YSC summit
the national conference for young women affected by breast cancer and their co-survivors

#YSCSUMMIT16  ATLANTA, GA
FERTILITY AND PREGNANCY: YOUR CHOICES, YOUR DECISIONS

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Young Breast Cancer Statistics (CDC, 2012)

- 13,110 new cases of young breast cancer in US
- 10% are diagnosed under the age of 44 years
- >275,000 female cancer survivors of reproductive age

*Loss of reproductive capacity can be devastating*
Presentation Objectives

To review evidence of:

- Effects of cancer treatment & age on gonadal function
- National fertility guidelines & breast cancer advocacy
- Fertility preservation in breast cancer
- Implications for advocacy & interdisciplinary clinical care
Effects on Gonadal Function

- Chemotherapy
- Age
- Tamoxifen therapy
Chemotherapy: Ovarian Failure

- Alkylating agents (cyclophosphamide) deplete ovarian reserve and induce amenorrhea

- Ovarian failure is both drug and dose dependent
  - 15% to 75% who receive cyclophosphamide
    (Jung, 2010; Lambertini et al. 2013, Pagani 2011)
  - Occurs in 9% who do not receive cyclophosphamide
    (Lambertini 2013)
Age: Ovarian Failure

- Women have finite number of oocytes that decrease over time

- Additive effect of age + cyclophosphamide (Lambertini 2013)
  - 35 years + cyclophosphamide = 10% amenorrhea
  - 40 years + cyclophosphamide = 75% amenorrhea
Tamoxifen Therapy

- Standard endocrine therapy for premenopausal women with ER positive tumors
  - 5 year course of therapy is recommended

- Tamoxifen is associated with low risk of amenorrhea

- Tamoxifen is associated with teratogenicity
  - Pregnancy attempts are contraindicated during tamoxifen therapy
Studies do not indicate any increased cancer recurrence risk as a result of subsequent pregnancy
ASCO Fertility Preservation Guidelines
(Lee, et al. 2006)

- Frank discussion about fertility preservation with all patients of reproductive age
- Address fertility preservation as soon as possible, before treatment starts
- Answer basic questions
  - does fertility preservation can have impact on survival?
- Prompt referral to reproductive specialist
- Prompt referral to psychosocial provider
- Encourage participation in clinical studies
ASCO Fertility Preservation (Loren, 2013)

- Recognized oocyte cryopreservation as standard procedure
  - Considered experimental in 2006 report

- Replaced term ‘oncologist’ with health care provider
  - Recognizing other physicians, nurses, social workers, psychologists have vital in interdisciplinary management
Fertility Preservation in Young Breast Cancer Survivors (ASCO, 2013)

Embryo cryopreservation
- Established fertility preservation method
- Routinely used for storing surplus embryos

Cryopreservation of unfertilized oocytes
- No longer experimental procedure since 2012
- Option for women
  - Having no male partner
  - Do not wish to use donor sperm
  - Have ethical objection to embryo freezing
- Should be performed in centers with necessary expertise
Fertility Preservation (ASCO, 2013, cont)

Ovarian Suppression

- Insufficient evidence regarding gonadotropin releasing hormone analogs (GnRH)
  - PROMISE-GIM6 (Italy)
  - Small study of reduced chemo induced failure with non-alkylating agents
ASRM Fertility Preservation Guidelines
(Ethics Committee 2005, 2013)

- Inform patients about gonadotoxic therapy
- Inform options for fertility preservation
- Specific discussion about disposition of stored gametes, embryos
- Preimplantation Genetic Diagnosis (PGD) is ethically acceptable
- Collaborative multidisciplinary team is best

- Oocyte cryopreservation is viable option
  - For those with moral objection to embryo freezing
  - Cryopreservation of ovarian tissue should be conducted in research setting
  - Suppression of folliculogenesis using GnRHa data are conflicting
Website References

American Society of Clinical Oncology
(Updated 2013)
- http://jco.ascopubs.org/content/early/2013/05/24/JCO.2013.49.2678.full.pdf+html

American Society of Reproductive Medicine
(Updated, 2013)
YOUR CHOICES, YOUR DECISIONS

PRE-TREATMENT
DURING TREATMENT
POST TREATMENT
### Pre Treatment

*(Gorman, 2011; Meneses, 2010)*

<table>
<thead>
<tr>
<th>Young Breast Cancer Survivors</th>
<th>Oncology Care Providers</th>
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</thead>
<tbody>
<tr>
<td>Understandably, young women are emotionally distressed</td>
<td>Do not routinely perform pretreatment fertility counseling</td>
</tr>
<tr>
<td>May or may not be partnered</td>
<td>Do not routinely communicate fertility options at time of diagnosis</td>
</tr>
<tr>
<td>May lack fertility-related knowledge</td>
<td>Initiate discussion sooner than later</td>
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<tr>
<td>May not understand urgency for fertility planning before treatment</td>
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Pre Treatment
(Azim, 2012; Letourneau, 2012; Meneses, 2010)

Young Breast Cancer Survivors

- Request referral to reproductive specialist who understands cancer treatment
- Examine your personal, ethical, and cultural values
- Identify costs associated with fertility preservation
- Pretreatment counseling is associated with improved decision-making, lower decision regret, and improved quality of life

Co-Survivors

- Examine your personal, ethical, and cultural values
- May have mixed feelings about fertility preservation
- Initiate discussion sooner than later
- Data do not indicate increased risk for recurrence. But voice your concerns
Fertility Preservation Options
(Rodriguez-Wallberg, et al., 2012)

Is adjuvant chemotherapy planned?

YES

- Is there enough time for ovarian stimulation?
  
  YES
  
  - Ovarian stimulation with Letrozole +FSH
    
    Embryo cryopreservation if has a partner or using donor sperm
    
    Oocyte cryopreservation if single
  
  NO
  
  - Retrieval of immature eggs for in vitro maturation
    
    Embryo cryopreservation
    
    Oocyte cryopreservation
  
  Ovarian tissue cryopreservation

NO

- Is Tamoxifen treatment planned for 5 years?
  
  Yes
  
  - Counsel on impact of age on fertility
    
    Consider FP in patients of older reproductive age or wishing a large family
  
  No
  
  Reproductive counseling, FP may not be needed
## During Treatment

*(Meneses & Holland, 2014)*

<table>
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<tr>
<th>Barrier contraception recommended</th>
<th>Condoms</th>
<th>Diaphragm</th>
<th>Cervical cap</th>
<th>Spermicides</th>
<th>Sponge</th>
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<tr>
<th>Maintain health promoting activities</th>
<th>Physical activity</th>
<th>Nutrition</th>
<th>Stress reducing activities</th>
<th>Work and personal lifestyle fit</th>
</tr>
</thead>
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- Condoms
- Diaphragm
- Cervical cap
- Spermicides
- Sponge
Post Treatment
(Azim, 2012; Christinat 2012; Pagani 2011)

**Pregnancy**
- Data do not indicate increased risk for recurrence
- Recommended wait time between 6 months to 2 years after treatment
- Endometrial receptivity
- No existing prenatal guidelines for cancer survivors are available
- Breastfeeding possible

**Infant**
- Data show no significant increase in congenital malformations
- No significant increase in cancer unless BRCA history
- Children born after IVF (in general)
  - Increased risk for low-birthweight, prematurity, perinatal mortality
  - 10 fold increase risk of multiple births
  - Modest increase in malformations, cancer, birth defects
Options Other than Pregnancy

- Gestational surrogacy
- Donor gametes
- Adoption
- Childfree living
BREAST CANCER ADVOCACY
NATIONAL
REGIONAL
LOCAL
National: Links About Fertility

Young Survival Coalition
http://www.youngsurvival.org/

FertileHope

Susan G. Komen
http://ww5.komen.org/BreastCancer/PregnancyAfterBreastCancer.html

Living Beyond Breast Cancer
http://lbbc.org
Regional & Local: Links About Fertility

Gulf States Young Breast Cancer Survivor Network
http://www.gulfstatesybcson.org/

Young Breast Cancer Survivorship Network
http://www.youngsurvivorsbhm.org/
Educate  Support  Network

Family and child assistance  Refer to survivorship services  Health and mind-body activities
Programs for Children of Young Breast Cancer Survivors
- Vital way to communicate
- Announce programs, partnerships and available resources
- Maintain a family-centered survivorship approach

Web Presence and Social Networking

http://www.youngsurvivorsbhm.org
Gulf States Young Breast Cancer Survivors Network

June 2012
- Alabama

October 2014
- Alabama
- Louisiana
- Mississippi
Working together to support young breast cancer survivors and their families