an effective data collection mechanism and a centralised data collection point or registry in order to:

- determine the numbers of adults and children who currently are in need of treatment and estimate those who will require treatment in the future
- design targeted interventions according to population profiles
- identify standardised quantitative and qualitative indicators to monitor and evaluate all obesity treatment options
- monitor height and weight and socio demographic data

- evaluate intervention outcomes.[58]

Data needs to be collected for obesity from mental health, intellectual and physical disability services and from community, primary and secondary care. Issues around confidentiality and data protection require careful consideration and broad consultation.

6.4 Training

All weight issues, ranging from over-eating to under-eating, should be approached with sensitivity by health professionals equipped with appropriate training and skills. The current high prevalence of overweight and obesity in Ireland is not matched by a proportionate emphasis on undergraduate and postgraduate training of health professionals in the core elements of weight management and obesity prevention. All health professionals (HPs) at undergraduate, postgraduate and in-service levels need to be trained on the complex underlying biological, social, environmental and psychological causes of overweight and obesity. Underlying biases have a strong influence on the tone and success of HP-patient interactions and on broader public health campaigns. Effective behavioural interventions may require specialised training in behavioural strategies rather than the traditional advice giving model.[59] Relevant governmental and non-governmental departments also need to increase understanding of obesity and improve public health campaign design and delivery.

6.5 Obesity Research

Ongoing research into the effectiveness of intervention strategies and the management of obesity within the Irish health system is required. Further research on the determinants of diet and activity patterns and their impact on weight is crucial, particularly for children and adolescents.[51,60] There are insufficient policies and interventions that address the growing disparity between rates of obesity among children from higher and lower socio-economic backgrounds.[61] This all points to the need for timely collection of obesity-related data and its collation centrally for surveillance and development. As we move into an era of personalised medicine, targeted interventions can only be developed and evaluated if we have adequate collection of data relating to physical, metabolic and molecular parameters. This data needs to be accessible for researchers similar to the arrangements that currently exist for research on the national longitudinal studies.

Sarcopaenia and sarcopaenic obesity are entities that may be difficult to define in clinical practice, have an impact and require needed interventions to manage these conditions in the presence of obesity. Additional research is needed on pharmacotherapy in older adults. Furthermore, endoscopic devices may prove to be beneficial in older adults yet no data is currently available to promote/refute this as a possible intervention.

6.6 Economic Analysis

The absence of clear definitions of successful treatment and the current lack of access to treatment services for overweight/obesity in Ireland make it difficult to conduct proper economic analyses. In the future, cost-effectiveness and cost-benefit analyses of comparative treatment options in Ireland will be required to inform short-term and long-term planning of the healthcare services. Economic analysis on specific interventions for individuals with mental health problems and intellectual disability will be required.

7. Recommendations

7.1 High Level Recommendations

In recognising overweight/obesity as the most common disease in Ireland, we recommend the following measures:

High Level Recommendations

7. Ensure children and adults who are overweight/obese have access to an integrated obesity treatment and weight management service within community, primary and secondary care settings providing evidence-based models of care according to their need.

8. Appoint a National Clinical Lead for Obesity with responsibility for overseeing the implementation of the treatment and management aspects of the National Obesity Strategy.

9. Identify and scale up budgetary allocations for obesity treatment.

10. Support ongoing data collection and surveillance of overweight/obesity as a key component of Ireland's ehealth Strategy. Collate data on all sections of the population and across all healthcare settings via a centralised obesity data hub.

11. Educate all healthcare professionals on the management of obesity at undergraduate and postgraduate levels and educate all relevant government department and non-governmental organisational staff.

12. Resource adequate levels of healthcare staff and appropriate equipment to deal with individuals who are obese in all healthcare facilities.

7.2 Individual Level Recommendations

The International Classification of adult overweight and obesity according to BMI and optimal care setting

Classification	BMI(kg/m²)		Care Setting
	Principal cut-off points	**Additional cut-off points**	
Normal range	**18.50 - 24.99**	**18.50 - 22.99**	**Community & Primary Care**
		23.00 - 24.99	
Overweight	**≥25.00**	**≥25.00**	
Obese	**≥30.00**	**≥30.00**	
Obese class I	30.00 - 34.99	30.00 - 32.49	
		32.50 - 34.99	
Obese class II	35.00 - 39.99	35.00 - 37.49	**Community, Primary & Secondary Care**
		37.50 - 39.99	
Obese class III	≥40.00	≥40.00	**Secondary Care**

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

7.2.1 Management of Overweight and Obesity

Individuals should be assessed for overweight and obesity according to the HSE/ICGP Weight Management Treatment Algorithms for Adults, with due caution for their interpretation in older adults [1].

For adults with a BMI ≥25 kg m^2, multicomponent lifestyle and behavioural interventions are required in community and primary care settings (see Section 7.3.1). After dietary, exercise and behavioural approaches have been started and evaluated, pharmacological treatment may be considered for certain individuals who have not reached their target weight loss.[53]

7.2.2 Role of Surgery for Obesity

For adults with a BMI ≥35 kg m^2 with co-morbidities such as type 2 diabetes, or adults with a BMI ≥40 kg m^2, bariatric surgery should be available (see Section 7.3.2).[53]

[1] Note, specific cut-off points may not be valid in older adults- see pg 26

Note, the role in older adults is controversial and recommendations would be to have a geriatric and/or multidisciplinary consultation to ensure the risks/benefits are in the favour for surgery.

7.2.3 Health Nudging across All Healthcare Professions

Health care professionals in many disciplines where obesity could be an underlying cause of a presenting problem, including orthopaedics, obstetrics and cardiology, may be presented with opportunities to address a cohort of people who are overweight/obese. For example, over 1,500 knee replacements are carried out in Ireland each year and approximately 4,500 hip replacements and many will have obesity as an underlying cause.[62,63]

7.3 Recommendations in Particular Settings

In line with High Level Recommendation 1, the following recommendations are focused on the development of an integrated obesity treatment and management service across community, primary and secondary care settings and the delivery of appropriate models of care according to individuals' specific needs.

7.3.1 Primary Care and Community

In our policy statement on obesity prevention, we made specific recommendations on improvements in community and education settings and on planning for a healthy physical environment.[2] Our recommendations for the treatment of obesity in the community setting include those recommendations outlined for the prevention of obesity. We also recognise the value of community treatment programmes that should be accessed through self-referral and referral by a primary care team (PCT).

Responsibility for the detection and clinical management of overweight and obesity in adults and children will fall upon the primary care team (PCT). There is evidence to show that the primary care environment in Ireland is acceptable to parents and children for checking the weight of children.[64] The evidence base for a screening initiative remains weak, however, the benefits from weight assessment currently outweigh any potential harms. Services for the treatment and management of overweight/obesity will vary from one-to-one counselling to

full multi-disciplinary team (MDT) based interventions. For children, family-based interventions are the most effective.

Use of electronic coding for overweight/obesity in the electronic medical record in General Practice is required to allow active recall at the practice level, electronic prompts in the consultation and to facilitate research and audit through the automated generation of practice registers of overweight patients.

Recommendations for Primary Care and Community

1. Resource primary care teams (PCTs) so they can effectively and sensitively manage patients presenting for support in the management of overweight/obesity. The primary care team managing overweight and obesity in adults and children must consist of, or have access to, when clinically required:
    - General Practitioner
    - Practice Nurse
    - Public Health Nurse
    - Community Dietician
    - Physiotherapist
    - Psychologist
    - Community Pharmacist
    - Paediatrician
    - Medical Social Worker
    - Occupational Therapist
    - Child, Adolescent and Adult Psychiatrist
2. Provide appropriate equipment and facilities for individuals who are obese (e.g. bariatric chairs and large blood pressure cuffs).
3. Implement the HSE/ICGP Weight Management Treatment Algorithms for Children and Adults so that all individuals who require it have access to a suitable model of care.
4. Record children's height and weight at ages two and five years as per the new GP contract.
5. Support timely data collection to measure the prevalence of overweight/obesity and ensure ongoing population surveillance.
6. Integrate all services for the clinical treatment and management of

overweight/obesity across community, primary and secondary care.

7. Resource and promote necessary support services outside primary care including:
    - Self Help Peer support groups
    - GP exercise referral
    - Weight management support by phone and video conference with qualified health professionals
    - Physical Activity Specialist
    - Workplace wellbeing initiatives
    - Health coach
    - Access to an exercise physiologist.
8. Ensure provision and access to community programmes and services for the management and treatment of overweight/obesity. Evidence for these programmes is evolving and where possible they should be demonstrated to be clinically sound, independently evaluated and delivered by professionals. Successful programmes need to be rolled out nationally.
9. Support evidence-based commercial weight management programmes, particularly those that operate in tandem with the public health system. The state must play a leading role in providing adequate overweight/obesity treatment services to all members of society, including the high burden of overweight/obesity among lower socio-economic groups who may not be able to afford self-funded programmes.
10. Promotion of specialised diets or very low calorie diets (VLCDs) must be carefully considered in individual cases, by health care professionals, to ensure they are utilised appropriately, effectively and safely. They must not be promoted directly to individuals nor should they be used routinely to manage obesity.[27]

7.3.2 Secondary Care

Secondary services need to be closely integrated with primary care, with clear referral and care pathways. A small percentage of complex obesity cases will require referral from primary care to specialist centres for clinical treatment. Individuals with a BMI ≥35 kg m^2 with co-morbidities, or adults with a BMI ≥40 kg m^{-2} are potentially suitable for bariatric surgery according to international standards of best clinical practice.[65,66] Surgery should only be performed after all non-surgical measures have been tried without clinically significant weight loss resulting.

Further development of bariatric services will be required to provide equitable service to all individuals for whom surgery is indicated. The evidence-based multi-disciplinary team model currently used in St Columcille's Hospital, Loughlinstown and University Hospital Galway should be replicated and scaled up. The number of bariatric surgeries across Europe, per million of population, range from Germany (72) to Belgium (928). With approximately 80 surgeries per annum, Ireland's rate is 75% lower than the lowest figures reported to date.[67]The management of patients who are overweight/obese arriving to the Emergency Department with or without related complications for instance Diabetes, Infected Chronic Venous Ulcers, Myocaridal Ischaemia and Stroke deserves particular attention. Management difficulties include assessment and interpretation of vital signs in the acute setting due to inadequate blood pressure cuff sizes, difficulty with venous access, intubation, urinary catheter insertion, and even access to suitable trollies or beds. There are further difficulties around access to diagnostic imaging because of weight restriction with CT and MRI machines.

An ordinal classification system that considers co-morbidity and functional status might be considered given that patients who are obese are presenting with an increasing number of co-morbidities. This would improve the use of resources and help direct individuals to the most suitable model of care. The Edmonton Obesity Staging System could be an appropriate tool for this purpose.

Recommendations for Secondary Care

Develop six specialist weight management centres, one within each HSE Hospital Group throughout the country as a priority, ensuring equity of care regardless of geographical region. Specialist centres must be consultant-led dedicated weight management centres with full multidisciplinary teams modelled on the existing two adult centres, St Columcille's and Galway University Hospital.

1. Resource paediatric weight management teams in each hospital group. Existing childhood obesity interventions such as Temple Street's W82GO Healthy Lifestyle Service must be evaluated and the efficacy and effectiveness of implementation in the community setting assessed.
2. Ensure access to and availability of surgery as a treatment modality for adults through each centre. Every hospital group must have the capacity to prepare and refer individuals for surgery and carry out long term follow up.
3. In adolescents, access to bariatric surgery must be through a single centre, most

likely the National Children's Hospital, with appropriate psychological, paediatric endocrine, dietetic and child and adolescent mental health services (CAMHS) assessment prior to surgery.[53]

4. Ensure effective management of patients who are overweight/obese and provision of appropriate equipment and facilities particularly in Emergency Care. This must include bariatric trolleys and beds, as well as basic equipment such as blood pressure cuffs.
5. There must be equity of access to obesity medication for suitable patients.

7.4 Recommendations for Specific Population Groups

7.4.1 Pre-Pregnancy, Pregnancy and Postnatal

Optimising a woman's pre-pregnancy weight may improve fertility and may prevent pregnancy complications and interventions such as gestational diabetes mellitus (GDM) or caesarean section. At a minimum, information leaflets addressing these issues should be distributed to all female adolescents. A national public information initiative addressing prevention of obesity in pregnancy and the harmful effects of being obese during pregnancy is required similar to the recent Safefood campaigns prevention of childhood obesity.

Many women gain weight post pregnancy especially if they are socially disadvantaged. This is particularly true of women who were overweight at their first antenatal visit. Interventions postpartum may prevent obesity complications in their next pregnancy or metabolic syndrome in later life. Women who are obese are at increased risk of Neural Tube Defects due to folic acid deficiency and ultrasound diagnosis is technically more challenging. It is one of the few preventable congenital anomalies which carry a high burden of morbidity in Ireland.

Recommendations for Pre-Pregnancy, Pregnancy and Postnatal[9]

1. Encourage all women and their partners to have their BMI calculated accurately before they plan their pregnancy. This is best undertaken in primary care. At this time all women who are overweight/obese need to be actively encouraged to manage their weight prior to becoming pregnant and provided with information on folic acid supplementation. Appropriate weight advice is also required for partners.

Advice on nutrition and physical activity during pregnancy is needed and encouragement given to breastfeed.

2. Advise women who are obese to take high dose folic acid for at least three months before conception and for three months after conception if they are trying to conceive or at risk of conceiving.
3. Measure weight and height of all women and their partners at their first antenatal visit. At this time all women must be actively encouraged and supported in breastfeeding and provided with accurate information on healthy weaning practices.
4. Calculate the BMI of all women and their partners postpartum, ideally in a primary care setting during the first primary immunisation visit, with follow up visits to provide opportunities for review and brief interventions.

7.4.2 Infants, Children and Adolescents

It has been clearly shown that obesity tracks from early childhood into adulthood, and that adults who have been obese in childhood have more serious complications than adults who become obese later in life.[21] It is essential that a healthy diet and physical activity patterns are embedded from infancy. The successful treatment and management of obesity in children and adolescents is contingent on management in the home environment for the whole family. Currently, treatment options for children who are obese in Ireland are severely limited. Better access to treatment services for children in community, primary and secondary care needs to be prioritised by all agencies. While regular childhood surveillance of weight and height is essential, evidence on screening for obesity in children is still evolving[68,69] and requires close monitoring. In addition to obesity detection, regular assessment of growth in childhood helps early diagnosis of conditions such as hypothyroidism, coeliac disease, growth hormone deficiency, Turner Syndrome, and provides essential population level data for services planning and delivery.[70]

Recommendations for Infants, Children and Adolescents

1. Encourage healthy infant feeding practices and provide adequate resources to

improve Irish breastfeeding rates.[9]

2. Assess growth of children at age two and five years as per the new GP contract for surveillance and to inform population level interventions. Further growth assessment along with discussion with parents is advised between 5-9 years, 9-11 years and 12-17 years as per recommendations by the American Heart Association and American Academy of Paediatrics.[71]
3. Carry out rigorous evaluation of existing pilot programmes currently targeting children with severe obesity. Evaluation of these pilot programmes will provide valuable evidence of the effectiveness and likely cost of scaling up those and similar interventions.
4. Provide paediatric multidisciplinary expertise in primary and secondary care services throughout the country. The associated costs will be considerably less than the escalating costs of treating the many potentially avoidable complications of obesity, including cardiovascular disease, diabetes and malignancy.
5. Recognise that the issue of weight in young people requires careful and sensitive assessment and monitoring with due regard to the many physical and emotional factors, including Eating Disorders, that can underpin overweight/obesity.

7.4.3 Individuals with Mental Health Problems

From the mental health perspective, the issue of weight has in the past focused predominantly on eating disorders, but there are many significant mental health impacts associated with being overweight/obese. This is true for children and adults. There is a two-way relationship between obesity and mental health: obesity can have a negative effect on mental health and conversely treatment for mental health problems can result in overweight and obesity leading to a vicious cycle.[72,73]

The life expectancy of those with mental illness is up to 30 years less than the general population. This is mainly due to high levels of cardiovascular and other physical illnesses while unemployment, smoking, alcohol excess, obesity and lack of exercise are other key factors.[15] At present international literature suggests that only a quarter to a half to patients with mental health problems have adequate physical health monitoring and assessment. Various small sample reports suggest we are no different in Ireland but we have no national

figures. Internationally, there is emerging evidence that interactive multidisciplinary nutrition and exercise group sessions using recognised cognitive and behavioural techniques are effective in addressing obesity similar to the general population.[74, 75]

Most medications used and necessary in serious mental illness impact on weight and have the potential to impact on physical health. In instances where such medication is prescribed, the risk of becoming overweight should be communicated to the patient and their carer together with healthy lifestyle advice at regular intervals.

Recommendations for Individuals with Mental Health Problems

1. Consider the physical health needs of those with mental health problems at every review and conduct weight monitoring in a structured fashion in accordance with current evidence.[76]
2. Consider the potential for rapid development of obesity as a side effect of certain drugs and the mitigation of those effects, addressing in particular, the immediate period after starting medication as this is the time of greatest weight gain.
3. Provide specific behaviour change programmes addressing healthy eating and increased physical activity using motivational interviewing or similar techniques for individuals with mental illness within primary and community settings. Subsidised exercise or exercise on prescription programmes must be considered.
4. Educate patients with mental illness on weight management. Training in the physical and mental factors in the aetiology and management of overweight/obesity must be provided to all relevant health professionals.
5. Ensure regular improvement in physical health care for people with mental illness is a key component of current mental health policy.

7.4.4 Individuals with Special Needs including Intellectual and Physical Disability

Obesity is a significant and growing public health issue for people with intellectual disability (ID) in Ireland. Despite the wealth of international evidence and the overwhelming consensus across the literature that the prevalence of obesity in adults with intellectual disability has been steadily rising over the last 20 years, with rates similar or higher to the non-ID population[77], there has been very limited action taken to address this major health issue in

Ireland. In the most recent wave of the intellectual disability component of the Irish Longitudinal Study on Ageing (IDS-TILDA), 2 out of 3 adults with ID over 40 years were reported to be overweight or obese[8]. People with ID are just, and in some cases even more, susceptible to the complications of overweight and obesity as others in the population[78]. Health care services mainly focus on the primary disability rather than on the prevention or management of secondary conditions such as overweight and obesity. Health inequalities among people with ID are particularly stark in relation to obesity and physical activity levels[79], with well known gaps in health care services and public health interventions for people with ID[80]. People with ID need to be treated as full and equal citizens with the same, if not greater, needs than the general population.

There is a two way relationship between obesity and physical disability: physical disability may be as a result of neurological conditions, neuromuscular disorders, and conversely obesity can lead to an increased risk of physical disability.[81] Risk factors for developing obesity and issues for managing overweight among people with a disability include changes in body composition, the use of medications and changes in energy expenditure and overall levels of physical activity. In children and adolescents, overweight/obesity can exacerbate complications arising from having a physical disability and further restrict social participation and quality of life.[82]

Recommendations for Individuals with Special Needs including Intellectual and Physical Disability

1. Establish appropriate BMI cut-off values for the subgroups of the population with different physical characteristics, where the standard BMI cut-off values do not apply (e.g. adults with Down syndrome and wheelchair users).
2. Train all health professionals (undergraduate and in-service levels) in contact with people with intellectual or physical disability on lifestyle weight management strategies to particularly focus on their specific needs.
3. Establish alternative methods to measure body composition of those with intellectual or physical disability and integrate those methods into standardised measurement protocols.
4. Ensure all overweight/obesity prevention, treatment and management services are equally accessible and available to people with intellectual or physical disability. Examination and treatment rooms must be accessible to all people with disabilities,

including those who use wheelchairs or mobility aids, to ensure equal access to all citizens. All clinics need to have access to a hoist, wheelchair or hoist scales and adjustable height exam table for the accurate measurement of body composition.

5. Ensure that people with intellectual or physical disability have the same access rates to all future weight and lifestyle-related screening programmes as others in the general population.
6. Educate people with intellectual or physical disability, their families and support staff on healthy lifestyles and risks associated with overweight/obesity specifically tailored to their needs. Ensure health promotion materials on healthy eating, physical activity and public health topics are available in accessible and literacy-friendly formats.
7. Encourage community-based organisations and service providers to work in partnership and build their capacity to promote healthy behaviours and health promotion programmes that are accessible to everyone in the community. A good example of this is the HSE-Special Olympics Ireland-Daughters of Charity Health Promotion Project for people with intellectual disabilities.[83]
8. Support surveillance of overweight/obesity in people with disability that is essential for service planning. The feasibility of collection of BMI data as part of the National Intellectual Disability Database and the National Physical and Sensory Database needs to be explored.

7.4.5 Older People

Ageing into later life poses particular issues in terms of diagnosis and management, including increased inter-individual variability; increasing levels of disability, multi-morbidity and polypharmacy. Other issues specific to older adults with obesity include, but are not limited to ascertainment of adiposity, diagnostic accuracy of obesity, link with adverse outcomes and mortality, focus on quality of life and function, sarcopaenic obesity , weight-loss induced sarcopaenia, osteoporosis and nutritional deficiencies.

Quality of life, an important patient-reported outcome measure, is compromised in adults with obesity (generally), and more so in older adults. This is in addition to the well-known metabolic and cardiovascular impairments observed. Older adults are at higher risk of cognitive impairment which is exacerbated by obesity. Older adults are at risk of developing

'Sarcopenic Obesity' [2] . Such individuals have obesity (irrespective of anthropometric or body measure used) and loss of muscle mass. Individuals in this subgroup are known to be at higher risk of adverse outcomes.

Recommendations for older people

1. Programmes for older people with obesity need to be developed in concert with geriatricians and dieticians with gerontological expertise.
2. Ensure dialogue between specialist service for older people and obesity services to ensure that obesity in later life is managed used a synthesis of best practice from both disciplines.
3. Professionals need to be aware of the limitations of BMI measurement among older adults, and incorporate other anthropometric measures (waist circumference, waist-hip ratio).
4. All services for older people need to be bariatrically-attuned, and obesity services for older people gerontologically-attuned.
5. Access to obesity service should be equitable at all ages.
6. Further research is needed to clarify best practices in Ireland for assessment and management of obesity among older people

[2]" Sarcopenia is an age-associated loss of muscle mass and decline in muscle strength; it is common in older adults and is associated with significant morbidity and mortality. ..Recently, the new concept of sarcopenic obesity has emerged, reflecting a combination of sarcopenia and obesity" https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5094937/

7.5 Education and Training

Obesity prevention and management strategies will not be effective unless we have a unified approach and message across all health professional disciplines.

Recommendations for Education and Training

1. Ensure training and ongoing continuing professional development (CPD) of all health professionals (HPs) in the causes, measurement and treatment of obesity at undergraduate, postgraduate and in-service levels.
2. Encourage professionals involved in disseminating information regarding obesity to use patient-first language and avoid pejorative or accusatory language when discussing obesity with professionals, clients and the general public.
3. Train HPs on how to raise and discuss the issue of overweight/obesity in a non-judgemental and empathetic manner. Ensure that all professionals are trained in evidence-based behaviour change methods such as motivational interviewing.[84]
4. Raise awareness of risk factors of obesity such as the food and physical activity environment as well as genetic and biological determinants of energy balance and satiety. This will lead to reduced obesity stigmatization in health care settings.
5. Train all HPs on basic anthropometric measurements, accurate techniques and equipment.
6. Educate all relevant government department and non-governmental organisational staff on overweight/obesity to increase understanding and improve public health campaign design and delivery.

8. RCPI Policy Group on Obesity's Key Recommendations on Obesity Prevention

The race we don't want to win, Sept 2014

8.1 Recommendations for Public Policy Measures

- Prohibition of TV advertising of foods high in fat, salt and sugar (HFSS) up to 9pm and a ban on marketing of HFSS foods to children.
- Monitoring by government of all approaches to food marketing, sponsorship, and brand management directly or indirectly aimed at children.
- Introduction of a front-of-pack, traffic-light, food labelling system.
- Introduction of a 20 per cent tax on sugar sweetened drinks (SSDs) in budget 2015.
- Consistent application and monitoring of local area planning guidelines on the location of fast food outlets throughout the country.
- Built environment planning that facilitates and encourages people to be physically active including promotion of active travel through planning regulations and guidelines, and continued investment in necessary infrastructure.

8.2 Recommendations for Healthcare, Education and Community Settings

- Adoption of a 'weight aware' ethos in all clinical services.
- Providing a majority (at least 60 per cent) of healthy options in food service facilities in healthcare settings and providing only healthy options in children's units.
- A commitment from schools to allow free play[1] and physical activity in school playgrounds/recreation areas.
- Better provision of healthy food choices in school breakfast clubs, supported by funding, adequate facilities and promotion of nutritional guidelines.
- Use of the profile and influence of sporting organisations and sportspeople in communities to promote physical activity and consumption of healthy, rather than unhealthy, food and drinks.

8.3 Recommendations for Health Professionals

- Record overweight/obesity using the same principles as chronic disease, including recording Body Mass Index (BMI) above the normal range on the medical certificate of cause of death (MCCD).
- Make weight measurement standard practice with each professional contact.
- Provide advice to women and partners on optimising weight prior to pregnancy.
- Encourage women to exercise to a light or moderate level in pregnancy.
- Emphasise the benefits of breastfeeding for the weight of the child.
- Highlight healthy weaning practices with parents.
- Identify and address early instances where mothers are overweight during the years following delivery.
- Monitor growth of all children aged 0-4 years according to the HSE's *Best Health for Children Guidelines.*
- Emphasise the benefits to mental wellbeing of being a healthy weight.
- In managing psychiatric illness, consider the potential for rapid development of obesity as a side effect of certain drugs, communicate the risks to patients and take action to mitigate the effects.

8.4 Recommendations for Training of Health Professionals

- Development of an educational programme in the Royal College of Physicians of Ireland around weight management for all health professionals (including trainers), with the support of a Royal College of Physicians of Ireland lead.
- Establishment of a national multi-disciplinary weight management training group to liaise with undergraduate and postgraduate training bodies to incorporate core elements[1] of weight management training future curricula.
- Establishment of an Advanced Nurse Practitioner (ANP) role in the care of obesity and related diseases (bariatric care).
- Support for obesity research across all disciplines.

We believe that these recommendations will assist in reversing the obesity epidemic and will support the government in achieving *Healthy Ireland* targets in relation to obesity.

References

[1] Foresight (2012) *Tackling Obesities*: Future Choices – Project Report. 2nd Edition.

[2] Royal College of Physicians of Ireland Policy Group on Obesity. *The race we don't want to win – Tackling Ireland's obesity epidemic.* RCPI 2014.

[3] Harrington J, Perry I, Lutomski J, et al. (2008) *SLAN 2007: Survey of Lifestyle, Attitudes and Nutrition in Ireland. Dietary Habits of the Irish Population.* Department of Health and Children Dublin: The Stationery Office.

[4] Greene, S, Williams, J, Layte, R, Doyle, E, Harris, E, McCrory, C, et al. *Growing Up in Ireland. Overweight and Obesity among 9 year olds.* Office of the Minister for Children and Youth Affairs; 2011.

[5] Growing Up in Ireland (2011). *The Health of 3 Year Olds* [Internet]. Available online from: http://www.growingup.ie/fileadmin/user_upload/documents/Conference/2011/Growing_Up_in_Ireland_-_The_Health_of_3-Year-Olds.pdf

[6] Irish Universities Nutrition Alliance (IUNA). *National Adult Nutrition Survey* [Internet]. 2011. Available from: http://www.iuna.net/wp-content/uploads/2010/12/National-Adult-Nutrition-Survey-Summary-Report-March-2011.pdf

[7] TILDA (2014). *Obesity in an Ageing Society: Implications for health, physical function and health service utilisation.* The Irish Longitudinal Study on Ageing. TCD, Dublin.

[8] McCarron M. *et al.* (2014) *Advancing Years, Different Challenges: Wave 2 IDS-TILDA: Findings on the ageing of people with an intellectual disability.* Intellectual Disability Supplement to the Irish Longitudinal Study on Ageing (IDS-TILDA). Dublin: School of Nursing & Midwifery, Trinity College Dublin.

[9] Health Service Executive and Royal College of Physicians of Ireland. Obesity and Pregnancy, clinical practice guideline. 2013, Revision.

[10] HSE (2007). *Mental Health in Ireland: Awareness and Attitudes*. National Office for Suicide Prevention, Dublin 8.

[11] WHO. WHO Modelling Obesity Project - European Congress on Obesity, Prague 2015 [unpublished].

[12] World Health Organisation. Obesity and overweight. WHO. [cited 2014 Jul 28]. Available online at: http://www.who.int/mediacentre/factsheets/fs311/en/

[13] Juonala M et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. N Engl J Med. 2011 Nov 17;365(20):1876-85.

[14] Cole TJ, Flegal KM, Nicholls D, Jackson AA. Body mass index cut offs to define thinness in children and adolescents: international survey. BMJ. 2007 Jul 28;335(7612):194.

[15] Crawford MJ et al. Assessment and treatment of physical health problems among people with schizophrenia: national cross-sectional study. British Journal of Psychiatry (2014) 205, 473-477.

[16] Department of Health UK (2011) *No Health Without Mental Health: A Cross-Government Mental Health Outcomes Strategy for People of All Ages.* Available online at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213761/ dh_124058.pdf

[17] Doody CM, Doody O. Health promotion for people with intellectual disability and obesity. Br J Nurs 2012 Apr 26-May 9;21(8):460, 462-5.

[18] Kleinert S, Horton R. Rethinking and reframing obesity. The Lancet. Feb 18, 2015. Available online at: http://dx.doi.org/10.1016/S0140-6736(15)60163-5

[19] Safefood (2012) *The cost of overweight and obesity on the island of Ireland*. Safefood, Cork.

[20] Keaver L, Webber L, Dee A, Shiely F, Marsh T, Balanda K, et al. *Application of the UK Foresight Obesity Model in Ireland: The Health and Economic Consequences of Projected Obesity Trends in Ireland.* PLoS ONE. 2013;8(11):e79827.

[21] Hoey, H. *Management of obesity in children different from that of adults.*

[22] Department of Health and Children (2012). Healthy Ireland- A Framework for Improved Health and Wellbeing 2013-2015. DoHC, Dublin.

[23] Department of Health and Children. *Tackling Chronic Disease: A Policy Framework for the Management of Chronic Disease.* DOCH 2011

[24] National Taskforce on Obesity. *The Policy Challenges: The Report of the National Taskforce on Obesity.* 2005

[25] Kuk JL, Ardern CI. Influence of age on the association between various measures of obesity and all-cause mortality. J Am Geriatr Soc. 2009 Nov;57(11):2077-84. doi: 10.1111/j.1532-5415.2009.02486.x. Epub 2009 Sep 15. PubMed PMID: 19754497.

[26] Flegal KM, Kit BK, Orpana H, Graubard BI. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. JAMA. 2013 Jan 2;309(1):71-82. doi: 10.1001/jama.2012.113905. Review. PubMed PMID: 23280227;

[27] Flegal KM, Graubard BI, Williamson DF, Gail MH. Excess deaths associated with underweight, overweight, and obesity. JAMA. 2005 Apr 20;293(15):1861-7. PubMed PMID: 15840860.

[28] Batsis JA, Gill LE, Masutani RK, Adachi-Mejia AM, Blunt HB, Bagley PJ, Lopez-Jimenez F, Bartels SJ. Weight Loss Interventions in Older Adults with Obesity: A Systematic Review of Randomized Controlled Trials Since 2005. J Am Geriatr Soc. 2017 Feb;65(2):257-268. doi: 10.1111/jgs.14514. Epub 2016 Sep 19. PubMed PMID: 2764154

[29] World Health Organisation. Commission on Ending Childhood Obesity. Available to view online at: http://www.who.int/end-childhood-obesity/en/

[30] National Clinical Guidelines Centre (2014). Obesity: Identification, assessment and management of overweight and obesity in children, young people and adults. NICE, London.

[31] Irish Nutrition and Dietetic Institute. *Optimal Approaches to Adult Weight Management by Dietitians in Ireland: Exploring the Options. INDI 2013.*

[32] Harrington J, Perry I, Lutomski J, et al. (2008) SLAN 2007: Survey of Lifestyle, Attitudes and Nutrition in Ireland. Dietary Habits of the Irish Population. Department of Health and Children Dublin: The Stationery Office.

[33] Burke, Sara et al. Indicators of health system coverage and activity in Ireland during the economic crisis 2008–2014 – From 'more with less' to 'less with less'. Health Policy, Volume 117, Issue 3, 275-278.

[34] Loveman E, Frampton GK, Shepherd J, Picot J, Cooper K, Bryant J, *et al*. The clinical effectiveness and cost-effectiveness of long-term weight management schemes for adults: a systematic review. *Health Technol Assess*2011;**15**(2).

[35] Weight Management Interest Group of the Irish Nutrition and Dietetic Institute (2015). *Optimal Approaches to Adult Weight Management Services in Ireland. Available online at* https://www.indi.ie

[36] Dietitians of Canada. A Systematic Review of the Effectiveness of Nutrition Counselling Interventions by Dietitians 2009.

[37] Knowler WC, Barrett-Connor E, Fowler SE, et al. (2002) Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med 346: 393-403.

[38] Clark AM, Hartling L, Vandermeer B, McAlister FA (2005) Meta-analysis: secondary prevention programs for patients with coronary artery disease. Ann Intern Med 143: 659-672.

[39] Batsis JA, Gill LE, Masutani RK, Adachi-Mejia AM, Blunt HB, Bagley PJ, Lopez-Jimenez F, Bartels SJ. Weight Loss Interventions in Older Adults with Obesity: A Systematic Review of Randomized Controlled Trials Since 2005. J Am Geriatr Soc. 2017 Feb;65(2):257-268. doi: 10.1111/jgs.14514. Epub 2016 Sep 19. PubMed PMID: 27641543

[40] Green et al. American Journal of Psychiatry 2015; 172: 71-81, Bartels, Editorial American Journal of Psychiatry 2015; 172: 9-11.

[41] McCormack et al. (2013) *Managing Physical Health in Mental Health Populations*. Irish Medical Journal; 106: 101-102

[42] Jolly K et al. Comparison of range of commercial or primary care led weight reduction programmes with minimal intervention control for weight loss in obesity: Lighten Up randomised controlled trial. *BMJ* 2011;343:d6500.

[43] Counterweight Project Team. The implementation of the Counterweight Programme in Scotland, UK. *Family Practice* 2012; 29;i139-i144

[44] O'Malley G, Clarke M, Burls A, Murphy S, Murphy N, Perry IJ. A smartphone intervention for adolescent obesity: study protocol for a randomised controlled non-inferiority trial. Trials. 2014 Jan 31;15:43. doi: 10.1186/1745-6215-15-43.

[45] Shaw et al (2009) *Exercise for overweight and obesity* (Review). The Cochrane Collaboration

[46] Khera R, Murad MH, Chandar AK, Dulai PS, Wang Z, Prokop LJ, Loomba R, Camilleri M, Singh S. Association of Pharmacological Treatments for Obesity With Weight Loss and Adverse Events: A Systematic Review and Meta-analysis. JAMA. 2016 Jun 14;315(22):2424-34. doi: 10.1001/jama.2016.7602. Review. Erratum in: JAMA. 2016 Sep 6;316(9):995.

[47] Picot J, Jones J, Colquitt JL, Gospodarevskaya E, Loveman E, Baxter L, *et al*. The clinical effectiveness and cost-effectiveness of bariatric (weight loss) surgery for obesity: a systematic review and economic evaluation *Health Technol Assess* 2009;**13**(41).

[48] Smith FM, Gallagher H, O'Connell J, O'Shea D, Geogheghan J. Laparoscopic bariatric surgery for morbid obesity: the first hundred cases in an Irish centre. *Irish Journal of Medical Science 2010; 179 (1), 17-22.*

[49] Network SIG (2010) Guideline 115: Management of obesity.

[50] Sjostrom L, Narbro K, Sjostrom CD, et al. (2007) *Effects of bariatric surgery on mortality in Swedish obese subjects.* N Engl J Med 357: 741-752.

[51] Schauer PR, Kashyap SR, Wolski K, et al. (2012) *Bariatric surgery versus intensive medical therapy in obese patients with diabetes.* N Engl J Med 366: 1567-1576.

[52] Office of Health Economics U. *Shedding the Pounds: Obesity Management*, NICE Guidance and Bariatric Surgery in England 2010.

[53] Karlsson J, Taft C, Rydén A, Sjöström L, Sullivan M (2007) *Ten-year trends in health-related quality of life after surgical and conventional treatment for severe obesity: the SOS intervention study.* Int J Obes (Lond) 31: 1248-1261.

[54] Buchwald H, Williams SE (2004) *Bariatric surgery worldwide 2003*. Obes Surg 14: 1157-1164.

[55] Buchwald H, Avidor Y, Braunwald E, et al. (2004) *Bariatric surgery: a systematic review and meta-analysis.* Jama 292: 1724-1737.

[56] Buchwald H, Estok R, Fahrbach K, et al. (2009) *Weight and type 2 diabetes after bariatric surgery: systematic review and meta-analysis.* The American journal of medicine 122: 248-256. e245.

[57] Irish Nutrition & Dietetic Institute. *INDI Vision for Childhood Obesity Policy and Services in Ireland*. INDI, 2013. Available online at https://www.indi.ie/images/INDI_Childhood_Obesity_Vision_PolicyServices_FINAL150413_1.pdf

[58] Swinburn, B.A. et al (2011) *The global obesity pandemic: shaped by global drivers and local environments*, Lancet, 378:804-14.

[59] National Institute for Health and Clinical Excellence (2014a). *Obesity: identification, assessment and management of overweight and obesity in children, young people and adults.* Available online at: http://www.nice.org.uk/guidance/cg189.

[60] Keane et al. *Trends and prevalence of overweight and obesity in primary school aged children in the Republic of Ireland from 2002-2012: a systematic review.* BMC Public Health 2014, 14:974 Page 2 of 15. Available online at http://www.biomedcentral.com/1471-2458/14/974

[61] Growing Up in Ireland: National Longitudinal Study of Children. *Overweight and Obesity among 9 year olds.* DCYA*,* 2011.

[62] HSE Hip Replacement. Available online at http://www.hse.ie/portal/eng/health/az/H/Hip-replacement/

[63] HSE Knee Replacement. Available online at http://www.hse.ie/eng/health/az/K/Knee- replacement/

[64] O Shea B, Ladewig E, Kelly A, Reulbach U, O'Dowd T. *Weighing children; parents agree, but GPs conflicted.* Arch Dis Child. 2014 Jun;99(6):543-5. doi: 10.1136/archdischild-2013- 304090. Epub 2014 Jan 15.

[65] CG43 Ncg (2006) *Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children*.

[66] ASMBS (2012) *Updated position statement on sleeve gastrectomy as a bariatric procedure.* Surg Obes Relat Dis 8: e21-26

[67] Borisenko O, et al. *Clinical Indications, Utilization, and Funding of Bariatric Surgery in Europe.* OBES SURG (2015) 25:1408-1416

[68] Wake M, Baur LA, Gerner B et al*. Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial.* BMJ 2009; 339: b3308

[69] Westwood M, Fayter D, Hartley S, Rithalia A. *Childhood obesity: should primary school children be routinely screened? A systematic review and discussion of the evidence.* Arch Dis Child. 2007 May; 92(5): 416–422.

[70] Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents Summary Report. Pediatrics 2011. 128 Suppl 5; S213-256.

[71] Juonala M et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. N Engl J Med. 2011 Nov 17;365(20):1876-85.

[72] Scott KM, McGee MA, Wells JE, Oakley Browne MA. Obesity and mental disorders in the adult general population. J Psychosom Res. 2008 Jan;64(1):97-105.

[73] Rivenes AC, Harvey SB, Mykletun A. The relationship between abdominal fat, obesity, and common mental disorders: results from the HUNT study. J Psychosom Res. 2009 Apr;66(4):269-75. doi: 10.1016/j.jpsychores.2008.07.012. Epub 2008 Dec 16.

[74] American Journal of Psychiatry January 2015 Editorial 'Can Behavioural Health Organizations Change Health Behaviours? The STRIDE Study and Lifestyle Interventions for Obesity in Serious Mental Illness', Vol 172; Number 1: pg 9.

[75] Greene et al . American Journal of Psychiatry January 2015 'The STRIDE Weight Loss and Lifestyle Intervention for Individuals Taking Antipsychotic Medications: A Randomised Trial' Vol 172; Number 1: pg 71.

[76] Shiers DE, Rafi I, Cooper SJ, Holt RIG. 2014 update (with acknowledgement to the late Helen Lester for her contribution to the original 2012 version) Positive Cardiometabolic Health Resource: an intervention framework for patients with psychosis and schizophrenia. 2014 update. Royal College of Psychiatrists, London.

[77] Emerson E. (2005) *Underweight, obesity and physical activity in adults with intellectual disability in supported accommodation in Northern England*. J Intellect Disabil Res 2005 49:134-143.

[78] Lindsay P. (2011) *Care of the Adult with Intellectual Disability in Primary Care.* London: Radcliffe Publishing Ltd. 1st New Edition.

[79] Robertson J., Emerson E., Baines S., & Hatton C. (2014) Obesity and health behaviours of British adults with self-reported intellectual impairments: cross sectional survey. *BMC Public Health* **14**(1), 1-7.

[80] Lorentzen B. & Wikstrom B.M. (2012) Healthy lifestyles for people with intellectual disabilities through a health intervention program. *Open Journal of Nursing* **2:**157-164.

[81] Public Health England (2013). Obesity and Disability.

[82] Reinehr T, Dobe M, Winkel K, Schaefer A, Hoffman D. (2010). *Obesity in Disabled Children and Adolescents: an overlooked group of patients.* DEUTsches Arzteblatt International, 107(15), 268.

[83] HSE/Special Olympics Ireland (2012). *The Development and Evaluation of a Health Promotion Programme for People with Intellectual Disabilities.* Available online at: https://www.specialolympics.ie/Portals/0/public_documents/Health/Health_Promo_Web. pdf

[84] National Institute for Health and Clinical Excellence (2014b). Behavioural Change: Individual Approaches. Available online at: http://www.nice.org.uk/guidance/ph49.

Weight Management Treatment Algorithm

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

icgp

A Quick Reference Guide For Primary Care Staff

(See www.icgp.ie/weightmanagement or www.hse.ie for additional online resources)

Raising the issue

- *"I haven't checked your weight & height in a while. I can check it today as part of your check up? "*
- *"Do you think your weight (or general lifestyle) may be contributing to your back pain/fertility problem/ arthritis/reflux/diabetes/BP?"*

If patient agrees to engage proceed to assessment or arrange next appointment. The exercise & food diary could be given at this stage. (www.icgp.ie/weightmanagement)

If patient is not keen to engage do not push the issue but offer to revisit it at a later date.

Initial assessment

- BMI 18.5 – 25.0 reassure and advise re ongoing self-monitoring. (If BMI < 18.5 consider appropriate referral)
- BMI 25.0 – 40.0
  - Assess readiness to change
  - Assess patient's expectation & agree realistic target weight loss of 5 – 10% over 6 months.
- Show patient the category they are in on BMI chart (www.icgp.ie/weightmanagement).
- Advise of benefits of 10% weight loss
- Advise patient to keep a food & exercise diary for 4 days (www.icgp.ie/weightmanagement)
- BMI > 40 proceed with above and arrange referral to hospital based weight management service. (www.icgp.ie/weightmanagement)

Benefits of a 10% loss in presenting body weight

- 37% reduction in cancer deaths
- 20% reduction in all cause mortality,
- 40% reduction in diabetes related mortality
- 10mmHg reduction in systolic BP
- Improved lipid profile
- Improved fertility
- Improved mood & self-confidence

> ***"Stress that "obesity" is a clinical term with health implications, rather than a question of how one looks."***

Relevant History

- Medical history – relevant co-morbidities: diabetes, cardiovascular disease, cancer, operative history, PCOS, GORD, sleep apnoea, sub fertility, back pain, osteoarthritis, depression, medications & family history.
- Weight history (onset & progression of weight gain, peak weight)
- Dieting history (previous attempts, what diets, what worked, lowest weight achieved, reason for regaining weight)
- Physical activity history: objectify time spent (minutes per week); walk/cycle including transport to work (walk, cycle Vs car), leisure exercise (swim, golf, walk dog, etc.)
- Physical inactivity history: objectify time spent (minutes per week); watching TV & computer, in car, prolonged sedentary periods.
- Food intake i.e. home cooked/processed/take away, high carbohydrates/fats/sugar/salt, portion sizes, snacks, alcohol, supermarket habits – multipacks of bars/crisps etc.
- Psychological history – history of depression, anxiety or eating disorders. (See www.icgp.ie/weightmanagement for screening tools)

Physical Activity (P.A.) Guidelines
www.getirelandactive.ie

Get Ireland Active
Promoting Physical Activity in Ireland

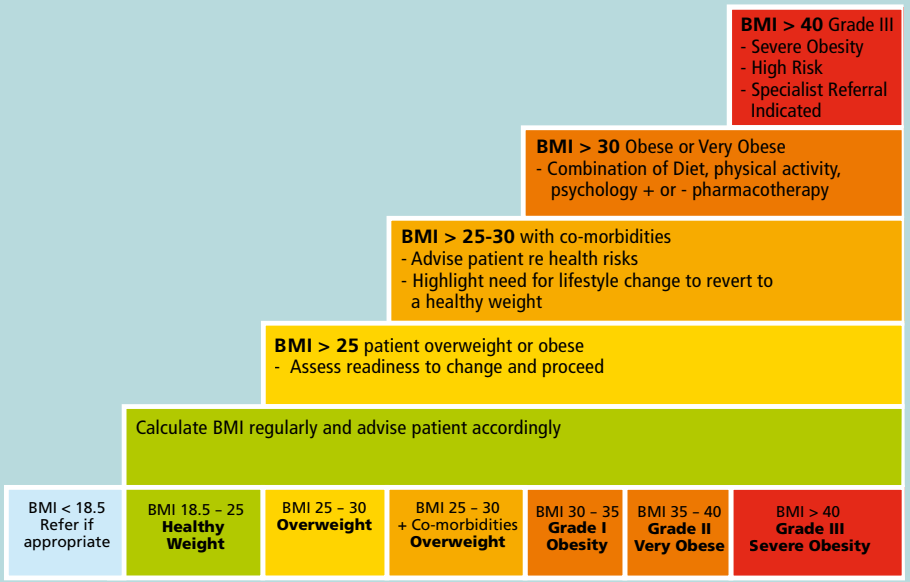
Suggest starting with **small, regular, planned** bouts of P.A. (10 minutes or less). Build to target time over months.

Weight maintenance

- Suggest 30 – 60 minutes moderate intensity P.A. between 5 to 7 days a week (> 150 mins per week)
- 60 minutes of moderate or 30 minutes of vigorous activity per day
- This can be broken up into smaller cumulative blocks (e.g. 15 mins x 5, 25 mins x 3, 35 mins x 2)

To lose weight

- Suggest 60 – 75 minutes of moderate intensity P.A. per day between 5 to 7 days a week (> 250 mins per week)



> ***Stress that consistent weight loss of 0.5 -1kg (1-2lbs) per week will result in reaching the target weight of 10% weight loss.***

Subsequent visits / referral options

- Recheck BMI and assess trend
- Assess the food & exercise diary - identify & agree areas for improvement (www.icgp.ie/weightmanagement). Reset target.
- Explore any contributing factors i.e. medical & social, family & environmental factors.
- Consider referral to a Dietitian, Physiotherapist/Physical Activity Specialist or Psychologist. Referrals where possible should be within the Primary Care Team/Network to maximize multidisciplinary management.
- Refer to the GP Exercise Referral Programme/Green Prescription, if available in your area, or advise re regular, planned exercise. Emphasise self-monitoring of time involved (minutes per week). Use Physical Activity Diary. (www.icgp.ie/weightmanagement)
- Reweigh & explain that weight loss may be slow (or absent) in initial weeks but persistence will achieve results. Explore reasons for lack of weight loss.
- Consider referral to commercial, self-help & community organisations e.g. Weight Watchers & Unislim, as well as the online resource www.safefood.eu/weigh2live all of which are evidence based.
- Agree regular follow up – ideally every 4 weeks.
- Once 10% weight loss is achieved encourage weight maintenance for 6 months
- Consider other options e.g. pharmacotherapy (see box), bariatric surgery (hospital referral for BMI >40) (www.icgp.ie/weightmanagement)

Pharmacotherapy

Only one agent is currently licensed for the treatment of obesity – Orlistat. It is hoped that other agents will become available soon.

Orlistat

- Prescribe only as part of an overall plan for managing obesity in adults who have:
  - BMI of 28.0 kg/m2 or more with associated risk factors,
    Or
  - BMI of 30.0 kg/m2 or more.
- Continue treatment for longer than 3 months only if the person has lost at least 5% of their initial body weight since starting drug treatment (less strict with type 2 diabetics).
- Continue for longer than 12 months (usually for weight maintenance) only after discussing potential benefits and limitations with the patient.

Contraceptive renewal

- Advise patient that oestrogen containing contraceptives are not advised with BMI > 39 due to increased CV & thromboembolic risk.
- For BMI 30 – 39 advise patient of importance of weight loss, both for reduced cardiovascular risk and improved fertility.
- Consider alternatives & record.

Weight Management Treatment Algorithm for Children

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

icgp

A Quick Reference Guide For Primary Care

(See www.icgp.ie/weightmanagement or www.hse.ie for the Weight Management Treatment Algorithms for both Adults and Children, an adult BMI chart plus additional support online resources.)

SCHOOL NURSE/PHN

- Measure child in junior infants (calculate BMI and BMI percentile or BMI z score (see definition overleaf) if concern re extreme obesity.

Use the new UK-WHO chart for children up to 4 years

Use the UK90 Growth Foundation Chart or the UK 2-18 charts, which are based on similar data for 4yrs+ (until Irish ones are developed or a change in national policy is agreed)

http://www.rcpch.ac.uk/child-health/research-projects/uk-who-growth-charts/uk-who-growth-charts-resources/uk-who-0-4-years/uk-who-0

http://www.rcpch.ac.uk/child-health/research-projects/uk-who-growth-charts/uk-growth-chart-resources-2-18-years/uk-2-18-yea

NORMAL WEIGHT

- Letter/talk to parents relaying measurement result with other findings/ school medical check results, if applicable *(e.g. hearing and eye test)*

OVERWEIGHT / OBESE

- Telephone parents and invite them in for appointment with the School Nurse/PHN to discuss results *(non judgmental)* explore related factors and agree action plan. Nurse trained in giving info

G.P.

Opportunistic discussion and measurement when and if deemed appropriate

- Child assessment and family history
- Stratification of risk as per criteria overleaf
- Identify concerns

(See Over for tips on how to raise the issue)

SENIOR MEDICAL OFFICER (SMOs/MOs)

- Child assessment and family history
- Stratification of risk as per criteria overleaf
- Identify concerns
- Letter to GP to update

NORMAL WEIGHT

- Congratulate parents and encourage continuation of current practice. Include copy of the Physical Activity Guidelines – *(At least 60 mins of moderate intensity P.A. every day)* + Nutrition pack and/or refer to online resources

OVERWEIGHT/OBESE

OVERWEIGHT 91ST PERCENTILE BMI

- School Nurse/PHN initiates plan for child
- Parents/GP can liaise with School Nurse/ PHN re plan for child

If concerns identified

OBESE 98TH PERCENTILE BMI

- GP/SMO Uses OSCA* Guidelines to determine if referral to Paediatrician is needed. *(See over)*

www.littlesteps.eu

Get Ireland Active – Promoting Physical Activity in Ireland

www.getirelandactive.ie

www.eatsmartmovemore.ie/pdfs/eat_smart_move_more.pdf

COMMUNITY MULTI-DISCIPLINARY WEIGHT MANAGEMENT PROGRAMME/PRIMARY CARE TEAM

- Give the parent and child information on how to reduce daily calorie intake and reduce sedentary behaviour by:
  - cutting out treats high in fat, sugar and salt
  - no eating in front of TV
  - aiming for 3 healthy meals a day
  - reducing portion sizes if appropriate
  - reduce screen time to < 2 hours a day
  - increasing daily physical activity
- Refer to Dietitian/Physiotherapist or other specialist members of the Community Weight Management Team where available
- Monitor progress and review in 3-6 months

AIM: Weight Maintenance in the growing child

SUCCESS

NO SUCCESS

NO

YES

PAEDIATRICIAN

* **OSCA** = Obesity Services for Children and Adolescents

SPEAKING TO A CHILD ABOUT THEIR WEIGHT

- Don't have a "big talk" with them about it.
- Instead, look out for a good opportunity to discuss e.g. if they are struggling in P.E. classes, are left out of a group activity, are out of breath easily, are teased because of their weight.
- The easiest way to approach the subject is to ask them what is happening, how it makes them feel and why they think it is happening. Ask them to describe a typical day.
- Focus on the behaviours that have led to their weight gain.
- Highlight that these are behaviours, and behaviour can be changed.
- Be empathetic and try to understand how they are feeling.
- Highlight all the positive aspects of being a healthy weight – not just physical

Be careful not to assume you know how the child is feeling – make sure that you ask them if they would like your support and how they would like you to help.

SPEAKING TO PARENTS ABOUT THEIR CHILD'S WEIGHT

There are common worries about speaking to a parent about their child's weight but they shouldn't be a reason to stop you from talking to them. The key is to build up a positive relationship with the parent. If you do not have a good relationship with the parent then you are most likely not the right person to be raising the issue with them.

In speaking to children and parents about weight issues you shouldn't actually be doing a lot of the talking. They should. It is their opportunity for someone to listen to their concerns. It is imperative that:

- you are realistic and explain that long term changes need to be made regarding the child's diet and lifestyle, and that returning to a healthy weight will be a slow process.
- if you are unsure how to answer their questions then be honest about this, but offer to help them find out by signposting them to the right service/ programme/online supports for their family. (see overleaf)

IF THEY DON'T WISH TO ENGAGE

If the parent and/or child choose not to acknowledge that there is a weight issue or don't want to discuss it you must:

- respect their wishes.
- do not ask any more questions.
- let them know you are there if they would like to speak to you at any point.
- offer them the opportunity to speak to another Healthcare Professional e.g. practice nurse etc.

However clinical judgement and duty of care may override the above depending on degree of obesity and/or risk of comorbidities

ASSESSMENT AND CLASSIFICATION OF OVERWEIGHT AND OBESITY IN CHILDREN

Determine degree of overweight or obesity

- Measure weight and height, particularly if weight may be a factor in the reason they made the appointment.
- Use BMI; relate to UK 1990 BMI charts (for 4yrs+) to give age and gender specific information. (See over for web link)
- Discuss with the child and family.

Consider intervention or assessment

- Consider tailored clinical intervention if overweight with BMI at 91st centile or above.
- Consider assessing for comorbidities if obese with BMI at 98th centile or above.

Assess lifestyle, comorbidities and willingness to change, including:

- presenting symptoms and underlying cause of overweight or obesity.
- willingness and motivation to change.
- comorbidities (such as hypertension, hyperinsulinaemia, dyslipidaemia, type 2 diabetes, psychosocial dysfunction and exacerbation of asthma) and risk factors.
- psychosocial distress such as low self-esteem, teasing and bullying.
- family history of overweight and obesity and comorbidities.
- lifestyle – diet and physical activity
- environmental, social and family factors that may contribute to overweight and obesity and the success of treatment.
- growth and pubertal status.

Source: Adapted from National Institute for Health and Clinical Excellence (NICE), 2006

Note:
The GP/SMO should refer to a Paediatrician if Specific Concerns or if:

1. Extreme obesity (See below)

   or

2. BMI> 98th centile

   and

   A child or family is seeking help/ treatment PLUS one or more of the following risk factors

   For current or future morbidity.....

   (A) Pathology

   * Short stature for genetic potential/parents
   * Dysmorphic features
   * Learning difficulties

   OR

   (B) Future morbidity or risk factors

   * Adverse family history
   * Symptoms/signs from clinical assessment
   * Abnormalities on investigation

Definitions of extreme Obesity (BMI)

Years	Male (BMI)	Female (BMI)
2 yrs	22.7	22.7
5 yrs	22	23.5
10yrs	32	33
15yrs	38	38
18yrs	40	40

Source: OSCA Consensus statement on the assessment of obese children & adolescents for paediatricians. (For additional information if required see http://ep.bmj.com/content/97/3/98.full)

Body Mass Index z-scores:

Body mass index z-scores, also called BMI standard deviation (S.D.) scores, are measures of relative weight adjusted for child age and sex.

Source: Must A, Anderson S E. Body mass index in children and adolescents: considerations for population-based applications. International Journal of Obesity 2006 30, 590-594.doi:10.1038/sj.ijo.0803300

BMI z scores are used here to identify those with extreme obesity which is considered >/ = 3.5 Standard Deviations (SDs) and broadly corresponds to the values shown in the table above. Obesity is defined as > 98th percentile. The Z score gives an indication of how much above the 98th percentile the child is.

See **http://www.phsim.man.ac.uk/SDSCalculator/**

For an SDS Individual Calculator for British 1990 Growth Reference Data.

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