

CLINICAL UPDATE

A Publication Compiled by the Clinical Pharmacy Team of



Health Solutions

PHARMACY BENEFITS MANAGEMENT

ABDOMINAL OBESITY

Multiple studies have indicated that in addition to general obesity, abdominal obesity in particular can increase a person's risk of developing certain disease states such as dyslipidemia, type 2 diabetes, hypertension and stroke. Recent studies have shown that abdominal obesity early in life may be linked to Alzheimer's disease later in life. People with a larger percentage of abdominal obesity, those with an "apple-shape", face more health risks than those with more weight around the hips, sometimes called "pear-shaped". Even a person who is thin with only a large abdomen is at risk.

Abdominal adipose tissue is different than that found in other parts of the body. The abdominal region is made up of three types of fat: visceral fat, retroperitoneal fat, and subcutaneous fat. Visceral and subcutaneous fat are thought to be most strongly linked to risk factors. Visceral fat is found in the peritoneal cavity and is packed around the abdominal organs, especially the liver. It has a large effect on portal fatty acid flux which affects the hepatic response to insulin and fat. Visceral fat can increase both postprandial hyperglycemia and hyperlipidemia due to the systemic delivery of fatty acids, resulting in insulin resistance. It can also increase plasminogen activator inhibitor type 1 (PAI-1) and tumor necrosis factor levels, which can lead to a further increase in insulin resistance and vascular changes. The link between abdominal obesity and dementia may be due to the release of adipocytokines such as leptin and interleukin-6, which can be associated with neurological damage. Also, leptin has the ability to cross the blood brain barrier and is thought to be involved in the deposition of amyloid beta-42, which is the main component Alzheimer - associated plaques. Subcutaneous fat is the fat found just below the skin surface, and is thought to be highly related to insulin resistance.

There are many tools available to assist healthcare professionals to identify, assess, and manage overweight and obese patients and reduce health risks. The National Heart, Lung, and Blood Institute (NHLBI) guidelines recommend that three key measures be used to assess weight; Body Mass Index (BMI), Waist Circumference, and other risk factors.

BMI and **Body Fat** can be measured to determine if a person is overweight, normal, or underweight. BMI is a measure of weight relative to height and can be a very good indicator of total body fat. The calculation of BMI for adults requires a height measurement in centimeters or inches and a weight measurement in either pounds or kilograms, and is interpreted the same for men and women ages 20 years and older. The BMI calculation for children and teens is slightly different, as it also incorporates age and sex.

$$\text{BMI} = \frac{\text{Weight (kg)}}{[\text{Height (m)}]^2} \quad \text{OR} \quad \frac{\text{Weight (lb)}}{[\text{Height (in)}]^2 \times 703}$$

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Interpretation of BMI for adults 20 years and older:

| BMI Score | Status |
|-------------|-------------|
| < 18.5 | Underweight |
| 18.5 – 24.9 | Normal |
| 25.0 – 29.9 | Overweight |
| ≥ 30.0 | Obesity |

While BMI can be a strong indicator of body fat, there are some variations to consider:

- Women usually have more body fat than men at the same BMI.
- Older people tend to have more body fat than younger people at the same BMI.
- Athletes may have an increased BMI due to a large amount of muscle mass, not increased body fat.

Home body fat scales or fat loss monitors and skin fold calipers are some of the methods used to measure body fat. Body fat guidelines differ for men and women.

| | <u>Men</u> | <u>Women</u> |
|---|------------|--------------|
| Recommended Percentage of Body Fat | 13-17% | 20-21% |
| Average Percentage of Body Fat in the United States | 17-19% | 22-25% |
| Percentage of Body Fat When Considered Obese | ≥ 25% | ≥ 30% |

Waist circumference and **Waist-To-Hip Ratio (WHR)** are good predictors of overweight or obesity- related disease risk. Abdominal fat has been linked to an increased risk of plaque buildup in the arteries.

- To measure waist circumference, snugly place a tape measure around the bare abdomen just above the hip bone. Women with a waist circumference of over 35 inches and men measuring greater than 40 inches are considered at risk.
- To measure Waist-To-Hip Ratio, measure around the hips at the widest part of the buttocks. Also measure around the waist at the smallest circumference of the natural waist (usually right above the belly button). Divide the waist measurement by the hip measurement. Men should have a WHR of ≤ 0.9 and women should have a WHR of ≤ 0.8 . A WHR ≥ 1.0 indicates an increased risk for heart disease and diabetes.

In addition to obesity and fat distribution, risk factors for diseases and conditions associated with obesity should be considered:

- Hypertension
- Increased LDL
- Decreased HDL
- Increased Triglycerides
- Increased blood glucose
- Cigarette smoking
- Family history of cardiovascular disease
- Physical inactivity

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Weight loss is recommended for people who are considered overweight or obese (BMI ≥ 25) with 2 or more risk factors. Overweight people with less than 2 risk factors and a desirable waist measurement are encouraged to prevent further weight gain. Changes to diet can decrease abdominal fat and overall weight. One study published in the Journal of Nutrition evaluated the effect of different types of diets in a multi-ethnic population. The study measured the reduction in abdominal size by measuring the change in baseline WHR. The results showed that substituting protein for carbohydrates in modest amounts reduced WHR to normal ranges. Decreasing fat or calorie intake did not have the same effect. Also, the study happened to find that smoking increased WHR and that smoking cessation will help to reduce a person's WHR.

Additional information is available through the following organizations:

The National Heart, Lung, and Blood Institute

Phone: (301) 592-8573

www.nhlbi.nih.gov

Centers For Disease Control and Prevention

Phone (800) 311-3435

www.cdc.gov

The American Diabetes Association

Phone: (800)-DIABETES

www.diabetes.org

American Heart Association

Phone (800) 242-8721

www.americanheart.org