





MOTTO AND VISION



- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine



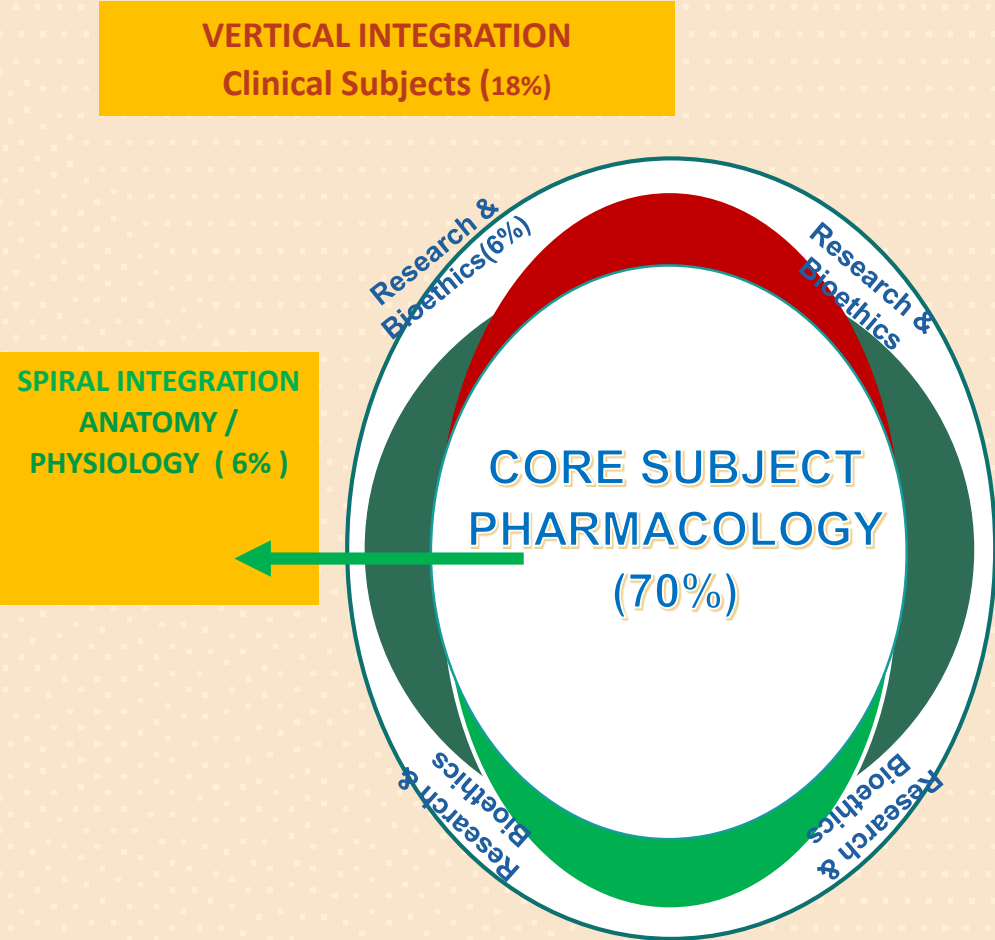
DRUGS USED IN INFERTILITY TREATMENT

DR MEMUNA KANWAL

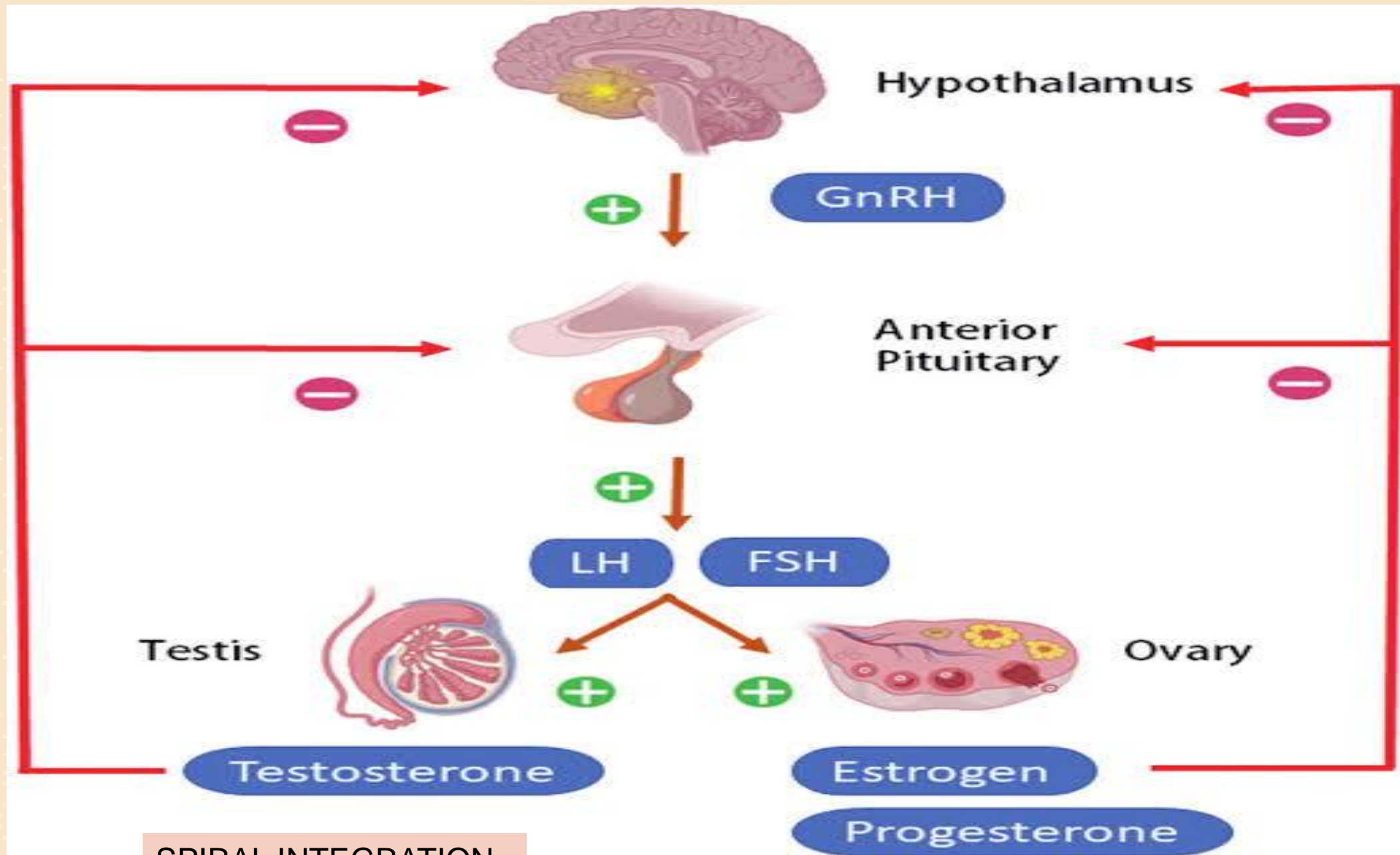
**SOURCE :
BERTRAM G.KATZUNG BASIC & CLINICAL PHARMACOLOGY
15TH EDITION
GOOGLE FOR IMAGES & RESEARCH ARTICLE**



PROFESSOR UMAR'S CLINICALLY ORIENTED INTEGRATION MODEL FOR INTERACTIVE LECTURES



4TH Year Pharmacology LGIS(19 slides)	
Core Subject – 9slides (48%)	
Vertical integration (Clinical Subjects)	• 4 slides (21%)
Spiral Integration (basic sciences subjects)	• 1 slide (5%)
Spiral integration	• 5 slides (26%)



SPIRAL INTEGRATION

Common Causes of Infertility



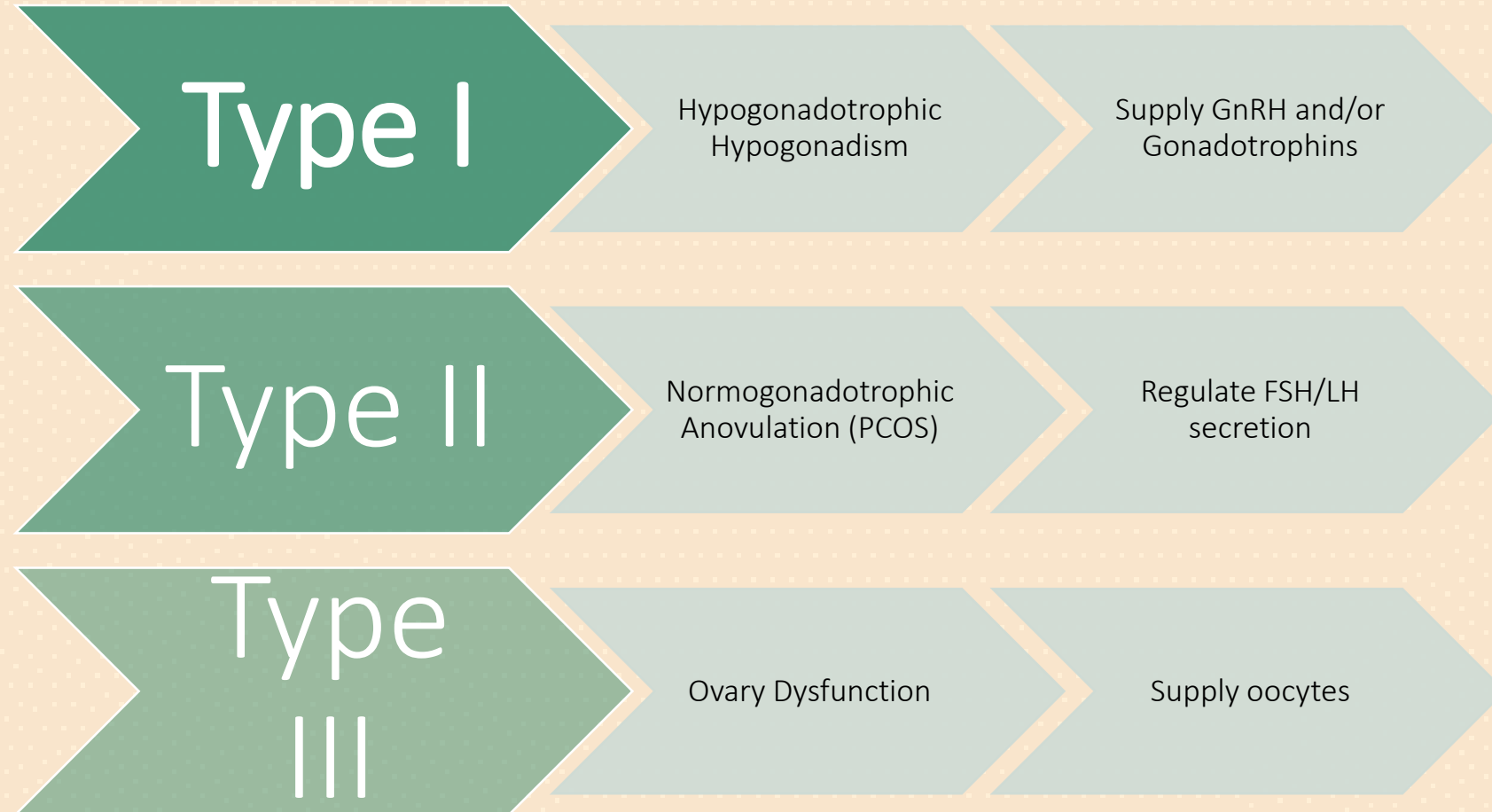
source: medium.com

Reasons for infertility in women





OVULATORY DISORDERS (WHO)



VERTICAL INTEGRATION



DRUGS USED IN INFERTILITY

Controlled Ovarian Stimulation

- Clomiphene Citrate
- Gonadotrophins

Ovulation Triggers

- HCG
- GnRH Analogues

Hypothalamic-Hypophysis Suppression

- GnRH Analogues
- GnRH Antagonists

Luteal Phase Support

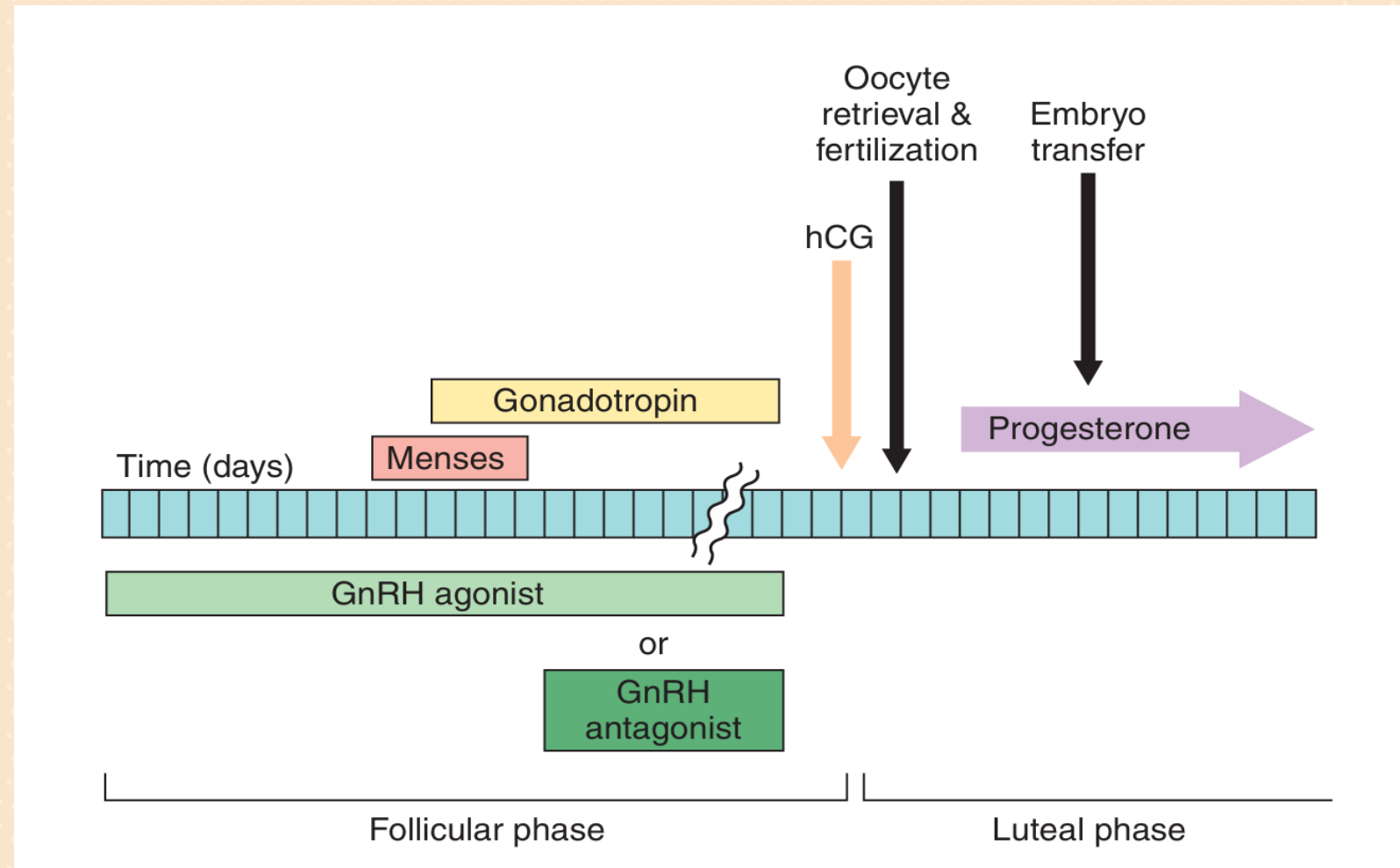
- HCG
- Progesterone

Others

- Metformin
- Aromatase Inhibitors

OVULATION INDUCTION PROTOCOLS

- Ovulation induction with gonadotrophins follow following three steps
- Supression of endogenous gonadotrophins secretion by GnRH analogues/antagonists
- Follicle development by daily injections of FSH, or menotropins
- Final stage of oocyte maturation: LH or hCG injection



GnRH Analogues

- Leuprolide, Goserelin, Histrelin, Nafarelin, Triptorelin
- Pulsatile release: Stimulate Gonadotrophins release

Continuous Leuprolide therapy

Initial Response

GnRH Receptor stimulation

↑ FSH release

↑ LH release

↑ Estradiol & Progesterone (women)

↑ Testosterone (men)

Chronic Effect (2-4 weeks) *

GnRH Receptor desensitization

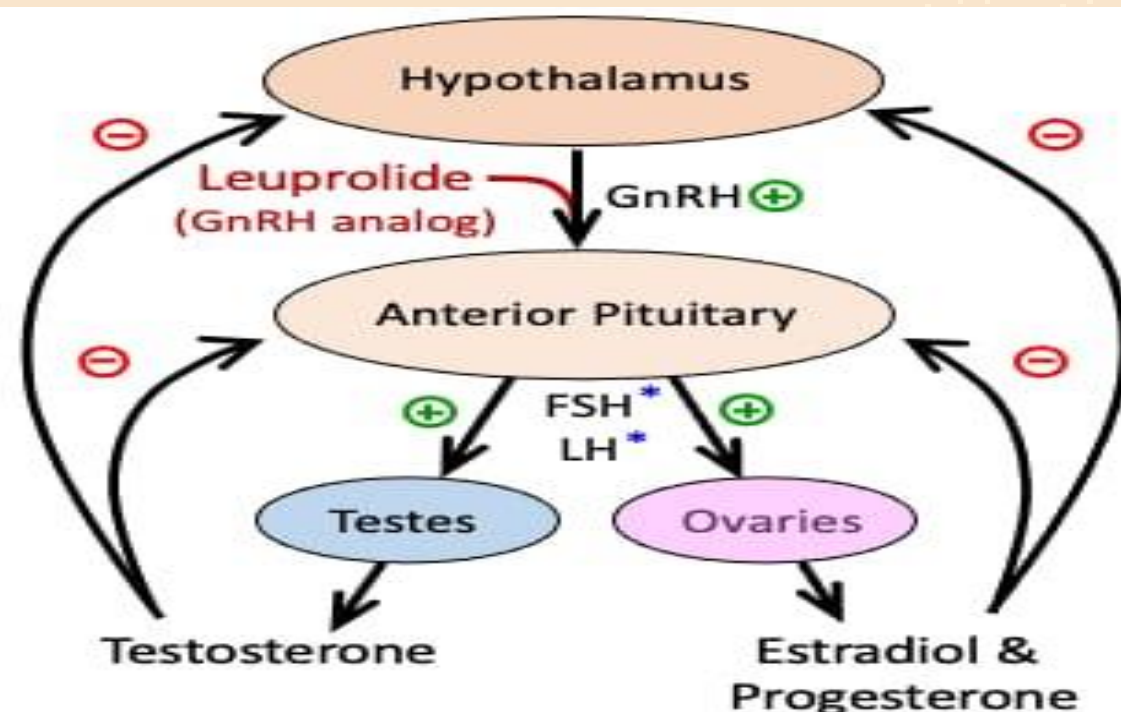
Hypogonadism

↓ FSH release

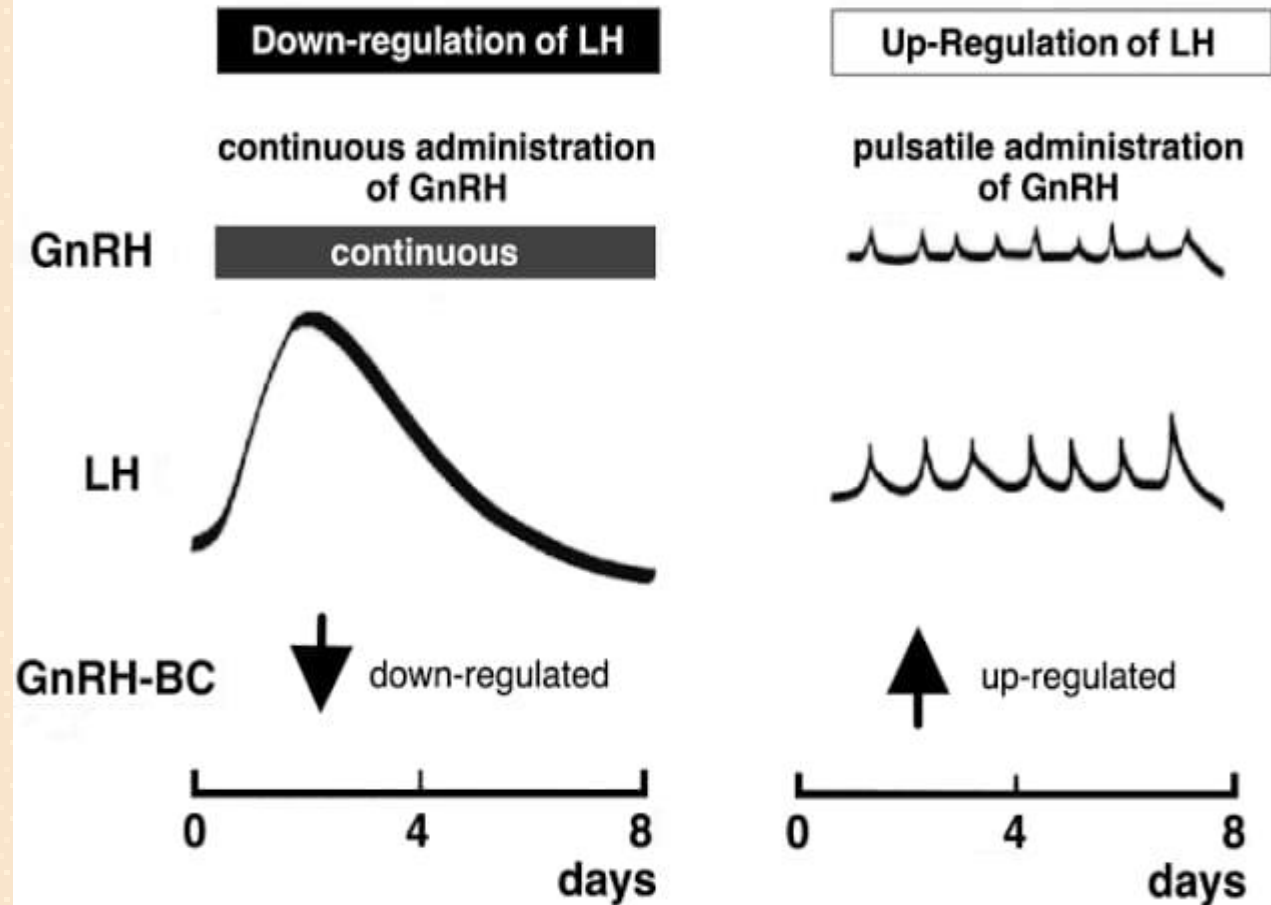
↓ LH release

↓ Estradiol & Progesterone (women)

↓ Testosterone (men)



Effect of GnRH on GnRH Binding Capacity (BC) and LH Secretion: continuous vs pulsatile administration



INITIAL FLARE UP RESPONSE



CLINICAL USES



- Suppress endogenous gonadotrophins secretion in women undergoing ovulation induction with gonadotrophins
- Gynecological disorders that benefit from ovarian suppression
 - Endometriosis, uterine Fibroids
- Prostate carcinoma
- In pubertal transgender adolescents
- Children with precocious puberty



ADVERSE EFFECTS



IN FEMALE

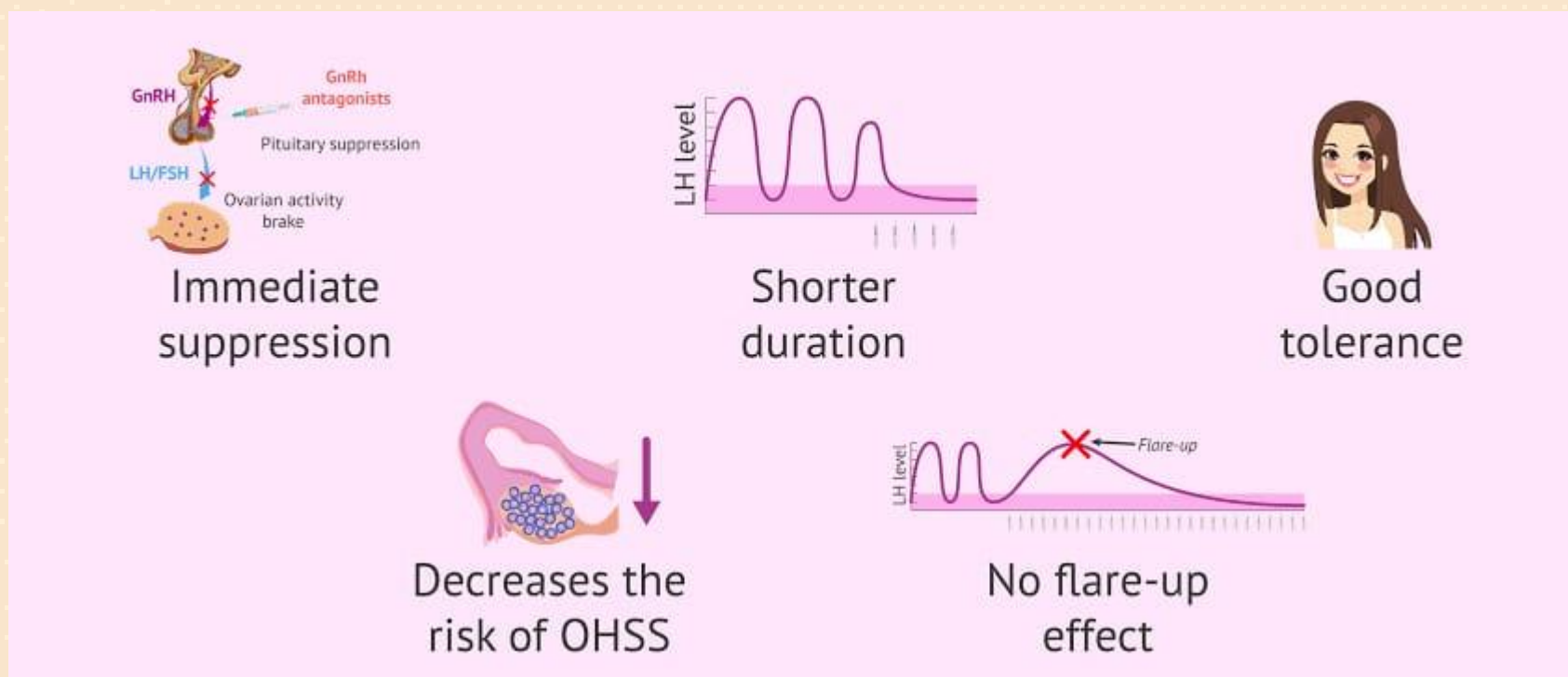
- Hot flushes
- Sweats
- Headache
- Osteoporosis

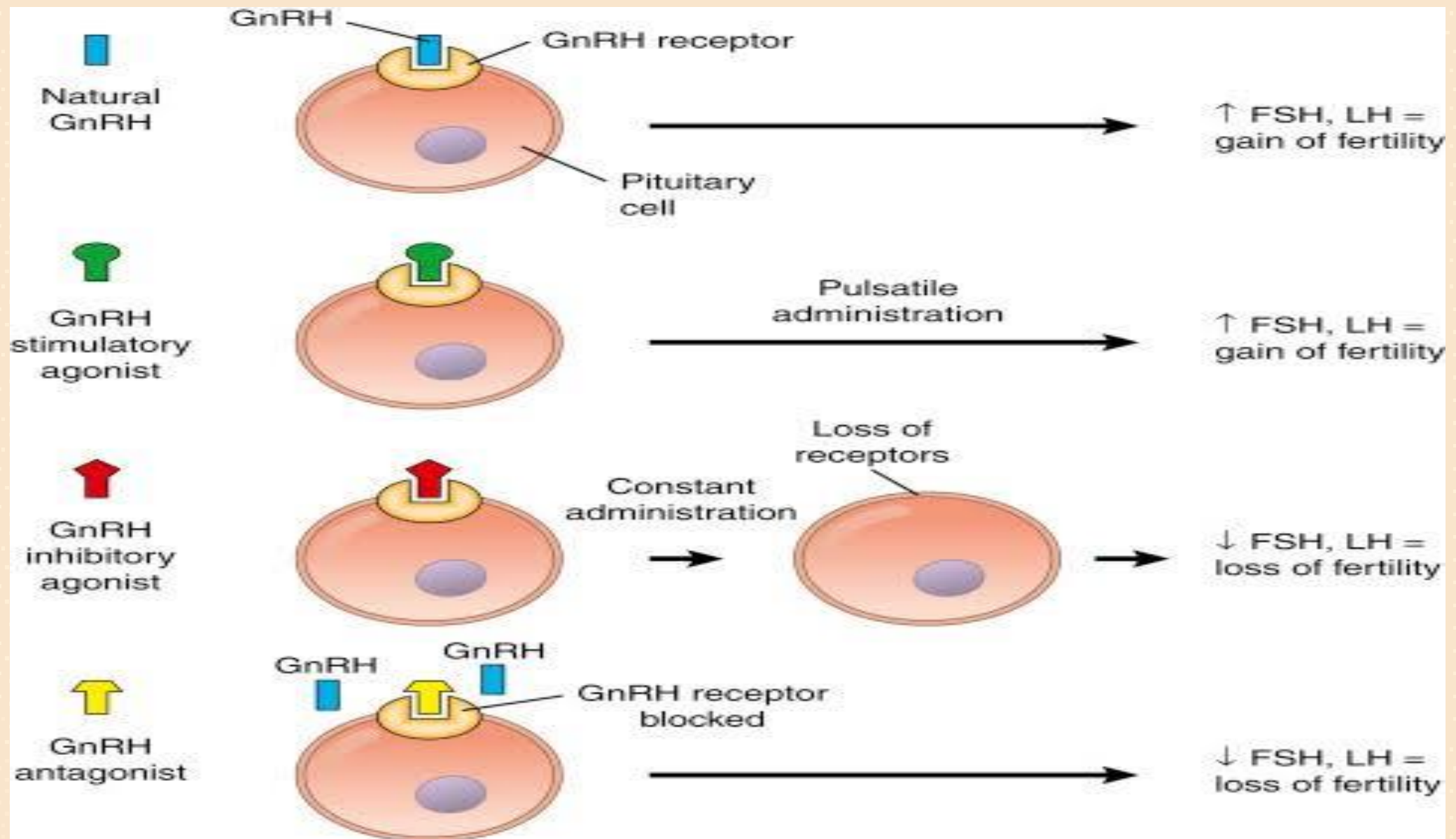
IN MALE

- Hot flushes, sweats
- Gynecomastia
- Reduced libido
- Decreased hematocrit
- Reduced bone density

GnRH ANTAGONISTS

- Ganirelix, Cetrorelix, Degarelix
- Degarelix is approved for the treatment of advanced CA Prostate







GONADOTROPHINS



Menotropins

- Mixture of FSH & LH purified from urine of postmenopausal women

FSH and its Analogues

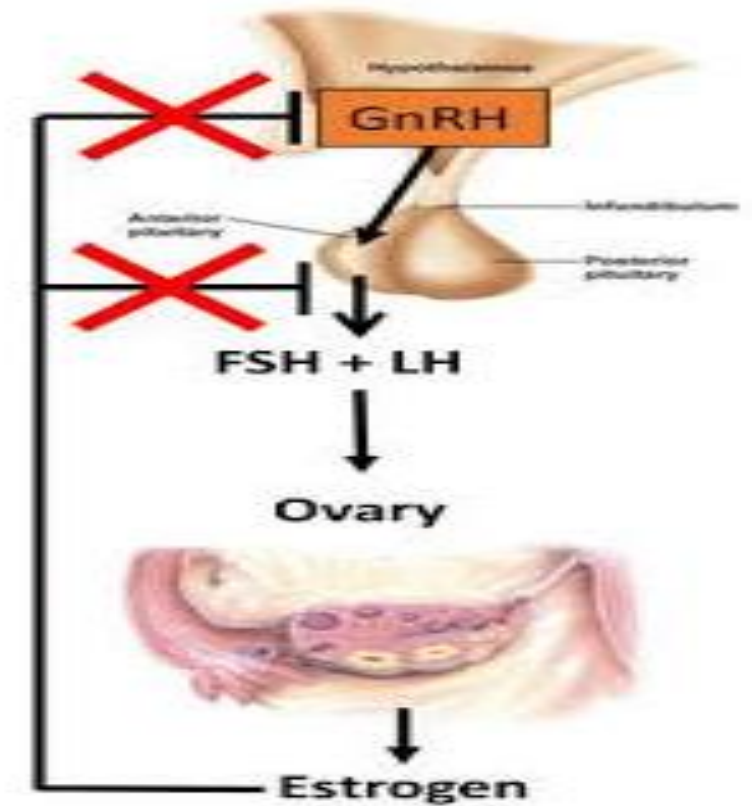
- Urofollitropin: purified preparation extracted from urine of postmenopausal women

LH and its Analogues

- Recombinant forms: Follitropin alpha, Follitropin beta
- HCG mimic LH action: purified from human urine & recombinant also
- Lutropin: recombinant form of LH

CLOMIPHENE

- Agonist at ovary
- Antagonist at hypothalamus and anterior pituitary
- **Mechanism of action**
 - Prevent estrogen negative feedback of HP-Gonadal axis
 - Promote increased expression of GnRH and gonadotrophins
 - Increased production of FSH and LH
 - Increased follicular development and ovulation



CLOMIPHENE



Uses

- Female infertility due to anovulation

Adverse effects

- Multiple pregnancies
- Hot flashes



OTHER DRUGS



- Bromocriptine: if cause of infertility is hyperprolactinemia
- Luteal phase support with progesterone
- Metformin
- Letrozole is an aromatase inhibitor used for ovulation induction



FAMILY PHYSICIAN & INFERTILITY



- Initial assessment and diagnosis
- Education and counselling about normal fertility, life style modifications
- Addressing the emotional and psychological issues
- Management of underlying conditions leading to infertility
- Start initial treatment i.e ovulation induction
- Follow up of provided treatment
- Referral to specialist where needed
- Preconception counselling and care



BIOETHICS



- Access to treatment is poor
- High cost
- Discrimination or society pressure on couple: hasty decisions
- Religious considerations
- Embryo dispositions
- Multiple pregnancies
- Confidentiality and privacy breach risk
- Psychological impact

SPIRAL INTEGRATION



ROLE OF AI IN INFERTILITY MANAGEMENT

- Diagnosis and assessment
- Personalized treatment plans
- Menstrual cycle tracking and fertility window
- Embryo selection in IVF
- Optimizing dosing schedule
- Analyzing genetic testing
- Predictive analysis of procedure success
- 24/7 chatbot support to patients
- Data integration and research

SPIRAL INTEGRATION



How To Access Digital Library



- ▣ Go to the website of HEC National Digital Library.
- ▣ On Home Page, click on the INSTITUTES.
- ▣ A page will appear showing the universities from Public and Private Sector and other Institutes which have access to HEC National Digital Library HNDL.
- ▣ Select your desired Institute.
- ▣ A page will appear showing the resources of the institution
- ▣ Journals and Researches will appear
- ▣ You can find a Journal by clicking on JOURNALS AND DATABASE and enter a keyword to search for your desired journal.



FURTHER READING



- Kawamura K, Ishizuka B, Hsueh AJ. Drug-free in-vitro activation of follicles for infertility treatment in poor ovarian response patients with decreased ovarian reserve. Reproductive biomedicine online. 2020 Feb 1;40(2):245-53.
- Casarini L, Crépieux P, Reiter E, Lazzaretti C, Paradiso E, Rochira V, Brigante G, Santi D, Simoni M. FSH for the Treatment of Male Infertility. International journal of molecular sciences. 2020 Mar 25;21(7):2270.

THANK

