

## AbstractID: 4152 Title: Computer-Aided Detection (CAD) in the Laboratory and the Clinical Environment

Computer-Aided Detection (CAD) is intended to be used in a specific way and several studies have shown that when it is used appropriately improvements in performance can be realized. The effect seems to be much more noticeable in the laboratory than in the clinic. Data ascertained in both environments clearly suggest that the measurement methodology is extremely important as is the actual use of CAD as a part of the clinical workflow. Our observations suggest the following: 1) regardless of the actual improvement (or not) in accuracy, CAD is an important tool; 2) most radiologist do not use it in the clinical environment as originally intended; 3) comparison of sequential viewing "without" followed by "with" CAD may not be the appropriate/optimal way to analyze accuracy improvements; 4) change in detection rates are expected to be low and temporary, while change in average size (or stage) are expected to be small and persistent; 5) performance of the CAD alone does affect observer performance; 6) reliance on CAD in the area of micro-calcifications may result in an increase in biopsy rates; 7) there is a significant difference in the performance of current CAD systems in regards to the detection of micro-calcifications and masses, and this difference results in a significant difference in the level of reliance on CAD results with respect to the two abnormalities. These observations and the supporting experimental data will be shown and discussed.

### **Educational Objectives:**

1. Understanding the difficulty in measuring performance changes with the incorporation of CAD technology into the clinical environment.
2. Understanding the importance of study design in measuring the impact of CAD technology.
3. Understanding the magnitude of the "human" factor in observer performance studies.