

EBM teaching tip

Using a tape measure for intra-observer variability.

This helpful exercise shows inter-observer variability and needs only paper tape measures—1 per member of the group. If you are really short of money, a trip to Ikea can yield a couple. In the group, tell everyone: "Find 3 people in the group to measure your head circumference and tell you the answer. Make a note of each answer; don't tell anyone any of the results. Don't give anyone any hints."

In the context of an adult head circumference of around 55 cm, getting 3 people to be within 1 cm of each other is rare. The narrowest scatter I have observed is 7 mm. If you consider that, in paediatric practice following meningitis, a head circumference that increases by 7 mm in a day will result in urgent head imaging, this is a striking example of how important it is to take into account inter-observer variability when interpreting apparently simple clinical findings.

The exercise can be extended to show intra-observer variability (or its converse in this context), reproducibility, and the subsequent confidence one can place in one's own repeated measurements, which improve with repetition. Most experienced measurers will take the average of 3 separate personal assessments, taking the tape away from the head between each measurement. The exercise can be further extended to include an older plastic tape measure to show the unreliability of measuring devices, which alter with time, or with the user "effort" applied, which, if you consider the pliability of a neonatal skull, may be important.

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Journals reviewed for this issue*

Acta Obstet Gynecol Scand	Arch Pediatr Adolesc Med	Gut	J Vasc Surg
Age Ageing	Arch Surg	Heart	Lancet
Am J Cardiol	Arthritis Rheum	Hypertension	Med Care
Am J Med	BJOG	JAMA	Med J Aust
Am J Obstet Gynecol	BMJ	J Am Coll Cardiol	N Engl J Med
Am J Psychiatry	Br J Gen Pract	J Am Coll Surg	Neurology
Am J Public Health	Br J Psychiatry	J Am Geriatr Soc	Obstet Gynecol
Am J Respir Crit Care Med	Br J Surg	J Clin Epidemiol	Pain
Ann Emerg Med	CMAJ	J Fam Pract	Pediatrics
Ann Intern Med	Chest	J Gen Intern Med	Rheumatology
Ann Surg	Circulation	J Infect Dis	Spine
Arch Dis Child	Cochrane Library	J Intern Med	Stroke
Arch Gen Psychiatry	Crit Care Med	J Neurol Neurosurg Psychiatry	Surgery
Arch Intern Med	Diabetes Care	J Pediatr	Thorax
Arch Neurol	Gastroenterology		

*Approximately 60 additional journals are reviewed. This list is available on request.