Assessment of Neonatal Body Composition

Using Anthropometry

Workshop (WS2): Methodological Aspects of Measuring Adiposity and Body Composition

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Overview

• Background – what is anthropometry and why use it?

• Description of methods

• Upcoming Early Nutrition e-Academy (ENeA) module
What is Anthropometry?

- **noun**: *anthropometry*

  the scientific study of the measurements and proportions of the human body.
How are these measurements useful in research?

- Surveillance (e.g. prevalence of low birth weight or macrosomia in a population)
- As an exposure or outcome in observational or experimental studies
- To assess growth patterns
Strengths and Limitations of Anthropometry

**Strengths**
- Relatively Inexpensive
- Portable
- Can be used for large numbers of participants
- Minimally invasive

**Limitations**
- Requires a skilled measurer
- Requires assessment of inter-/intra measurer reliability
- Appears unpleasant
- Not a gold standard method
Which measurements to make?

- Research question
- Time
- Setting (transporting equipment)
- What (if any) other data is being collected at the time
Example Measurements

- Weight
- Length
- Head, Chest and Abdominal Circumferences
- Mid Upper Arm Circumference (MUAC)
- Triceps Skinfold (back of the upper arm)
- Subscapular Skinfold (below the shoulder blade)
• Weight = *Sum of lean and fat mass*

• Length = *Skeletal development*

• Head = *Skeletal and brain development*

• Chest and Abdominal Circumferences = *Sum of viscera and fat*

• Mid Upper Arm Circumference (MUAC) = *Lean and fat tissue*

• Triceps Skinfold = *Peripheral fat*

• Subscapular Skinfold = *Truncal fat*
Equipment we use to measure neonates
Example Measurements

• Weight

• Length

• Head, Chest and Abdominal Circumferences

• Mid Upper Arm Circumference (MUAC)

• Triceps Skinfold

• Subscapular Skinfold
Length
Crown Rump Length
Crown Heel Length
Head Circumference
Mid-Upper Arm Circumference (MUAC)
Recording values from tapes
Triceps Skinfold
Reading Callipers
Always write measurements down straight afterwards.

Don’t try to remember data!
Common Pitfalls

- Rushing measurements
- Writing measurements down incorrectly
- Digit preference

Tips

- Start by measuring adults to get used to equipment
- Shadow an experienced measurer
- Make sure you explain what you will be doing to the parents and put them at ease before starting to measure a baby
Standardisation

- Standard Operating Protocol
- All measurers should be trained by 1 or 2 experienced measurers
- Keep number of measurers to a minimum
- Intra and Inter Observer Studies
- Same equipment across study settings
- Regularly calibrate equipment
Early Nutrition e-Academy Module

- Principles of anthropometry and how best to ensure that high quality data is collected
- Description of frequently made measurements with video demonstrations of each (head, chest, mid upper arm and abdominal circumference; length and triceps and subscapular skinfolds.)
- Summary of common pitfalls and tips to prevent these
- Assessment

Thank you

- All participants who give up their time to be measured

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