

# Differing performance of two assays for the measurement of anti-Mullerian hormone in premenopausal women: A cross-sectional study

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## Abstract

**Objective:** To compare the performance of two anti-Mullerian (AMH) assays over a range of concentrations, in samples collected from young women.

**Design:** A cross-sectional method-comparison study of 168 non-healthcare-seeking women.

**Participants:** Included women were aged 18–39 years, not recently pregnant, breast feeding or using systemic hormones.

**Measurements:** Serum AMH levels were analysed with the Beckman Coulter Access 2 assay from fresh samples and the Ansh picoAMH assay using samples stored at  $-80^{\circ}\text{C}$ , in a parallel setting. Comparisons between the two assays were examined using Bland-Altman plots.

**Results:** Participants had a mean  $\pm$  SD age of  $32.6 \pm 5.4$  years and body mass index of  $28.1 \pm 7.9$  kg/m<sup>2</sup>, and 60.1% were parous. Although the assay results were highly correlated (Spearman correlation .982,  $P < .001$ ), the relationship between the assays was nonlinear. Serum AMH values below 4 pmol/L were lower with the picoAMH assay compared with the Access AMH assay (mean difference in this range was  $-0.49$  pmol/L), but for samples with a mean value above 10 pmol/L, the picoAMH assay consistently measured higher than the Access AMH assay (mean difference in this range was  $+8.2$  pmol/L). As AMH concentrations increased the absolute discrepancy between the assays also increased.

**Conclusions:** This study demonstrates that despite the high correlation between two commercially available AMH assays, the assays performed in a discordant manner at high and low concentrations. Hence, the results of these assays are not interchangeable, highlighting the need to establish specific reference limits for individual assays to guide clinical decision-making and the challenge of establishing future universal cut-offs for the application of AMH levels in clinical practice.

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