

AbstractID: 9026 Title: How does the choice of mAs affect lesion detection performance in digital mammography?

We investigated how the observer detection threshold of mass lesions varied with selected mAs value in digital mammography. Digital mammograms were acquired of an anthropomorphic breast phantom, with and without mass lesions. A difference image was generated corresponding to the lesion alone, which was added at a reduced intensity to a non-lesion digital mammogram during a 4-Alternate Forced-Choice (4-AFC) experiment. The lesion intensity that corresponded to a 92% correct performance level in the 4-AFC experiments was determined ( $I_{92\%}$ ). Five circular shaped mass sizes were investigated ranging in size from 0.7 mm diameter to 12 mm diameter. Values of  $I_{92\%}$  were obtained for x-ray intensities that correspond to 40, 60, 90 and 120 mAs at a constant x-ray tube voltage (28 kV). The mAs used to acquire the digital images had no significant effect on detection performance for circular mass lesions between 0.7 and 12 mm.