FERTILE FUTURE:
EXPANDING PARENTHOOD OPTIONS

Laxmi A Kondapalli, MD MSCE
Assistant Professor, Reproductive Endocrinology & Infertility
Director, Oncofertility Program

Department of Obstetrics and Gynecology
University of Colorado Denver
Disclosure

- The speaker has no financial or other interests which pose a conflict of interest
Objectives

- To describe how cancer and cancer treatment can affect fertility
- To review ways to assess current fertility status and fertility treatment options
- To identify resources that are available to you
Fertility as a Survivorship Issue

1.6M new cancer cases with ~10% younger than 45 years

- **40% of survivors** do not recall discussing fertility impact of cancer treatment with oncologist\(^1\)
- **24% of young male cancer patients** pursued sperm banking\(^2\)
- **4% of young female cancer patients** pursued fertility preservation\(^3\)

\(^1\) Armuand GM et al, 2012
\(^2\) Trottman L et al, 2007
\(^3\) Letourneau JM et al, 2012
Loss of Eggs is Faster for Survivors

Natural Decline of Ovarian Reserve

- Birth
- Optimal Fertility
- Decreased Fertility
- End of Fertility
- Menopause

With Chemo/Radiation

Age (years)
0 18 31 37 41 45 51

1,000,000 100,000 10,000 1,000

Follicles
Structure of the Ovary

Oncofertility Program | Department of Obstetrics & Gynecology
Expanding parenthood options for life after cancer
Estimated Risk of Gonadotoxicity

High (>80%)
- Alkylating chemotherapy
  - Cyclophosphamide, ifosfamide
  - Busulfan, mephalan
- Total body irradiation, stem cell transplant

Moderate
- Platinum-based chemotherapy
  - Cisplatin, carboplatin
  - Adriamycin

Low (<20%)
- Cell cycle dependent agents
  - Methotrexate, vincristine, bleomycin
Impact of Radiation Exposure

<table>
<thead>
<tr>
<th>Radiation dose to the ovaries (Gy)</th>
<th>0.0</th>
<th>1.5</th>
<th>2.0</th>
<th>3.0</th>
<th>4.0</th>
<th>5.0</th>
<th>6.0</th>
<th>20.0</th>
<th>30.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persistent sterility in 100% of women ≥40 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>Irregular menses</td>
<td>Persistent sterility in 50% of women regardless of age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of persistent infertility</td>
<td>Low</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.5 Gy impaired pelvic blood flow gestational carrier
Normal Periods ≠ Normal Fertility

Letourneau et al. Cancer 2012

Expanding parenthood options for life after cancer
Impact on Testicular Function

Spermatogonial stem cells
How does the brain fit?

Oncofertility Program | Department of Obstetrics & Gynecology

Expanding parenthood options for life after cancer
Testing Female Fertility

Oncofertility Program | Department of Obstetrics & Gynecology

Expanding parenthood options for life after cancer
Testing Male Fertility
Fertility Options for Males

- Sperm banking
- Donor sperm
- Adoption
Fertility Options for Females

- Oophoropexy
- Egg/embryo banking
- Ovarian tissue banking
- Donor eggs, adoption
- Gestational carrier

Expanding parenthood options for life after cancer
no delay in treatment, can be combined with other procedures to minimize anesthesia
Oocyte & Embryo Cryopreservation
Oocyte & Embryo Cryopreservation
Preimplantation Genetic Diagnosis
Oncofertility Resources

http://arm.coloradowomenshealth.com/service/oncofertility

myoncofertility.org
savemyfertility.org

Oncofertility Program | Department of Obstetrics & Gynecology
Expanding parenthood options for life after cancer
Oncofertility Program at CU
Mission Statement

- To provide an interdisciplinary approach to cancer treatment planning that includes:
  - Clear family planning options
  - Community support services
  - Research
  - Education
  - Outreach

All Around CU!

In 2011 Laxmi Kondapalli, MD was recruited to the CU School of Medicine to start the region’s first fertility preservation program for cancer patients—one of few in the nation whose work includes men (one-third of her patients) and women alike. Her efforts give hope to 2,000+ plus individuals of childbearing age annually diagnosed with cancer. Support from a March Cocktails for a Cure CU Cancer Center Fund event will aid the research of Kondapalli and two other cancer researchers.

Above: Laxmi Kondapalli, MD (2nd from right) and OB/GYN department chair Nanette Santora, MD (far right), with colleagues and patients.
Oncofertility Program at CU

- New Stapleton office
  - 3055 Roslyn Street, Suite 230
  - 303-724-8089

- Anschutz Cancer Pavilion
  - 1665 Aurora Court, 1st Floor
  - 720-848-0170

Expanding parenthood options for life after cancer