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Key Inforbits

- Introduction to Childhood Obesity
- Clinical Presentation
- Recommendations and Treatments
- The Role of the Pharmacist
- Daily Meal Suggestions

July 4th – July 10th is...

Daily Eating Meal Suggestions: 1200 Calories

Breakfast:

- 1 cup Special K cereal – 120
- 1 cup skim milk – 91
- 1 cup strawberries - 50
- 1 medium banana-110

Total: 371

Lunch:

- 1 ½ cup vegetable soup – 150
- 1 small whole wheat turkey wrap- 165
- 1 slice Laughing Cow Swiss cheese – 35

Total: 350

Dinner:

- 4 oz pork tenderloin – 214
- 1 medium sweet potato – 105
- 4oz. steamed spinach – 31

Total: 350

Snacks:

- Apple - 90
- Luna mini bar- 80
- Total: 160

Daily Total: 1241



<https://crossfitroundrocktx.com/sheldons-corner-childhood-obesity/>

Introduction to Childhood Obesity^{1,2,3,4}

Childhood obesity is a serious medical condition and a growing concern within the United States. Recent data estimates that about 17%, or roughly 12.7 million, of children and adolescents between 2 – 19 years of age are currently classified as obese.

The cause of obesity amongst this population is complex and multifactorial. While there is certainly a genetic component associated with weight gain amongst children, behavioral patterns of diet and exercise are critical contributors to obesity that can be managed through patients' actions. In addition, there are various societal factors that can contribute to weight gain including: education, the availability of unhealthy food and beverages, and limited physical activity.

What does this mean to our children in the future? Childhood obesity can lead to long-term unhealthy lifestyle choices and increases the likelihood of being obese once an adult. Asthma, sleep disorders, and psychological and emotional struggles are all possible consequences that an obese child may struggle with. In addition, even as a child and adolescent, they are placed at a higher risk of developing many serious medical conditions such as hypertension, diabetes, and dyslipidemia. Recent data estimates that 85% of children who are diagnosed with type 2 diabetes are overweight or obese at the time of diagnosis. Furthermore, overweight adolescents have a 8.5 fold increased risk of having hypertension as adults and a 3 fold increase in LDL values >160 mg/dL.⁴ All of these conditions can lead to long-term health complications and place them at a higher chance of developing cardiovascular disease later in life.

Daily Eating Meal

Suggestions: 1600

Calories

Breakfast:

1 cup honey-nut cheerios - 150
1 cup fat free milk - 91
1 medium banana-110

Total: 351

Lunch:

1 tuna pack - 99
1 tbsp light mayo - 45
½ cup chopped celery-12
1 serving of wheat thins - 150
1 cup grapes - 62
1 light yogurt- 100

Total: 468

Dinner:

6 oz. sirloin steak - 440
1 medium baked sweet potato - 103
1 tbsp light butter - 50
1 tsp brown sugar - 17
1 cup steamed broccoli-30

Total: 640

Snacks:

1 apple- 90
10 almonds- 70

Total: 160

Daily Total: 1619

Sample diet provided by
SEIB Wellness Center,
Montgomery, AL 334-263-
8300



Clinical Presentation/ Classification^{1,2,3}

Body mass index (BMI) is a useful tool used to determine if someone is healthy, over-weight, or obese. For children and adolescents, BMI classifies overweight as being between the 85th and 95th percentile and obese as being above the 95th percentile compared with other children and adolescents of the same age and sex. Per the *Prevention and Management of Obesity for Children and Adolescents* guidelines, BMI should be calculated and documented at a child's annual well visit from 2 to 18 years of age. From birth until 23 months of age, physicians should use the World Health Organization (WHO) growth curves to determine BMI. At 2 years of age, the CDC sex-specific BMI-for-age growth charts are recommended until the child turns 18 years of age.

If a child is classified as obese and is between the ages of 2 and 8, a fasting lipid panel should be obtained. If the patient is between the ages of 9 and 18 when they are identified as obese, a fasting lipid panel, fasting glucose, AST and ALT should all be obtained to aid in therapy guidance. Once obtained, a fasting glucose, AST and ALT test should be repeated every two years starting at the age of 10.

Recommendations and Treatments

Diet and Exercise:³

- There are multiple aspects that should be evaluated when a child is obese:
 - Diet, exercise, sedentary behaviors, and life style/behavioral management in general
- Diet
 - Limit consumption of sugar-sweetened beverages
 - Eat a diet with 5 fruits and vegetables daily
 - Eat breakfast daily
 - Decrease the amount of fast foods consumed
 - Eat meals together as a family
 - Practice age appropriate portion control
- Exercise
 - Should be at least 60 minutes of moderate exercise daily
 - Assess the child's barriers to physical activity looking into:
 - Time restraints
 - Fear or injury/safety
 - Room for activities
 - Encourage parents to get involved
- Sedentary behaviors
 - Children under the age of 2 should avoid television
 - Limit the amount of television to less than 2 hours daily
- Life style/behavioral management
 - Clinicians should help establish target behaviors
 - Clinicians should encourage self-monitoring.
 - Clinicians should work with Primary Adult Care Givers (PAC).
 - PACs should promote healthy living.



<http://www.canstockphoto.com/composition-with-vegetables-and-fruits-7845763.html>



http://www.123rf.com/photo_7394216_boy-doing-jumping-jacks.html

Drug treatment options for childhood obesity

- Orlistat is currently the only FDA-approved medication for childhood obesity in patients 12 years and older.⁵
 - It is a non-absorbed lipase inhibitor that works in the lumen of the stomach and intestine thus preventing the absorption of fatty acids and monoglycerides.
- Orlistat 120 mg taken three times a day, can be used to improve weight, BMI, TC, LDL, and endothelial function in adolescent patients.

<http://www.eaalearni ng.com/2011/07/behavior-problems-no-problem.html>

- One single-blind, randomized control trial studied 64 children over a 10-week duration and placed them into 3 groups (group 1: diet only, group 2: diet and orlistat, group 3: diet, orlistat, and exercise).
 - The results of this study included an average weight gain of 0.2 kg for group 1 and a reduction of 2.0 kg, on average, for groups 2 and 3.
- Orlistat is required to be taken with a multivitamin due to interference with the absorption of fat-soluble vitamins.
- The main side effects seen with orlistat include: GI upset, oily spotting in undergarments, headache, menstrual irregularity, and back pain.
- Patient counseling: inform the patient that side effects should decrease with continued usage
- Other Drugs available for weight loss in obese children. ^{6,7}



Drug	Dose/ Route	Length	Results	ADRs
Metformin	500-1000mg PO BID	8 weeks – 6 months	BMI decreased 0.8-3.2 kg/m ² in 5/6 trials	GI upset (take with food), HA and asthenia
Octreotide	5-15mcg/kg/day SQ TID	2-6 months	Results varied from - 12.8kg to 1.8 kg in 5/8 kids	Abdominal pain, GI upset, dizziness and HA

Surgical options for obese children:³

- The guidelines for the *Prevention and Management of Obesity for Children and Adolescents*, mentions bariatric surgery as a consideration given the following:
 - BMI > 40 kg/m²
 - BMI > 35 kg/m² with severe comorbidities (T2DM, obstructive sleep apnea, pseudotumor cerebri)
 - Tanner 4 or 5 pre-pubertal development or bone age ≥13 years (girls) and ≥15 years (boys)*
 - > 6 months of other weight management that resulted in failure
 - Has decisive management and the ability to complete comprehensive evaluations before and after surgery
 - Supportive family environment is present
- Bariatric surgery of choice:
 - Roux-en-Y gastric bypass (RYGB)
 - Stapling and removing majority of the stomach is involved
 - A small pouch in the stomach is made, and the duodenum and part of the jejunum are bypassed.
 - 50-85% of excess body weight is lost as a result
 - Side effects include: small bowel obstruction, dumping syndrome (N/V/D, bloating, cramping), and malnutrition



*Tanner: Growth charts to provide insight for physical development of children according to age, sex, and stages of puberty⁸

The Role of the Pharmacist

What is included in effective counseling for children who are obese?⁹

- Recognize that sensitivity is usually required for these patients and their parents
- Rephrasing statements that could be recognized as insensitive toward the patient/situation
- Elicit a response and draw motivation
- It is more difficult to motivate a child when siblings/parents are also overweight, therefore, treatment may need to involve the entire household.
- 80% of obese children (10 - 13 years of age) continue the trend into adulthood
- Avoid extreme diets due to the realization that many unsupervised diets can lead to medical problems as a result
- Look into medications that could be causing weight gain (ex. corticosteroids, valproic acid, progestins, atypical antipsychotics, cyproheptadine, and mirtazapine).

- End counseling sessions by checking for patient understanding, try to get a commitment to change (scale), and offer information about weight loss
- Continue to encourage at every encounter

From Pharmacy Times:

“Pharmacists can be an essential resource for obese patients attempting to manage their weight. They can monitor patient medication profiles to detect those prescribed agents that may have the potential for weight gain, and they can provide information about proper weight-loss programs. Pharmacists can encourage patients to utilize long-term weight-management goals rather than just some of the quick-fix OTC products. Pharmacists should stress to their patients that even a moderate amount of weight loss, can be beneficial.”¹⁰

Resources

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The Last Dose

*“Take care of your body, it's the only place you have to live”
- Jim Rohn (Entrepreneur) (1930 - 2009)*

*An electronic bulletin of drug and health-related news highlights, a service of ...
Auburn University, Harrison School of Pharmacy, Drug Information Center*

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