



## Laboratory Issues

Insurance companies gather data on insurance applicants in order to assess risk. Data include such things as ECGs, medical records, and laboratory testing.

### Laboratory tests are ordered for:

- ▶ Screening
- ▶ Prognosis
- ▶ Reassurance
- ▶ Monitoring
- ▶ Baseline Data
- ▶ Medical/Legal

Laboratory testing is also used to establish diagnoses, but insurance companies leave this function to clinical physicians. Insurance companies use tests that have shown predictive value in mortality and morbidity assessment (such as abnormal liver tests).

### The perfect test is:

- ▶ Highly sensitive i.e. positive in disease with a low false negative rate
- ▶ Highly specific i.e. negative in health with a low false positive rate
- ▶ Without analytical variation
- ▶ Non-invasive
- ▶ Inexpensive

Unfortunately, there is no perfect test. Often, as sensitivity rises, specificity falls and vice versa.

Blood tests are inexpensive and minimally invasive, and urine tests are inexpensive and non-invasive, but both have biological variation and sampling errors. For example, jogging before a urine test may cause protein in the urine sample. Variations in tests can be due to:

- ▶ Biological variation (age, sex, fasting, pregnancy, trauma to muscle or bone)
- ▶ Sample variation due to specimen collection & handling
- ▶ Prolonged tourniquet time (2 min max)
- ▶ Delay in spinning sample
- ▶ Time in the tube
- ▶ Exposure to extremes of temperature
- ▶ Analytic variation (type of test and inherent accuracy of the technique)

Reference ranges are determined by each laboratory based on the type of testing done. For many tests, the bell shaped curve is used to set the "normal range". The "normal" part of the curve includes the middle 95% of the test results. Other tests; such as glucose, cholesterol, and prostate specific antigen (PSA), have nationally standardized normal ranges.

Laboratory tests are a crucial part of risk assessment in life insurance underwriting.

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