

Enhanced Precision of the New Hologic Horizon™ Model Compared With the Old Discovery™ Model Is Less Evident When Fewer Vertebrae Are Included in the Analysis

McNamara EA, Kilim HP, Malabanan AO, Whittaker LG, Rosen HN.

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Objective

The goal of this study was to evaluate the precision of bone density measurements made with the Hologic Horizon and Discovery models and whether the number of vertebrae measured affected the precision.

Materials and Methods

Precision studies were performed with the Hologic Horizon and Discovery models by acquiring spine bone mineral density (BMD) measurements twice for 30 patients in a clinical population of older women and men. The paired data obtained from each patient were used to calculate the least significant change (LSC), a measurement of BMD precision, according to International Society of Clinical Densitometry guidelines. One precision study was performed for the Horizon model and ten precision studies were performed for the Discovery model. LSC values were compared between the two models and within each model depending on whether four or fewer vertebrae were included in the analysis.

Results

There were no significant differences between baseline characteristics of the Horizon and Discovery patient groups with respect to age, height, weight, body mass index, spine T-score, and gender distribution. For both models, there was no significant deterioration in precision when one vertebral body was excluded from analysis. For both models, there was a nonsignificant trend to poorer precision when two vertebrae were excluded and a statistically significant deterioration in precision when three vertebrae were excluded.

Table

Spine BMD LSC (in gram/cm²) for the Hologic Horizon and Discovery Models According to the Vertebrae Included.

Site	Horizon	Discovery	p-value (Horizon vs. Discovery)
L1- L4	0.0168	0.0274	< 0.05
L1- L3	0.0177	0.0310	< 0.05

*Pooled analysis of the results of 10 precision studies performed by 6 technicians, using a total of 254 patients.

When calculated from the data presented in the manuscript, the in vivo percent coefficient of variation (%CV) for the Horizon model was 0.63% for L1-L4.

Conclusion

In this independent, non-industry sponsored study, the Hologic Horizon densitometer had a precision of 0.63% CV at the AP Spine in a clinical population of older women and men. The authors conclude that “the newer Horizon densitometer yields measurements with significantly better precision than the Discovery.”

hologic.com | info@hologic.com | +1.781.999.7300

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