

## Comprehensive Breast Program

Dartmouth's Comprehensive Breast Program brings together specialists from various medical disciplines at DHMC and The Norris Cotton Cancer Center to provide accurate diagnoses and treatments, delivering a range of medical and supportive services focused on you, not just your illness. If breast disease is found, a team is formed that includes your primary care physician, radiologists, pathologists, oncologists, nurses, technologists, care coordinators, and, if needed, reconstructive surgeons and geneticists. The team works together to constantly monitor your progress, reviewing and adjusting your treatment plan in light of the best available options and your own individual needs and preferences.

## Breast Imaging Research

Dartmouth radiologists have a longstanding commitment to breast imaging research. Highlights include pioneering clinical trials on 3D mammography, studies on the non-surgical treatment of tumors through freezing ("cryoablation"), and research into the usefulness of MRI in detecting small breast lesions. In collaboration with the Thayer School of Engineering, the Imaging Center's radiologists have helped develop alternative breast imaging systems involving near-infrared light, electrical impedance, microwave spectroscopy, and measurements of tissue elasticity. The hope is that these techniques, alone or in combination with existing modalities, can improve the accuracy, comfort and safety of existing methods.

Prototype of an imaging system that uses near-infrared energy to locate rapidly metabolizing—and potentially cancerous—areas of breast tissue.



## Information Resources



The National Cancer Institute maintains a website with excellent resources for anyone seeking more information on breast cancer and mammography. [www.cancer.gov](http://www.cancer.gov)

### *RadiologyInfo.org*

With clear explanations and useful illustrations, Radiology-Info is a comprehensive guide to medical imaging, and is an excellent source of information on breast imaging and image-guided procedures. [www.radiologyinfo.org](http://www.radiologyinfo.org)

The American Cancer Society website offers a good selection of information on mammography; follow link to "cancer screening guidelines." [www.cancer.org](http://www.cancer.org)



The American College of Radiology, with the Society of Breast Imaging, provides a wealth of general information on breast imaging, with many resource links to videos, news articles, and breast cancer research. [www.mammographysaveslives.org](http://www.mammographysaveslives.org)



### Breast Imaging Center of Excellence

The Dartmouth-Hitchcock breast imaging team was recently accredited as a Breast Imaging Center of Excellence by the American College of Radiology. The designation is awarded in recognition of high standards in image quality, personnel qualifications, state-of-the-art equipment, and a commitment to quality assurance and the unending goals of practice improvement. Call 603-650-4488 for information.

**image right image safe**  
The D-H Commitment to Imaging Safety

# Breast Imaging

at  
Dartmouth-Hitchcock



an accredited  
Breast Imaging  
Center of Excellence



At the heart of the Breast Imaging Center at Dartmouth-Hitchcock is a specialized team dedicated to breast imaging care—from screening mammography to the full range of diagnostic imaging and image-guided procedures. As part of the Comprehensive Breast Program, the imaging team will also be there with you should you ever need more involved medical treatment. Our goal is to combine professional excellence and proven imaging science with a commitment to individualized, compassionate patient-centered care.

 Dartmouth-Hitchcock

## Mammography

Mammography is a type of x-ray imaging used for breast cancer screening and in the diagnosis of breast diseases in women. Mammography is quick and usually painless, though some women may experience discomfort with the paddles used to compress the breast in order to improve image clarity.



**SCREENING MAMMOGRAPHY** is used when there are no symptoms of breast disease as way to detect cancer at an early stage when the disease is potentially curable and can be treated less intensively. Research has shown that mammography can reduce the chance of dying from breast cancer.

**DIAGNOSTIC MAMMOGRAPHY** is used when symptoms that may indicate breast disease have been found by the patient or her doctor. Diagnostic mammography may also be done after an abnormal screening mammogram in order to evaluate the area of concern on the screening exam.

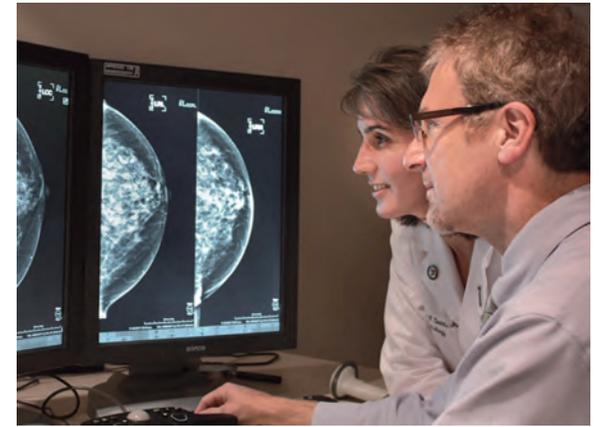
**3D MAMMOGRAPHY**—digital breast tomosynthesis (DBT)—is a new type of breast imaging used for both screening and diagnostic purposes. For younger women, women with dense breasts, and when additional imaging information is essential, DBT can result in earlier detection of disease, more precise characterization of tumors, and reduce the likelihood of unnecessary call-backs and biopsies. The patient's experience is almost identical to that of standard mammography, but in DBT multiple exposures are taken across a 30° arc, creating a series of images which can be computer "reconstructed" as 3D studies.

## Breast MRI

Magnetic resonance imaging (MRI) is the most sensitive breast imaging modality. It may be used in screening exams for women with a genetic predisposition or strong family history of breast cancer, for characterization of a newly diagnosed breast cancer, for follow-up monitoring after chemotherapy or surgery, or to evaluate the status of a breast implant. An MRI exam is a radiation-free and usually painless procedure lasting between 30 and 90 minutes. Preparation includes answering questions about your medical history (metallic implants can be dangerous in the magnetic field of an MR scanner) and in most cases, an injection of a contrast solution to improve image clarity. In the scanner you lay face-down on a platform with openings to accommodate your breasts. For patients with difficulty remaining still, or who feel discomfort in closed-in spaces, sedation can be given, though it is not usually needed.



3D digital breast tomosynthesis system. The Breast Imaging Center participated in some of the first clinical trials for this groundbreaking new technology.



## Breast Ultrasound

Ultrasound is a painless, radiation-free modality that uses sound waves to produce images of internal structures. Ultrasound imaging is often used to identify the nature of breast lumps or abnormalities found in mammography. An exam usually involves lying comfortably while an ultrasound technologist or radiologist applies a clear water-based gel to the breast and moves an imaging wand ("transducer") over the skin surface. Ultrasound is also used for non-invasive image guidance in procedures like cyst aspirations.

## Breast Biopsy

When an abnormality has been found—by clinical examination, mammography, ultrasound, or MRI—a biopsy may be recommended in order to better understand the nature of the problem. Traditionally, biopsy samples of breast tissue in which malignancy is suspected were obtained surgically. Today, breast biopsies are more likely to be performed as a minimally-invasive procedure in which imaging technology is used to accurately guide a needle to the abnormality for sampling. The breast skin and deeper tissues are anesthetized with local anesthesia and a small incision is made in the breast. The procedure is safe and accurate, it removes the need for exploratory surgery, and provides essential information for planning treatment if potentially dangerous disease is found.