

# Fertility Preservation in Oncology

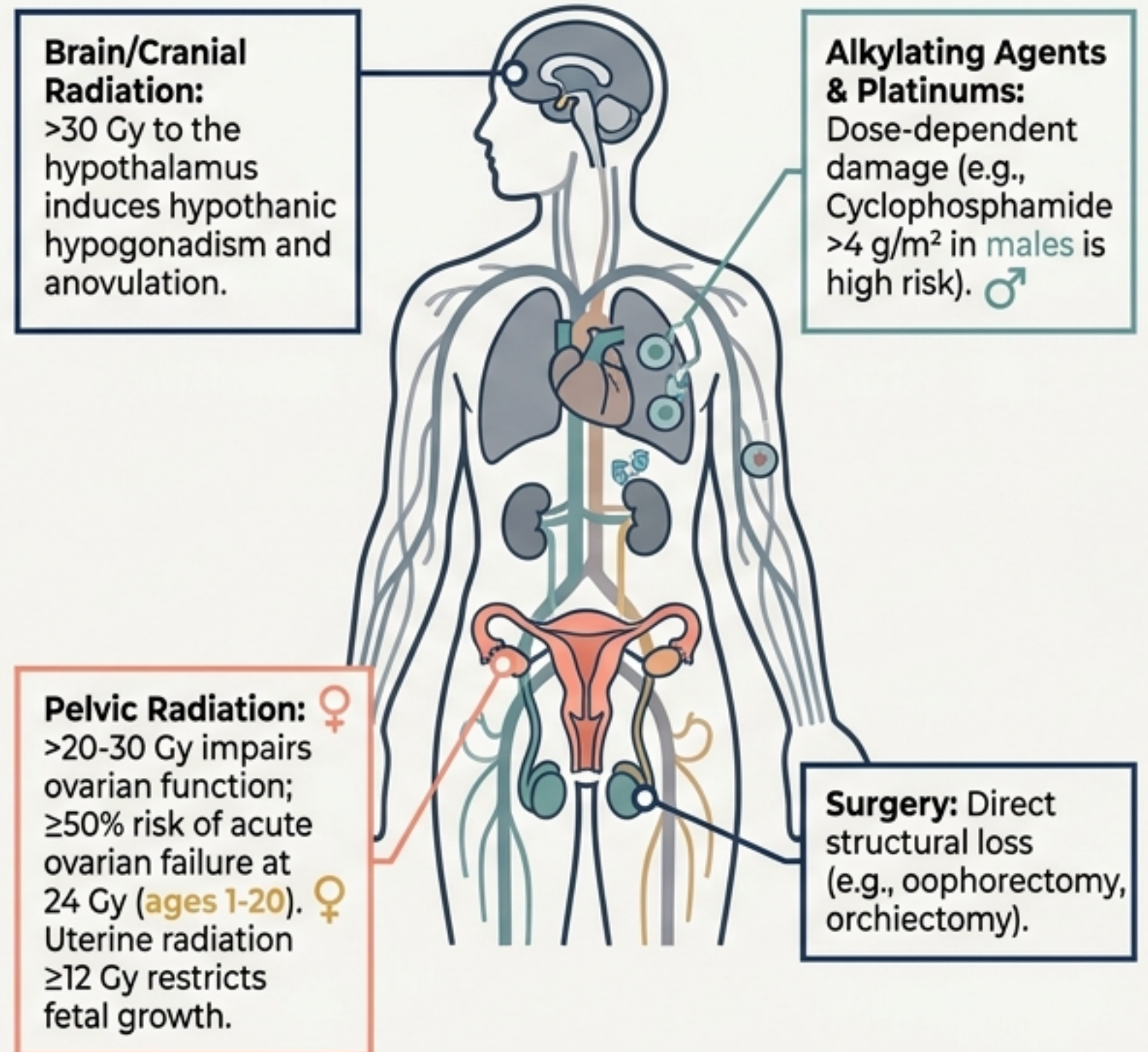
## The 2025 ASCO Clinical Practice Guideline Blueprint

A visual reference guide for clinicians across oncology, reproductive medicine, and multidisciplinary survivorship teams.

Cancer survivorship is rising, but antineoplastic therapies carry **severe reproductive toxicity.**

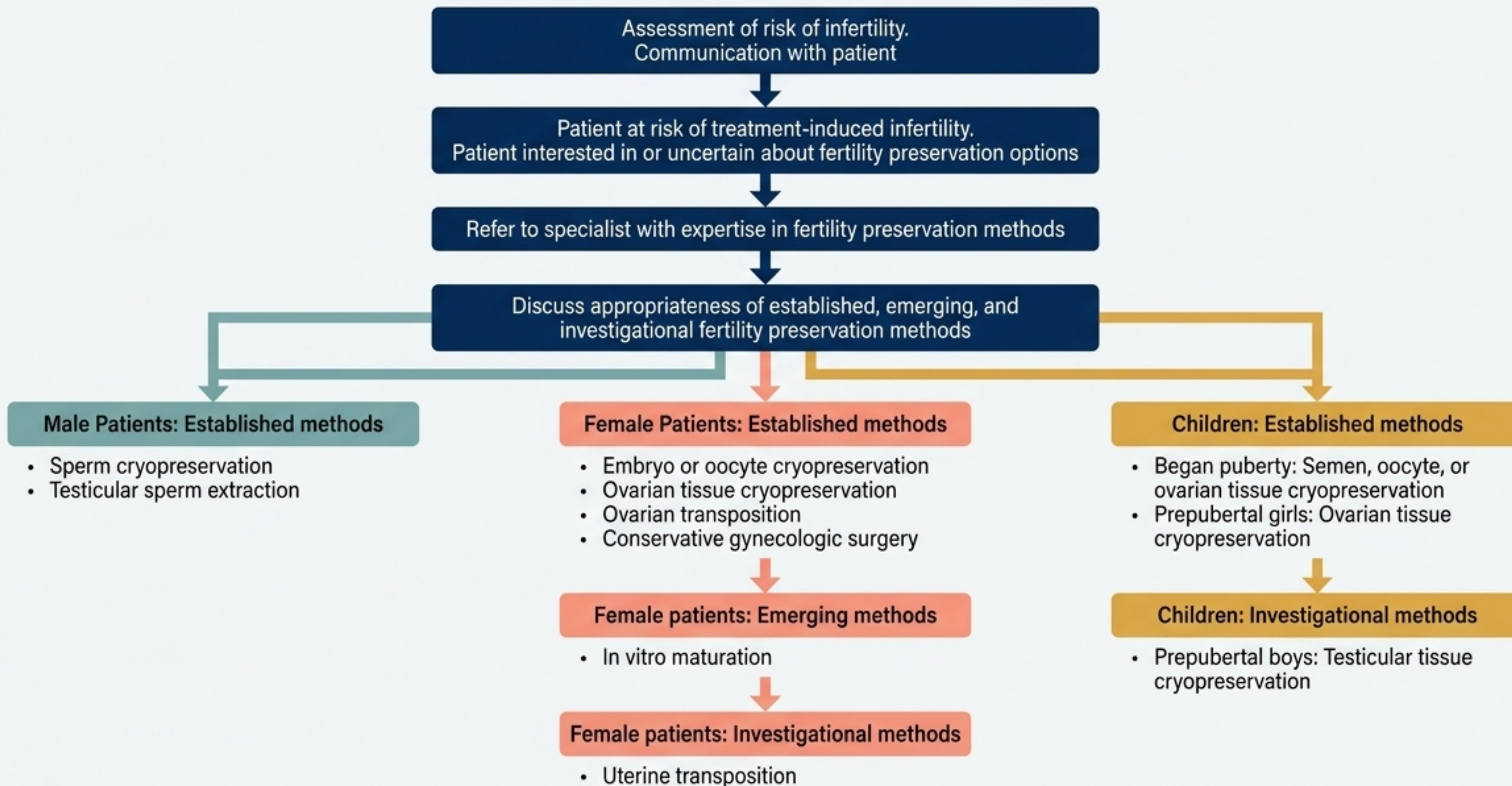
**Preservation is not an afterthought; it is an immediate mandate.**

## Gonadotoxic Threat Vectors



# The Clinical Decision Pathway

The 2025 ASCO master algorithm for triaging and treating patients at risk of treatment-induced infertility.



## 1. Assess Risk [● STRONG / MODERATE EVIDENCE]

Evaluate all patients before treatment starts, accounting for age and specific therapies.



## 2. Counsel [● STRONG / MODERATE EVIDENCE]

Initiate discussion to reduce distress, irrespective of prognosis, parity, or resources.



## 3. Refer [● STRONG / VERY LOW EVIDENCE]

Refer interested or uncertain patients to reproductive specialists immediately.



## 4. Document [● STRONG / LOW EVIDENCE]

Follow up yearly and document discussions in the medical record.

## Communication Checklist

### What to Ask

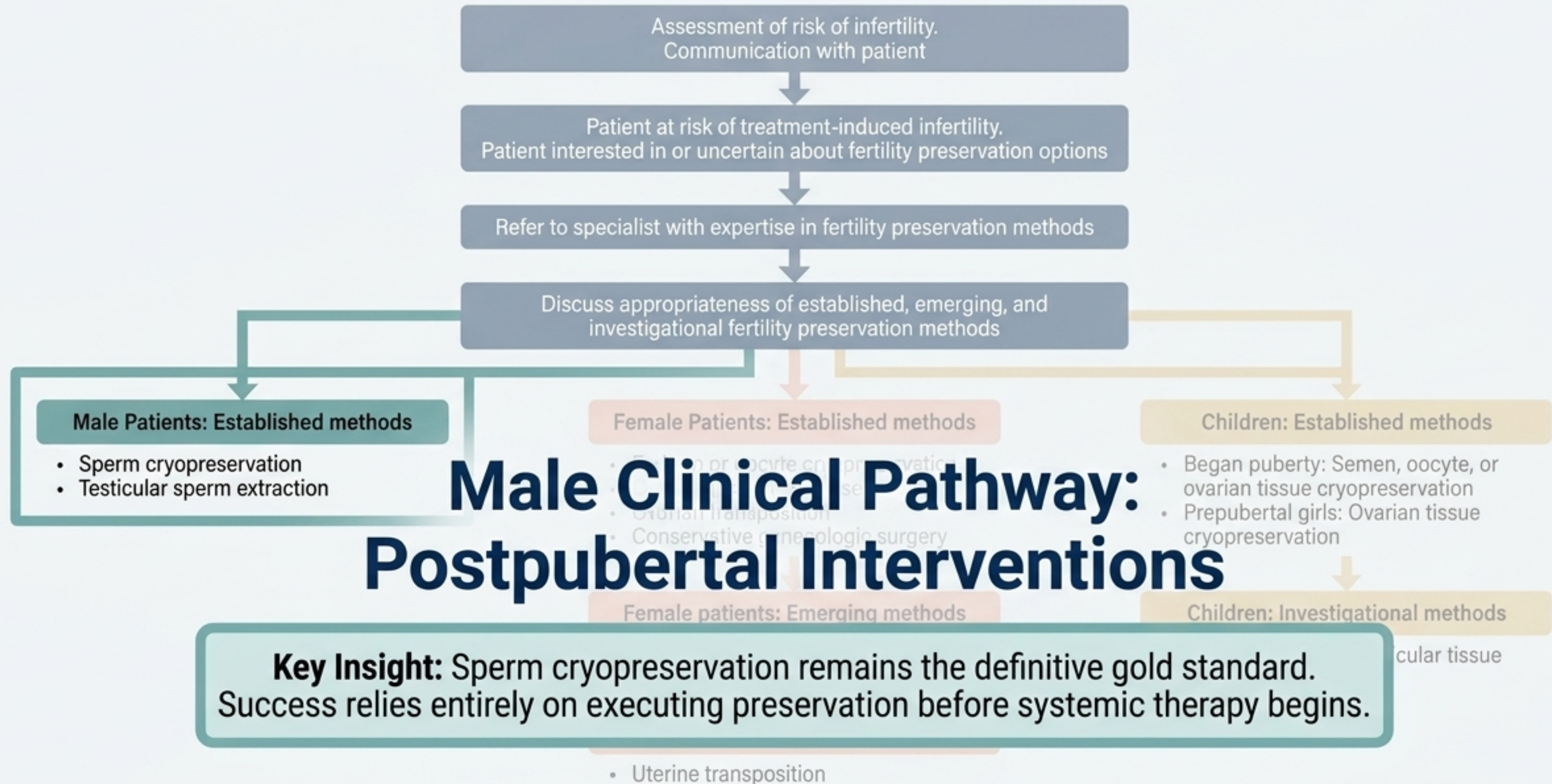
- Are you interested in preserving fertility?
- Are you uncertain?

### What to Tell

- Time commitments: **2-3 weeks for females,**  
**1-2 days for males.**
- **Insurance status:** Verify state-level mandates.
- **Reassurance:** No increased risk of cancer recurrence or congenital abnormalities in progeny from FP methods.

# The Clinical Blueprint

The 2025 ASCO master algorithm for triaging and treating patients at risk of treatment-induced infertility.



# Male Fertility Preservation Interventions: A Comparative Analysis

	Sperm Cryopreservation	TESE (Testicular Sperm Extraction)	Hormonal Gonadoprotection
Status	[● STRONG / HIGH EVIDENCE] Gold Standard.	[● STRONG / HIGH EVIDENCE] Alternative Standard.	[● STRONG RECOMMENDATION AGAINST / HIGH EVIDENCE]
Timing	Before therapy.	Before therapy or >6-12 months post-therapy (if azoospermic).	
Efficacy	LBRs ~20-28%. Safe, noninvasive.	Positive retrieval in ~42-57% of oncologic patients.	<b>Do NOT offer. Ineffective in males.</b>
Limitations	Ideal protocol requests 3 ejaculates (Total Motile Count >25M), but prioritize collecting any viable sample before therapy over delaying care.	Surgical risks, requires IVF/ICSI.	

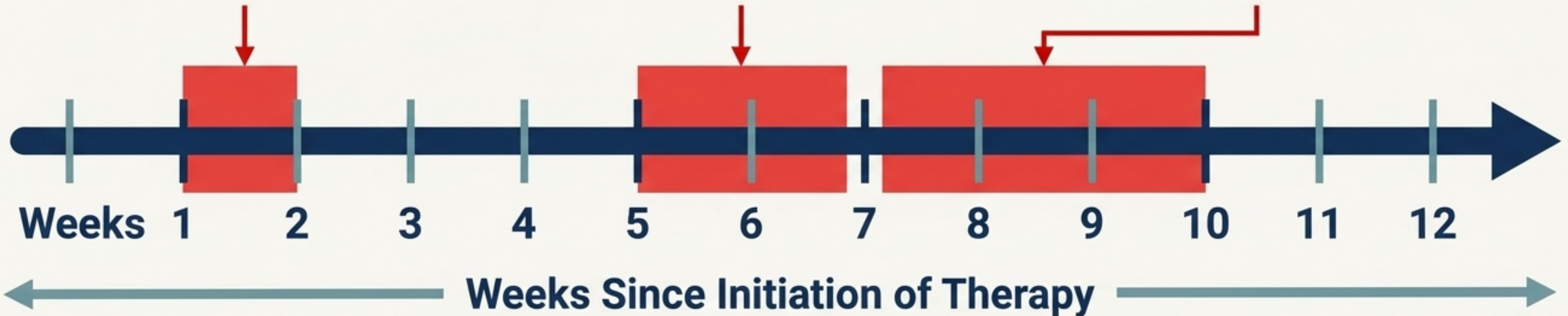
# The Mutagenesis Timeline: Why Pre-Treatment Matters

**[● STRONG / LOW EVIDENCE]** Males must be advised of higher genetic damage risks in sperm collected soon after therapy begins.

**Weeks 1-2:** High risk of mutations from Alkylating Agents & Radiation

**Weeks 5-7:** Peak risk from Topoisomerase II inhibitors (and microtubule inhibitors)

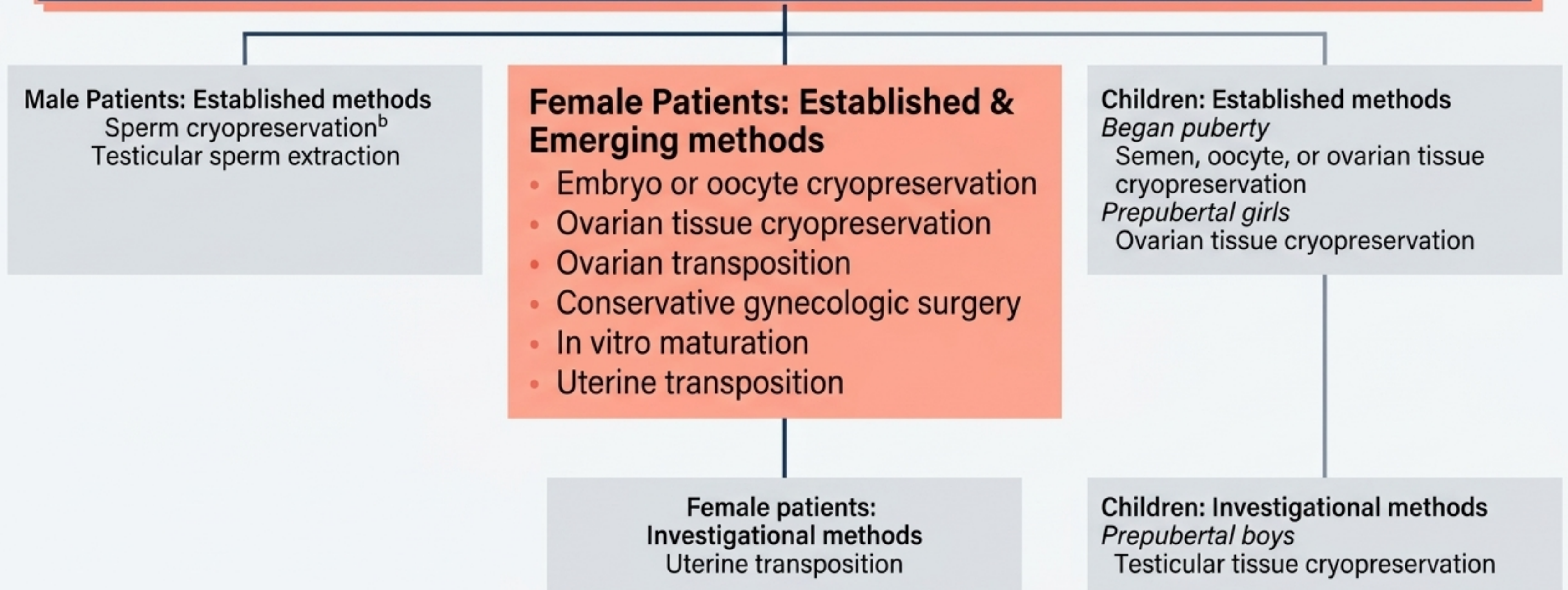
**Weeks 7-10:** Mutagenic effects from Nucleoside analogs, antimetabolites, and bleomycin.



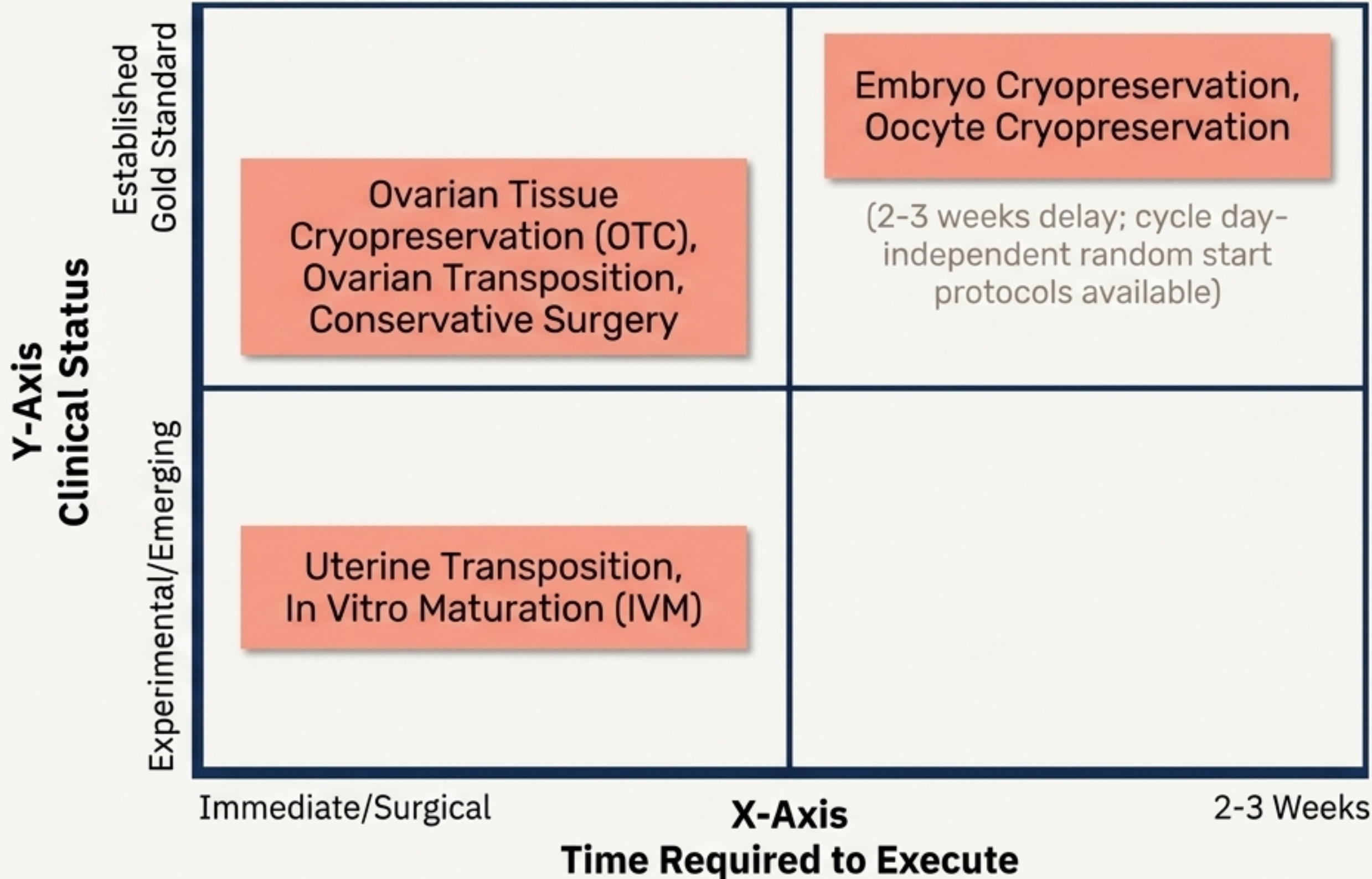
**Bottom Line: Do not wait.** However, diminished counts prior to therapy should not dissuade collection, as **ICSI** allows use of very limited sperm.

# Female Clinical Pathway: Modalities & Timing

**Key Insight:** Female FP requires balancing oncologic urgency against the time requirements of controlled ovarian stimulation. Random start protocols have drastically reduced delays.



# Female Fertility Preservation Modalities: Modalities & Timing Matrix



Ovarian Suppression (GnRHa) sits outside this matrix—it is an adjunct therapy throughout treatment, never a replacement for established FP methods.

# Female Fertility Preservation Modalities: Detailed Comparison Matrix

## Embryo Cryopreservation

[● STRONG / HIGH EVIDENCE]

- **Efficacy:** 49% Clinical Pregnancy Rate (CPR); 35%-41% Live Birth Rate (LBR).
- **Logistics:** 2-3 weeks. Requires sperm (partner or donor).
- **Risks:** Disposition ethics if patient does not survive.

## Oocyte Cryopreservation

[● STRONG / HIGH EVIDENCE]

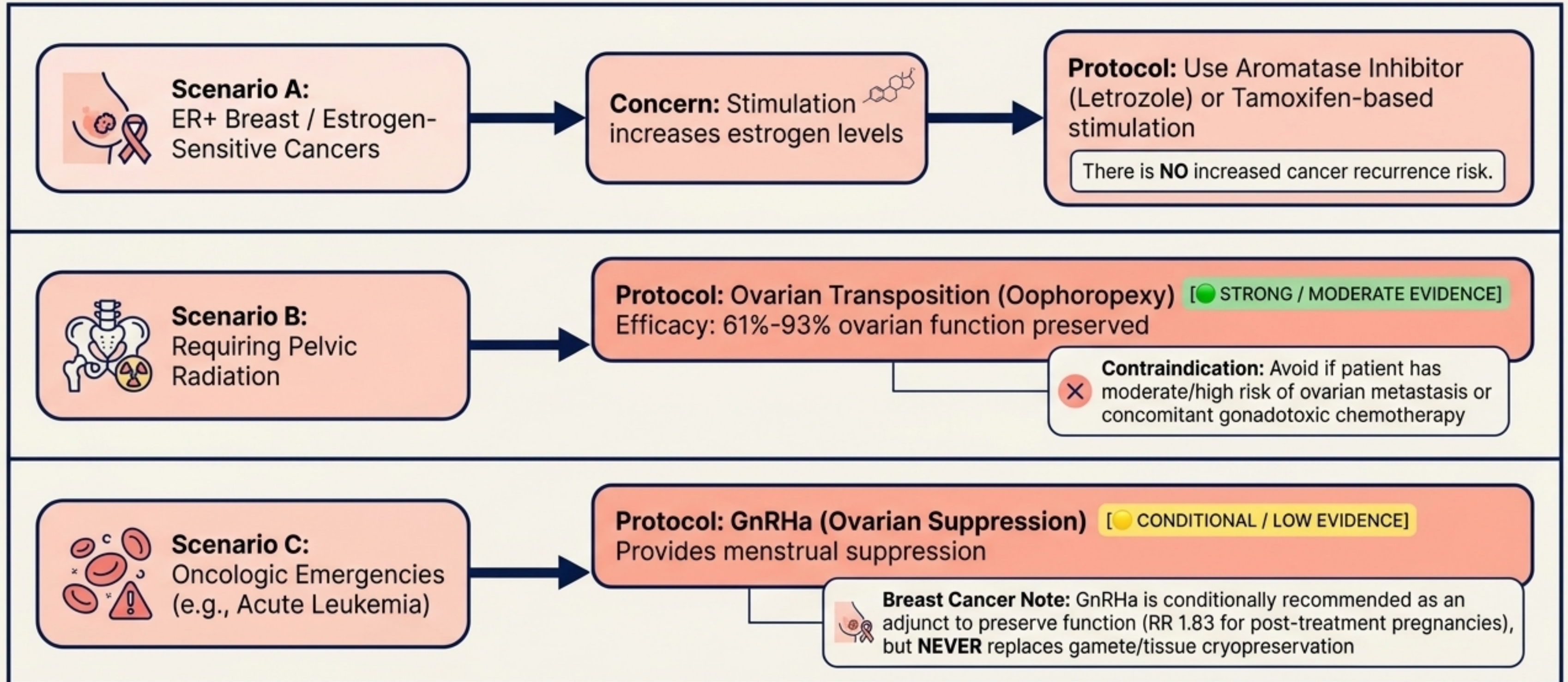
- **Efficacy:** 35% CPR; 26%-32% LBR.
- **Logistics:** 2-3 weeks. Does NOT need sperm (ideal for future flexibility).
- **Risks:** Potential OHSS risk (mitigated by GnRH agonist triggers).

## Ovarian Tissue Cryo (OTC)

[● STRONG / MODERATE EVIDENCE]

- **Efficacy:** Restores ovarian function in 70%-95% of patients. 44% CPR (vitrification); 19%-32% LBR.
- **Logistics:** Immediate surgical procurement. No hormonal stimulation. The only option for prepubertal females.
- **Risks:** Theoretical risk of reintroducing malignant cells (may defer until post-treatment Measurable Residual Disease (MRD) negativity is achieved).

# Female Fertility Preservation Modalities: Logic Map & Decision Pathways



# Pediatric & Adolescent FP: The Puberty Divide

## Pubertal/Adolescent [● STRONG / MODERATE EVIDENCE]

- **Offer** standard adult methods (Semen, Oocyte, or Embryo Cryopreservation).
- **Requirement:** Requires patient assent and parent/guardian consent.

## Prepubertal Female

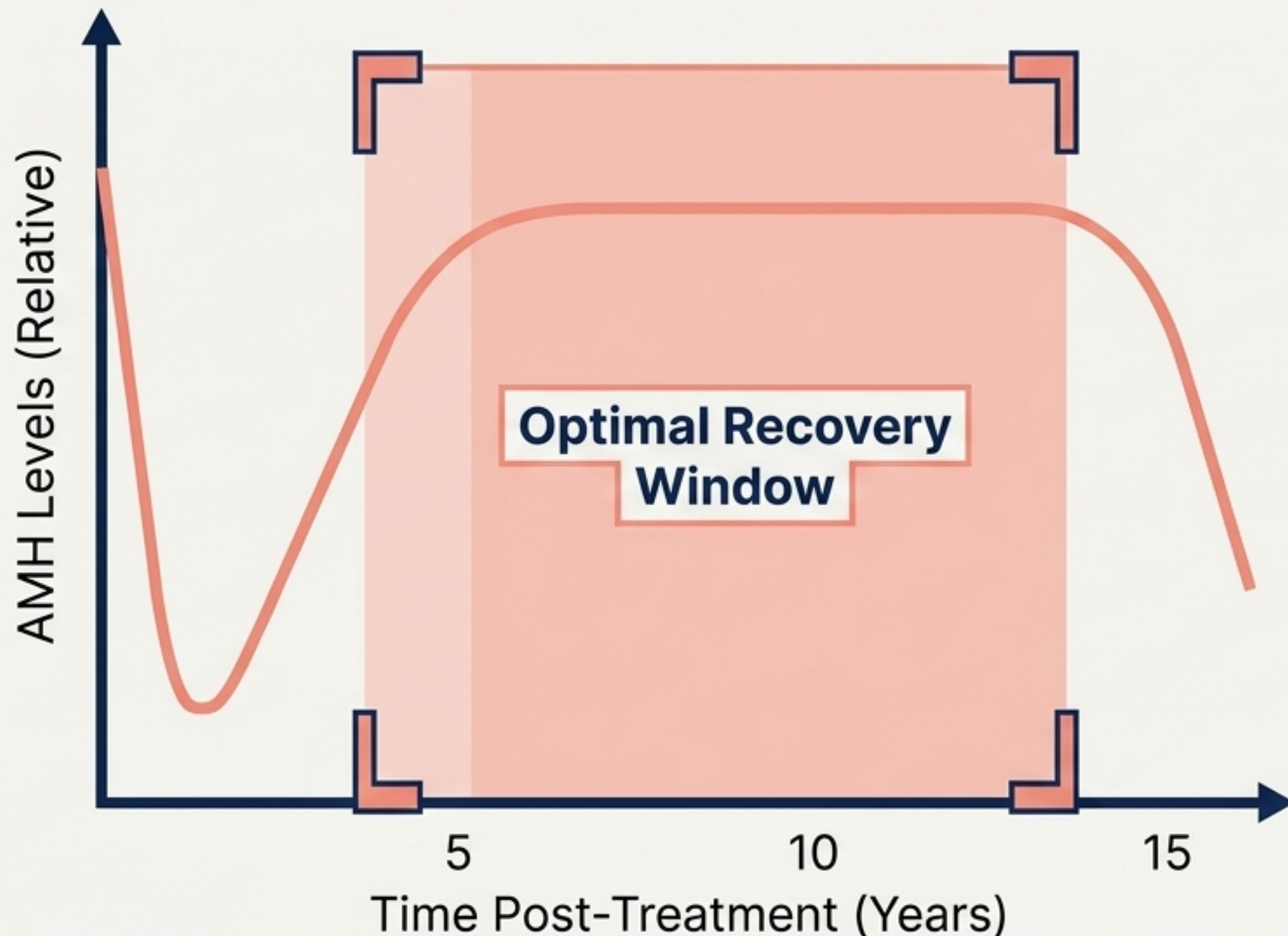
- **Method:** Ovarian Tissue Cryopreservation (OTC).
- **Status:** Established.

## Prepubertal Male

- **Method:** Testicular Tissue Cryopreservation (TTC).
- **Status:** Investigational [● STRONG / VERY LOW EVIDENCE]. Should only be performed via clinical trials or approved protocols.

# The Survivorship Window: Post-Treatment FP

[**● STRONG / MODERATE EVIDENCE**] Embryo/Oocyte cryo may be offered post-treatment for those at risk of primary ovarian insufficiency or age-related decline.



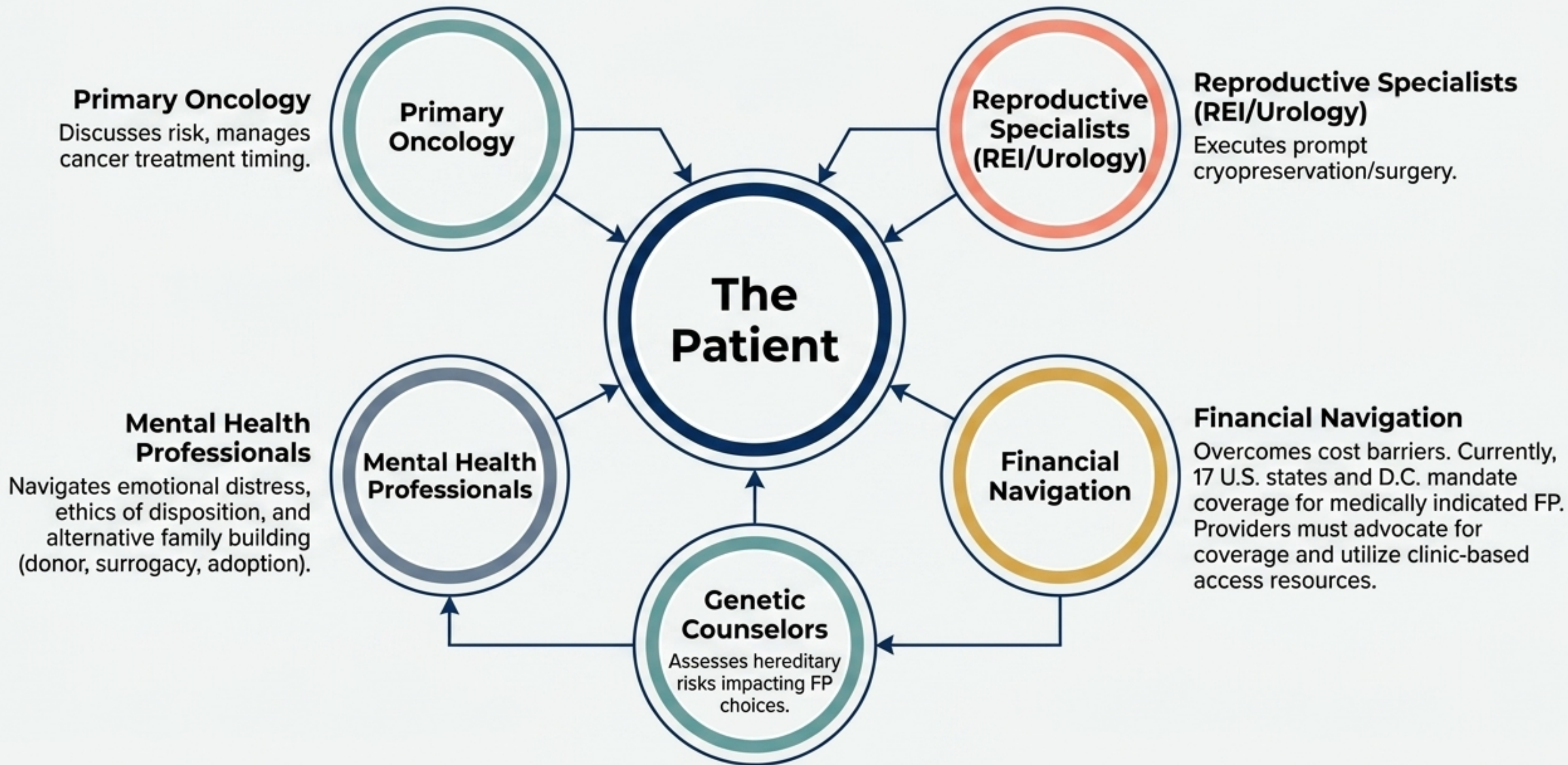
## Clinical Reality

Post-treatment AMH levels typically drop, then increase for 2-3 years, plateau for 10-15 years, and decline prematurely.

This creates an optimal recovery window for maximizing oocyte yield.

**⚠ Caution:** Gamete retrieval within 3 months of last chemotherapy dose often yields zero oocytes. Counsel patients on unknown reproductive potential of gametes obtained proximal to therapy.

# Systemic Execution: The Multidisciplinary Ecosystem



# Integrating Fertility into the Standard of Care

## Pillar 1: Proactive Triage

FP must be discussed at diagnosis, irrespective of a patient's age, socioeconomic status, or prognosis. Document it.

## Pillar 2: Rapid Execution

Leverage modern protocols (random-start stimulation, OTC, prompt sperm banking) to eliminate delays to life-saving cancer therapy.

## Pillar 3: Equitable Access

Disparities exist. Minoritized groups and non-urban patients suffer lower referral rates. The clinician's role extends beyond biology to active advocacy—navigating mandates and ensuring equitable referral pathways.

For full ASCO guidelines, tools, and resources: [www.asco.org/survivorship-guidelines](http://www.asco.org/survivorship-guidelines)