Breast Cancer in Young Women:
Understanding and Reducing Disparities in Outcomes

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Dana-Farber Cancer Institute

February 7, 2017
Breast Cancer in Young Women is Different

• Review disparities in disease and psychosocial outcomes young women with breast cancer

• Present recent and ongoing work to elucidate potential contributors to disparities

• Highlight emerging efforts to reduce disparities and improve outcomes for young women with breast cancer
Breast Cancer in Young Women is Different

- Breast cancer in women under 40 is a relatively rare disease
Breast cancer in young women is a relatively rare disease: age < 40

Hankey et al, JNCI 1994
Breast cancer in older young women is a still relatively rare disease: age < 45

Hankey et al, JNCI 1994
US Population-based Incidence of Breast Cancer: Rates Stable in Young Women

Anders et al, Semin Oncol, 2009
US Population-based Incidence of Breast Cancer

Anders et al, Semin Oncol, 2009
Young women are a growing population in the US.

With more young women at risk, the absolute number of young women with breast cancer increasing!
Survival of Young Women With Breast Cancer is Inferior to Older Women

<table>
<thead>
<tr>
<th>Age at diagnosis</th>
<th>5-year relative survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>84%</td>
</tr>
<tr>
<td>40 and older</td>
<td>90%</td>
</tr>
</tbody>
</table>

Disease-free survival by age

Model of Breast Cancer Disparities in Special Populations

- Medical and Physical Host Differences
- Disease and Biology Differences
- OPTIMAL TREATMENT, CARE, AND OUTCOMES
- Access and Uptake of Care and Treatment Differences

Freedman and Partridge, CCR, Under Review
Helping Ourselves, Helping Others: The Young Women’s Breast Cancer Study (YWBCS)

Prospective cohort established in 2006
- Women age ≤40 at diagnosis of breast ca
- Eastern Massachusetts, Colorado, MN, Canada

Outcomes
- Disease, tumor biology/molecular characteristics
- Psycho-social (fertility, sexuality, workplace issues)
- Lifestyle factors (alcohol, exercise)
- Health services (delay in diagnosis, survivorship care)
- Decision making

Accrual
- 1302 participants, surveyed q 6 months x 3 years, annually thereafter
- Blood: 91% of patients with at least one sample
- Tumor: 98% consented, 65% reviewed, 56% block banked (N=666)

PI: Partridge
### Pathologic Features and Biomarker Expression Among Young Women’s Breast Cancer Study

<table>
<thead>
<tr>
<th>Clinico-pathologic Feature</th>
<th>&lt;30 years (n=33)</th>
<th>31-35 years (n=83)</th>
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<tbody>
<tr>
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<td>7/33 (21%)</td>
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<tr>
<td>ER positive</td>
<td>20/33 (61%)</td>
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</tr>
<tr>
<td>Grade 3</td>
<td>67%</td>
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<td>61%</td>
</tr>
<tr>
<td>Histology ductal only</td>
<td>27/33 (82%)</td>
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<tr>
<td>Fibrotic focus present</td>
<td>14/32 (44%)</td>
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<tr>
<td>Tumor necrosis present</td>
<td>15/33 (45%)</td>
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Collins et al., Breast Cancer Research and Treatment, 2012
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Collins et al., Breast Cancer Research and Treatment, 2012
Breast Cancer Subtypes by Increasing Age

Keegan et al, BCR, 2012

HER2+
HR+/HER2+
TNBC
HR+/HER2-

Keegan et al, BCR, 2012
Subtypes of breast cancer vary by race as a function of age

- Carolina Breast Cancer Study
  - Basal-like breast cancer subtype
    - premenopausal African American women (39%)
    - postmenopausal African American women (14%)
    - non-African American women of any age (16%) (p<0.001)
  - Corresponding differences in Luminal A subtype

Carey et al, JAMA 2006
Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Luminal A</th>
<th>Luminal B</th>
<th>HER2-Enriched</th>
<th>Basal-like</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH-White</td>
<td>55.2</td>
<td>21.5</td>
<td>11.6</td>
<td>12.4</td>
</tr>
<tr>
<td>Black</td>
<td>43.4</td>
<td>30.4</td>
<td>12.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>44.2</td>
<td>24</td>
<td>8.7</td>
<td>11.6</td>
</tr>
<tr>
<td>PI</td>
<td>55.2</td>
<td>21.5</td>
<td>11.6</td>
<td>12.4</td>
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Sources: Azim et. al, 2012; Sweeney et al. 2014

Age

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<th>Luminal B</th>
<th>HER2-Enriched</th>
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<tr>
<td>≤ 40</td>
<td>17</td>
<td>27</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>41-52</td>
<td>31</td>
<td>24</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>53-64</td>
<td>35</td>
<td>29</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>≥ 65</td>
<td>35</td>
<td>37</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Sources: Azim et. al, 2012; Sweeney et al. 2014
Young Women Are More Likely to Die from Luminal A Tumors in NCCN

Partridge et al., SABCS 2011, JCO 2016
Luminal A Tumors (ER+/HER2-) Have Best Prognosis

Source: Engstrom et al, BCRT 2013
Age was neither a prognostic nor predictive for early recurrence in the HERA Trial.

STEPP Analyses According to Age

Partridge et al., J Clin Oncol, 2013
Young Age is Associated with Increased pCR

N=8949 total; N=1453 < 40

Loibl et al., BCRT, 2015
Quantification of gene expression by age

- Average recurrence score slightly higher in younger group
- Wide range observed in all groups (of select patients)
- Select population, limited outcomes data
- Clearly, not all young women need chemotherapy (e.g., ABSCG 12, SOFT outcomes!

Shak et al., Breast Cancer Res Treat, 2010
Chemotherapy use varied across age categories.

Regardless of age and chemotherapy use, the Recurrence Score results consistently predicted outcomes.

<table>
<thead>
<tr>
<th>Age at Diagnosis</th>
<th>N (% in each group known to have received chemotherapy)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;40</td>
</tr>
<tr>
<td>RS</td>
<td></td>
</tr>
<tr>
<td>&lt;18</td>
<td>682 (18%)</td>
</tr>
<tr>
<td>18-30</td>
<td>637 (55%)</td>
</tr>
<tr>
<td>≥31</td>
<td>161 (78%)</td>
</tr>
</tbody>
</table>

Shak et al. SABCS 2015.
350 patients (11.5%) under age 35
94% received chemotherapy in this age group

Frances et al, NEJM 2015
Cost of Progress: Toxicity

• Adherence:
  – 15% stopped OFS by 2 years, 22% by 3 years

• Provider reported
  – Depression reported in ~ 50% in all groups
    • 4% severe, 5% increase with OFS
  – Marked increase in menopausal symptoms, insomnia, osteoporosis

• Patient reported
  – No difference in global QOL
  – Endocrine differences are less pronounced after 2 years
  – Endocrine toxicity change less in women with prior chemotherapy

Ribi et al, SABCS 2014
Is young age an independent prognostic/predictive factor?

- Effect of age varies by tumor subtype
- Differences may continue to disappear with better tumor subtyping and better therapies
- Currently, we do use age to direct therapy to some degree
  - often lack of competing risks
  - consider unique host/tumor features
  - take caution not to over-treat based on age
- Attention to adherence with endocrine therapy may be critical missing link
Adherence to Adjuvant Hormonal Therapy Wanes Over Time

Average Adherence in New Jersey Medicare/Medicaid Population in Years 1-4 of Tamoxifen

Partridge et al. JCO 2003
Adherence Matters!
Discontinuation is Associated with Decreased Overall Survival

Survival Distribution in 8769 Women with Stage 1-3 Breast Cancer in Kaiser Permanente Northern California

Hershman et al, BCRT 2011
Non-Adherence (<80% MPR*) is Associated with Decreased Overall Survival

*MPR=Medication Possession Ratio= Drug available to take

Survival Distribution in 8769 Women with Stage 1-3 Breast Cancer in Kaiser Permanente Northern California

Hershman et al, BCRT 2011
Younger and Much Older Women are More Likely to be Non-Adherent

Hershman et al, JCO 2010
Factors Associated with Non-initiation or Delayed Initiation of Tamoxifen in Young Women

<table>
<thead>
<tr>
<th>Patient characteristic</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0 cancer</td>
<td>28.07 (10.99 to 71.64)</td>
</tr>
<tr>
<td>Declined radiation therapy</td>
<td>7.97 (3.15 to 20.15)</td>
</tr>
<tr>
<td>Desired future fertility at diagnosis</td>
<td>5.04 (2.29 to 11.07)</td>
</tr>
<tr>
<td>No chemotherapy (stage I-III)</td>
<td>5.02 (1.92 to 13.10)</td>
</tr>
</tbody>
</table>

* Multivariable logistic regression model of tamoxifen noninitiation and delayed initiation among premenopausal patients younger than age 45 years diagnosed with stage 0-III estrogen and/or progesterone positive breast cancer (n = 515). CI = confidence interval; OR = odds ratio.
Patient Reasons for Non-initiation or Delayed Initiation of Tamoxifen

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient reasons for noninitiation or delayed initiation of tamoxifen</td>
<td></td>
</tr>
<tr>
<td>(n = 69)</td>
<td></td>
</tr>
<tr>
<td>Concerns about side effects</td>
<td>25 (36.2)</td>
</tr>
<tr>
<td>Pursuit of fertility</td>
<td>24 (34.8)</td>
</tr>
<tr>
<td>Perceived little benefit</td>
<td>9 (13.0)</td>
</tr>
<tr>
<td>Patient declined</td>
<td>9 (13.0)</td>
</tr>
<tr>
<td>Desired alternative medicine and diet change</td>
<td>1 (1.5)</td>
</tr>
<tr>
<td>Length of therapy</td>
<td>1 (1.5)</td>
</tr>
<tr>
<td>Patient reasons for early discontinuation of tamoxifen (n = 80)</td>
<td></td>
</tr>
<tr>
<td>Side effects</td>
<td>51 (63.7)</td>
</tr>
<tr>
<td>Pursuit of fertility</td>
<td>20 (25.0)</td>
</tr>
<tr>
<td>Concerns about side effects</td>
<td>4 (5.0)</td>
</tr>
<tr>
<td>Patient declined</td>
<td>3 (3.7)</td>
</tr>
<tr>
<td>Lack of refills</td>
<td>1 (1.3)</td>
</tr>
<tr>
<td>Perceived little benefit</td>
<td>1 (1.3)</td>
</tr>
</tbody>
</table>

Llarnena et al, JNCI 2015
Breast Cancer in Young Women is Different

- Presentation and disease
  - More aggressive, more advanced disease
  - Higher rates of recurrence and mortality

- Host differences
  - Genetics
  - Hormonal milieu (very premenopausal)
  - Body image, sexual, fertility concerns
  - Psychosocial issues - more poor adjustment, adherence

- Young women are more likely to suffer both physically and emotionally

Breast cancer in women under 40 is a relatively rare disease and a public health problem

Rosenberg et al, JAMA Oncol 2015
How Can We Address Age Disparities in Breast Cancer Outcomes?

The Cancer Control Continuum

Prevention
Early Detection
Diagnosis and Treatment
Survivorship
Palliative Care; End of Life

Adapted from NCI, 2005
Prevention, Screening and Early Detection

• Breast cancer in women under 40 is a relatively rare disease

• Risk factors in young women similar to those in older women with a few notable exceptions

• Hereditary breast cancer particularly likely to show up at a young age

• Increased awareness should lead to earlier detection
The Secretary, Department of Health and Human Services (HHS), acting through the Director, Centers for Disease Control and Prevention (CDC), under Section 399NN of the Public Health Service Act, is authorized:

- to develop evidence-based initiatives to advance understanding and awareness of breast cancer among young women (particularly those at heightened high risk for developing breast cancer)
- to establish and conduct public and health care professional education activities
- to conduct prevention research
- to support the dissemination of evidence-based age appropriate messages and materials
What Every Woman Needs to Know about Breast and Ovarian Cancers

A little knowledge can go a long way in helping you understand your risk for breast and ovarian cancers. Once you learn your risk for these cancers, we hope you will talk to your doctor and develop a strategy to reduce your risk or detect these diseases at early, non-life-threatening stages.

BREAST AND OVARIAN CANCER BASICS
Cancer is a disease in which cells in the body grow out of control. When cancer starts in the breast, it is called breast cancer. About 7 out of 100 women (or 7%) will be diagnosed with breast cancer by the time they turn 70 years old.

Ovarian cancer is far less common. About 1 out of 100 women (or 1%) will be diagnosed with ovarian cancer by age 70. Though it is less common than breast cancer, ovarian cancer causes more deaths than any other cancer of the female reproductive system.

About 5-10% of breast and 10-15% of ovarian cancers are hereditary. These hereditary breast and ovarian cancers are caused by inherited changes in genes such as BRCA1 and BRCA2.

BREAST AND OVARIAN CANCER BASICS FOR YOUNG WOMEN
While breast and ovarian cancers are most common in older women (about 89% of breast cancers occur in women older than 45 years of age), they can and do occur in younger women. There are some important differences when these cancers do affect young women:

- Breast and ovarian cancers in young women are more likely to be hereditary (passed down through families and because of an inherited BRCA gene mutation).
- Breast and ovarian cancers in young women are more likely to be diagnosed at a later stage and are
Bring Your Brave

While breast cancer mostly occurs among older women, in rare cases breast cancer does affect women under the age of 45. Eleven percent of all cases of breast cancer in the U.S. are reported in this age group. Risk for breast cancer among young women varies based on factors such as family and personal history of cancer. Many young women do not know their risk for this disease or are not aware of ways to lower their risk.

The Bring Your Brave campaign provides information about breast cancer to women younger than age 45 by sharing real stories about young women whose lives have been affected by breast cancer.

www.cdc.gov/cancer/breast/young_women/bringyourbrave/
Diagnosis and Treatment

• Improvements for general breast cancer population likely to translate into improvements for young women
  
  – Advance for women with HER2+ disease may particularly help close some of the gap facing younger women

  – Triple negative disease remains a major challenge

  – Further work in ER positive disease, although research slower in young women (e.g., aromatase inhibitors)

  – And adoption of new methods and clinical effectiveness of therapies may be more challenging (e.g., adherence) in a younger population
Whole Exome Sequencing of Tumors of Women Age <35yrs at Dx

- 92 women between the age of 23 and 35 who had had clinically annotated blood and tumor specimens banked for the study for WES (mean sequencing coverage of 88x)

- Utilized The Cancer Genome Atlas (TCGA) data, which contains WES data from 796 breast cancers from patients over the age of 45

- Identified four genes that were significantly mutated in young women with breast cancer: TP53, GATA3, PIK3CA, and PTEN
  - Mutation rate of PTEN was approximately 4% in both older and young women with breast cancer
  - TP53 (43% vs. 31% in TCGA) and GATA3 (18% vs. 9% in TCGA) both had significantly higher mutation rates in younger women than in older women
  - PIK3CA (18% vs. 34% in TCGA) had a lower mutation rate in younger women
  - Trends of mutation rates held true even after accounting for subtype differences between the two populations

Oh, Wagle et al, DF/HCC Retreat, 2014
Treatment decision-making and the cancer care trajectory

- **Diagnosis**
- **Treatment decision-making**
- **Treatment**
- **Long-term Survivorship**
- **Survivorship**
# Emotions of Young Women on Endocrine Therapy Impact Adherence

To what extent does each of the following emotions describe your feelings toward ET?

<table>
<thead>
<tr>
<th>Negative emotions:</th>
<th>All Women</th>
<th>More Adherent</th>
<th>Less Adherent</th>
<th>P-value</th>
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<tbody>
<tr>
<td>Does not describe</td>
<td>61 46%</td>
<td>29 57%</td>
<td>32 62%</td>
<td>0.83</td>
</tr>
<tr>
<td>Slightly describes</td>
<td>30 30%</td>
<td>12 26%</td>
<td>18 34%</td>
<td></td>
</tr>
<tr>
<td>Definitely describes</td>
<td>10 10%</td>
<td>5 11%</td>
<td>5 9%</td>
<td>0.01</td>
</tr>
<tr>
<td>Missing</td>
<td>5 0%</td>
<td>0 0%</td>
<td>5 9%</td>
<td></td>
</tr>
<tr>
<td>Annoyed</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>26 57%</td>
<td>19 37%</td>
<td>0.01</td>
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<td>19 41%</td>
<td>23 40%</td>
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<td>1 2%</td>
<td>11 23%</td>
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<tr>
<td>Missing</td>
<td>7 0%</td>
<td>0 0%</td>
<td>7 14%</td>
<td></td>
</tr>
<tr>
<td>Tense</td>
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<td></td>
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<tr>
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Walker et al, JAYAO 2016
Emotions of Young Women on Endocrine Therapy Impact Adherence (cont.)

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<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>More adherent&lt;sup&gt;a&lt;/sup&gt;</td>
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Walker et al, JAYAO 2016
Emotions and Perceptions Toward Endocrine Therapy are Highly Correlated

Can we reframe thinking/emotions to improve adherence?

Walker et al, JAYAO 2016
Survivorship

• Young women have concerns that are either unique or accentuated by their young age

• Fertility (and subsequent pregnancy) is a particularly challenging issue for some young patients
ASCO Recommendations for Fertility Preservation

Eligible for proven fertility preservation method

- Male: sperm cryopreservation
- Female: embryo cryopreservation

Investigational fertility preservation technique

- Male: cryopreservation of testicular or ovarian tissue
- Female: ovary cryopreservation, oophoropexy, conservative gynecologic surgery, ovarian suppression

2012

No longer experimental!

www.asco.org

(Modified from Lee et al., J Clin Onc; 2006)
Model Program to Improve Care for a Unique Cancer Population: Young Women With Breast Cancer

By Ann H. Partridge, MD, MPH, Kathryn J. Ruddy, MD, MPH, Jamie Kennedy, BA, and Eric P. Winer, MD
Dana-Farber Cancer Institute and Brigham and Women’s Hospital–Harvard Medical School, Boston, MA

Abstract
Young women with breast cancer face a variety of problems unique to or accentuated by their age. Attention to these concerns is warranted, yet research has revealed inadequacies in care and that the needs of these patients are not being met. To address these critical issues, we have developed a comprehensive program to provide additional support and education for young women with breast cancer and their providers. On the basis of the preliminary success of the program, we have developed and pilot tested an exportable version that may serve as a national model for care of this unique population. We believe this work will not only improve care for young women with breast cancer, but also may serve as a paradigm to overcome barriers to delivering optimal care for unique groups of patients in other settings.

Introduction
When a young woman is diagnosed with breast cancer, she and those close to her encounter not only the usual concerns of breast cancer survivors, but also a variety of problems unique to young women. Although breast cancer is relatively uncommon in young women, it is the leading cause of cancer-related deaths in women 45 years of age and younger, and survival rates for young women with breast cancer are lower than for their older counterparts, despite receipt of generally more aggressive therapy. Young women are likely to be diagnosed at a stage in life when they serve multiple roles that may not easily be filled by others (eg, parenting of young children, completing education, developing a career). Moreover, many young women are interested in having children after treatment, and fertility may be a concern. A recent study focused on fertility issues in young women with breast cancer (mean age at time of survey, 33 years), 72% of women recalled discussing fertility at diagnosis, but only half responded that it had been addressed adequately. In another survey of women treated in practices in the northeastern United States, Duffy et al interviewed 107 women younger than 45 with early-stage breast cancer and reported that only 34% recalled a discussion of the risk of infertility with adjuvant treatment. It is likely that these data overestimate how often fertility concerns are addressed in routine practice, as we suspect that those who participate in Web-based research and/or see physicians doing research in this area may be more well informed than the general population.

Fertility concerns should be addressed early in the course of treatment, as fertility preservation may be an option. It is critical that patients and their providers understand the potential for fertility loss, the risks and benefits of fertility preservation, and the options available to those who wish to keep their fertility. Referral to a gynecologic oncologist or other health care provider knowledgeable about fertility preservation is recommended.
Welcome to Young and Strong, a program for young women with breast cancer

We have created this website (and the print materials from your doctor) to focus on YOU, a young woman with newly diagnosed breast cancer. This website contains expanded information and resources, helpful videos, and materials to help you with your doctor visits. These materials include a checklist of questions to ask your doctor when you're just getting started and another with follow-up questions for optimal survivorship care.

If you have study-related questions, please use the contact information below to reach us.

Why did this happen? >

"Knowing that other women have walked this path and survived to live a full life makes me feel very good."
—Liz F., Age 36

The Young and Strong study is sponsored by the American Society of Clinical Oncology (ASCO) and the Susan G. Komen for the Cure Foundation. Contact us: (888) 814-3324 | youngandstrong@partners.org | Site developed by DF/HCC Health Communication Core.
Fertility

Many young women with breast cancer wonder how cancer and its treatment will affect their fertility (ability to become pregnant). Some will get pregnant easily, others will not. It may be harder for a woman to get pregnant after breast cancer treatment than it otherwise would have been. So, deciding to get pregnant after a breast cancer diagnosis can be very difficult for a young woman and her loved ones.

If you think you might want to get pregnant after your treatment is done, you should learn more and talk with your doctor.

"Making plans to have children in the future helped me get through the tough days and gave me hope."
—Kristin G., Age 28

Having children after breast cancer >
Exploring options

Reproductive medicine offers a variety of procedures that can help you protect your fertility before, during, and after breast cancer treatment. Some of them may fit your needs better than others. It’s important to speak with your doctor and a fertility specialist to develop a plan that makes sense for you and your family. You may also consider non-medical options like adoption or foster care.

Cryopreservation

Reproductive procedures that involve freezing are called cryopreservation (cry-oh-prez-er-vay-shun). This can be done in a variety of ways:

Freezing a fertilized egg (also called embryo freezing): A fertility doctor gives you hormones to make your ovaries produce lots of eggs. The unfertilized eggs are removed from your body and fertilized with a man’s sperm (from a partner or a donor). Fertilized eggs are frozen and stored for later use.

Freezing an unfertilized egg: A fertility doctor gives you hormones to make your ovaries produce lots of eggs. The unfertilized eggs are removed from your body, frozen, and stored for later use. After your breast cancer treatment is over, the eggs can be thawed and fertilized with sperm. This method is less successful than embryo freezing. However, if you don’t have a male partner now and don’t want to use a sperm donor, this may be the right option for you.

Freezing ovarian tissue: Before your cancer treatment begins, a piece of your ovary is removed and frozen. This helps protect the tissue from damage during chemotherapy. Once your treatment is done and you are ready to try to get pregnant, the tissue is put back in your body. Note: This method is highly experimental and has only resulted in a few successful pregnancies to date.
Follow-up Provider Clinical Checklist for Young Women

- Prescriptions refilled, adherence issues addressed as needed

- Genetics discussed:
  - Refer to counseling, as needed
  - Refer for testing, as needed

- Fertility/contraception issues updated:
  - Referral to fertility specialist, as needed

- Menopausal symptoms or sexual dysfunction addressed:
  - Referral to specialist, as needed

- Bone health recommendations made:
  - Encourage vitamin D (400-800 IU/day) and calcium (1000 mg/day if premenopausal, 1500mg/day if postmenopausal) supplementation
  - Weight bearing exercise
  - Baseline bone mineral density scan (DEXA scan) if at risk for osteoporosis

- Psychosocial resources discussed:
  - Consider referral to social worker, counselor or other mental health professional
  - Local support groups or other local programs
  - One-to-one through ACS
  - Young Survival Coalition: [www.youngsurvival.org](http://www.youngsurvival.org)

- Dietary and behavioral considerations discussed:
  - Encourage regular, moderate exercise
  - Encourage weight reduction, if overweight
  - Consider nutrition consultation, if not ideal BMI
Young and Strong RCT Schema

54 sites -
14 academic
40 community

YWI
For providers
For patients

PAI
For providers
For patients

Randomise by practice

Outcome Measurement (by patient participant)

- Follow-up patient surveys at 3 months and 6 months after first visit
- Medical oncology record review at 8 months after first visit

Partridge et al, In Preparation
Young and Strong- Results

• 467 patients across 54 sites enrolled between 7/2012 -12/2013

• Median age at diagnosis was 40 years (range 22-45)
  – patient characteristics did not vary by arm

• At 3 months, patients rated both interventions as valuable in educating them (64% YWI, 63% PAI)

Partridge et al, In Preparation
Young and Strong- Results (cont.)

• Of responding providers (145/171, 85%), most reported that:
  – YWI/PAI educated
    • providers (55% YWI, 51% PAI)
    • patients (79% YWI, 77% PAI)
  – YWI/PAI improved care (79% YWI, 60% PAI)

Partridge et al, In Preparation
Young and Strong- Results (cont.)

- Attention to fertility by 3 months was observed in 55% YWI patients and 58% on PAI (p = 0.88)

- Rates were highly correlated with age (p < 0.0001)
  - <30 years old (100% YWI, 94% PAI)
  - 30-40 (68% YWI, 59% PAI)
  - 40-45 (42% YWI, 52% PAI)

- This study failed to show improvement in attention to fertility with YWI vs. PAI

- Ix valued and rates much higher than anticipated

Partridge et al, In Preparation
Pregnancy Outcome and Safety of Interrupting Therapy for women with endocrine responsive Breast Cancer

IBCSG 48-14 / BIG 8-13
ALLIANCE # A221405

POSITIVE TRIAL

INTERNATIONAL PI: OLIVIA PAGANI
NORTH AMERICAN PI: ANN PARTRIDGE
The POSITIVE Trial: Endocrine therapy interruption for pregnancy in breast cancer patients

• Phase II trial designed to evaluate safety and pregnancy outcomes of interrupting ET for young women with ER+ disease who desire pregnancy

• Enroll 512 women, <42, premenopausal, have completed between 18-30 months of ET

• Study participants come off endocrine therapy for up to 2 years for a pregnancy attempt, restart hormonal therapy
A model to improve clinical research and care for young women with breast cancer
Young Womens II (YWII)

Enrollment

Diagnosis

Surgical DA

6 mo

Addressing sexual dysfunction

Treatment

12 mo

Mindfulness intervention

Long-term Survivorship

Cognitive and symptom management Ix to improve ET adherence
A Biobehavioral Model of Cancer

Host-directed Interventions to Affect the Tumor Microenvironment

Mindfulness Meditation

• Mindfulness meditation is currently the most popular type of meditative practice
• Mindfulness is “paying attention to present moment experiences with openness and curiosity,” without judgment
• Originated in Eastern meditation practices, non-secular version popularized by Kabat-Zinn ---Mindfulness Based Stress Reduction (MBSR)
Mindfulness in Cancer Populations

- 2009 review identified 10 studies of MBSR in cancer populations (3 RCTs)
- Showed significant benefits for mental health (ES = 0.48)
- Since that time, at least 7 additional studies just with breast cancer populations published
- Few trials have targeted specific populations
Pathways to Wellness

A program for young survivors
PATHWAYS TO WELLNESS STUDY
Improving Outcomes for Younger Breast Cancer Survivors: A randomized trial comparing outcomes for women receiving a mindfulness awareness practice group intervention, a health education curriculum tailored to younger women, or a delayed intervention control condition
PIs: Ganz and Bower

• Based on successful randomized pilot data from a single site pilot randomized trial at UCLA

• 3 arm, multi-center RCT evaluating mindfulness

• 6 week intervention teaching mindfulness awareness practices (MAPs)
  – Sitting and walking meditations
  – Application to physical symptoms, emotions, and thoughts
  – Focus on relevance for cancer survivorship
Study Outcomes: Post-treatment

• Psychological:
  – Perceived stress, depression, anxiety

• Symptoms:
  – Fatigue, sleep, pain

• Health behaviors:
  – Stress-related eating, physical activity

• Biological:
  – Inflammation, insulin, glucose
  – Heart rate variability
  – Reactivity to challenge
Guidelines Focused on Breast Cancer in Young Women

Contents lists available at ScienceDirect

The Breast

journal homepage: www.elsevier.com/brst

Original article

First international consensus guidelines for breast cancer in young women (BCY1)

Ann H. Partridge a,1, Olivia Pagani b,c,1, Omalkhair Abulkhair d, Stefan Aebi e, Frédéric Amant f, Hatem A. Azim Jr. g, Alberto Costa h, Suzette Delaloge i, Gloria Freilich j, Oreste Davide Gentilini k, Nadia Harbeck l, Catherine M. Kelly m, Sibylle Loibl n,o, Dror Meirow p, Fedro Peccatori h,k, Bella Kaufmann q,2, Fatima Cardoso r,k,x,2

BCY3R- in Boston in July!
Conclusions: Breast Cancer in Young Women

• There are emerging institutional, national and international efforts to improve care and outcomes of young women

• New data should be incorporated into the care of young women to tailor treatment
  – Hopefully we will continue to see improvements
  – We must continue to support (and study!) our young patients with attention to their unique issues
## Acknowledgements

### Investigators and Research Team

- Eric Winer
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