



Ontario Network  
of Experts in Fertility  
life through knowledge

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## **Male Fertility: Your Questions Answered**

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**Michael S. Neal**

Scientific Director, ONE Fertility, 3210 Harvester Rd. Burlington, Ontario

**[www.onefertility.com](http://www.onefertility.com)**

**[mneal@onefertility.com](mailto:mneal@onefertility.com)**

# Outline

- Assisted Conception Options
- A team approach
- Cancer and Male Fertility
- Fertility treatments / Cost / Success
- Discussion



# Cancer and Fertility Crossroads

Increasing Cancer Survival Rates



Increased emphasis on Quality of Life



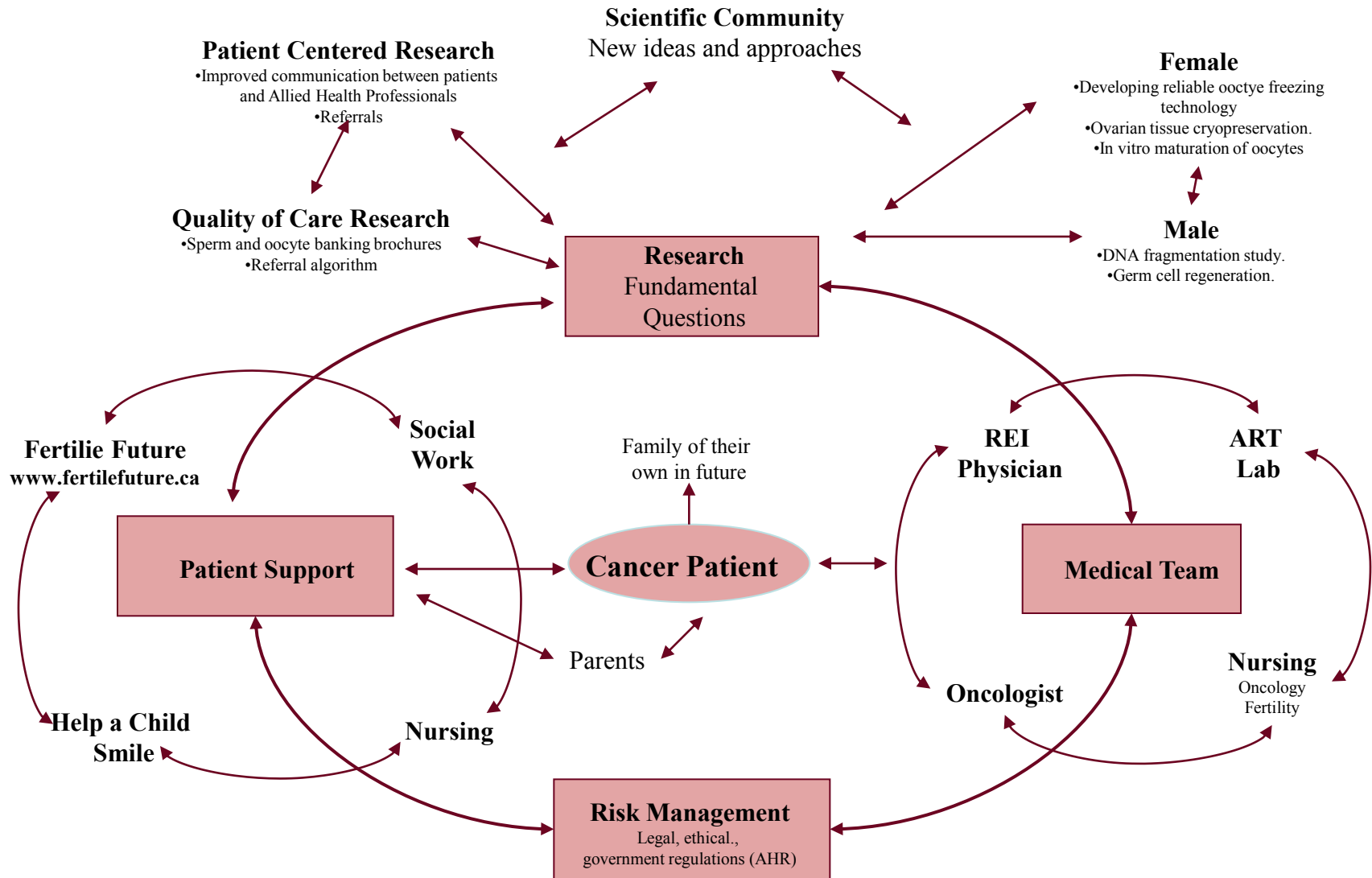
Advances in Assisted Reproductive Technologies (ART)



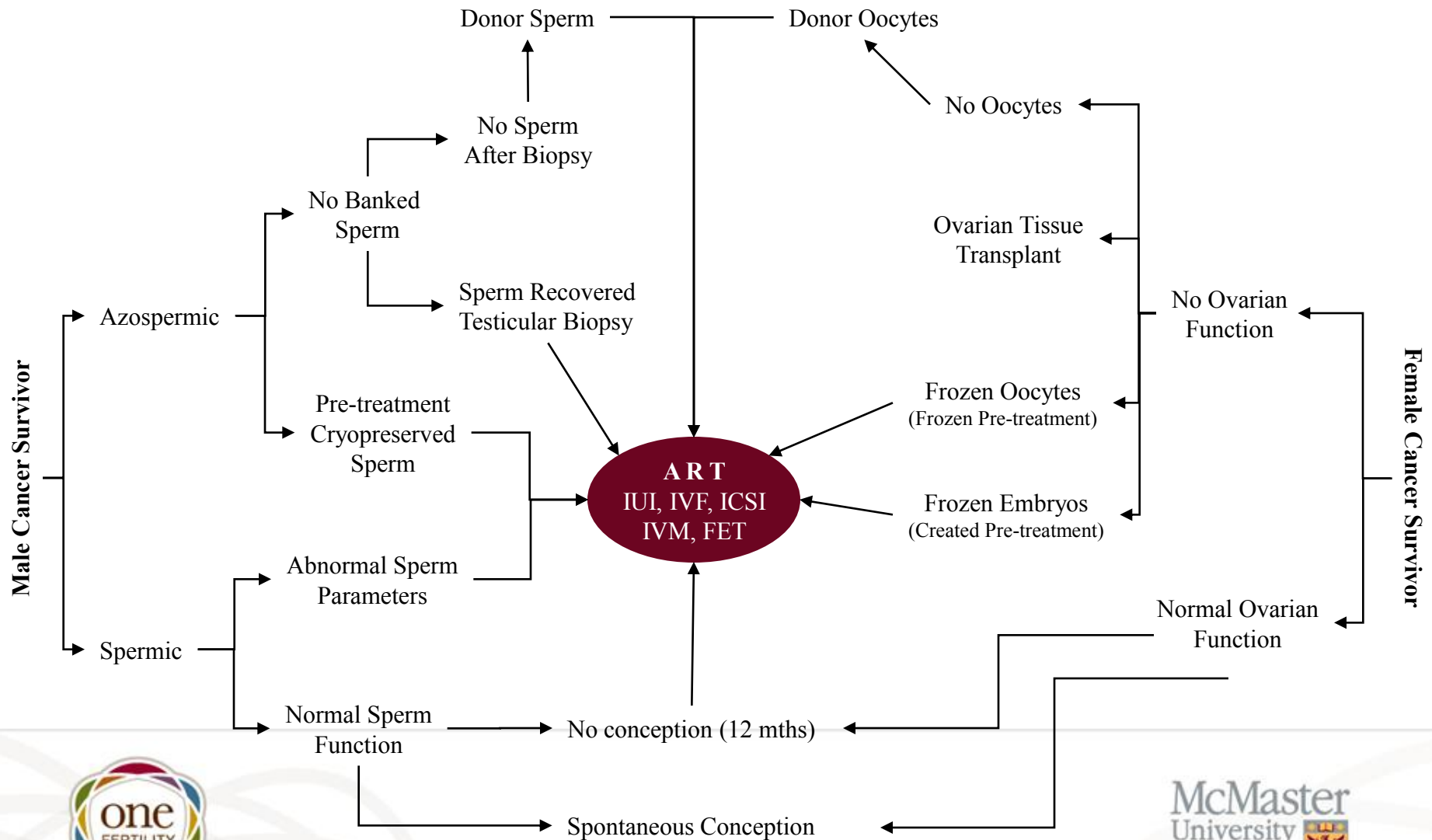
Greater need for Information and Understanding  
about Fertility Risks and Options



# Multi-disciplinary Team Approach to Fertility Preservation



# Assisted Conception Options



# Cancer and Male Fertility

- Male infertility can result from:
  - Disease
  - Anatomic problems
  - Primary or secondary hormonal insufficiency
  - Damage or depletion of the germinal stem cells
- The effects of chemotherapy and / or radiotherapy include:
  - Compromised sperm number;
  - Motility;
  - Morphology; and
  - DNA integrity.

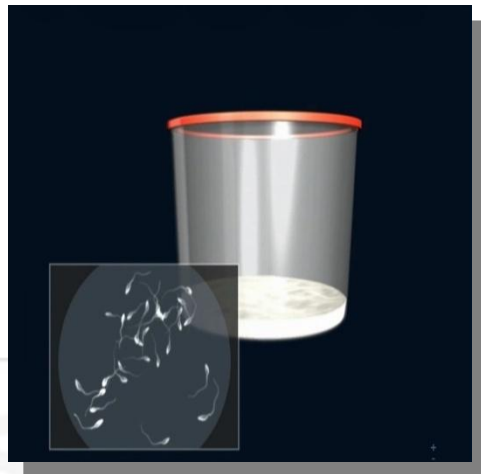


# Semen Assessment

Infertility or Sub-fertility = no conception after 1 year of unprotected regular intercourse

Semen Assessment – first step to see if sperm in ejaculate.

- Validates sperm production
- Confirms patency of the male ducts (vas deferens)

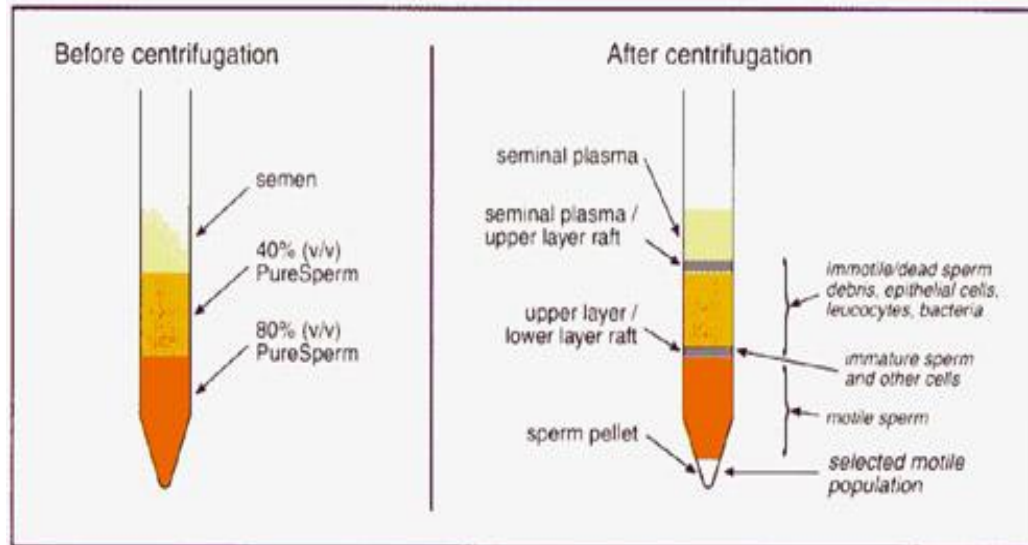


1. Concentration  $> 20\text{M/ml}$
2. Motility  $> 50\%$
3. Normal Morphology (4%)

Azoospermia – no sperm

# Sperm Preparation for IUI

IUI = Intra-uterine insemination

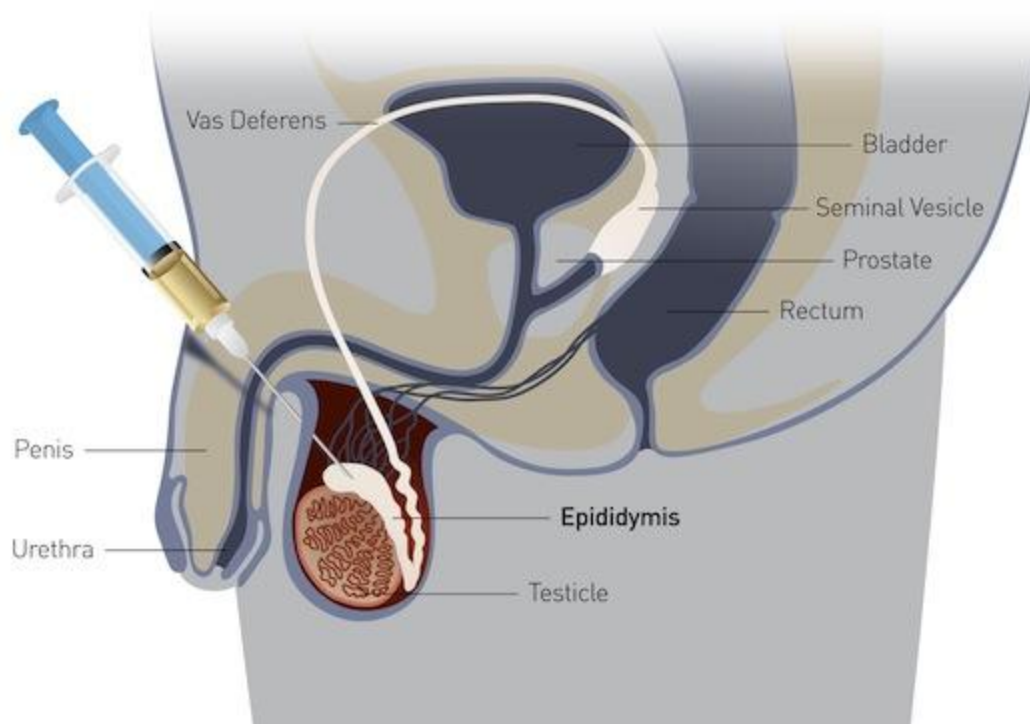




# Surgically recovered Sperm

## Percutaneous Epididymal Sperm Aspiration (PESA)

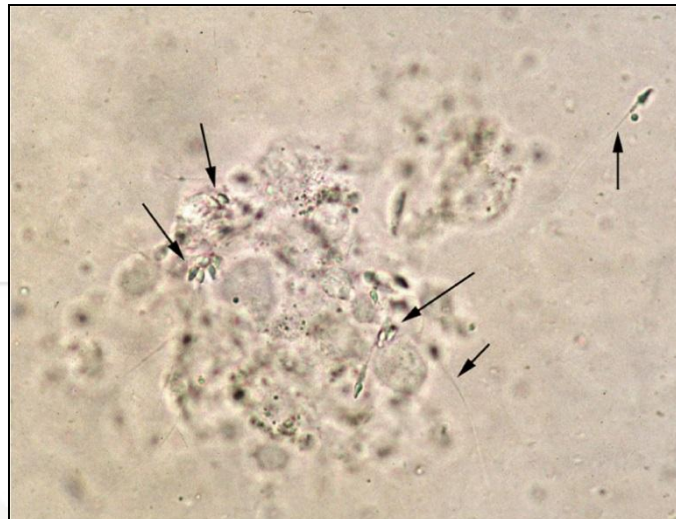
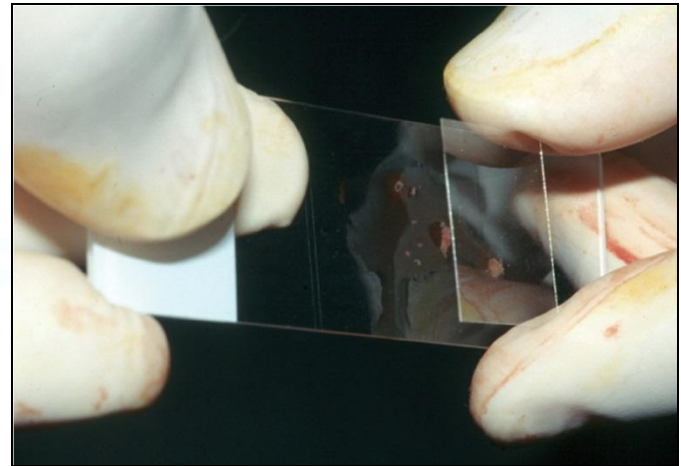
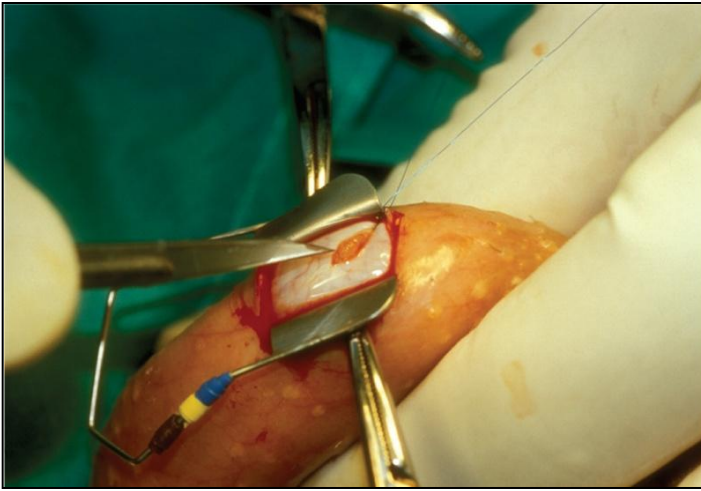
The procedure of Percutaneous Epididymal Sperm Aspiration (PESA) is performed by passing a fine needle into the epididymis and aspirating sperm.



# Surgically recovered Sperm

## Testicular Biopsy

Surgical recovery of seminiferous tubules.



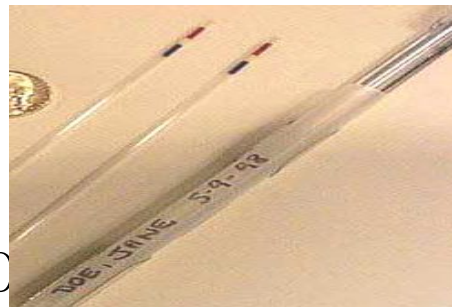
# Cryobiology

- Removal of water
- Additions of Cryoprotectants (PROH, glycerol, DMSO)
- Slow cooling vs. Vitrification

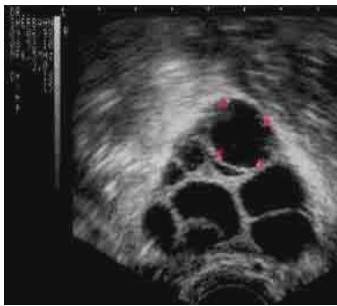


- Storage periods of more than 40 years (J Assist Repro Genet Sept 2013) for sperm and 11 years for embryos prior to pregnancies established have been documented, but these records will be broken.

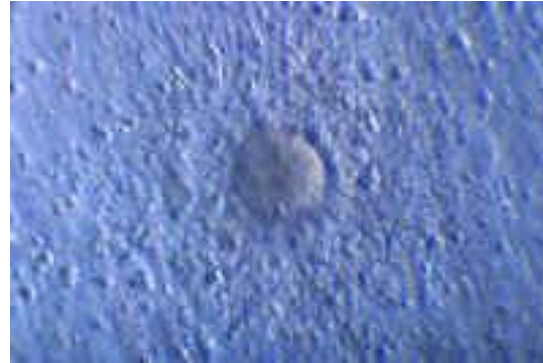
- Cost to freeze = \$250 – 500
- Annual Storage = \$200 – 600



2013 OOOH/POGO Survivor Conference

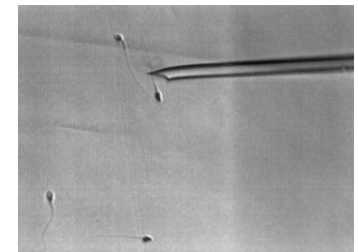
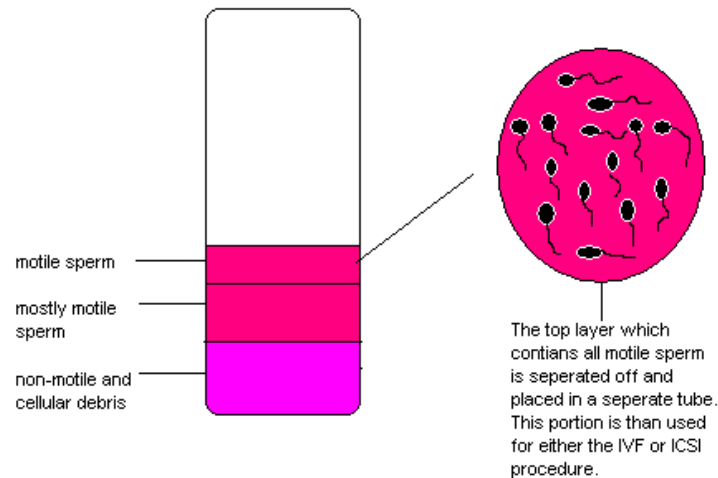


# Eggs and Sperm



IVF

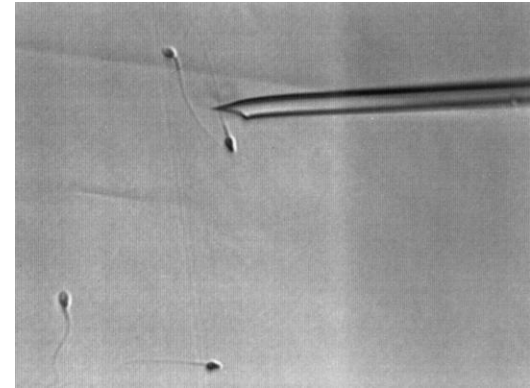
## The Swim Up Technique



ICSI



# Sperm Selection for ICSI



# ICSI



# Awareness of Fertility Preservation Options

Only 17.8% (146/821) newly diagnosed AYA cancer patients utilized sperm cryopreservation technology.

Oncology banked sperm used for conception is effective:

- a) 36.4% clinical PR/IUI
- b) 54.5% clinical PR/ET with IVF/ICSI



Awareness is the key to increased use of sperm banking for oncology purposes.

Neal et al., Cancer 2007



# Cost and Success

Procedure	Cost	Success
Natural Cycle IUI Sperm prep (wash)	\$350.00	8 – 12%
FSH stimulated IUI Sperm prep (wash)	\$1,000.00 – 1250.00	17 – 20%
COH with IVF	\$9800.00 – 11,500.00	45 – 65%
COH with ICSI	\$11,300.00 – 13,000.00	

COH = Controlled Ovarian Hyperstimulation; dependant on individual response and patient age.





# Additional Options

**Donor sperm** commercially available for sperm banks

Cost ranges from \$500 - \$1000 per vial of sperm; still requires the cost of processing \$350; Donor selection based on phenotypic traits.

**Embryo Adoption** – allows couple to experience pregnancy.

**Conventional Adoption**



# Resources



[fertilefuture.ca](http://fertilefuture.ca)

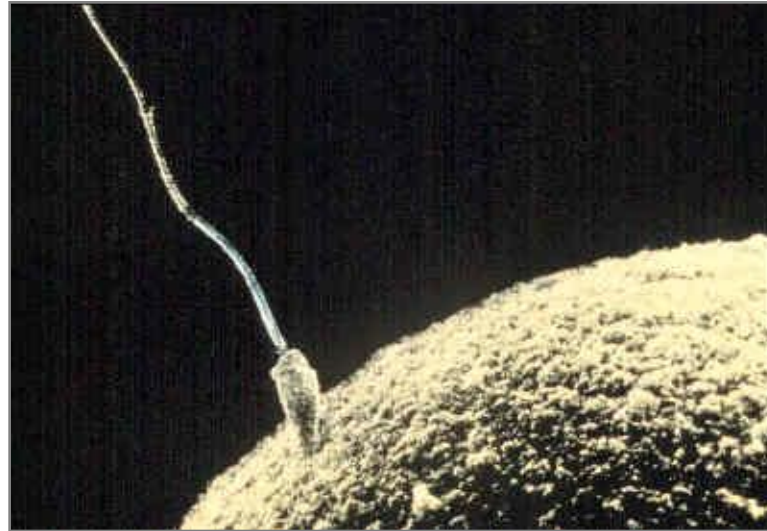


# Conclusions

- Cancer treatment can have a devastating effect on the reproductive system
- Awareness and Education is required for not only patients, but, allied health care professionals.
- Oncologists combined with a multi-disciplinary team of health professionals provides hope for the future fertility of oncology patients.



# Discussion



**Michael S. Neal**  
Scientific Director, ONE Fertility  
[mneal@onefertility.com](mailto:mneal@onefertility.com)

