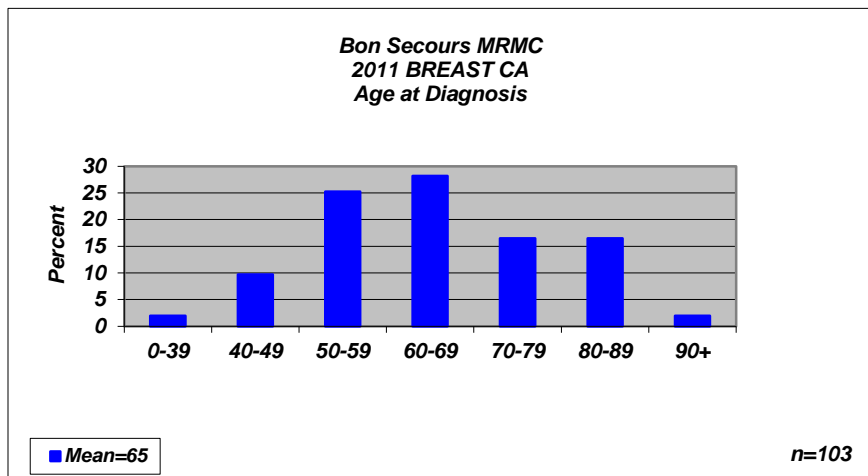


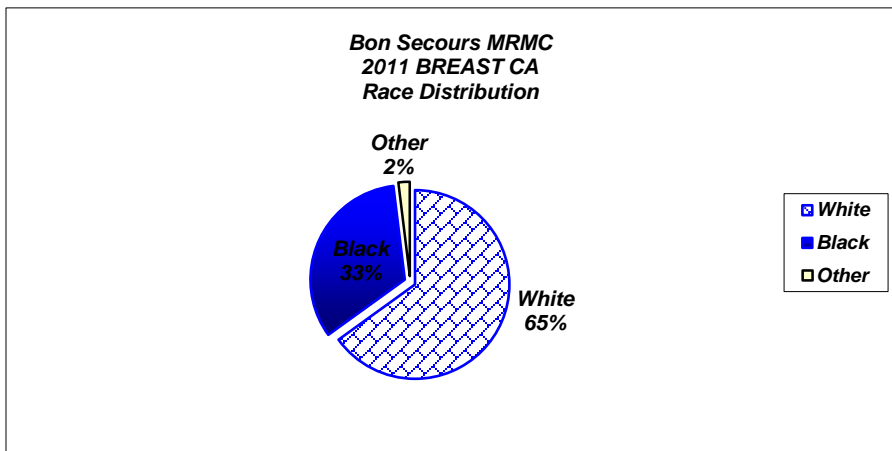
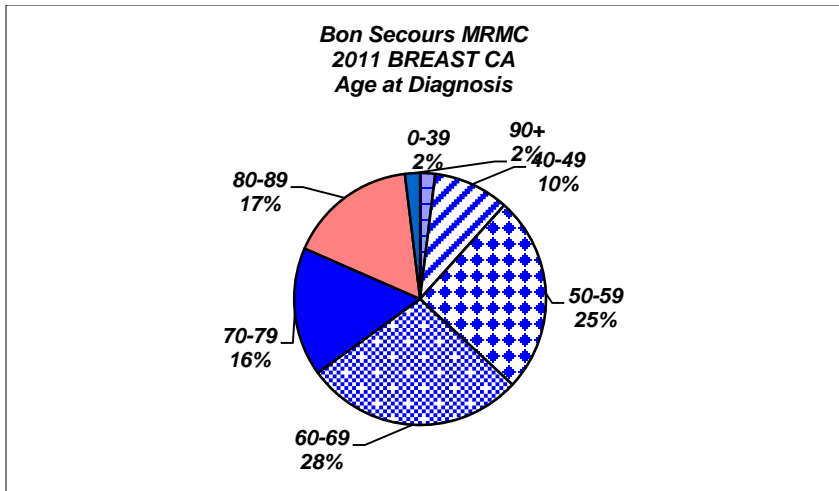
Site Study- MRMC Breast cancer.

Rashmi Pradhan Vaidya, MBBS, MS, MD,FACS.

Aside from non-melanoma skin cancer, breast cancer is the most common cancer among women in the United States. It is also one of the leading causes of cancer death among women of all races and Hispanic origin populations. Breast cancer is the most common cancer and the second leading cause of death in women in the United States. According to the National cancer institute's Surveillance Epidemiology and End results data (SEER) is estimated that there will be 226,870 women diagnosed with breast cancer and 39510 women will die of it , with a death rate of 23.0 per 100,000 women per year and 2190 males diagnosed with breast cancer with 410 men dying of it.9 1.2) From SEER data the mean age at diagnosis for cancer of the breast was 61 years.(2)In MRMC in 2011, 103 patients were treated for breast cancer, a significant increase over the 82 cases treated in 2010. Mean age at diagnosis was 65 years. 2% of patients were 39 years or below, 10% of patients were between 40-49 years, 25% of patients were between 50 and 59 years, 27% of patients were between 60-69 years, 17% of patients were between 70-79 years and 17% of patients were between 80-89 years and 2% patients were over 90 years. These are comparable to SEER data. figure



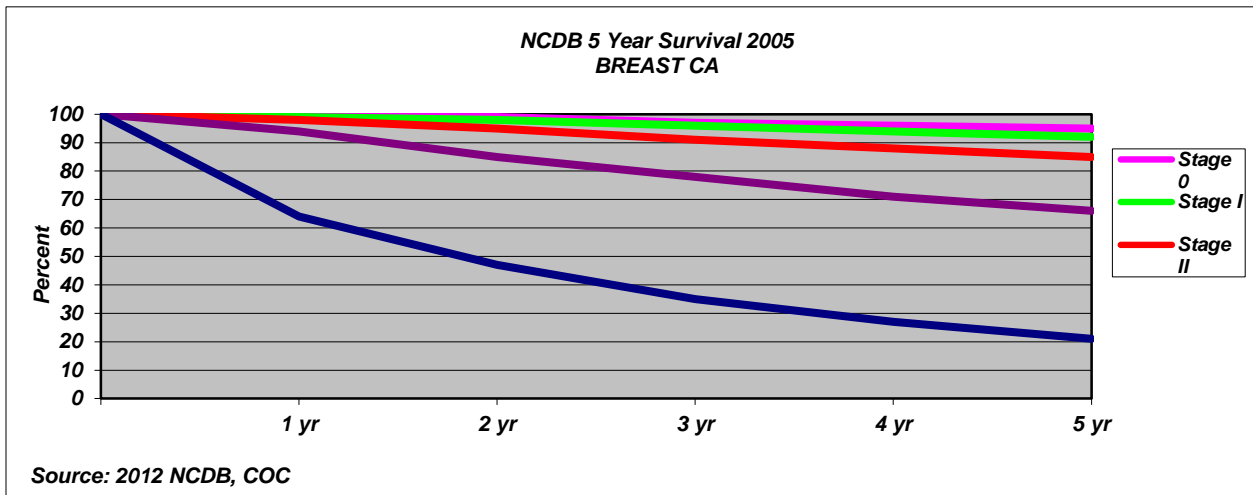
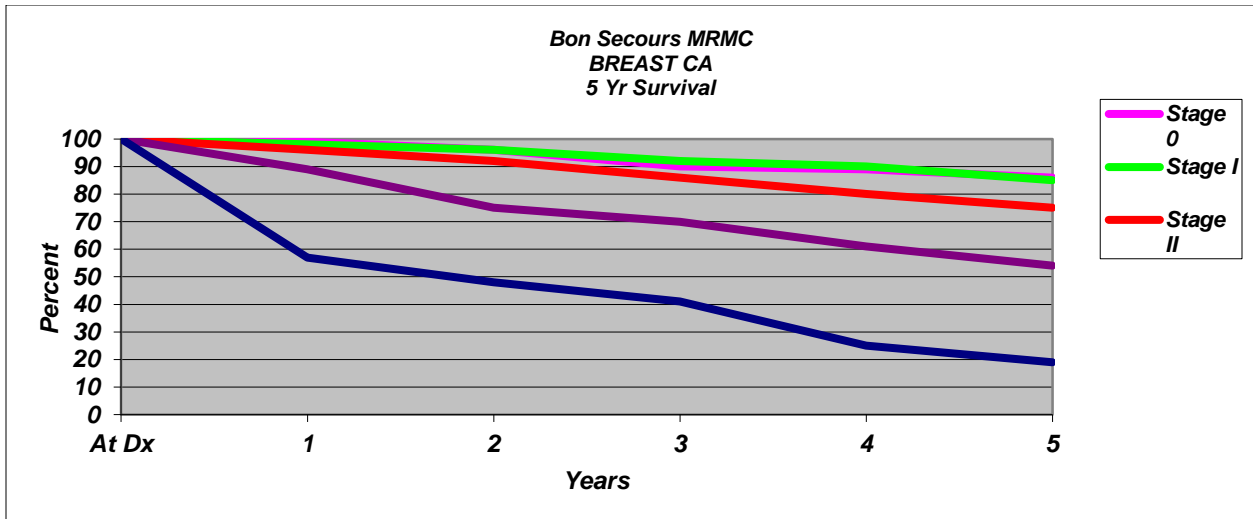
The age adjusted incidence rate was 124.3 per 100,000 women per year., according to SEER data from 2005-2009.(2)In MRMC in 2011, 33% of patients treated for breast cancer were African American, 65% were Caucasian and 2% with other ethnicities. Figure



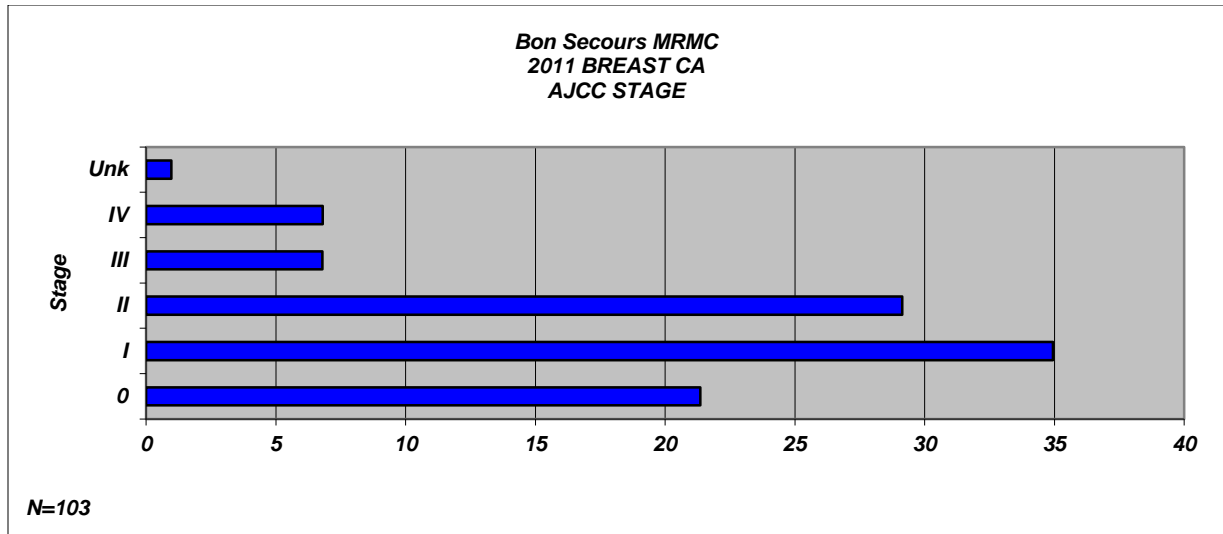
Survival and Stage

Overall 5 year relative survival for 2002-2008 was 89%, with 90.3% for white women and 77.7% for African American women. 5 year survival of patients at different stages treated at MPMC was compared to the 5 year survival for stage matched patients in the NCDB database

As seen from the accompanying graphs, there is room for improvement in survival at 5 years at every stage when comparing MPMC data to NCDB data, being 86% for Stage 0 to NCDBs 95%, 85% for Stage 1 to NCDBs 92%, 75% for Stage 2 to NCDBs 85%, 54% for Stage 3 to NCDBs 66% and finally 19% at Stage IV to NCDBs 21%. Admittedly, smaller numbers could account for some of the magnitude of difference in the data but there is still room for improvement.



In MRMC in 2011, 21.36% patients were treated for DCIS, 34.95% patients had Stage 1 breast cancer, 29.13% patients had Stage 2 breast cancer, 6.79% patients had Stage 3 breast cancer and 6.8 % had stage IV breast ca.

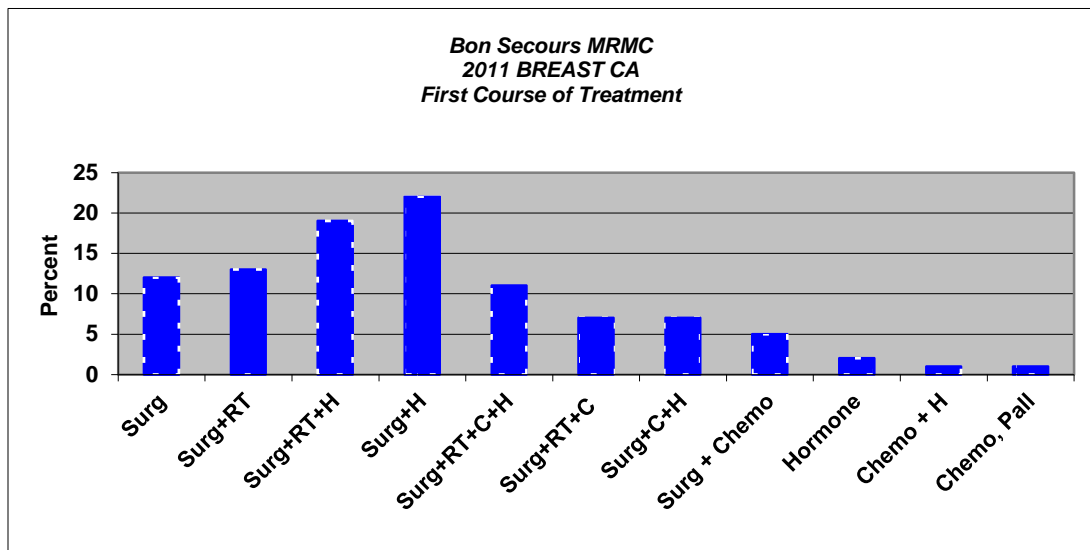


Lifetime risk

12.38% women born today will be diagnosed with breast cancer at some time during their lifetime, i.e. 1 in 8 women.

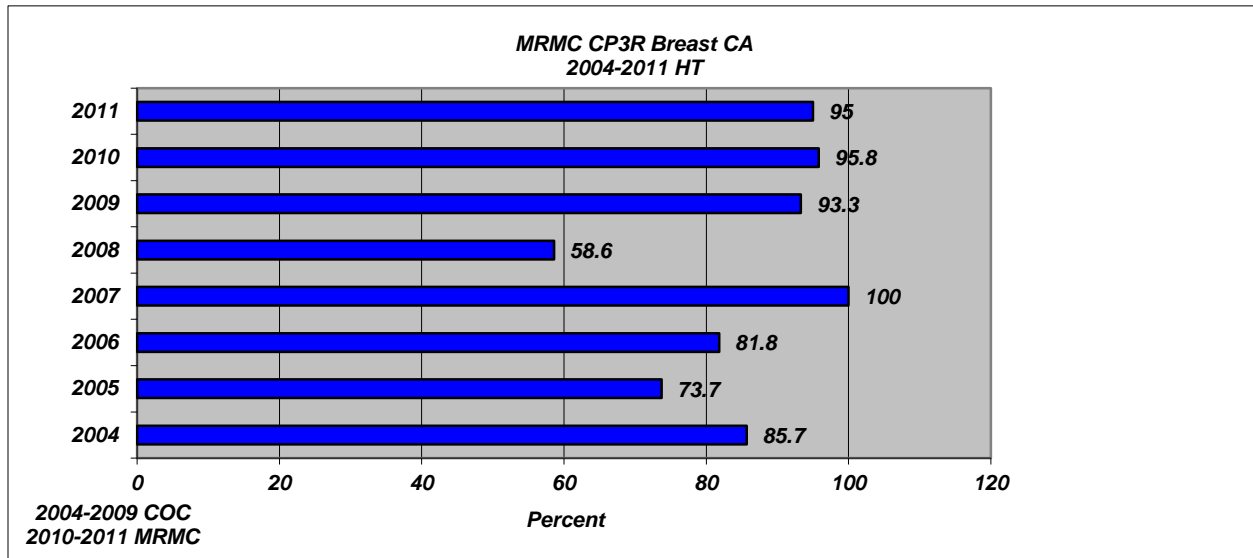
First course of treatment by stage

A majority of patients with disease localized to primary site or regional disease had surgery as the first line of treatment and this was followed by chemotherapy, radiation therapy and hormonal therapy as adequately indicated.



MPMC CP3R report

95% of eligible patients got Anti hormonal therapy as part of the adjuvant therapy for the treatment of breast cancer.

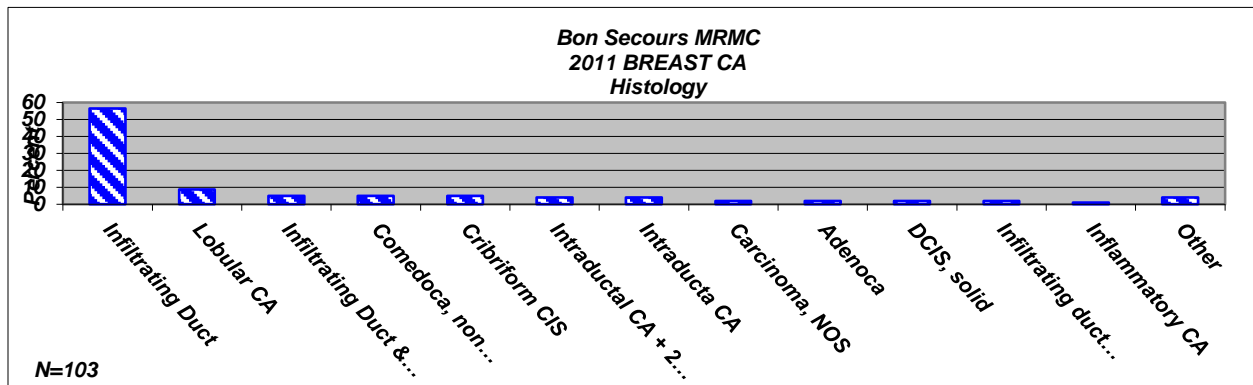


Exact etiology of breast cancer is unknown at present but risk factors are known. Combined estrogen and Progesterone hormone replacement therapy causes approximately a 26% increase in incidence of invasive breast cancer, based on a Randomized Controlled trial. There is solid evidence to prove Ionizing radiation is associated with an increased risk of developing breast cancer starting 10 years after exposure and persisting lifelong. Risk depends on dose and age at exposure, with the highest risk occurring during puberty. Based on solid observational study obesity is associated with an increased breast cancer risk in postmenopausal women who have not used HRT. Based on solid evidence, exposure to alcohol is associated with an increased breast cancer risk in a dose dependant fashion. The relative risk for women consuming approximately four alcoholic drinks/day when compared with non drinkers is 1.32. The relative risk increases by 7% for each drink per day. This is based on case control and cohort studies. Based on solid evidence women who inherit gene mutations associated with breast cancer have an increased risk which could vary from 45-85% lifetime risk for developing breast cancer. 5-10% of women diagnosed with breast cancer with have hereditary breast cancer caused by a germ line mutation such as BRCA 1 and 2. These mutations also carry a risk for ovarian cancers and other primary cancers. Genetic testing and counseling is available for such individuals. (3, 4.5)Based on solid evidence following are the factors that decreased risk for breast cancer: early pregnancy, breast feeding, strenuous exercise for more than four hours per week. Average RR reduction is 30-40%.

Screening mammography and risk reduction from breast cancer mortality: a systematic review that examined ecologic and large cohort studies of women aged 50 to 69 years and found that any relative reduction in breast cancer mortality due to screening in this age group would likely be no greater than 10%.

Breast cancer is classified into a variety of histological types, some of which have prognostic importance. For example, favorable histological types include mucinous, medullary, and tubular carcinoma.(6) Invasive ductal carcinoma is the most common histological type found in about 85% cases of breast cancer.

In MRMC in 2011 56.31% patients had invasive ductal carcinoma, 8.7% had invasive lobular carcinoma and the rest had other forms of breast cancer including .



Different types of treatments are used and multimodality therapy is commonly used for treating breast cancer. Surgical options are those of lumpectomy versus a simple mastectomy along with a sentinel node biopsy. Axillary node dissection is now reserved for those patients with biopsy proven axillary nodal disease. Frequently mastectomy is offered with immediate or delayed breast reconstruction with exogenous or autologous tissue used for reconstruction. Chemotherapy uses drugs and targeted therapy uses monoclonal antibodies such as herceptin and tyrosine kinase inhibitors to stop the growth of breast cancer cells or kill them. Radiation therapy uses high energy x-rays or other type of radiation to kill cancer cells in the breast tissue. There are different types of radiation therapy such as external beam radiation therapy, accelerated partial breast radiation therapy using devices such as balloon catheters, interstitial wires or 3 D conformal whole breast radiation therapy.

Anti hormonal therapy in the form of Selective estrogen receptor modulators such as Tamoxifen used in all premenopausal women and some post menopausal women and aromatase inhibitors, in post menopausal women is effective in patients with Estrogen and progesterone receptor positive cancers as is ovarian ablation or oophorectomy in premenopausal women.

Prognosis and selection of therapy may be influenced by the following clinical and pathology features (based on conventional histology and immunohistochemistry):

- The age and menopausal status of the patient.
- The stage of the disease.
- The histological and nuclear grade of the primary tumor.
- The ER and PR status of the tumor.
- Human epidermal growth factor type 2 receptor (HER2/neu) over expression.
- Proliferative capacity of the tumor (e.g., Ki67).

Molecular profiling has led to classification of breast cancer into the following five distinct subtypes:

- Basal-like.
- *HER2*+
- Normal.
- Luminal A.
- Luminal B.

The use of molecular profiling in breast cancer includes the following:

- ER and PR status testing.
- *HER2*/neu receptor status testing.
- Gene profile testing by microarray assay or reverse transcription-polymerase chain reaction (e.g., Mamma Print, *Oncotype DX*). (7,8,9)

In MRMC, in 2011 54 out of 101 cancers were ER/PR positive and *HER2* negative. 7 Patients had ER/PR and *HER2* positive cancers, 2 patients had ER/PR negative and *HER2* positive cancers and 4 patients had Triple negative cancers. (Irwin table)

			<i>SMH</i>	<i>MRMC</i>	<i>SFMC</i>	<i>Totals</i>
Stage 1-3		ER or PR +, <i>HER2</i> -	237	53	137	427
		ER/PR -, <i>HER2</i> +	12	2	7	21
		Triple Negative	44	2	36	82
		ER or PR +, <i>HER2</i> +	22	4	19	45

			<i>SMH</i>	<i>MRMC</i>	<i>SFMC</i>	<i>Totals</i>
Stage IV		ER or PR +, <i>HER2</i> -	6	1	1	8
		ER/PR -, <i>HER2</i> +	0	0		0
		Triple Negative	2	2		4
		ER or PR +, <i>HER2</i> +	2	3		5

It is heartening though that the age adjusted mortality rate from breast cancer currently 23 per 100,000 women per year ,has been trending downward from 1998 to 2009 and given all the state of the art treatment modalities available to patients at SMH we hope to do even better in the future.(2

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