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### Comparison of Mammography, Thermography, and Ultrasound

MAMMOGRAPHY	MEDICAL THERMAL IMAGING ( THERMOGRAPHY )	ULTRASOUND
Uses X-rays to produce an image that is a shadow of dense structures. Suspicious area need to be dense enough to be seen.	Uses infrared sensors to detect heat and increased vascularity (angiogenesis) as the byproduct of biochemical reactions. The heat is compiled into an image for computerized analysis.	High frequency sound waves are bounced off the breast tissue and collected as an echo to produce an image.
Structural imaging. Ability to locate the area of suspicious tissue.	Functional imaging. Detects physiologic changes. Cannot locate the exact area of suspicion inside the breast.	Structural imaging. Ability to locate the area of suspicious tissue.
Early detection method	Earliest method of detection. Used as an adjunctive imaging test.	Low spatial resolution (cannot see fine detail). Good at distinguishing solid masses from fluid filled cysts. Used as an adjunctive imaging test.
Findings increase suspicion. Cannot diagnose cancer.	Findings increase suspicion. Cannot diagnose cancer.	Findings increase suspicion. Cannot diagnose cancer.

**A BIOPSY IS THE ONLY TEST THAT CAN DETERMINE IF A SUSPECTED TISSUE AREA IS CANCEROUS.**

Can detect tumors in the pre-invasive stage.	<b>Can provide the first signal that a problem is developing.</b>	Ability to detect some cancers missed by mammography.
	<b>A positive infrared image represents the highest known risk factor for the existence of or future development of breast cancer—10 times more significant than any family</b>	
Average 80% Sensitivity (20% of cancers missed ), in women over age 50. Sensitivity drops to 60% (40% of cancers	<b>Average 90% Sensitivity (10% of cancers missed ) in all age groups.</b>	Average 83% Sensitivity (17 % of cancers missed ) in all age groups.
Hormone use decreases sensitivity,	No known effect	No known effect
Large, dense, and fibrocystic breasts cause reading difficulties.	No effect	No known effect
In most women, the medial upper triangle, peripheral areas next to the chest wall, and the inframammary sulcus cannot be	Not applicable.	All areas visualized.