Fertility Preservation

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Why is fertility preservation important to YAs after cancer?

- Normality (Crawshaw & Sloper, 2010)
- Preference for biologic offspring vs. adoption (Schover 2002)
- 75% of YAs with cancer want children one day (Schover 1999 & 2002)
- Cancer experience would enhance parenthood (Schover 1999 & 2002)
- Infertility negatively impacts on QoL and causes distress (Wenzel 2005; Green 2003)
- Worry about risk of cancer in offspring (Schover 1999 & 2002)

CANCER = BIOGRAPHICAL DISRUPTION

(Bury 1982)

- Women
  - Emotional distress and adjustment (Canada & Schover, 2012; Carter, Chi et al., 2010)
- Men
  - Effects more ambiguous but may be linked to virility
  - Desire for biological children (Gardino et al., 2011)

What are some of the challenges to preserving fertility?

- Cost
- Presence of partner (or not)
- Timing
- Accessibility

Fertility preservation for men

Established

- Sperm banking
- Radiation shielding
- Electrostimulation
- Sperm extraction from urine if retrograde ejaculation

Experimental

- Testicular sperm extraction (TESE)
- Testicular tissue cryopreservation
- Tissue grafting

Premature ovarian failure

- Return of periods or normal hormone levels ≠ undamaged ovaries
- 60% of women experience POF
  - 17% in those 15 - 30 years
  - 42% of women in their 30s
- Recovery from menstrual changes occurs in
  - 80% of women under 35 and 25% under 40
- Those who remain amenorrheic 1 year after treatment will not regain ovarian function

Lobo – NEJM 2005; Partridge – Eur. Jnl. Cancer 2007

Established - female

OPTION	DEFINITION	TIMING	TIME REQUIREMENT	OTHER CONSIDERATIONS
Embryo banking	Harvesting eggs, IVF, and freezing of embryos for later implantation	Before or after treatment	10–14 days from menses; outpatient surgical procedure	Need partner or donor sperm
Oocyte banking	Harvesting and freezing of unfertilized eggs for IVF and implantation after cancer treatment	Before or after treatment	10–14 days from menses; outpatient surgical procedure	May be attractive to single women
Radiation shielding	Use of shielding to reduce scatter radiation to the ovaries	During treatment	In conjunction with radiation treatments	Does not protect against effects of chemotherapy
Ovarian transposition	Surgical repositioning of ovaries away from the radiation field	Before treatment	Outpatient procedure or in conjunction with gynecologic cancer surgery	

Experimental - females

OPTION	DEFINITION	TIMING	TIME REQUIREMENT	OTHER CONSIDERATIONS
Ovarian Tissue Banking	Freezing of ovarian tissue and reimplantation of tissue or *in vitro* maturation of follicles and fertilization of eggs after cancer treatment	Before or after treatment	Outpatient surgical procedure	Tissue not suitable for transplant if high risk of ovarian metastases; no live births to date from *in vitro* maturation
Ovarian Suppression	GnRH analogs or antagonists used to suppress ovaries	During treatment	In conjunction with chemotherapy	State of science: not effective Does not protect against radiation effects

Alternatives - female

OPTION	DEFINITION	TIMING	TIME REQUIREMENT	OTHER CONSIDERATIONS
Donor eggs	Eggs donated by another woman	After treatment	Varies	Woman chooses egg donor
Donor embryos	Embryos donated by another couple	After treatment	Varies	May be available from fertility centre
Gestational surrogacy	Another woman carries pregnancy for woman/couple	After treatment	Varies	Legality differs by jurisdiction
Adoption	Process creates legal parent-child relationship	After treatment	Varies	Medical history may be a factor

RESOURCES

FERTILITY RISK ASSESSMENT TOOL

FAMILY-BUILDING OPTIONS TOOL

https://www.livestrong.org/we-can-help/livestrong-fertility

What do we tell them about fertility preservation?

- Males more than females (Wilkes et al 2010)
- Negative information about preservation
- Only 12% of women recalled being counselled

(Niemasik 2012)

- Despite counseling, only 5% referred to fertility specialist and 5% pursued fertility preservation (Letourneau 2012)
- Overload of information at time of crisis

(Peddie 2012)

Provision of Information

- ASCO Guidelines 2013
  - Inform about risks to fertility from planned treatment
  - Begin discussions as soon as possible after diagnosis
  - Sperm, oocyte and embryo-cryopreservation are standard practice
  - Refer to reproductive specialists
- Majority do not know fertility status at completion of treatment (Wright et al., 2013)
- “Gatekeeping” by health care providers (Crawshaw, 2013)

Provider barriers and challenges

- Lack of knowledge (Quinn et al., 2007; Vadaparampil et al., 2008)
- Lack of time, perceived poor success rates, economics, patient already has children (Adams et al., 2013)
- Access issues – referrals for sperm banking in Canada
  - 33% of facilities received 1 -2 referrals per month
  - 33% 3 -4
  - 13% 5 -6
  - 8% 14 – 18
  - Referrals from pediatric, radiation and surgical oncologists very infrequent (Yee at al., 2013)

Don’t forget!

- Contraception
- Safer sex
- Knowing is better than not knowing