Precision of Your Bone Densitometry Results

Important Information for Your Practice

Why Do I Need Good Precision?

Good precision is an essential component for quality bone densitometry. Lower precision error allows earlier and more reliable detection of the small changes in bone density that occur in patients with osteoporosis. It is important to understand your precision error for both the spine and femur to monitor BMD in your patients. Halving of precision error also halves the time required to detect a statistically significant change in a patient's BMD. The table below demonstrates how your precision error relates to a statistically significant change in your patient's BMD, and thus how long you should wait before a follow-up scan.

Your Precision Error (% CV)	Least Significant Change* (at 95% CI)	Typical Annual Change in Patient BMD	Time needed to detect a significant change**
3.0 %	8.3 %	2.0 %	4.1 years
2.5 %	6.9 %	2.0 %	3.5 years
2.0 %	5.5 %	2.0 %	2.8 years
1.5 %	4.2 %	2.0 %	2.1 years
1.0 %	2.8 %	2.0 %	1.4 years
0.5 %	1.4 %	2.0 %	8.5 *months*

What Affects Precision?

Precision errors depend on the model of densitometer, the technologist, the patient, and the measurement region.

Possible ways to reduce your DXA precision error include:

- Review technologist training for consistency and best practices
- Understand which measurement regions offer the best precision and clinical information
- Update your densitometer software or hardware
- Service your densitometer if there is equipment malfunction

How Is Precision Error Calculated?

Record your results for duplicate measurements on 30 patients (or triplicate measurements on 15 patients) to calculate precision. It is important to use your regular technologist and typical patients to determine your clinical precision.

If you need to acquire scans for your precision study, be aware that state and local regulatory policies often apply to such studies. Please consult the appropriate regulatory body for more information.

Where Can I Get More Information?

The International Society for Clinical Densitometry (www.iscd.org) is a good resource for information on precision and bone densitometry.

* Least Significant Change (LSC) at 95% Confidence Interval = Precision Error x 2.77

** Time to Detect a Significant Change = LSC / Typical Annual Change in Patient BMD