EVALUATION & TREATMENT 2008

ADULT DEFINITIONS: BODY MASS INDEX is the weight in kilograms divided by the height in meters – squared. OVERWEIGHT is defined as a BMI of 25-29.9 kg/m². OBESITY is a BMI of ≥30-39.9 kg/m². SEVERE OBESITY is a BMI ≥ 40 kg/m² or, in the presence of co-morbidities, ≥ 35 kg/m².

METRIC CONVERSIONS: 1 kilogram = 2.2 lbs; 1 meter = 39.37 inches.

PEDIATRIC CALCULATIONS with adult BMI do not account for changes in growth and adiposity related to normal maturation. BMI in Children is calculated by weight (lbs./height (inches) squared X 703.

BMI PERCENTILE can be plotted and calculated on age and gender adjusted specific growth charts per the CDC.

PEDIATRIC DEFINITIONS: Age 2-19 years old: OVERWEIGHT is between 85th to 94th percentile. OBESITY is ≥95th percentile.

PREVALENCE AND MORTALITY RISKS:

CHILDHOOD OBESITY PREVALENCE is 15.5 % in the U.S. A. Genetics may predispose, but the increased incidence and prevalence in recent years suggests risk factors include behavior and environment. Obesity during adolescence is a strong predictor (80%) of adult obesity. Similar risk factors contribute to adult obesity. ADULT OBESITY PREVALENCE varies per state but now averages 31% and ADULT OVERWEIGHT PREVALENCE averages 64% with worsening annual trends.

MORBIDITY RISKS are curvilinear for increased visceral fat and diabetes mellitus, hypertension, hyperlipidemia, CV disease, cholelithiasis, some cancers, and osteoarthritis. Therefore, one must also check WAIST CIRCUMFERENCE. If > 40 inches (102 cm) in men and > 35 inches (85 cm) in women, there is an increased morbidity and mortality (EBM Level B recommendation).

HISTORICAL QUESTIONS:

ADULTS: (EBM Level B): sedentary lifestyle, foods with increased calories and low quality, skipping breakfast and eating mainly at night, family history, sleepiness during the day (rule out OSA), high ETOH intake, recent marriage, childhood onset, lower SEC, race with AA and Hispanics and Native Americans, recent smoking cessation, higher # of birth deliveries, menopause, higher rate of weight gain since age 19 years of age, and medications such as some antipsychotics, antidepressants, antiepileptics, steroids, serotonin antagonists, and some antidiabetic drugs.

PEDIATRIC: (EBM Level B): High or low gestational weights, preterm births, high maternal weight gain, smoking in pregnancy, gestational diabetes, rapid weight gain in first 5 mos., obese parents, sedentary, less than normal sleep, excessive TV watching, high fat diet, high protein diet age 12-24 mos., high energy food cereals, less family dinners together, sexual abuse in females.
**PHYSICAL EXAM:**

Adults and children require a thorough initial physical exam focused on target areas for comorbidities. All require a BMI or pediatric BMI percentile and a waist circumference (EBM Level B recommendation) to classify extent of obesity and to estimate central fat for morbidity risks.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Focus on Finding Possible Comorbidities</th>
<th>Tests to Consider</th>
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</thead>
<tbody>
<tr>
<td>Endocrine and Metabolic</td>
<td>Lab to R/O glucose intolerance, type 2 DM, dyslipidemias. +/- hypothyroidism, metabolic syndrome, gout. Exam for, Cushing’s, hirsuitism/hyperandrogenism, accelerated pediatric linear growth and bone age.</td>
<td>Fasting glucose, HbA1C, cholesterol total, LDL, HDL, TG’s. +/- TSH, +/- uric acid, IF Cushingoid +/- 24 hr. urine cortisol + dexamethasone ST or serum cortisol + ACTH</td>
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<tr>
<td>HEENT</td>
<td>Large tongue or tonsils with small jaw (OSA?), retinal exam for diabetic retinopathy or papilledema if symptoms of pseudotumor cerebri.</td>
<td>If + OSA symptoms, refer to sleep lab, If papilledema refer to neurologist, If retinopathy refer to ophthalmologist</td>
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<tr>
<td>Cardiovascular</td>
<td>HTN, dyslipidemia, CHF, CAD, PVD, DVT. Heart arrhythmia, cardiomegaly (myocardial steatosis).</td>
<td>If + cardiac signs , EKG to R/O LVH, LAE, atrial fibrillation/flutter. If PVD, ankle-brachial test, segmental volume plethysmography, or Duplex ultrasound.</td>
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<tr>
<td>Pulmonary</td>
<td>Alveolar hypoventilation syndrome, asthma, see HEENT for obstructive sleep apnea.</td>
<td>Check lung excursion on inhalation. +/- flow meter or PFT.</td>
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<td>Gastrointestinal</td>
<td>Tender RUQ, hepatomegaly--R/O cholelithiasis, nonalcoholic fatty liver disease. Chronic or poorly controlled GERD--R/O esophagitis/CA</td>
<td>If + symptoms, liver function tests, bilirubin, sonogram for GB or liver. +/- Endoscopy to R/O esophageal disease.</td>
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<tr>
<td>Genitourinary</td>
<td>Lab: +/- DM nephropathy, obesity glomerulopathies, renolithiasis. Exam + polycystic ovarian female or male delayed sexual maturation.</td>
<td>If +, UA/protein, serum creatinine. +/- renal sono/IVP, pelvic exam, Tanner’s stage</td>
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<tr>
<td>Orthopedic</td>
<td>Adult signs of osteoarthritis, pedi painful hip (R/O slipped capital femoral epiphysis) or tibia vara.</td>
<td>X-ray symptomatic joints. Refer SCFE or TV</td>
</tr>
<tr>
<td>Neuorologic</td>
<td>DM neuropathy, early adult onset dementia, pseudotumor cerebri symptoms</td>
<td>Monofilament if DM, mental status in older pts., retinal exam if pseudotumor cerebri.</td>
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<tr>
<td>Dermatologic</td>
<td>Candidal intertrigo, furuncles, carbuncles, venous stasis, if acanthosis nigricans is unlikely associated with cancer.</td>
<td>KOH skin scraping, I and D abscess, etc. For PVD see CV above.</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>Depressed mood, anxiety, etc. on exam</td>
<td>Depression and/or stress scale +/- referral.</td>
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<tr>
<td>Genetic</td>
<td>Unusual morphologic features, hypogonadism, mental retardation, pedi unrestrained appetite</td>
<td>If &gt; 99% weight percentile, genotyping. R/O Prader-Willi , leptin deficiency, etc.</td>
</tr>
<tr>
<td>Cancer</td>
<td>Increased risk of cancers of esophagus, colorectum, gallbladder, pancreas, kidney, prostate, breast, uterus, cervix, ovary, non-Hodgkin’s lymphoma and multiple myeloma</td>
<td>CA screens if at risk +/- endoscopy, colonoscopy, abdominal sono or CT, mammco/sono/biopsy/”M protein”</td>
</tr>
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</table>

**TREATMENT:**

**WHAT ARE THE RISKS OF TREATMENT?**  Weight loss may increase risk in adults for cholelithiasis as the flux of cholesterol through the biliary system increases, especially in rapid weight loss of > 1-1.5 kg/week. This risk may be lessened with adding a bile acid such as
ursodeoxycholic acid, or by triggering some gallbladder contraction with modest amounts of fat intake at overall reduced caloric intake.

**WHAT TREATMENT IS APPROPRIATE?** Patients in the higher obesity categories should receive the most aggressive treatment options. Treatment should begin by decreasing energy intake or increasing energy expenditure (decreased energy intake has greater potential for acute weight loss).

**ADULT WEIGHT LOSS DIET:** 800-1200 kcal/day. Pediatric dietary guidelines are more variable.

**ADULT INTENSIVE COUNSELING:** (EBM Level A recommendation): If no other medical risks, counsel to increase exercise to 30 min. or more 5X/week. Get adequate sleep. Control calorie intake. Lower fat intake. Increase fiber intake. Eat breakfast. Control BP. Control stress. MD’s should also counsel pts. to: 1. promote sustained weight loss, 2. be more physically active, 3. have intensive behavioral dietary intervention if hyperlipidemia and other CV or diet related chronic diseases, 4. participate in strategies such as readiness to change assessment and motivational interviewing techniques such as the “5 A’s” which are: 1. **ASK** about and **ASSESS** dietary and activity practices and related risk factors, 2. **ADVISE** to change, 3. **AGREE** on individual goals, 4. **ASSIST** to change practices or address motivational barriers, 5. **ARRANGE** regular follow-up and support or refer for more intensive behavioral counseling. See more details in reference below of USPSTF.

**PEDIATRIC COUNSELING:** (EMB LEVEL A recommendation): 4 Stages: 1. Prevention Plus: focus on pt. and family counseling about healthy eating and physical activity. Stage 2 Structured Weight: If stage 1 not succeeding, advise food and exercise logs, may add dietitian, recheck more often +/- monthly. Stage 3 Comprehensive Multidisciplinary Intervention and Stage 4 Tertiary Care Intervention: if no success from the first 2 stages, refer to a team with experience in childhood obesity, including a behavioral counselor, a registered dietician, and/or and exercise specialist. Referring MD should monitor success or failure or obesity-related diseases, and provide reinforcement to the pt. of the behaviors learned from the pediatric weight management center.

**MEDICATIONS:**

Rx medications (EBM level 2 A): are advised if patients fail to achieve weight loss goals through diet and exercise after 6 months and have comorbity. These promote modest weight loss usually < 5 kg/year which may be clinically significant. Drug choice may be influenced by side effect tolerance. Risks are rare and are < 1/1000. FDA approved drugs for long term treatment are:

- **First line:** Orlistat/Xenical, 120 mg po tid before meals. Wt. loss averages 2-3 kg in 6 and again at 12 mos. Side effects: diarrhea, flatulence, bloating, abdominal pain, dyspepsia. Must be > 12 years old. Orlistat is a good choice if pt. has HTN, CV disease, dyslipidemia. **DO NOT COMBINE WITH SIBUTRAMINE!** May treat 4 years with Orlistat or 2 years with Sibutramine, then it is advisable to sign annual a legal Dr-patient agreement since no EBM studies are > 2-4 years of treatment.

- **Second line:** Sibutramine/Meridia/Reductil, 5-15 mg/day. Wt. loss averages 4-6 kg at 4-6 and 12 mos. Side effects: modest increases in heart rate and blood pressure. Must be > 16 years old. For Diabetes, Metformin is drug of choice (EMB B) as it also causes modest weight loss. Other Rx medications have more side effects or have higher risk vs. benefit ratios, are for short term use and are less recommended –see AHRQ and Up To Date references listed below.
Rimonabant may cause greater weight loss than Orlistat, but increases risk of depression and anxiety. Sympathomimetics are only FDA approved for short term use (phentermine, diethylpropion, benzphetamine, phenidemetrazine) and have abuse potential and other side effects (contraindications are CV disease, HTN, hyperthyroidism, glaucoma, agitation, drug or alcohol abuse or during or 14 days after MAOI ‘s (monoamine oxidase inhibitors). Antidepressants fluoxetine and bupropion are not FDA approved for weight loss. OTC weight loss pills are ineffective or harmful.

SURGICAL TREATMENT:

Surgery is advised if other measures discussed above have failed (EBM level A) and if BMI is > 40 kg/m2 or if BMI is > 35 kg/m2 with comorbidities. LIPOSUCTION: may decrease volume of subcutaneous fat, but does not appear to improve insulin sensitivity or risk factors for coronary heart disease. BARIATRIC SURGERY: (EBM 2B): Benefits: At least two meta-analyses have summarized that the mean overall percentage of excess weight lost was 61 percent (95% CI 58-64%), varying according to the specific bariatric procedure performed. 30-day mortality was 0.1 percent for purely restrictive procedures, 0.5 percent for gastric bypass, and 1.1 percent for biliopancreatic diversion or duodenal switch. Diabetes completely resolved in 77 percent and resolved or improved in 86 percent. Hyperlipidemia improved in 70 percent or more of patients. Hypertension resolved in 62 percent and resolved or improved in 79 percent. Obstructive sleep apnea resolved in 86 percent and resolved or improved in 84 percent. Some weight gain reoccurs the first 1-2 years. Contraindications to bariatric surgery include patients with untreated major depression or psychosis, binge eating disorders, current drug and alcohol abuse, severe cardiac disease with prohibitive anesthetic risks, severe coagulopathy, or inability to comply with nutritional requirements including life-long vitamin replacement. Bariatric surgery in advanced (above 65) or very young age (under 18) is controversial. Restrictive procedures are generally simpler in techniques but seem to achieve less weight loss. Malabsorptive procedures are highly effective in weight loss but carry significant metabolic complications such as protein calorie malnutrition and various micronutrient deficiencies. Roux-en-Y gastric bypass is the most commonly performed procedure in the United States due to its multiple mechanisms of action and proven success in long term weight loss. Laparoscopic RYGB performed by well-trained bariatric surgeons can lower surgical pain, infectious and hernia complications, as well as allowing for quicker postoperative recovery. Laparoscopic adjustable gastric banding is relatively new in the United States but may become more popular due to its simplicity in technique, adjustability, reversibility, and exceedingly small mortality. Vertical band gastroplasty has been replaced largely by other procedures due to lack of sustained weight loss as well as complications requiring revision. Sleeve gastrectomy is a newer technique offered to patients with super morbid obesity as the first stage in surgical management. Intragastric balloon is a temporary alternative for weight loss in moderately obese individuals.
Biliopancreatic diversion is less favored than BD with duodenal switch which has been advocated for patients with super-morbid obesity BMI > 50 with less rates of protein malnutrition, anemia, diarrhea, and stomal ulceration. Jejunoileal bypass has been abandoned due to the high complication rates and revisions.

PATIENT EDUCATION:

**Obesity and Children: Helping Your Child Lose Weight - February 15**

... familydoctor.org, the AAFP patient education Web site ... Patient Information Collection

NUTRITION: Nutrition: Tips for ... Obesity and Children: Helping Your Child Keep ...

www.aafp.org/afp/20040215/929ph.html -

**Obesity and Children: Helping Your Child Keep a Healthy Weight**

... familydoctor.org, the AAFP patient education Web site ... Patient Information Collection

NUTRITION: Nutrition: Tips for ... Obesity and Children: Helping Your Child Keep ...

www.aafp.org/afp/20040215/928ph.html -

**Continuing Medical Education (CME) -- Americans In Motion (AIM)**

Description: Fitness-related AAFP CME activities, supported by the AAFP’s Americans In Motion (AIM) program.

www.aafp.org/online/en/home/cme/selfstudy/aimcme.html - 19k

**Clinical Briefs - May 15, 2004 - American Family Physician**

... for counseling in practice settings, a dearth of appropriate patient education materials, and ...

Heart, Lung, and Blood Institute's guidelines on obesity and the ...

www.aafp.org/afp/20040515/clinical.html -

**REFERENCES**

US Preventive Services Task Force at [http://www.ahrq.gov/clinic/obesaid.htm](http://www.ahrq.gov/clinic/obesaid.htm) and at:


Up To Date at: [http://uptodate.com/online/content/topic.do?topicKey=obesity/2858](http://uptodate.com/online/content/topic.do?topicKey=obesity/2858)

ACP PIER & AHFS DI Essentials at:


Center for Reviews and Dissemination at:

[http://144.32.150.197/scripts/WEBC.EXEnhscrd/expand?saan=0000276558](http://144.32.150.197/scripts/WEBC.EXEnhscrd/expand?saan=0000276558)

American Academy of Pediatrics at: [http://aap.org/obesity/PolicyandGuidelines.htm](http://aap.org/obesity/PolicyandGuidelines.htm)


AAFP “Americans in Motion” EBM on Adult Obesity Counseling—see website above.

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