Treatment of Pediatric Obesity

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Objectives

- Be able to list the current guidelines’ recommendations regarding **lifestyle modifications that** patients will need to implement in order to **promote a decrease in BMI**
- Be able to identify when patients are **good candidates for pharmacotherapy and/or bariatric surgery**.
Why Treat Obesity?

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Improvement After Weight Loss</th>
<th>First Author, Year (Ref)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2DM</td>
<td>Yes</td>
<td>Cohen, 2012 (132); Mingrone, 2012 (133)*; Schauer, 2012 (134); Buchwald, 2009 (135)</td>
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<tr>
<td>Hypertension</td>
<td>Yes</td>
<td>Ilane-Parikka, 2008 (136); Phelan, 2007 (137); Zanella, 2006 (138)</td>
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<td>Dyslipidemia and metabolic syndrome</td>
<td>Yes</td>
<td>Ilane-Parikka, 2008 (136); Phelan, 2007 (137); Zanella, 2006 (138)</td>
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<tr>
<td>Cardiovascular disease</td>
<td>Yes</td>
<td>Wannamethee, 2005 (139)</td>
</tr>
<tr>
<td>NAFLD</td>
<td>Variable outcomes</td>
<td>Andersen, 1991 (140); Huang, 2005 (141); Palmer, 1990 (142); Ueno, 1997 (143)</td>
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<td>Osteoarthritis</td>
<td>Yes</td>
<td>Christensen, 2007 (144); Fransen, 2004 (145); Huang, 2000 (146); Messier, 2004 (147); van Gool, 2005 (148)</td>
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<tr>
<td>Cancer</td>
<td>Yes</td>
<td>Adams, 2009 (149); Sjöström, 2009 (150)</td>
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<tr>
<td>Major depression</td>
<td>Insufficient evidence</td>
<td>Kuna, 2013 (151)</td>
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<tr>
<td>Sleep apnea</td>
<td>Yes</td>
<td></td>
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</tbody>
</table>

Abbreviation: NAFLD, nonalcoholic fatty liver disease.

* This study showed that weight gain within the normal-weight BMI category (i.e., increase from 23 to 25 kg/m²) increases risk of T2DM 4-fold.

Primary Emphasis of Treatment Should be . . .

- Prevention
- Prevention
- Prevention
Recommendations for the Prevention of Obesity

- Clinicians promote and participate in the ongoing healthy dietary and activity education

- Prescribe and support healthy eating habits
  - Avoid calorie-dense, nutrient-poor foods (SSBs, fast foods, those with added sugar, HFCS, high-fat or high-sodium foods, & calorie-dense snacks)
  - Whole fruits, not fruit juice

Recommendations for the Prevention of Obesity

- At least 20 minutes, optimally 60 minutes of vigorous physical activity at least 5 days per week
- Balance unavoidable technology-related screen time with increased opportunities for physical activity.
- Obesity prevention efforts should enlist the entire family rather than only the individual patient
- Foster healthy sleep patterns

Recommendations for the Prevention of Obesity

- Clinicians to assess family function and make appropriate referrals to address family stressors
- Use school-based programs and community engagement in pediatric obesity prevention
- Use comprehensive behavior-changing interventions
  - Should be integrated with school- or community-based programs to reach the widest audience
- Suggest breast-feeding for the prevention of obesity

Staged Treatment of Obesity

**Prevention Plus**
- Primary Care Office
- Basic Healthy Behaviors
- 5, 2, 1, 0 rule

**Structured Weight Management**
- Primary care office with support
- Dietician evaluation
- Monthly visits working on behavior change and motivational interviewing

**Comprehensive Multidisciplinary Intervention**
- Weekly structured intervention for 8-12 weeks by an experienced team
- Family involvement, supervised activity
- Negative energy balance through diet and exercise
- May include medication management, meal replacements

**Tertiary Care Intervention**
- Tertiary care center with designed protocol
- May include meal replacements, weight loss medications
- May include weight loss surgery

Treatment Recommendations

- Prescribe and support intensive, age-appropriate, culturally sensitive, family-centered lifestyle modifications (dietary, physical activity, behavioral) to promote a decrease in BMI
- Reduce saturated dietary fat intake for children and adolescents >2 yo
- Dietary fiber, fruits, and vegetables
- Timely, regular meals and avoid grazing

Treatment Recommendations

- Probe for and diagnose unhealthy intrafamily communication patterns and support rearing patterns that seek to enhance the child’s or adolescent’s self-esteem.

- Limit nonacademic screen time to 1-2 hours per day.

- Identify maladaptive rearing patterns related to diet and activity and educate families about healthy food and exercise habits.

- Recognize eating cues such as boredom, stress, loneliness, or screen time.
Treatment Recommendations

- Evaluate for psychosocial comorbidities and prescribe assessment and counseling when psychosocial problems are suspected.

- Portion control education.
Pharmacotherapy for Obesity/Overweight

- Suggest use only after a formal program of intensive lifestyle modification has failed to limit weight gain or to ameliorate comorbidities.

- We recommend against using obesity medications in those <16 years of age who are overweight but not obese, except in the context of clinical trials.
Pharmacotherapy for Obesity/Overweight

- FDA–approved drugs for obesity be administered only with a concomitant lifestyle modification program of the highest intensity available **AND** only by clinicians who are experienced in the use of anti-obesity agents and are aware of the potential for adverse reactions.

- Discontinue and reevaluate if there is not a >4% BMI/BMI z score reduction after taking antiobesity medication for 12 weeks at the medication’s full dosage.
Pharmacotherapy for Obesity/Overweight

- Orlistat
- Metformin
- Phentermine +/- topapiramate
- GH (Somatropin)
- Octreotide
- Liraglutide or exenatide
- Leptin
Bariatric Surgery

- Surgery
- Pharmacotherapy
- Lifestyle Modification
Requirements for Bariatric Surgery

- Must attain Tanner 4 or 5 pubertal development and final or near-final adult height,
- Has a BMI of >40 kg/m² or has a BMI of >35 kg/m² and significant, extreme comorbidities
- Extreme obesity and comorbidities persist despite compliance with a formal program of lifestyle modification, with or without pharmacotherapy
- The patient demonstrates the ability to adhere to the principles of healthy dietary and activity habits
Requirements for Bariatric Surgery

- **Psychological evaluation** confirms the stability and competence of the family unit.

- There is access to an **experienced surgeon** in a pediatric bariatric surgery center of excellence that provides the necessary infrastructure for patient care, **including a team capable of long-term follow-up** of the metabolic and psychosocial needs of the patient and family.
Requirements for Bariatric Surgery

- The Endocrine Society Clinical Practice Guideline suggest **against bariatric** surgery in preadolescent children, pregnant or breast-feeding adolescents (and those planning to become pregnant within 2 years of surgery), and **in any patient who has not mastered the principles of healthy dietary and activity habits** and/or has an unresolved substance abuse, eating disorder, or untreated psychiatric disorder.
Comorbidity Reduction After Bariatric Surgery

- Migraines: 57% resolved
- Pseudotumor cerebri: 96% resolved
- Dyslipidemia, hypercholesterolemia: 63% resolved
- Non-alcoholic fatty liver disease: 90% improved, 37% resolution
- Asthma: 82% improved or resolved
- Cardiovascular disease: 62% risk reduction
- Hypertension: 52-62% resolved
- GERD: 72-98% resolved
- Stress urinary incontinence: 44-88% resolved
- Degenerative joint disease: 41-76% resolved
- Poly cystic ovarian syndrome: 79% resolution of hirsutism, 100% resolution of menstrual dysfunction
- Venous stasis disease: 95% resolved
- Gout: 72% resolved

Quality of life improved in 85% of patients

Mortality: 89% reduction in 5-year mortality

Putting It All Together
Management of the Infant with Obesity: 0 to 24 months

- No screen time
- No TV in bedroom
- Allow infant to feed themselves
- Do not force/finish foods when infant indicating refusal
- 12-18 Hours of sleep

Intake
- Exclusive breastfeeding for 6-12 months
- Appropriate formula feeding ingestion for age
- Delay complementary foods until 6 months
- No juice/sugar sweetened beverages
- No fast food
- No desserts

Activity
- Keep active in playpen/floor
- Encourage direct interaction with parents as much as possible
- No media

Behavior and Sleep
- Do not force/finish foods when infant indicating refusal
- 12-18 Hours of sleep

Reference/s: [3] [8] [9] [10]
Management of the Toddler with Obesity: 2 to 4 years

- **Routine sleep pattern**
- **No TV in bedroom**
- 11-14 hours of sleep
- All meals at the table/highchair
- Parents as role models
- **Food not used as reward**
- Parents should not be over controlling
- Family Based Therapy

- Active play almost constantly
- Minimal sedentary time
- No screen time < 2 years, < 1 hour/day at 2-4 years

- **Intake**
  - Three meals plus snack(s)
  - 3 servings of protein (1-3oz)/day
  - 2-2.5 cups dairy/day
  - 3 servings non-starchy vegetables (3/4 cup to 1 ½ cups)/day
  - Fruit 1 cup /day
  - Dessert only on special occasion
  - No sugar sweetened beverages
  - No fast food
  - Age appropriate portion sizes
  - **Praise for trying new foods**

Management of the Young Child with Obesity: 5 to 9 years

**Intake**
- Three meals; 1-2 snacks
- 3 servings of protein/day
- 2-3 servings of dairy/day
- 4-5 servings non-starchy vegetables
- Dessert only on special occasion
- No SSBs
- No fast food
- Age appropriate portion sizes
- Praise for trying new foods
- Consider low glycemic index/reduced carbohydrate diet

**Activity**
- Moderate - vigorous activity for ≥60 minutes each day; Can be organized or not
- 3 servings of protein/day
- 2-3 servings of dairy/day
- 4-5 servings non-starchy vegetables
- Dessert only on special occasion
- No SSBs
- No fast food
- Age appropriate portion sizes
- Praise for trying new foods
- Consider low glycemic index/reduced carbohydrate diet

**Behavior and Sleep**
- Screen time <1-2 hours
- Routine sleep pattern
- No TV in bedroom
- 11-14 hours of sleep
- All meals at the table
- Parents as role models
- Parenting style should not be overly controlling
- Sleep study if severe obesity and/or symptoms
- Tonsillectomy & adenoidectomy PRN

**Pharmacology**
- Minimize obesogenic meds especially SGAs*
- Treat asthma with controller meds to minimize systemic steroid use
- Consider ACE inhibitor for persistent hypertension
- Tonsillectomy & adenoidectomy PRN
- Minimize obesogenic meds especially SGAs*
- Treat asthma with controller meds to minimize systemic steroid use
- Consider ACE inhibitor for persistent hypertension

*Second generation antipsychotics

Reference/s: [3] [8] [9] [10]
Management of the Pubertal Child with Obesity: 10-14 years

- **Orlistat (Xenical) FDA approved for > age 12**
- Minimize obesogenic medications especially SGAs
- Treat asthma with controller meds to minimize systemic steroid use
- Consider ACE inhibitor for persistent hypertension
- **Metformin FDA approved for T2DM > age 10**

- **Screen time < 1-2 hours/day**
  - 10-12 hours of sleep
  - Routine sleep pattern
  - No TV in bedroom
  - Parenting style should not be overly controlling
  - Peer groups become increasingly important
  - All meals at table with family and encourage socialization

Recommend meal and exercising tracking

- 3 meals; 1-2 **nutritious** snacks
- 3 servings of protein/day
- 3 servings of dairy/day
- 4-5 servings of non-starchy vegetables
- Dessert only on special occasion
- No sugar sweetened beverages
- No fast food
- Age-appropriate portion sizes
- Allow child to leave food on plate

- Vigorous activity for > 60 minutes daily. Can be organized or not
- **Monitor for changes in decreased activity level**
- Decrease non academic sedentary time as much as possible

Reference/s: [3] [8] [9] [10]
Management of the Adolescent with Obesity: 15-18 years

- Orlistat (Xenical) > age 12, **Phentermine approved for > 16**
- Treat asthma with controller meds to minimize systemic steroid use
- Minimize obesogenic meds especially SGAs*
- Consider ACE inhibitor for persistent hypertension
- Metformin FDA approved for T2DM > age 10

- 10-12 hours of sleep
- Routine sleep pattern
- **Screen time less than one hour/day**
- No TV in bedroom
- Parenting style should not be overly controlling
- Friends and relationships are important
- Recommend meal/exercising tracking or monitoring

- 3 meals; nutritious snacks
- 3 servings of protein/day
- 3 servings of dairy/day
- 4-5 servings of vegetables
- Dessert only on special occasion
- No SSBs
- No fast food
- Age-appropriate portion sizes
- Allow adolescent to leave food on plate

- **Vigorous activity for ≥ 60-90 minutes daily**
- Planned intervention with structured physical activity
- Decrease non academic sedentary time as much as possible

*Second generation antipsychotics

Reference/s: [3] [8] [9] [10]
Questions?
Bibliography


4. Choosemyplate.gov
Bibliography


