

**BREAST CANCER RISK ASSESSMENT
AND MANAGEMENT**

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FINANCIAL DISCLOSURES

None

OBJECTIVES

- Identify the Components of Breast Cancer Screening
- Perform Breast Cancer Risk Assessment
- Management of Patients from Average to High Risk

BREAST CANCER STATISTICS

- One in eight women in the United States will be diagnosed with breast cancer in their lifetime
- The American Cancer Society estimated number of deaths from breast cancer in 2017--41,070¹
- Mortality rates from breast cancer has dropped 38% from 1989 through 2014—in part due to mammographic screening, in part due to better medical therapy^{2,3}
- The key to success with breast cancer is early detection, or, even better, prevention—that's where risk assessment and management can make a tremendous impact

THE COMPONENTS OF BREAST CANCER SCREENING

- **Part One: The Exam Before the Test**

IMAGING IS NOT A STAND ALONE MEANS OF BREAST CANCER EVALUATION

- Neither the current technology of mammography or any other imaging tests, nor the subsequent interpretation of such tests is foolproof. Clinical judgement is needed to ensure appropriate management. The patient's concerns and physical findings must be taken into account along with imaging results and histologic assessment.⁴
- Bottom line: Imaging and clinical exam **COMBINED** are the most effective means of breast cancer detection and are **BOTH** important for screening

NCCN BREAST CANCER SCREENING AND DIAGNOSIS GUIDELINES

- The Components of a Breast Screening Evaluation⁵
 - Depend on age, family history, medical history
 - Includes breast awareness
 - Regular clinical encounters with breast cancer risk assessment AND clinical breast exam (CBE)
 - Breast imaging with screening mammography with utilization of breast ultrasound and MRI as appropriate

BREAST CANCER RISK ASSESSMENT: THE CLINICAL ENCOUNTER AKA “THE ART OF MEDICINE”

- This is the starting point for screening guidelines
- Includes a complete medical history, breast cancer risk assessment, and CBE
- The clinical encounter maximizes the earliest detection of breast cancers and identifies patients at elevated risk that may benefit from increased screening and risk reduction strategies
- It is important aid in the detection of early stage palpable breast cancers, most importantly those that are mammographically occult⁶

BREAST CANCER RISK ASSESSMENT CLINICAL ENCOUNTER CONTINUED

- In an asymptomatic patient with a negative physical exam the next step is to identify if the patient falls in the average risk for breast cancer vs. increased risk as this will impact radiographic screening recommendations as well as the use of certain risk reducing strategies

NCCN GUIDELINES FOR BREAST CANCER RISK REDUCTION: INCREASED RISK CATEGORIES⁷

- Women >35 with a 5 year risk of invasive cancer >1.7% based on the Gail Model
- Women with a lifetime risk of breast cancer >20% based on a history of lobular carcinoma in situ, atypical ductal hyperplasia, or atypical lobular hyperplasia
- Women with a lifetime risk >20% defined by models largely dependent on family history, (i.e. Tyrer-Cuzick or Claus models)
- Women with a history of mantle radiation between the ages of 10-30
- Women with a pedigree consistent with or with a known genetic mutation

BREAST CANCER RISK ASSESSMENT INTAKE FORM

BREAST CANCER RISK ASSESSMENT: RISK FACTORS⁸

- Familial/genetic factors
- Demographics
- Reproductive history
- Lifestyle factors
- History of breast atypia or LCIS
- Breast density
- Thoracic radiation between the ages of 10-30

NCCN GUIDELINES FOR GENETIC ASSESSMENT: PATIENTS WITHOUT CANCER¹⁵

- Close relative (1st, 2nd, or 3rd degree relative) with one of the following:
 - Known genetic mutation
 - 2 breast cancer primaries in a single individual
 - 2 individuals with breast cancer primaries same side of the family with at least 1 diagnosed <50
 - Ovarian cancer
 - Male breast cancer
- 1st or 2nd degree relative with breast cancer <45
- Individual with personal or family history of 3 or more of the following cancers: breast cancer, pancreatic cancer, prostate cancer (Gleason >7 or metastatic), melanoma, sarcoma, adrenocortical cancer, colon cancer, endometrial cancer, brain tumors, leukemia, diffuse gastric cancer, kidney cancer and thyroid cancer especially if diagnosed before age 50 or with multiple primary cancers in one individual

RISK ASSESSMENT: HEREDITARY VS. FAMILIAL CANCERS

- Hereditary Cancers ^{9,10}
- Associated with genetic mutations with high penetrance genotype
- Vertical transmission through either the maternal or paternal line
- Association with other types of tumors
- Early age of onset
- Autosomal dominant inheritance pattern
- Examples include BRCA1/2, PTEN, p53,

Familial Cancers ^{11,12,13,14}

Occur in a family more frequently than the general population, but do not demonstrate the inheritance patterns of hereditary cancer

Older age of onset

May be associated with clustering of sporadic cancer cases within families, genetic variation in lower penetrance genes, a shared environment, or a combination of the above factors

RISK ASSESSMENT: FAMILIAL/GENETIC RISK FACTORS

- Individuals that meet criteria for concern of either hereditary or familial cancer risk should be referred for formal genetic assessment/counseling¹⁶
- Cancer genetics professionals should also evaluate whether an individual has a lifetime risk >20% based on models dependent on family history

RISK FACTORS: DEMOGRAPHICS

- Female gender
- Age
- Ethnicity/Race: i.e. Ashkenazi Jewish population

RISK FACTORS: REPRODUCTIVE HISTORY

- Nulliparity
- Prolonged interval between menarche and age at first live birth
- Breast feeding

RISK FACTORS: LIFESTYLE

- Current or prior hormonal therapy use
- Current use of hormonal contraceptives (the debate is ongoing)
- Alcohol consumption
- Smoking—to a lesser extent

RISK FACTORS: BODY MASS INDEX/OBESITY

- Body Mass Index (BMI) is an independent risk factor for breast cancer
- Multiple studies have demonstrated an association between high BMI, adult weight gain, and increased risk for breast cancer in postmenopausal women due to higher circulating estrogen levels from fat tissue^{17,18,19,20,21}
 - Association between BMI and hormone-positive breast cancer in postmenopausal women^{22,23,24,25}
 - Nurses' Health Study suggested that women experiencing a weight gain of 25.0 kg or more since age 18 have an increased risk of breast cancer compared to those who have maintained their weight
 - Case controlled study of BRCA1/2 positive women demonstrated a weight loss of 10 or more pounds between the ages of 18-30 was associated with a decreased risk of breast cancer between the ages 30-40⁵⁸

RISK FACTORS: HISTORY OF BREAST ATYPIA/LCIS

- Risk for breast cancer with flat epithelial atypia is similar to that of benign proliferative disease without atypia
- Atypical lobular hyperplasia and atypical ductal hyperplasia—substantial increase in risk of breast cancer
- Classic LCIS is not breast cancer. It is a type of breast tissue that confers substantial increase in risk of breast cancer

OTHER ELEMENTS OF RISK: BREAST DENSITY

- Change in breast density has been suggested as a risk factor for breast cancer
- Many states require mammography reports to include an assessment of breast density
- Unfortunately, many insurance carriers will not cover additional screening modalities (screening ultrasound or MRI) in women with average risk for breast cancer

BREAST CANCER RISK ASSESSMENT

- Women **WITHOUT** the following should have a breast cancer risk calculation performed:
 - BRCA1/2, TP53, or PTEN mutation
 - Strong family history of breast cancer
 - History of thoracic radiation before age 30

BREAST CANCER RISK CALCULATION MODELS: GAIL MODEL²⁶

- Gail Model is a multivariate logistical regression model for women >35 years old
 - Age
 - Race
 - Age at menarche
 - Age at first live birth/nulliparity
 - # of first degree maternal relatives with breast cancer
 - # of previous breast biopsies and histology of those biopsies
- Does not consider paternal line or beyond first degree relatives
- Underestimates breast cancer risk in women with atypia
- Overestimates risk of benign biopsies

BREAST CANCER RISK ASSESSMENT MODELS: GAIL MODEL

- The Gail Model is available on the National Cancer Institute Website (<http://www.cancer.gov/bcrisktool/Default.aspx>)
- NCCN Risk Reduction Panel recommends that those individuals >35 years old with 1.7% or greater 5 year risk of breast cancer be considered for risk reduction strategies such as lifestyle modification and chemoprophylaxis
- Recommendations for screening MRI are not based on Gail risk calculations

BREAST CANCER RISK ASSESSMENT: TYRER-CUZICK MODEL²⁷

- Computer based, multivariate model that takes into account personal history, family history (maternal and paternal) and breast density
- <http://www.ems-trials.org/riskevaluator/>
- According to analysis of a Mayo Clinic cohort the Tyrer-Cuzick model overestimates risk of atypia
- Screening MRI is recommended for women with >20% lifetime risk as calculated by this model

BREAST CANCER RISK ASSESSMENT

- Women without a history of breast cancer and with a life expectancy >10 years who are considered to be at high risk based on previous slides should undergo individualized risk reduction counseling to discuss strategies to decrease their personal risk of breast cancer as well as appropriate screening recommendations
- Women with a life expectancy <10 years likely have minimal benefit to risk reduction therapy or screening²⁸

RECOMMENDATIONS FOR BREAST CANCER SCREENING

- What Test?
- For Whom?
- When to Start?

BREAST IMAGING MODALITIES

- Screening mammography
 - Only modality to demonstrate mortality reduction⁵⁹
- Screening ultrasound
 - Considered for adjunctive imaging for women with dense breasts
 - More effective in the diagnostic setting
 - Getting insurance coverage can be tricky
- Screening MRI
 - Only recommended in the high risk population

SCREENING MAMMOGRAM

- Digital mammography has replaced film screen in the United States
 - More accurate for evaluating dense breasts
- Digital mammography with tomosynthesis appears to improve cancer detection and reduce false-positive call back rates

SCREENING ULTRASOUND

- Screening ultrasound can be a useful adjunct to screening mammogram for women with dense breasts
- Routine use of ultrasound as universal supplemental screening test in women with average risk is not recommended at this time²⁹

SCREENING MRI

- Sensitivity of contrast-enhanced breast MRI is higher than mammography, but with lower specificity
- Microcalcifications are not detectable on MRI
- Benefits of screening MRI for early detection in high risk women has been demonstrated in multiple studies^{30,31,32,33,34}

SCREENING MRI: NOT ALL MRI ARE CREATED EQUAL

- Criteria for performance and interpretation of high quality breast MRI
 - Dedicated breast coil
 - Radiologist experience in breast MRI
 - Ability to perform MRI-guided needle biopsy or wire localization

OTHER BREAST IMAGING MODALITIES

- Breast scintigraphy and contrast enhanced mammography may improve detection of breast cancer in women with dense breasts—not ready for prime time
- NCCN does NOT recommend thermography or ductal lavage for breast cancer screening or diagnosis and is not a replacement for mammography³⁵

UNITED STATES PREVENTIVE SERVICES TASK FORCE SCREENING GUIDELINES 2009

- Biennial screening for women age 50-74,
- Shared decision making process for screening women age 40-49
- Insufficient evidence to support screening women over the age of 75

NCCN SCREENING RECOMMENDATIONS AVERAGE RISK: AGES OF 25 AND 39

- Clinical Encounter every 1-3 years
 - Breast cancer risk assessment
 - Risk reduction counseling (healthy lifestyle, limit alcohol consumption, exercise, weight control, breast feeding)
 - Clinical breast exam
- Breast self awareness

NCCN SCREENING RECOMMENDATIONS AVERAGE RISK: 40 AND OLDER

- Annual clinical encounter
 - Breast cancer risk assessment
 - Risk reduction counseling (healthy lifestyle, limit alcohol consumption, exercise, weight control, breast feeding, consider risks of hormonal therapy)
 - Clinical breast exam
- Annual screening mammography—consider tomosynthesis

NCCN SCREENING RECOMMENDATIONS: AVERAGE RISK: 40 AND OLDER

- Mammographic screening and appropriate treatment has been shown to decrease breast cancer mortality³⁶
- The NCCN continues to support annual screening mammography beginning at age 40 as it results in the greatest mortality reduction, most lives saved, and most life years gained (category 1 recommendation)³⁷

NCCN SCREENING RECOMMENDATIONS AVERAGE RISK: 40 AND OLDER BENEFITS OF MAMMOGRAPHIC SCREENING

- Case controlled observational studies demonstrate benefits of reduction in breast cancer mortality from 40-45%³⁸
- Retrospective analysis looking at the benefits of mammographic screening in women aged 40-49 found that mammography-detected breast cancer coincides with lower-stage disease at detection³⁶
- Breast cancer is the leading cause of cancer deaths for women in their 40s³⁹

NCCN SCREENING RECOMMENDATIONS AVERAGE RISK: 40 AND OLDER SCREENING INTERVAL

- Most studies suggest incremental benefit with annual versus every other year screening, more so among younger and premenopausal women^{40,41}
- The NCCN panel feels the benefit of annual screening outweighs the risk
 - Breast cancer mortality is lower w/ annual screening
 - Mammograms can detect cancer 2 years prior to CBE
 - Interval cancer rates are lower with annual screening

UPPER AGE LIMITS FOR MAMMOGRAMS

- There is no upper age limit for mammographic screening
- The American Cancer Society recommends considering omission of screening mammogram for women with a life expectancy of less than 10 years
- Observational studies show mortality benefit to age 80-84^{40,41}
- Women who have opted to omit screening mammogram still need a clinical breast exam

SCREENING RECOMMENDATIONS: WOMEN AT INCREASED RISK

- Over age 35 with 5 year risk of breast cancer >1.7% based on the Modified Gail Model
- Lifetime risk >20% based on history of LCIS or ADH/ALH
- Lifetime risk >20% based on models largely dependent on family history
- Thoracic radiation between the ages of 10-30
- Pedigree consistent with or known genetic mutation

SCREENING RECOMMENDATIONS: ELEVATED GAIL RISK

- Breast awareness
- Clinical encounter every 6-12 months
- Annual digital mammography with consideration for tomosynthesis
- Consideration of risk-reduction strategies
 - Healthy lifestyle
 - Consider risk reducing agents i.e. tamoxifen, raloxifene or aromatase inhibitors

SCREENING RECOMMENDATIONS: LIFETIME RISK >20% BASED ON FAMILY HISTORY MODELS

- Most commonly used models based on family history: Claus, Tyrer-Cuzick
- Breast awareness
- Clinical encounter every 6-12 months
- Annual mammography starting 10 years prior to the youngest family member with breast cancer, but not before 30
- Annual MRI starting 10 years younger than the youngest family member as above, but not before age 25
- Consider risk reduction strategies

SCREENING RECOMMENDATIONS: HISTORY OF LCIS OR ADH/ALH

- Breast awareness
- Clinical breast encounter every 6-12 months starting at time of diagnosis
- Annual mammography—consider tomosynthesis, not to begin before age 30
- Consider annual MRI starting at time of diagnosis, but not before age 25
- Consider counseling in risk reduction strategies
 - Healthy lifestyle
 - Risk Reduction agents

SCREENING RECOMMENDATIONS: PRIOR THORACIC RADIATION BETWEEN AGES 10-30

- Late Effects Study Group trial—overall risk of breast cancer in this population is 56.7 fold greater than the risk of breast cancer in the general population⁴²
- NCCN recommendations for women over the age 25 with prior thoracic radiation
 - Breast self awareness
 - Clinical encounter every 6-12 months starting 8-10 years after radiation exposure
 - Annual digital mammogram and annual breast MRI to begin 8-10 years after radiation exposure
 - Consider risk reduction mastectomy

SCREENING RECOMMENDATIONS: WOMEN WITH A KNOWN OR SUSPECTED GENETIC MUTATION

Women with a known or suspected genetic mutation should be referred to a cancer genetic professional for further evaluation for recommendations for genetic testing, screening, and risk reduction strategies including surgical intervention⁴³

MANAGEMENT OF THE HIGH RISK PATIENT

MANAGEMENT OF THE HIGH RISK PATIENT

- Ideally, most individuals identified to be at high risk for breast cancer would be followed in a high risk clinic or in a practice that specializes in the management of individuals at high risk for breast cancer
- Most health institutions in the Milwaukee/Racine area do have those programs in place
- The largest barrier to use of high risk programs is the identification of high risk individuals and encouragement to participate in those programs

RISK REDUCTION INTERVENTIONS

- Lifestyle Modifications
- Risk Reduction Agents
 - Tamoxifen
 - Raloxifene
 - Anastrozole/Exemestane
- Risk Reduction Surgery
 - Risk Reducing Mastectomy (RRM)
 - Risk Reducing Bilateral Salpingo-Oophrectomy (RRBSO)

RISK REDUCTION INTERVENTIONS: LIFESTYLE MODIFICATIONS

- Studies have demonstrated that lifestyle modification can be as effective as risk reducing agents in breast cancer risk reduction
- Modifiable factors include
 - Obesity
 - Exercise
 - Diet
 - Alcohol consumption
 - Hormone Replacement Therapy
 - Hormonal Contraceptives

RISK REDUCTION INTERVENTIONS: DIET/EXERCISE/OBESITY

- DIET
 - Studies evaluating the effects of low-fat diet on risk for breast cancer in postmenopausal women did not show statistically significant risk reduction in the incidence of breast cancer⁴⁴
 - Studies have suggested that diet during adolescence and early adulthood may have a greater effect on breast cancer risk⁴⁵

RISK REDUCTION INTERVENTIONS: DIET/EXERCISE/OBESITY

- EXERCISE
 - Increased levels of physical activity have been associated with decreased risk of breast cancer⁴⁶
 - The American Cancer Society recommends at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity activities each week for adults and at least 60 minutes of moderate to vigorous activity for kids each day⁴⁷

RISK REDUCTION INTERVENTIONS: DIET/EXERCISE/OBESITY

- OBESITY
 - There is a substantial amount of evidence that overweight/obese women have a higher risk for postmenopausal breast cancer
 - Nurses' Health Study suggested that women experiencing a weight gain of 25.0 kg or more since age 18 have an increased risk of breast cancer compared to those who have maintained their weight
 - Case controlled study of BRCA1/2 positive women demonstrated a weight loss of 10 or more pounds between the ages of 18-30 was associated with a decreased risk of breast cancer between the ages 30-40

RISK REDUCTION INTERVENTIONS: ALCOHOL CONSUMPTION

- A number of studies have demonstrated that alcohol intake of 1-2 drinks per day is associated with an increased risk of breast cancer⁴⁶
- A population based study of 51,847 women provided an association between alcohol consumption and increased likelihood of developing ER positive breast cancer
- Even one drink per day modestly elevates breast cancer risk⁴⁶

RISK REDUCTION INTERVENTIONS: ALCOHOL CONSUMPTION

- The consensus of the NCCN Breast Cancer Risk Reduction Panel is alcohol consumption should be limited to <1 drink per day.
- One drink was defined as 1 ounce of liquor, 6 ounces of wine or 8 ounces of beer

RISK REDUCTION INTERVENTIONS: HORMONE THERAPY (HT)

- The Women's Health Initiative enrolled 161,809 women ages 50-79 into a set of clinical trials
- Two of these trials involved the use of HT in primary disease prevention^{48,49}
- The first trial randomized women to receive combined HT or placebo
 - 26% increase in incidence of breast cancer was observed in the treatment group
 - Increased incidence of abnormal mammograms in the treatment group
 - HT was associated with significant increase in rates of breast cancer incidence and breast cancer mortality

RISK REDUCTION INTERVENTION: HORMONE THERAPY (HT)

- The use of estrogen/progestin therapy and estrogen therapy alone have been associated with increased risk for cardiovascular disease and decreased risk of bone fracture
- Results from a large French cohort control study demonstrated a significantly increased risk for breast cancer in women receiving short term (2 years or less) estrogen and progesterone shortly after menopause compared with non-users⁵⁰

RISK REDUCTION INTERVENTIONS: HORMONE THERAPY (HT)

- Bottom Line: Avoid HT if possible
- Attempt other means of controlling menopausal symptoms before resorting to HT
- Women who are offered HT need to be counseled that HT can increase their risk of breast cancer and can make breast cancer more difficult to detect due to changes in breast density for women on HT

RISK REDUCTION INTERVENTION: HORMONAL CONTRACEPTIVES(HC)

- Recent article in the New England Journal of Medicine regarding hormonal contraception and risk of breast cancer⁵¹
- Danish cohort study involving all women in Denmark between the ages 15-49 who had not had cancer, DVT or infertility treatment looking at the use of hormonal contraception, breast cancer diagnosis and cofounders

RISK REDUCTION INTERVENTION: HORMONAL CONTRACEPTIVES (HC)

- After being followed for an average of 10 years 11,517 cases of breast cancer occurred in 1.8 million women
- Relative risk of breast cancer in women with current or recent use of HC was 1.20 (95% confidence interval)
- Risk increased with duration of use
- Risk was still higher after discontinuing the use of HC among women with >5 years or more than for women who had never used HC
- Risk was also greater for women who used the progestin-only intrauterine system compared to non-users
- Overall absolute increase in breast cancer diagnosis among recent and current users was one extra breast cancer for every 7690 women using HC for a year

RISK REDUCING INTERVENTION: HORMONAL CONTRACEPTION (HC)

- Risk of breast cancer was higher for women who were currently or recently using HC
- Risk increased with longer duration of use
- Overall absolute increase in risk was small
- Risk should be weighed against the benefits of HC
 - Good efficacy
 - Risk reduction for ovarian, endometrial and colorectal cancer
 - Consider other means of contraception for women >40?

RISK REDUCTION AGENTS: TAMOXIFEN, RALOXIFENE, AROMATASE INHIBITORS (AIS)

- Only recommended for women >35 years old
- Utility in women <35 years old in unknown⁵²

RISK REDUCING AGENTS: TAMOXIFEN

- Multiple studies have repeatedly demonstrated the efficacy of tamoxifen in dramatically decreasing a woman's risk of breast cancer (ex. NSABP P-1study), especially for women with a history of atypia
- Recommended dose 20 mg/day for 5 years in women >35
- Continues to be effective after cessation
- Recommended for individuals with elevated 5 year Gail score, history of LCIS/ALH/ADH, elevated lifetime risk >20%
- Side effects of tamoxifen include
 - Vasomotor symptoms
 - Thromboembolic events
 - Uterine tumors
- Tamoxifen is not recommended for women with a history of thromboembolic disease
- Women taking tamoxifen should:
 - undergo yearly gynecologic evaluation
 - Have visual symptoms evaluated by an ophthalmologist

RISK REDUCING AGENTS: RALOXIFENE

- Tamoxifen is superior to raloxifene as a risk reducing agent
- Raloxifene demonstrates diminished benefits with cessation of the medication
- Raloxifene is given only to postmenopausal women
- Recommended dose is 60mg/day
- * Side effects include
 - Vasomotor symptoms
 - Thromboembolic events
- * Raloxifene does not demonstrate increased risk of endometrial cancer

RISK REDUCTION AGENTS: AROMATASE INHIBITORS

- The NCCN has included exemestane and anastrozole as choices for risk reduction in postmenopausal women
- Exemestane dose 25mg/day/5 years
- Anastrozole dose 1mg/day/5 years
- Recommended for postmenopausal individual with elevated 5 year Gail risk, >20% lifetime risk, or history of LCIS/ADH/ALH
- Side effects include
 - Joint pain
 - Bone loss
- Bone density should be evaluated at baseline and on a yearly basis for women taking Als53

RISK REDUCING SURGERY

- Risk Reducing Mastectomy (RRM)
- Risk Reducing Bilateral Salpingo-oophrectomy (RRBSO)

RISK REDUCING SURGERY: RISK REDUCING MASTECTOMY (RRM)

- Risk reducing mastectomy (RRM) is an appropriate option for women with high risk mutations (BRCA1/2, TP53, PTEN, CDH1, or STK11)
- Risk of breast cancer with a BRCA1/2 mutation is 56-84%
- RRM reduces the risk of breast cancer by at least 90%
- Appropriate preoperative counseling is essential to achieve appropriate post operative expectations
- RRM candidates have the option of reconstruction
- When possible nipple-sparing mastectomy should be considered
- Preoperatively women should undergo clinical breast exam, mammogram, and if possible, screening MRI
- Postoperatively women should undergo yearly clinical breast exams

RISK REDUCING SURGERY: RISK REDUCING SALPINGO-OOPHORECTOMY (RRSO)

- BRCA1 mutation carriers harbor a 36-46% lifetime risk for ovarian cancer
- BRCA2 mutation carriers harbor a 10-27% lifetime risk for ovarian cancer
- There is not a reliable screening mechanism for ovarian cancer, thus, these women should consider RRSO after completion of childbearing
- Mean age at diagnosis for ovarian cancer 50.8 years⁵⁴
- 80% reduction in risk of ovarian/fallopian cancer with RRSO
- 1%-4.3% risk of primary peritoneal cancer
- RRSO can reduce the risk of breast cancer in BRCA1/2 carrier by 50% (BCRRms8)— may be more effective in BRCA1 vs. BRCA2 carriers
- RRSO after age 50 is not associated with a significant decrease in breast cancer⁵⁵
- RRSO is only recommended for women with known or strongly suspected BRCA1/2 mutations⁵⁶

RISK REDUCING SURGERY: RISK REDUCING SALPINGO-OOPHORECTOMY (RRSO)

- Side effect for women undergoing RRSO before age 50 are significant
 - Vasomotor symptoms
 - Vaginal dryness
 - Sexual dysfunction
 - Greater decline in bone density
 - Increased osteopenia/osteoporosis
 - Decreased cognitive function
 - Cardiovascular risk
- RRSO should be considered for women with BRCA1 mutation after completion of childbearing between the ages of 35-40
- Because of later ovarian cancer onset in BRCA2 patients RRSO could be delayed until age 45-50 in this population
- Studies suggest that women who undergo RRSO can consider using hormonal therapy until age 50 to improve quality of life without significant impact to quantity of life⁵⁷

TAKE HOME POINTS: THIS IS THE ONLY SLIDE YOU NEED TO REMEMBER

- The clinical breast exam is still relevant
- Average risk women should be recommended to undergo yearly screening mammography starting at age 40
- Mammography with tomosynthesis isn't a fluke
- Having a tool available helps identify patients at high risk for breast cancer
- Encourage high risk patients to be a part of a high risk clinic
- Hormonal therapy (HT) should be lowest level for shortest duration possible
- Patients who have undergone RRBSO should consider HT until age 50
-

OK, ONE MORE . . .

- Unless a practitioner has specialized training in genetic testing, and is willing to dedicate the time for appropriate pre and post test counseling and follow up, patients that are identified to be possible candidates for genetic testing should be referred to genetic professionals
- Genetics is a vast, rapidly changing field
- It is a source of significant liability
- Inappropriate testing or counseling can have enormous consequences for our patients

THANK YOU.

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