

# The Benefits of Diagnostic Imaging

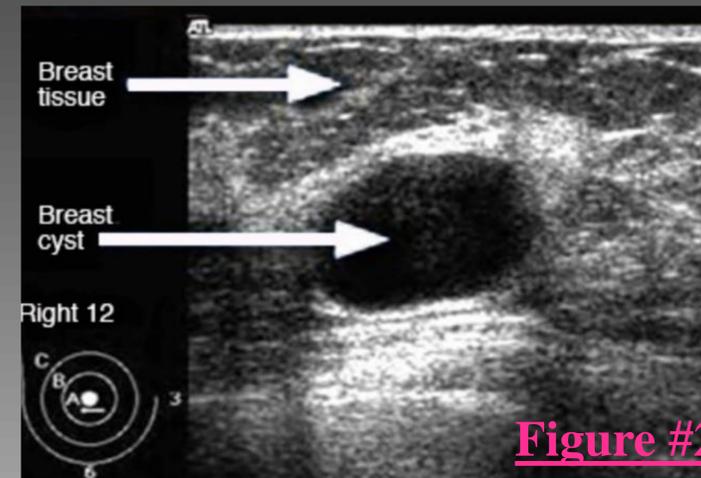
## Women's Health

RTS 1

### Magnetic Resonance Imaging

- With the use of magnetism to look at the soft tissue in more detail than ever before when comparing magnetic imaging resonance (MRI) to other radiology modalities.
- With use of IV contrast (preferably Multihance or Prohance), images are acquired prior to the injection, then after to see the highlighted masses and vessels like the image below (See Figure 1).
- MRI's are typically loud running anywhere from 65 – 95 dB and certain sequences can even spike up to 110 decibels.
- Breast MRI's last around an average of 45 minutes.
- It is also one of the best imaging devices for determining whether silicone breast implants have ruptured or not.
- MR's of the breast are used for patients who have a higher risk of acquiring breast cancer and go into much more detail about lumpectomy sites, evaluating implants, as well as seeing abnormalities within the tissue.

"An average of 266,000 new cases of breast cancer will be diagnosed in women in 2018."<sup>4</sup>



Breast Ultrasound acquired from radiologyinfo.org

Figure #2

Cases of Breast Cancer Related to Age at Diagnosis

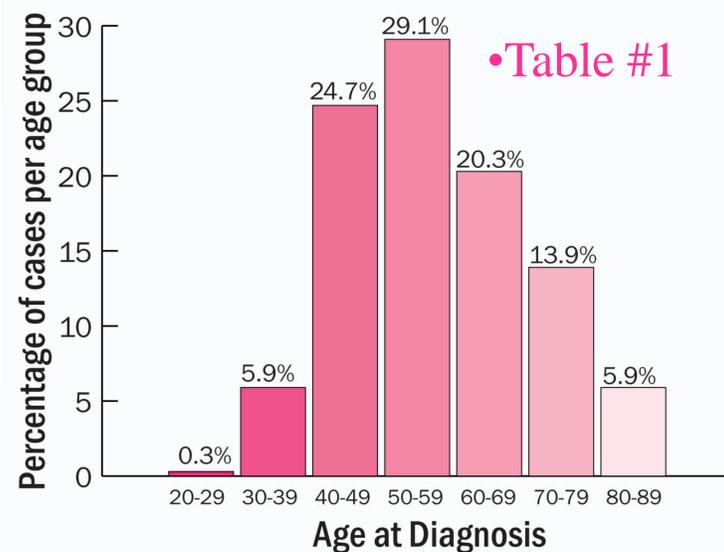


Table #1

Source: The Breast Health Center 1993-2006

"1 : 8 women develop breast cancer every year which averages 12.4% of the US population."<sup>3</sup>

### Ultrasound

- While mammograms are a great starting point in catching and diagnosing cancer early, ultrasounds are able to be use sound waves to produce an image based off of the echoes from the transducer to the anatomy and back. The images are more diagnostic compared to normal mammograms and they have no radiation penetrating the patient.
- Can better compare abnormal breast tissue to normal tissue.
- Noninvasive.
- Use this modality to aid in breast biopsies.

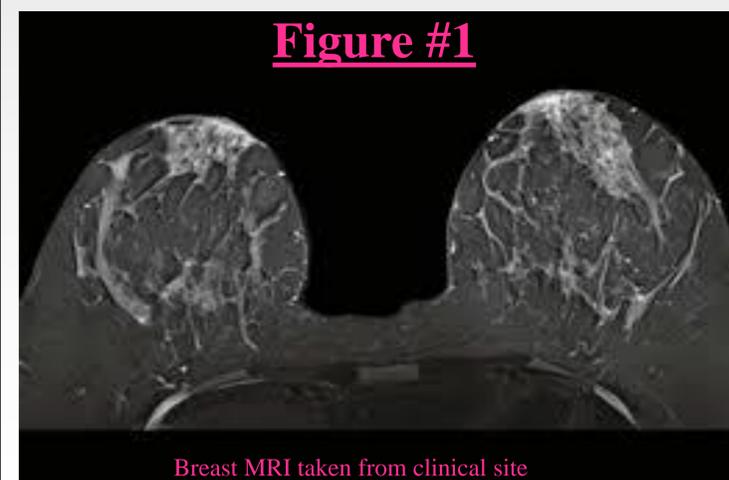
### Mammogram

- Using low-dose radiation, mammograms allow for yearly scanning to detect any precancerous cells or calcifications within the breast tissue. Breasts are each compressed with .44psi between the IR and a plastic translucent paddle.
- 3D mammograms offer "better" cancer detection as well as more image flexibility, less anxiety towards the patient, and fewer negative biopsy recommendations.
- 15% of screening mammograms require more testing such as an ultrasound.
- Every 2D image per breast causes .4 mSv of radiation to the patient.

### References

1. Images 1 acquired at clinical site.
2. The Role of CT in Breast Imaging. eRADIMAGING.com RT CE.
3. Mammography Facts. (n.d.). Retrieved October 20, 2017, from <http://www.mammographysaveslives.org/Facts>
4. Wolff, A. American Society of Clinical Oncology 2006 Update of the Breast Cancer Follow-Up and Management Guidelines in the Adjuvant Setting. Journal of Clinical Oncology. <http://ascopubs.org/doi/abs/10.1200/jco. Updated March 2006. Accessed November 29, 2017>
5. Figure 2 & 3 acquired from radiologyinfo.org

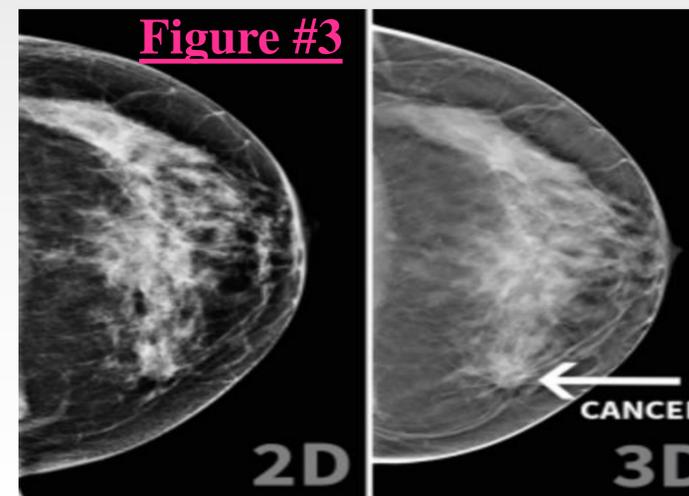
Figure #1



Breast MRI taken from clinical site

"Less than 1% of breast cancer is acquired by men, which is comparable to 1 : 1,000 men."<sup>3</sup>

Figure #3



Breast Mammogram acquired from radiologyinfo.org