

**Proficiency Testing** – a laboratory testing program in which samples from a common pool are periodically sent to members of a group of laboratories for analysis, following which each laboratory’s results are compared to those of other laboratories and/or to an assigned value and are subsequently reported to the participating laboratory.

**N** – the number of participating laboratories’ data used in the calculation of the group’s SD and/or mean.

**Mean** (targets values) are derived from all-participant mean values calculated by a robust statistical technique. In some cases, however, it is recognized that method-, reagent-, and/or instrument-specific targets may be required and that peer-group-specific targets are used where appropriate.

**Acceptable Range:** Represents limits established using criteria specified by the PT provider, such as CLIA, allowing for rounding to appropriate significant digits. Results falling within this range are scored as acceptable. Any result exceeding these limits is considered unacceptable.

**SDI** (Standard Deviation Index, or a.k.a. **z-score**) – a calculated value that indicates the number of SD units of each result from the group’s mean; describes the bias of a method in units of SD. SDI is expressed as either a positive or negative value, indicating whether your result is above or below the group’s mean. For PT testing, the SDI indicates the relationship between the result you obtained from the PT sample and the expected result determined by the PT provider.

$$\text{SDI} = (\text{your result} - \text{expected result}) / \text{group SD}$$

<b>SDI</b>	<b>Interpretation</b>
<b>0</b>	Your laboratory’s mean value is the same as the group (no bias)
<b>± 1.0</b>	Acceptable performance when compared to your group
<b>± 1.0 to 1.9</b>	Problem may exist, laboratory should investigate problem with bias
<b>± 2.0 or greater</b>	Your result falls among the laboratories with the poorest performance Troubleshoot bias problem and perform corrective action

**Guidelines for evaluating PT testing results when 5 samples are analyzed for each analyte**

1. If 2 or more of the 5 SDI results exceed ± 1.0 SDI, then further investigation is warranted.
2. If the average of the 5 SDI results is more than ± 1.5, then significant bias (SE) is present and calibration data should be reviewed to determine if a shift has occurred.
3. If a single SDI is greater than ± 3.0, there is a high probability of random error (RE).
4. If the range of SDI values between the highest and lowest PT results exceeds ± 4 SDI, random error is a possibility, and the method should be evaluated for sources of imprecision.