

ThermaScan Quotes

From the mid-1950s to the mid-1970s, it was expected that thermography would hold the key to breast cancer detection, as surface temperature increases overlying malignant tumors had been demonstrated by thermographic imaging...Recent studies suggest that an abnormal thermal sign, in the light of our present knowledge of breast cancer, is ten times as important an indication as is family history data.

Keith LG, Oleszczuk JJ, Laguens M. Circadian rhythm chaos: a new breast cancer marker. *Int J Fertil Womens Med.* 2001 Sep-Oct;46(5):238-47.

In the past 30 years there have been numerous studies that have demonstrated thermography to have the ability to detect breast abnormalities that other screening methods may not have identified. The Ville Marie study demonstrated that thermography alone had a sensitivity of 83% in detecting breast cancer [versus 66% sensitivity for mammography], while the combination of mammography and thermography had a 95% sensitivity...No single tool provides excellent predictability; however, a combination that incorporates thermography may boost both sensitivity and specificity.

Kennedy DA, Lee T, Seely D. A comparative review of thermography as a breast cancer screening technique. *Integrative Cancer Therapies.* 2009 Mar;8(1):9-16

Our recent retrospective analysis of the clinical records of patients who had breast thermography demonstrated that an abnormal thermogram was associated with an increased risk of breast cancer and a poorer prognosis for the breast cancer patient. [The findings indicate that] breast cancer patients with abnormal thermograms have faster-growing tumors that are more likely to have metastasized and to recur with a shorter disease-free interval.

Head JF, Wang F, Elliott RL. Breast thermography is a noninvasive prognostic procedure that predicts tumor growth rate in breast cancer patients. *Ann N Y Acad Sci.* 1993 Nov 30;698:153-8.

A prognostic classification for thermographic staging of breast cancer has been applied to a cohort of 70 patients from 5040 screenees enrolled in the Albert Einstein Medical Center Breast Cancer Detection Demonstration Project. The thermographic scoring system clearly shows shorter survival for patients with poor thermographic prognostic factors, 30% surviving at 5 years and only 20% at 10 years compared with overall survival of 80% at 5 years and 70% at 10 years.

PMID: 3390789

Isard HJ, Sweitzer CJ, Edelstein GR. Breast thermography. A prognostic indicator for breast cancer survival. *Cancer.* 1988 Aug 1;62(3):484-8

Thermography seeks to identify the presence of a tumour by the elevated temperature associated with increase blood flow and cellular activity. Of particular interest would be investigation in younger women and men, for whom mammography is either unsuitable or of limited effectiveness...For breast cancer care, it has become possible to use thermography as a powerful adjunct and biomarker tool, together with mammography for diagnosis purposes.

Ng EY, Kee EC. Advanced integrated technique in breast cancer thermography. J Med Eng Technol. 2008 Mar-Apr;32(2):103-14.

It was demonstrated that thermographic imaging could detect temperature changes as small as 0.1 degrees C on the skin surface at an early stage of tumor development. The findings of the study indicate that thermographic imaging might have considerable potential in monitoring human tumor xenografts and their response to anticancer drugs.

Song C, Appleyard V, Murray K, Frank T, Sibbett W, Cuschieri A, Thompson A. Thermographic assessment of tumor growth in mouse xenografts. Int J Cancer. 2007 Sep 1;121(5):1055-8.

Infrared imaging offers a safe noninvasive procedure that would be valuable as an adjunct to mammography in determining whether a lesion is benign or malignant.

Parisky YR, Sardi A, Hamm R, Hughes K, Esserman L, Rust S, Callahan K. Efficacy of computerized infrared imaging analysis to evaluate mammographically suspicious lesions. AJR Am J Roentgenol. 2003 Jan;180(1):263-9.

Dangers of Mammography

Our estimates suggest that a decade of annual two-view mammographic screening before age 40 years would result in a net *increase* in breast cancer deaths, and that starting at age 40 years could result in a material net decrease only if breast cancer mortality is reduced by about 20% or more in women screened.

Berrington de González A, Reeves G. Mammographic screening before age 50 years in the UK: comparison of the radiation risks with the mortality benefits. Br J Cancer. 2005 Sep 5;93(5):590-6.

This [new evidence] suggests that the risks associated with mammography screening may be approximately five times higher than previously assumed and that the risk-benefit relationship of mammography exposures may need to be re-examined.

Heyes GJ, Mill AJ. The neoplastic transformation potential of mammography X rays and atomic bomb spectrum radiation. Radiat Res. 2004 Aug;162(2):120-7

Women who carry germline mutations in the BRCA1 and BRCA2 genes are at greatly increased risk of breast cancer. Numerous studies have shown that moderate to high doses of ionizing radiation are a risk factor for breast cancer...In our series of BRCA carriers, we detected a relatively large effect on breast cancer risk with a level of radiation exposure that is at least an order of magnitude lower than in previously studied medical radiation-exposed cohorts.

Andrieu N, Easton DF, Chang-Claude J, Rookus MA, et al. Effect of chest X-rays on the risk of breast cancer among BRCA1/2 mutation carriers in the international BRCA1/2 carrier cohort study: a report from the EMBRACE, GENEPSO, GEO-HEBON, and IBCCS Collaborators' Group. *J Clin Oncol*. 2006 Jul 20;24(21):3361-6.

BRCA mutation carriers are recommended to start mammographic screening for breast cancer as early as age 25-30 years.

If we assume that the mortality reduction from mammography is 15%-25% or less for young women, these results suggest that there would be no net benefit from annual mammographic screening of BRCA mutation carriers at age 25-29 years; the net benefit would be zero or small at age 30-34 years, but there should be some net benefit at age 35 or older.

Berrington de Gonzalez A, Berg CD, Visvanathan K, Robson M. Estimated risk of radiation-induced breast cancer from mammographic screening for young BRCA mutation carriers. *J Natl Cancer Inst*. 2009 Feb 4;101(3):205-9.

Screening with clinical breast examination and mammography showed lower sensitivity in BRCA1 or BRCA2 carriers than in the general population. Screening with MRI might offer higher sensitivity rates than mammography.

Calderon-Margalit R, Paltiel O. Prevention of breast cancer in women who carry BRCA1 or BRCA2 mutations: a critical review of the literature. *Int J Cancer*. 2004 Nov 10;112(3):357-64.

In this prospective clinical trial of 92 women undergoing digital infrared thermal imaging (DITI) with suspicious breast lesions identified on prior mammogram or ultrasound, we have shown that the SBS can detect breast pathology with sensitivity up to 97% and a negative predictive value of 82%. DITI is painless, noninvasive, does not emit harmful radiation, has no patient risk, provides immediate results, and is relatively inexpensive. Compared to magnetic resonance imaging (MRI)—an adjunctive diagnostic tool for breast malignancy gaining more popularity—DITI is considerably more affordable to both patient and provider. MRI may cost \$2,000 to the patient for each examination and \$2 million to own the equipment, while DITI costs less than \$200 for each exam and approximately \$25,000 to own the equipment. In conclusion, we have shown that a modernized DITI system can be a useful adjunctive test in detecting breast cancer with 97% sensitivity in this prospective clinical trial of 92 patients.

Arora N, Martins D, Ruggiero D, Tousimis E, Swistel AJ, Osborne MP, Simmons RM. Effectiveness of a noninvasive digital infrared thermal imaging system in the detection of breast cancer. *American Journal of Surgery*. 2008 Oct;196(4):523-6.