

## The magnitude of the imprecision around routinely ordered medical measurements\*

<b>MEASUREMENT</b>	Chloride Sodium Osmolality	Albumin Bone density Calcium Hematocrit Hemoglobin HbA1c INR MCH MCV Total protein Systolic BP	Creatinine Globulins Glucose Magnesium pCO2 Potassium PTT Total cholesterol T4	AST Alkaline phosphatase BUN HDL LDH LDL Phosphorous Platelets Rheumatoid factor Testosterone Uric acid WBC	GGT Neutrophils PSA Vitamin D	Aldosterone ALT Bilirubin Folate Iron Lactate Triglycerides TSH Vitamin B12
Approximate +/- range for a single measurement	~1-3%	~3-7%	~7-15%	~15-30%	~30-50%	~>50%
The magnitude of the change required between two serial measurements so one can be reasonably confident there has been a change**	~2-5%	~5-10%	~10-20%	~20-40%	~40-60%	~>60%

\* based on the analytic and biologic variation

\*\* also known as the reference change value

Data collated primarily from here - <https://www.westgard.com/biodatabase1.htm>  
 but some also taken and confirmed from a few other sources - numbers rounded off for ease of use  
 James McCormack BSc.Pharm, Pharm D - [therapeuticseducation.org](http://therapeuticseducation.org)