Waist Circumference as a Vital Sign

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Implementation of Waist Circumference Measurements at Norwalk Community Health Clinic

Presentation by Brad Fiske MS III
Mentors/PI's: Cristina Smina MD & Giselle Volney MD
My role in this project:

• This project (and the research writeup from which this presentation is derived) was developed by Drs. Cristina Smina MD & Giselle Volney MD PGY-3 of the Norwalk Hospital Internal Medicine Residency Program.

• My role as a medical student was/is to help convert the original research protocol into an implementable quality improvement project at the Norwalk Community Health Center.

• Moving forward, I will be helping with in-person measurements at the clinic and any other tasks the PI’s listed above need help with.

• For this FM clerkship project, my deliverable is the QI writeup from the original proposal.

• This PowerPoint is an abbreviated version of the QI writeup. QI writeup itself will be emailed to clerkship staff as a deliverable.
Why use waist circumference as a vital sign?

**Obesity is associated with increased risk** of cardiovascular disease (CVD) & type 2 diabetes mellitus (DM II); the prevalence of obesity has increased worldwide throughout the last three decades.

- High levels of visceral adipose tissue (VAT) are associated with chronic inflammation and conditions such as metabolic syndrome, insulin resistance, and CVD as well as breast, colorectal, & prostate cancers.

BMI as a measurement does not account for variations in lean mass vs. adipose tissue, nor does BMI distinguish between subcutaneous & visceral fat stores. Thus, the amount of VAT present may differ radically within a narrow range of BMI values.

- Waist circumference (WC) measurements have been demonstrated to provide additive information for predicting all-cause mortality & CVD-related mortality in obese patients; it is also a more accurate measurement of VAT stores than is BMI.

Elevated waist circumference: 40” (102 cm) + in men; 35” (88 cm) + in women.
Cost of comorbidities associated with VAT

• According to CDC: obesity-related medical costs in 2008 dollar value: $147 billion

  • Associated costs in productivity loss = $3.38 billion $6.38 billion (CDC)

  • Costs are projected to increase to be upwards of $65 billion/year in the US by 2030 (5)
Community perspective

“I think it’s a good idea---I wouldn’t be opposed to having it done at annual physicals or other routine appointments” - CJB; office staff at local Dr.’s office

“I would be open to having it (WC measurement) done when I go to the doctor’s (office). A lot of the life-insurance paperwork we need to fill for patients already requires this kind of measurement.” –NC; nurse at local Dr.’s office
Methodology:

- **Methods:**
  - Male & female patients with a BMI between 25-34.9 who have upcoming visits will be included in the study.
  - During the patient’s first visit after enrollment, medical assistants (MA) will perform the WC measurement (inches). The MA will also instruct the patient on how to take their own WC. A hand-out with graphic (Fig.1) will be used to assist with instruction and will be given to patient prior to their leaving the office. The patient will also be provided a log where they can keep track of their measurements.
  - WC obtained by the MA on initial visit will be entered into the EMR as a vital sign with the BMR.
  - Patients will be asked to measure their WC every month and to keep a log of these measurements on the provided document.
  - A follow-up telephone or in-person visit with a resident will occur every three months throughout a 12-month period. The patient will be assigned the same resident provider (or a provider from the same group) to ensure continuity of care.
    - In-person visits at the 3- & 9-month marks will be “non-billable”.
    - Telephone follow-ups conducted at the other three-month intervals will be “non-billable” as well.
    - These visits will pertain strictly to management of BMI & WC; no other medical concerns will be addressed during these visits.
  - At each visit, patients will be educated on the “Weight Loss & Waist Loss” to further solidify their understanding and to encourage them in adopting the necessary lifestyle changes.
    - Resident providers will spend time educating patients on recommended diet & physical activity per current recommendations.
    - Patients will be offered a nutrition consult.
  - **No weight loss drugs will be used.**
Waist Circumference Protocol (Fig. 1):

1. Identify the top of iliac crest on both sides: this is where the measuring tape will be placed.

2. Stand straight with feet within shoulder distance apart & weight evenly distributed.

3. Hold the tape snug across the abdomen at the end of a normal breath; repeat this measurement twice (i.e. repeat step 3 to get two measurements).

4. If measurements are more than 0.4” (approx. 3/8”) apart, repeat step 3 until measurements fall within 3/8” of each other.

5. Once measurements are taken, calculate the average and record the average calculated as the WC measurement (in inches).
Proposed results collection:

- Measurements of WC, BMI, and weight will be exported into an excel spreadsheet. A graph showing the trends of their measurements over the 12-month period will be created and provided to the patient.

- The delta of patients’ weight and waist measurements will be analyzed using Statistical Package for the Social Sciences (SPSS)
Evaluation of effectiveness & limitations

- A survey at the end of the 12-month period will be administered to every patient who completed the program. This survey will provide metrics on:
  - Percentage of patients who found the campaign helpful in encouraging lifestyle changes as it relates to diet and exercise.
  - Percentage of patients who found campaign helpful in achieving weight-loss and waist-loss goals.
  - Percentage of clinic staff who found measuring of WC to be tedious and not helpful.
Recommendations for future interventions

IMO, this is a great start as a screening patients prior to their developing sequelae from excessive visceral adiposity.

Future interventions could include the development of an app that can link the patient’s at-home measurements and update their WC measurements to the EMR in live time.

Other improvements could be development of app-alerts through the patient portal system to allow for daily motivation and reminders according to current weight-loss & exercise guidelines.

There could also be an “opt-in” social network for participants in the program to foster better adherence and support.


Interview Consent Forms

• Sent to clerkship staff via email to preserve anonymity.