Prevention Brief

VA National Center for Health Promotion and Disease Prevention
Office of Patient Care Services, Veterans Health Administration
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http://www.prevention.va.gov

Waist Circumference

Bottom Line

- Waist circumference (WC) measurement is part of an overall screening strategy to identify patient at high risk from obesity-related health problems.
- WC > 88 cm (35 in) for women and >102 cm (40 in) for men is considered elevated.
- WC is most useful for risk stratification in patients with BMI < 30.

Many of us are familiar with using body mass index (BMI) to screen patients for overweight and obesity. Waist circumference (WC) is another measure used to evaluate body fat and is most closely associated with central adiposity. WC is obtained by measuring abdominal girth or circumference at the level of the iliac crests.

Both WC and BMI are used to estimate body fat, but evidence suggests that WC provides metabolic and cardiovascular risk information above and beyond that of BMI alone. Like BMI, risk associated with WC is on a continuum; the higher the WC the higher the health risk. However, for ease of use within clinical practice, thresholds for elevated WC have been defined:

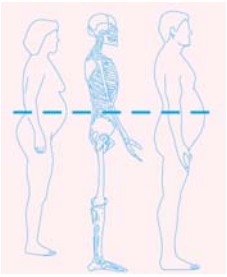
Women: WC > 88 cm (35 inches)
Men: WC > 102 cm (40 inches)

Patients with WC above these thresholds are considered at highest risk for metabolic and cardiovascular health problems.

It is possible for patients who are normal weight (BMI < 25) or overweight (BMI ≥25 and <30) to have increased waist circumference and thus be at risk for obesity-related health problems. The purpose of this Prevention Brief is to provide an overview of the Waist Circumference measure and describe how it can be used within the VHA as part of an overall screening strategy for obesity.

Waist Circumference as a Health Risk Factor

Measuring Waist Circumference



- Use fingers to identify iliac crests (topmost point of hipbone) at the sides and place tape at this height (not at beltline).
- The tape measure should be placed on the horizontal (parallel to the ground).
- The patient should hold the belly in a normal position, not sucking in or pushing out.
- Obtain the measurement at the end of a normal expiration cycle.

Central adiposity, commonly referred to as having an apple-shaped body build, increases risk for a range of disorders including type 2 diabetes, hypertension, non-alcoholic steatohepatitis (NASH, or fatty liver), and cardiovascular disease. Excessive fat deposits in abdominal organs (visceral fat) can be toxic to surrounding tissue and cause destruction through a process called lipotoxicity. This plays a central role in NASH development and patients with metabolic syndrome are at higher risk for lipotoxicity in the pancreatic beta-cells and heart tissue, resulting in type 2 diabetes and cardiomyopathy, respectively.

In epidemiological studies, excess central adiposity is an independent predictor of certain weight-related comorbidities, regardless of BMI, gender, race, and ethnicity. WC is a better indicator of cardiovascular disease risk than BMI alone because WC is better correlated with visceral fat as compared to BMI.

Although different methods have been uses to assess abdominal fat such as waist to hip ratio, WC requires only one measurement and provides information for individual risk stratification that is just about as good as other methods of assessing abdominal fat. Technique is important when measuring WC (see sidebar). WC should be measured by placing a tape measure parallel to the ground at the top of the iliac crests (hip bones) and the measurement should be obtained at the end of normal expiration.

Epidemiologic evidence is accumulating that racial/ethnic differences exists in the predictive utility of WC, but to date racial/ethnic WC thresholds have not been proposed for clinical use.

While WC is an independent predictor of risk beyond BMI in epidemiologic studies, it is clinically most useful for risk stratification in patients who are normal weight or overweight. WC provides little in the way of additional risk information for obese patients (BMI ≥ 30) since these patients are already at high-risk for obesity-related health problems and their management most likely would not change based on WC measurement.

VA/DoD Clinical Practice Guideline for Screening and Management of Overweight and Obesity

Weight Management Program for Veterans

The *MOVE!* Program is a comprehensive, evidence-based program which provides clinicians and patients tools and resources to implement the VA/DoD Clinical Practice Guideline for Screening and Management of Overweight and Obesity. The MOVE! intranet website offers:

- *The MOVE!23* Patient Questionnaire
- Over 100 patient handouts
- Group session modules
- A Clinical Reference Manual
- On-line training for continuing education credit
- Pocket reference guides
- Quick Start Manual
- Marketing materials for patients and staff

...and other tools and resources for providing weight management treatment.

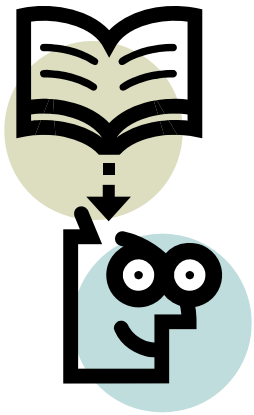
Check it out!

In collaboration with the Department of Defense (DoD), the VHA Office of Quality and Performance established an expert team to review evidence and issue a Clinical Practice Guideline for Screening and Management of Overweight and Obesity (released in January 2007). Due to growing evidence that WC may contribute additional information related to obesity-related health risk, this CPG recommends that waist-circumference be incorporated into the screening process.

Because of its complexity, it may be easiest to think of screening for obesity as a process and not an isolated test. First, all patients should have their height and weight measured annually so that BMI can be calculated and classified as normal weight, overweight, or obese. Next, identify those patients at highest risk from obesity-associated health problems. This includes patients with BMI $\geq$ 30, patients of any BMI with elevated WC, and overweight patients (BMI $\geq$25 - < 30) with one or more weight-related disorders (hypertension, type 2 diabetes, dyslipidemia, metabolic syndrome, obstructive sleep apnea, or degenerative joint disease). Next, determine whether high-risk patients are appropriate candidates for treatment. Contraindications to weight-management treatment include: end-stage illness, poor life expectancy, and cognitive deficits that would preclude participation in a self-management support program. Patients at highest risk without contraindications should be counseled about their risk for obesity-related health problems and offered treatment.

For FY 2008, a new EPRP supporting indicator will assess the extent to which VHA facilities are screening patients for obesity and offering weight management treatment. This indicator is based on the VA/DoD Obesity CPG. Facilities are encouraged to design their screening for obesity clinical reminder in a way that ensures success with meeting the parameters of this indicator, which is expected to become a full performance indicator with targets in FY09 (pending approval of the OQP Performance Measurement Work Group). See the resource section below for additional information. Note that WC measurement on all patients is not required for success with meeting this indicator.

Additional Resources



Patient Tools

- Information for patients on the *MOVE!* Weight Management Program for Veterans: www.move.va.gov
- Information of waist circumference from US Dept. of Health and Human Services – Weight-control Information Network at: win.niddk.nih.gov/publications/tools.htm

Clinician Tools

- Information for clinicians on the *MOVE!* Weight Management Program for Veterans: MOVE! Intranet Site
- VA/DoD Clinical Practice Guideline for Screening and Management of Overweight and Obesity: http://www.oqp.med.va.gov/cpg/OBE/OBE_base.htm
- NHLBI Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm
- Screening for Obesity Supporting Indicator Overview (contact NCP for information)

Additional Reading

Janssen et al. Body mass index, waist circumference, and health risk: evidence in support of current National Institutes of Health guidelines. *Arch Intern Med* 2002 Oct;162 (18):2074-9.

Vazquez G etal. Comparison of body mass index, waist circumference, and waist/hip ration in predicting incident diabetes: a meta-analysis. *Epidemiol Rev.* 2007; 29:115-28.

Zhu S et al. Race-ethnicity-specific waist circumference cutoffs for identifying cardiovascular disease risk factors. *Am J Clin Nutr.* 2005; Feb;81(2):409-15.