

Anthropometry in HIV/AIDS

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Concepts

- Body composition and anthropometry characterize health events that affect those measures
- Total volumes give clues about functional capacity and adequacy
- Patterning gives clues about metabolic changes
- Serial measures can help to match therapy and monitor effectiveness

Objectives

- The participant will be able to:
 - Describe the rationale for each type of anthropometric/body comp/functional measures
 - Describe methods for at least three anthropometric measures specific to HIV/AIDS
 - Evaluate a body composition report resulting from anthropometric and other measures
 - Recommend therapies for an example patient record based on anthropometry and other measures

Objective 1

- Thinking of measures as “lab values”
 - Numbers are compared and interpreted
 - Baselines, averages/expected, optimal, functional
- Charts can be drawn for interpretations:
 - What does each mean: \leftrightarrow \uparrow \downarrow
 - Semantics count: decreases, low levels, and deficits don't mean the same thing
- Keep the whole body in mind in social, economic, and other contexts

Objective 1

Anthropometry: Tools of the Trade

- Non-stretch tape measure
- Calipers
- Pen(s), paper, computer/calculator, cleaning supplies



Anthropometry

- Circumferences/
dimensions
 - Common measures:
 - Head, mid-upper arm, wrist
 - Additional to characterise
specific changes:
 - Neck, back, chest, breast,
abdomen, hip, thigh, calf



Anthropometry



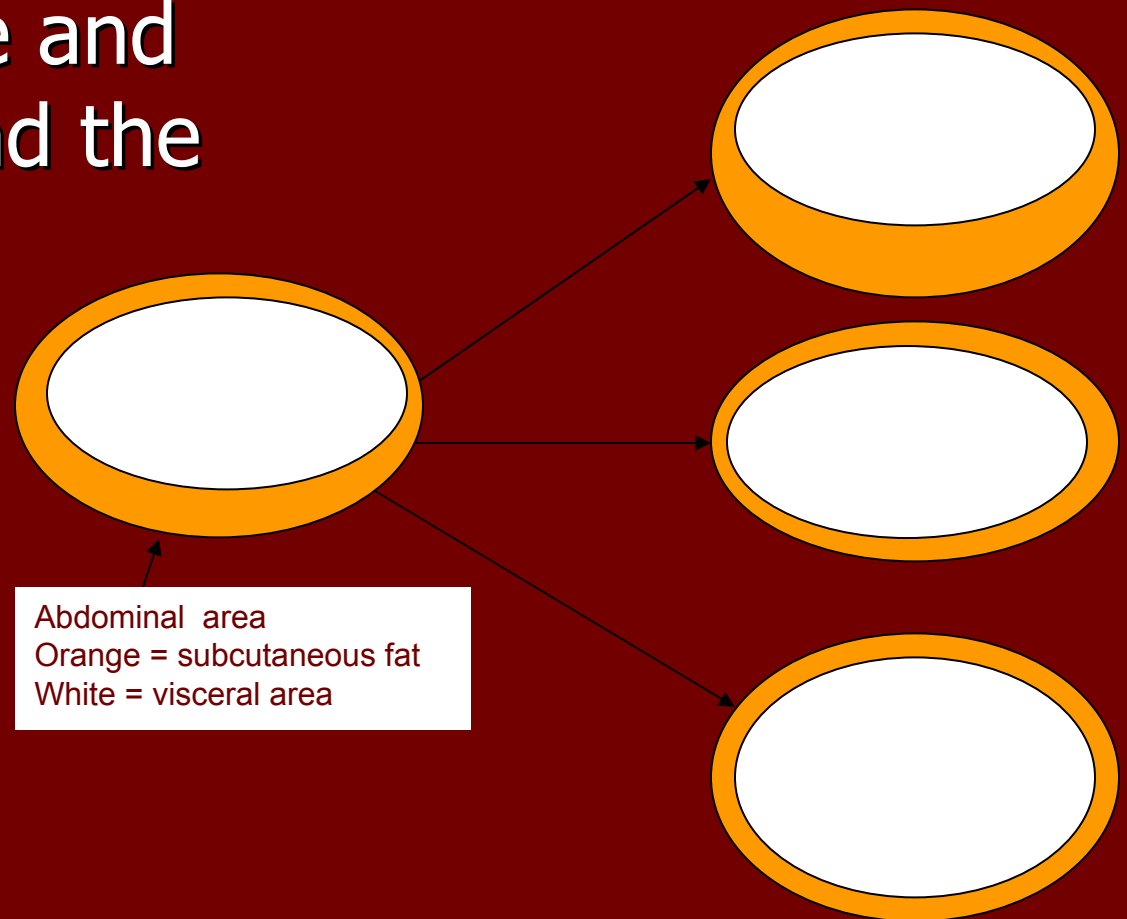
- Dorsocervical fat pads
 - Changes in back width
 - Measure area
 - Up to down
 - Side to side

Fatfolds (Skinfolds)

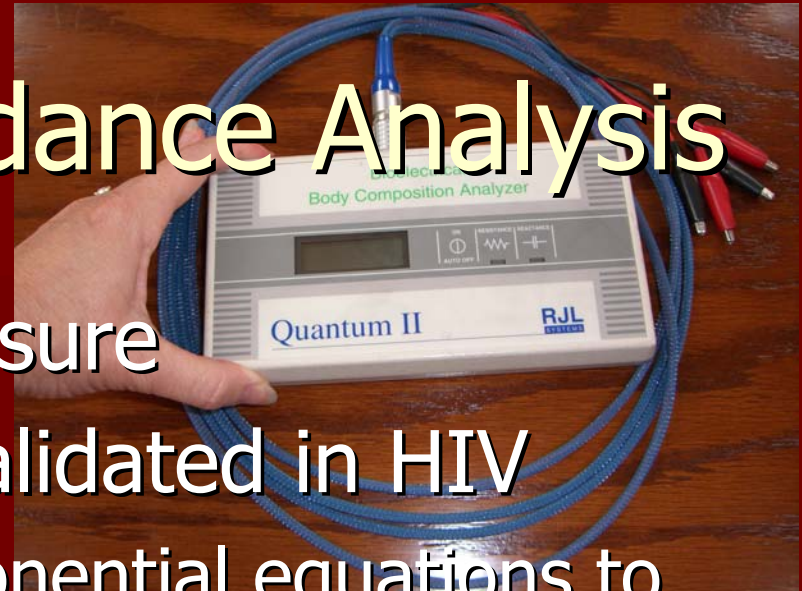
- Common measures:
 - Triceps, biceps, subscapular, suprailiac
- Additional to characterise specific changes:
 - Facial, abdominal, thigh, calf

Visceral Adiposity

- Abdominal circumference and fatfolds around the abdomen to estimate total area and visceral area



Bioelectrical Impedance Analysis



- BIA is an electrical measure
- Equations have been validated in HIV
 - Non-linear, parallel/exponential equations to capture changes in disease
- Estimates fat free mass (FFM) and body cell mass (BCM)
- Defaults numbers for extracellular mass (ECM) and fat

BIA (2)

■ Definitions

- Body cell mass: high metabolic rate protein tissues, including muscle and organ tissues
- Extracellular mass: low metabolic rate protein or water-based tissues, including bone, collagen, and fluids outside of the BCM
- Fat: both essential and stored fat tissues

BIA (3)

- Differences in measurement concepts
 - BIA provides total volume estimates of 2 and 3 compartment models
 - FFM + fat
 - BCM + ECM + fat
 - Anthropometry provides patterns of fat deposition and alterations in body shape
 - Functional measures (eg, handgrip) provides evaluation of work capacity and can be anticipated from volume

BIA (4)

- Evaluate for BCM wasting, hydration
- Evaluate type of weight losses and gains
- Anticipate functional capacity or problems
 - Loss of strength with low BCM or return of strength with regain of BCM
 - Reduction in medication efficacy with loss of BCM
 - Metabolic abnormalities with out of range fat mass
 - Hydration-related problems with strength and medication processing with drop in ECM
 - Infection/inflammation with raise in ECM

Hand Dynamometry

- Strength/Function
 - Compared to gender, age group



Summary

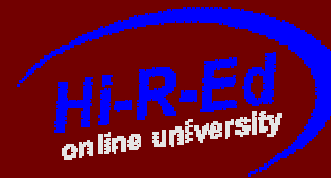
- Anthropometry, body composition, and muscle function information tells us both about disease and nutritional status
- With several objective measures
 - goals can be established
 - best therapies can be applied and monitored
- Such tools can improve dietitian standing as health care team members

Resources

■ Methods:

- AACTG Research Anthropometry VCD
- Anthropometry and BIA courses online at:

www.hi-r-ed.org



- Self-measures and other handouts for patients: www.tceconsult.org

The
Cutting Edge