MEDICAL TERMINOLOGY · STUDY GUIDE

Exam 6 Study Guide

This guide covers chapters 11 and 12. The urinary chapter follows urine from the glomerulus to the meatus, then teaches the -uria words, kidney and bladder disease, tests, operations and dialysis. The reproductive chapter gives the female and male roots, the menstrual words, the common diagnoses and operations, then the counting and vocabulary of pregnancy, birth and the newborn. Work one chapter at a time. Read the "what to know" paragraphs, copy the tables out by hand, then try each worked case with the steps covered. Finish each chapter with its ten self-test items. The cram sheet at the end puts the roots, look-alikes and abbreviations in one place.

WHAT THIS GUIDE COVERS

- Chapter 11 · ren/o vs nephr/o; glomerulus to meatus; ur/o, ureter/o, urethr/o; pyel/o vs py/o; -uria and -uresis; urinalysis terms; azotemia vs uremia; nephritic vs nephrotic; stones and hydronephrosis; AKI and CKD; UTI levels; storage vs emptying failure; tests, operations, catheters, dialysis, transplant.
- Chapter 12 · female roots and Greek and Latin doublets; menstrual terms; male roots in sperm order; reproductive pathology and STIs; plurals; tests and operations; gravida, para and GTPAL; pregnancy, labor and postpartum words; the newborn; OB and GYN abbreviations.

CHAPTER 11

The Urinary System

Read it in full: **Chapter 11 in the textbook**. Practice it in the lab: **Walk the Tract: Glomerulus to Meatus** and **The -uria Forge and the Urinalysis Reader**.

What to know

The kidney has two roots. Latin **ren/o** is used for anatomy and for phrases that came in through anatomy: renal artery, renal pelvis, renal failure, renal colic. Greek **nephr/o** is used for disease, specialty and surgery: nephritis, nephrology, nephrectomy, nephropathy. Nobody says

"renectomy" or "nephral artery." The kidneys are retroperitoneal, so a surgeon can reach one through the flank, and kidney tenderness is checked at the costovertebral angle (CVA).

Follow the urine. Blood is filtered at the **glomerulus** (glomerul/o), a tuft of capillaries that should keep blood cells and large proteins in. The fluid moves along the **tubule** (tubul/o), drips into cup-shaped **calices** (cali/o, calic/o), then into the **renal pelvis** (pyel/o), the funnel that feeds the ureter. Each kidney has about a million nephrons. The outer cortex holds the glomeruli; the inner medulla holds the renal pyramids. Glomerulonephritis inflames the filter; pyelonephritis is infection that has climbed into the kidney and its funnel.

Each **ureter** (ureter/o) is about 25 to 30 cm long and moves urine by peristalsis to the **bladder** (cyst/o Greek, vesic/o Latin). The trigone is the triangle between the two ureter openings and the urethral outlet. The single **urethra** (urethr/o) exits at the **meatus** (meat/o). The female urethra is about 4 cm and the male urethra about 20 cm, passing through the prostate: that explains why women get more bladder infections and older men more obstruction. Ur/o is urine or the whole tract. Emptying is micturition, voiding or urination.

-uria means a urine condition; the root in front names it. Hematuria (blood), dysuria (painful), oliguria (scanty: in an adult about under 400 mL a day or under 0.5 mL/kg/hr), anuria (about under 100 mL a day), polyuria (too much), nocturia (waking at night to void), pyuria (pus, white cells), bacteriuria. **-uresis** is urinating: diuresis is high output (a diuretic causes it) and enuresis is involuntary urination, as in bedwetting. Diuresis is not dysuria. **Pyel/o** (renal pelvis) is not **py/o** (pus).

A urinalysis (UA) has appearance, a dipstick and a microscope. Hematuria can be gross (visible) or microscopic. Specific gravity (SG) shows whether the kidney concentrates. Proteinuria and albuminuria mean a leaking filter. **Glycosuria** is glucose in urine, a classic first clue to diabetes mellitus. Ketonuria means fat is being burned. Nitrite and leukocyte esterase suggest infection. **Red cell casts** place bleeding at the glomerulus. Crystalluria hints at what a stone is made of.

Azotemia (azot/o, nitrogen) is a lab statement: BUN and creatinine are high. **Uremia** is a clinical statement: symptoms from those wastes, such as nausea, itching, confusion and a pericardial rub. Every uremic patient is azotemic, but not every azotemic patient is uremic. Creatinine feeds the

eGFR, which stages chronic kidney disease. I&O is where oliguria is detected: a 70 kg adult at 25 mL/hr is below 0.5 mL/kg/hr (35 mL/hr).

Kidney disease by mechanism. **Nephritic** pattern (glomerulonephritis, classically after a strep infection in children): hematuria with red cell casts, some proteinuria, hypertension, edema. **Nephrotic** syndrome: massive proteinuria, low albumin, widespread edema, high cholesterol. Glomerulosclerosis is the scarred endpoint that diabetes and hypertension produce. **Nephrolithiasis** is kidney stones; a stone in the ureter causes renal colic. Blocked flow backs urine up: hydroureter, then **hydronephrosis**; pyonephrosis is the dilated system full of pus. Nephroptosis is a dropped kidney, fixed by nephropexy. Polycystic kidney disease fills the kidneys with cysts; cyst/o there means sac, not bladder.

Acute kidney injury (**AKI**) is named by location: **prerenal** (poor perfusion before the kidney: bleeding, dehydration, heart failure, sepsis), **intrarenal** (inside the kidney: acute tubular necrosis, glomerulonephritis, toxic drugs) and **postrenal** (obstruction anywhere from renal pelvis to meatus). Chronic kidney disease (**CKD**) is staged 1 to 5 by eGFR; stage 5, eGFR under 15, is end-stage kidney disease (ESKD, often still ESRD). CKD brings anemia, bone disease, hyperkalemia, acidosis and fluid overload. Renal cell carcinoma is the adult kidney cancer; Wilms tumor (nephroblastoma) is the childhood one.

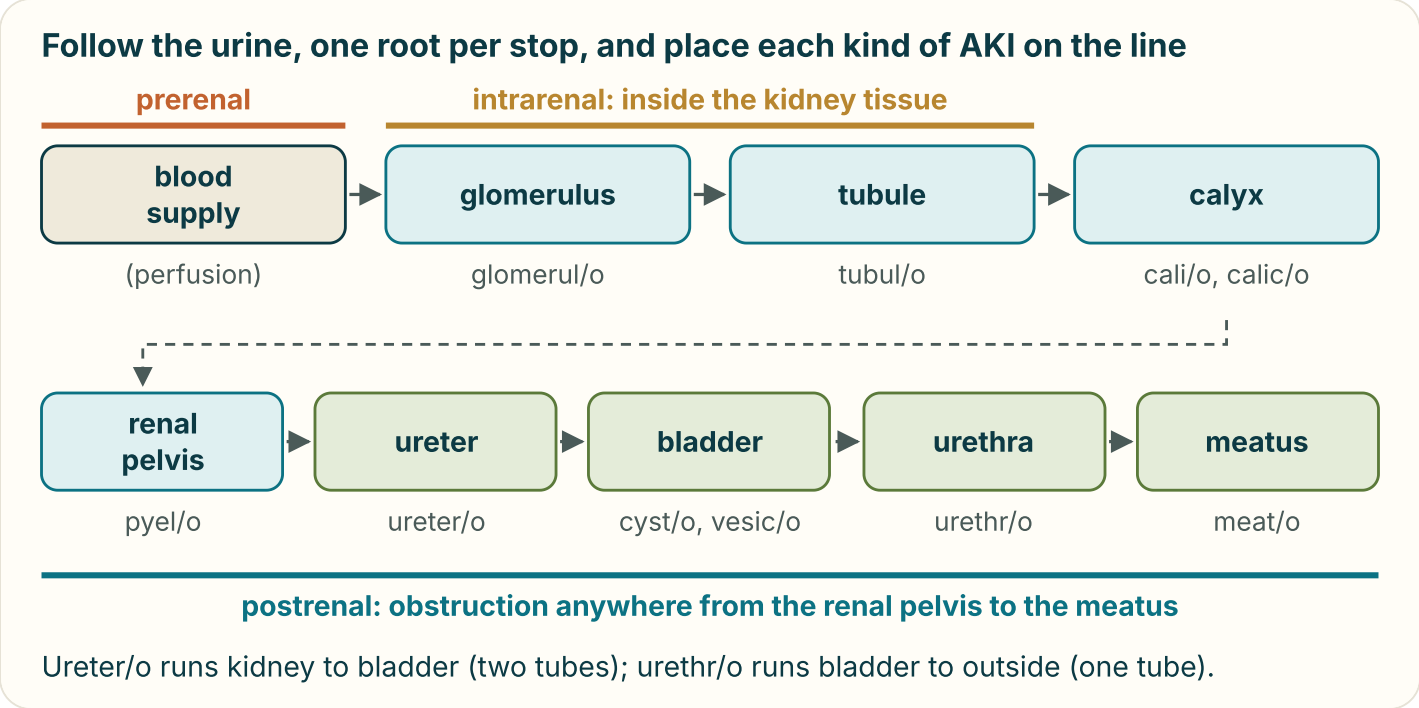
UTI levels: **cystitis** is the bladder (burning, urgency, frequency, usually no fever); urethritis is the urethra; **pyelonephritis** brings fever, flank pain and CVA tenderness. Lower UTI is bladder and urethra; upper is ureters and kidneys. CAUTI is catheter-associated; removing the catheter early prevents it. Asymptomatic bacteriuria is usually not treated outside pregnancy and certain procedures.

Every lower-tract problem is a **storage** failure or an **emptying** failure. Storage: urgency, frequency, nocturia, incontinence. Incontinence types: **stress** (leaks with cough or lift), **urge** (detrusor contracts on its own, overactive bladder), **overflow** (a full bladder that dribbles, really an emptying problem) and **functional** (tract works, person cannot reach the toilet). Emptying: hesitancy, weak stream, straining, retention; the leftover volume is the post-void residual (PVR). In older men the usual cause is BPH; nerve damage gives a neurogenic bladder. Painless gross

hematuria in an older adult suggests bladder cancer (urothelial carcinoma). Interstitial cystitis is chronic bladder pain without infection.

Tests: **cystoscopy** views the bladder, ureteroscopy the ureter; a voiding cystourethrogram (VCUG) shows reflux in children; CT urography has largely replaced the IVP; a retrograde pyelogram sends contrast upward; KUB is a plain film. Urodynamics separate storage from emptying failure. Operations: **nephrectomy** removes the kidney; nephrotomy cuts in; nephrolithotomy removes a stone (PCNL through the flank); **nephrostomy** drains the kidney through a tube to the skin. Cystectomy often needs an ileal conduit to a urostomy. Urethroplasty and pyeloplasty repair; cystorrhaphy sutures; **lithotripsy** crushes (ESWL from outside the body). TURP treats BPH.

A Foley catheter stays in with a balloon; a straight catheter drains and comes out. CBI irrigates after surgery. **Dialysis** (dia-, through, + -lysis, separation) filters through a membrane: hemodialysis (HD) uses a machine and needs access such as an arteriovenous fistula; peritoneal dialysis (PD) uses the patient's own peritoneum. Neither replaces the kidney's hormones. A transplanted kidney usually goes in the iliac fossa; ureteroneocystostomy is ureter/o + ne/o + cyst/o + -ostomy, a new opening between ureter and bladder. Plurals: glomeruli, calculi, calices, pelves, papillae, hila, cortices.



The prefix names the place. Pre-, intra- and post- put the cause of an acute kidney injury before, inside or after the kidney on this line.

LOCK THESE IN

- Ren/o for anatomy (renal), nephr/o for disease and surgery (nephrectomy).
- Flow: glomerulus, tubule, calyx, renal pelvis, ureter, bladder, urethra, meatus.
- Ureter/o kidney to bladder; urethr/o bladder to outside; ur/o urine or tract. Pyel/o pelvis; py/o pus.
- Oliguria: under about 400 mL/day or 0.5 mL/kg/hr. Anuria: under about 100 mL/day.
- Azotemia is the lab finding; uremia is the symptomatic patient.
- Nephritic leaks cells (hematuria, casts); nephrotic leaks protein (massive proteinuria, low albumin, edema).
- AKI: prerenal, intrarenal, postrenal. CKD stage 5 is eGFR under 15.
- Nephrectomy removes; nephrotomy cuts; nephrostomy drains through a tube.

Word parts for the urinary system

Word part	Meaning	Example term	What it means
ren/o, nephr/o	kidney (Latin, Greek)	renal, nephrology	of the kidney; kidney specialty
cortic/o, medull/o	outer, inner region	renal cortical cyst	cyst in the outer kidney
glomerul/o, tubul/o	glomerulus, tubule	glomerulopathy, acute tubular necrosis	filter disease; tubule cell death
cali/o, calic/o	calyx	caliectasis	dilated calices
pyel/o	renal pelvis	pyelogram, pyeloplasty	pelvis image; pelvis repair
ureter/o	ureter	ureterolithiasis, ureteroscopy	ureter stone; ureter scope
cyst/o, vesic/o	bladder	cystitis, vesicoureteral reflux	bladder infection; backflow to ureter
trigon/o, urethr/o, meat/o	trigone, urethra, meatus	trigonitis, urethritis, meatotomy	bladder triangle; urethra; opening enlarged
ur/o, urin/o	urine, tract	urology, urinary	tract specialty; of urine
-uria, -uresis	urine condition; urinating	hematuria, diuresis	blood in urine; high output
olig/o, an-, poly-, dys-, noct/i	scanty, none, much, painful, night	oliguria, anuria, polyuria, dysuria, nocturia	output and symptoms

Word part	Meaning	Example term	What it means
py/o, bacteri/o	pus, bacteria	pyuria, bacteriuria	white cells; bacteria in urine
albumin/o, protein/o, glycos/o, keton/o	albumin, protein, sugar, ketones	albuminuria, glycosuria, ketonuria	dipstick findings
azot/o, -emia	nitrogen, blood condition	azotemia, uremia	lab finding; symptomatic wastes
lith/o, crystall/o	stone, crystal	nephrolithiasis, crystalluria	kidney stones; crystals
hydr/o, -cele, -ptosis	water, pouching, drooping	hydronephrosis, ureterocele, nephroptosis	backed-up urine; ureter balloon; dropped kidney
-dipsia	thirst	polydipsia	excessive thirst
-tripsy, -lysis, ne/o	crushing, separation, new	lithotripsy, dialysis, ureteroneocystostomy	stone crushing; filtering; new connection

Urinary abbreviations

Abbreviation	Meaning	Why you see it
UA, SG, C&S	urinalysis; specific gravity; culture and sensitivity	urine tests
UTI / CAUTI	urinary tract infection / catheter-associated UTI	diagnosis and quality metric
BUN, Cr, eGFR	blood urea nitrogen, creatinine, estimated GFR	kidney function
AKI / CKD / ESKD	acute kidney injury / chronic kidney disease / end-stage kidney disease	failure spectrum
I&O, PVR	intake and output; post-void residual	fluid balance; incomplete emptying
KUB, IVP, VCUG	plain film; intravenous pyelogram; voiding cystourethrogram	imaging
HD / PD / RRT, AVF	hemodialysis / peritoneal dialysis / renal replacement therapy; arteriovenous fistula	dialysis
ESWL / PCNL	shock wave lithotripsy / percutaneous nephrolithotomy	stone procedures
BPH / TURP, CBI	benign prostatic hyperplasia / transurethral resection of the prostate; continuous bladder irrigation	obstruction and surgery
CVA, PKD, RCC	costovertebral angle; polycystic kidney disease; renal cell carcinoma	exam and diagnoses

Worked cases

WORKED CASE 1 · CHECKING A PATIENT FOR OLIGURIA

Mr. Santos weighs 70 kg. His output is 25 mL/hr for four hours. Is he oliguric?

STEP 1 · FIND THE THRESHOLD

0.5 mL/kg/hr × 70 kg = 35 mL/hr.

STEP 2 · COMPARE

25 mL/hr is below 35 mL/hr, and it has lasted four hours.

ANSWER

Yes, he meets the definition of oliguria (olig/o, scanty, + -uria), whether or not anyone has written the word yet.

WORKED CASE 2 · NEPHRITIC OR NEPHROTIC

A child, two weeks after strep throat, has cola-colored urine with red cell casts, high blood pressure and puffy eyes. Which pattern is it?

STEP 1 · LIST THE FINDINGS

Hematuria with red cell casts, hypertension, edema, after a strep infection.

STEP 2 · MATCH

Nephritic disease leaks cells; nephrotic leaks massive protein with low albumin.

ANSWER

A **nephritic** picture: post-streptococcal **glomerulonephritis**.

WORKED CASE 3 · CLASSIFYING AKI

Three patients: one bled heavily; one took a kidney-toxic drug; one has a large prostate blocking flow. Classify each AKI.

STEP 1 · BLEEDING

Poor perfusion before the kidney: **prerenal**.

STEP 2 · TOXIC DRUG

Damage inside the kidney tissue: **intrarenal**.

STEP 3 · ENLARGED PROSTATE

Obstruction after the kidney: **postrenal**.

WORKED CASE 4 · DECODING A LONG TRANSPLANT TERM

Decode ureteroneocystostomy.

STEP 1 · SUFFIX

-ostomy, a new opening.

STEP 2 · PARTS IN ORDER

ureter/o (ureter) + ne/o (new) + cyst/o (bladder).

ANSWER

A new opening joining the ureter to the bladder, as when a donor ureter is connected to the recipient's bladder.

TRAPS PEOPLE FALL INTO

- **Mixing ureter and urethra.** Two ureters run kidney to bladder; one urethra runs bladder to outside.
- **Reading pyel/o as pus.** Pyel/o is the renal pelvis; py/o is pus.
- **Confusing diuresis and dysuria.** Making a lot of urine vs pain on voiding.
- **Using azotemia and uremia as synonyms.** Lab values vs a symptomatic patient.
- **Reading polycystic kidney disease as a bladder disease.** Cyst/o here means sac.
- **Lumping dysuria, urgency and frequency.** Pain, sudden need and how often are three separate findings.
- **Calling overflow incontinence a storage problem.** It is an emptying failure that spills.
- **Mixing nephrectomy, nephrotomy and nephrostomy.** Removed, cut and closed, drained through a tube.

Chapter 11 self-test · ten items

1. Which root is used in the surgical term for removing a kidney?

A. ren/o
B. pyel/o
C. cyst/o
D. nephr/o

D. nephr/o Greek nephr/o takes disease and surgery suffixes: nephrectomy. Latin ren/o gives renal.

2. Which structure carries urine from the bladder to the outside?

A. Ureter
B. Renal pelvis
C. Urethra
D. Calyx

C. Urethra The single urethra exits at the meatus. The two ureters run from kidney to bladder.

3. White cells (pus) in the urine are called:

A. Pyelitis
B. Hematuria
C. Pyuria
D. Bacteriuria

C. Pyuria Py/o is pus. Pyel/o is the renal pelvis, and bacteriuria is bacteria in the urine.

4. Glucose found in the urine is called:

A. Ketonuria
B. Glycosuria
C. Albuminuria
D. Polyuria

B. Glycosuria Glycos/o is sugar. It is often the first clue to diabetes mellitus.

5. Which finding places bleeding at the glomerulus?

A. Crystalluria
B. Red cell casts
C. Nitrite on dipstick
D. Low specific gravity

B. Red cell casts Casts are molds of the tubule, so red cell casts mean the blood entered at the glomerular filter.

6. A patient's BUN and creatinine are high, but he feels well. The best term is:

A. Uremia
B. Azotemia
C. Anuria
D. Nephrosis

B. Azotemia Azotemia is the laboratory finding. Uremia means symptoms from the retained wastes.

7. Massive proteinuria, low albumin, edema and high cholesterol describe:

A. Glomerulonephritis
B. Pyelonephritis
C. Hydronephrosis
D. Nephrotic syndrome

D. Nephrotic syndrome The nephrotic filter leaks protein. The nephritic pattern leaks cells.

8. Leaking urine when coughing or laughing is which type of incontinence?

A. Stress
B. Urge
C. Overflow
D. Functional

A. Stress Abdominal pressure overwhelms a weak outlet. Urge incontinence comes from an overactive detrusor.

9. A tube placed through the skin to drain an obstructed kidney is a:

A. Nephrostomy
B. Nephrectomy
C. Nephrotomy
D. Nephropexy

A. Nephrostomy -stomy creates an opening that drains. Nephropexy fixes a dropped kidney in place.

10. What is the plural of calculus?

A. Calculi
B. Calculae
C. Calculuses
D. Calcula

A. Calculi -us becomes -i: one calculus, two calculi.

CHAPTER 12

The Reproductive Systems, Obstetrics and Neonatology

Read it in full: **Chapter 12 in the textbook**. Practice it in the lab: **Vulva to Ovary: The Gyn Term Builder** and **The OB Chart Desk: GTPAL and the Abbreviation Layer**.

What to know

Gynecology (gynec/o, woman) covers the non-pregnant female tract; obstetrics covers pregnancy and birth. From the outside in: **vulv/o** and **episi/o** (vulva), **colp/o** and **vagin/o** (vagina), **cervic/o** (cervix, also neck), **hyster/o**, **metr/o**, metri/o and **uter/o** (uterus), **salping/o** (uterine tube), **oophor/o** and ovari/o (ovary). Perine/o is the perineum (pelvic floor); peritone/o is the abdominal lining. Culd/o is the cul-de-sac behind the uterus. Breast is **mamm/o** and **mast/o**. Metr/o (uterus) is not the suffix -metry (measuring).

Doublets: the Latin form tends to describe normal anatomy and imaging (vaginal, ovarian, mammography); the Greek form tends to take disease and surgery suffixes (colposcopy, colporrhaphy, oophorectomy, mastectomy). It is a tendency, not a law. The uterus has three roots: hyster/o for surgery and scopes, uter/o for plain adjectives, metr/o for the layers and bleeding words: endometrium, **myometrium** (muscle), perimetrium. **Salping/o** names two tubes: the uterine tube and the eustachian tube of the ear.

Menstrual words are men/o plus a suffix. **Menarche** (-arche, beginning) is the first period. Menopause is diagnosed after 12 months without a period. -rrhea is flow and -rrhagia is excessive flow: **amenorrhea** (none), **dysmenorrhea** (painful), oligomenorrhea (scanty or infrequent), **menorrhagia** (heavy or long periods, normal timing), **metrorrhagia** (uterine bleeding between periods), menometrorrhagia (both). Ov/o, ovul/o and oo- mean egg; lact/o and galact/o mean milk; galactorrhea is milk discharge not related to nursing, often a pituitary clue. Gravid/o and -cyesis mean pregnancy.

The male roots follow the sperm: **orchi/o** (also orch/o, orchid/o; testis), **epididym/o** (epi-, upon, + didym/o, testis), **vas/o** (vas deferens), vesicul/o (seminal vesicle), **prostat/o**, urethr/o, pen/o. Scrot/o is scrotum, balan/o the glans, spermat/o sperm, semin/i semen, andr/o male. The male urethra carries urine and semen, so many problems are filed under GU. Prostate has no r after the t (prostrate means lying face down). Vas/o means blood vessel in the cardiovascular chapters and the vas deferens here; context decides.

Pathology is root plus suffix. **Endometriosis** is endometrial tissue outside the uterus, causing pain and infertility. **Leiomyoma** (lei/o smooth + my/o muscle + -oma) is a fibroid, the most common pelvic tumor in women. Adenomyosis is endometrial glands inside the uterine muscle. PCOS is many follicles with anovulation and androgen excess. Pelvic floor failure: cystocele (bladder into the anterior vaginal wall), rectocele (rectum into the posterior wall), uterine prolapse (hysteroptosis). Colporrhaphy repairs the first two.

Female diagnoses: **PID** is ascending infection that scars the tubes, causing infertility and ectopic pregnancy. Mastitis is breast inflammation; gynecomastia is breast tissue in a male. Cervical cancer is driven by HPV; postmenopausal bleeding is the warning sign of endometrial cancer. Male diagnoses: **BPH** (benign prostatic hyperplasia) compresses the urethra; **cryptorchidism**

(crypt/o, hidden) is an undescended testis; testicular torsion is an emergency measured in hours. Scrotal swellings: hydrocele (fluid), varicocele (veins), spermatocele (sperm). Phimosis is a tight foreskin; paraphimosis is the urgent trapped one. Oligospermia is few sperm; azoospermia is none. STI is now preferred over STD.

-plasia counts cells; **-trophy** sizes them. BPH is more cells, so "hypertrophy" is technically wrong. Plurals: fimbria to fimbriae, ovum to ova, labium to labia, testis to testes, cervix to cervices, salpinx to salpinges, condyloma to condylomata, spermatozoon to spermatozoa, epididymis to epididymides, corpus luteum to corpora lutea. Adnexa (tubes and ovaries together) is plural only: "the adnexa are non-tender."

Tests: **colposcopy** magnifies the cervix and vagina; hysteroscopy views the uterine cavity; **hysterosalpingography** (HSG) checks whether the tubes are open; culdocentesis samples fluid behind the uterus; amniocentesis samples amniotic fluid; pelvimetry measures the pelvis. The Pap test is cervical cytology. PSA and DRE assess the prostate. Operations: a **vasectomy** removes a segment of the vas; a vasovasostomy reverses it. A **hysterotomy** cuts into the uterus (every cesarean); a hysterectomy removes it. TAH-BSO is total abdominal hysterectomy with bilateral salpingo-oophorectomy. A myomectomy removes fibroids and keeps the uterus. D&C, LEEP, tubal ligation, TURP, orchiopexy and circumcision complete the list. Imaging takes mamm/o; surgery takes mast/o, except mammoplasty.

Gravida counts pregnancies of any outcome, including the current one. **Para** counts pregnancies delivered at viability (about 20 weeks or more). Para counts pregnancies, not babies: twins add one. Prefixes: nulli-, primi-, multi-. **GTPAL**: G gravida, T term births (37 weeks or later), P preterm (20 to 37 weeks), A abortions or losses before 20 weeks, L living children. In obstetric charting, abortion means any loss before viability, most often a miscarriage. Ante- and postpartum time the mother's delivery; pre-, peri- and neonatal time the infant's birth.

Pregnancy roots: amni/o (inner membrane), chori/o (outer membrane), placent/o, embry/o (first 8 weeks), fet/o (week 9 to birth), omphal/o (navel). Toc/o and -tocia mean labor: **dystocia** is difficult labor, a tocolytic stops labor, oxytocin is the hormone of swift birth. AROM and SROM are artificial and spontaneous rupture of membranes. Oligohydramnios is too little fluid; polyhydramnios is too much. Hyperemesis gravidarum is severe vomiting. Placenta previa covers

or nears the cervix; abruptio placentae separates early. **Preeclampsia** is new hypertension after 20 weeks with proteinuria or, without it, end-organ signs; proteinuria is not required. With seizures it is eclampsia. An **ectopic** pregnancy implants outside the uterine cavity, usually in a tube.

Labor and recovery words: effacement (thinning, in percent), dilation (opening, in cm), lightening, quickening, Braxton Hicks contractions. **Lochia** is postpartum discharge: rubra, serosa, alba. Involution is the uterus shrinking; the puerperium is about six weeks after delivery. Anatomical eponyms are giving way: uterine tube for fallopian tube, rectouterine pouch for pouch of Douglas.

Neonatology covers the first 28 days. The **Apgar score** rates heart rate, respiratory effort, tone, reflex irritability and color, 0 to 2 each, at 1 and 5 minutes, maximum 10. Size is AGA, SGA or LGA for gestational age; preterm is before 37 weeks and post-term after 42. RDS comes from too little surfactant. **Hyperbilirubinemia** causes newborn jaundice; dangerous levels cause kernicterus, which phototherapy prevents. Hemolytic disease of the newborn is prevented with Rh immune globulin. Meconium is the first stool. Congenital means present at birth, not the same as inherited; a teratogen can cause a defect in a genetically normal fetus.

Reading G4 T2 P1 A1 L3, letter by letter

G	T	P	A	L
4	2	1	1	3
gravida pregnancies, any outcome	**term** births at 37 weeks or later	**preterm** births at 20 to 37 weeks	**abortions** losses before 20 weeks	**living** children now

Check 1: T + P + A = 2 + 1 + 1 = 4 = G (she is not pregnant now).
Check 2: term babies + preterm babies = 2 + 1 = 3 = L.
Para counts deliveries at viability (T + P = 3), not babies: twins add one, not two.

Two quick sums catch most GTPAL errors. If T + P + A does not match G (allowing for a current pregnancy), something in the history was miscounted.

LOCK THESE IN

- Hyster/o, metr/o, uter/o uterus; salping/o tube; oophor/o ovary; colp/o vagina; mamm/o and mast/o breast.
- Menorrhagia: heavy periods on time. Metrorrhagia: bleeding between periods.
- Sperm path: orchi/o, epididym/o, vas/o, vesicul/o, prostat/o, urethr/o, pen/o.
- Salping/o has two tubes; vas/o has two meanings; perine/o is not peritone/o.
- -plasia is more cells; -trophy is bigger cells. BPH is hyperplasia.
- Hysterotomy cuts into the uterus; hysterectomy removes it. Vasovasostomy reverses a vasectomy.
- Gravida counts pregnancies; para counts deliveries at viability; twins add one to para.
- GTPAL: term 37 weeks or later; preterm 20 to 37; abortions before 20.

Word parts for the reproductive systems and pregnancy

Word part	Meaning	Example term	What it means
gynec/o	woman	gynecologist	female reproductive specialist
vulv/o, episi/o	vulva	vulvitis, episiotomy	vulva inflammation; perineal incision
colp/o, vagin/o	vagina	colposcopy, vaginitis	cervix and vagina exam; vaginal inflammation
cervic/o	cervix; neck	cervicitis	inflamed cervix
hyster/o, metr/o, uter/o	uterus	hysterectomy, myometrium, uterine	uterus removed; muscle layer; of the uterus
salping/o, -salpinx	tube (uterine or eustachian)	salpingitis, hydrosalpinx	inflamed tube; fluid-filled tube
oophor/o, ovari/o	ovary	oophorectomy, ovarian	ovary removed; of the ovary
perine/o, culd/o	perineum, cul-de-sac	perineorrhaphy, culdocentesis	perineum sutured; fluid sampled
mamm/o, mast/o	breast	mammography, mastectomy	breast imaging; breast removal
men/o, -arche	menses, beginning	menarche	first period
-rrhea, -rrhagia	flow, excessive flow	amenorrhea, menorrhagia	no periods; heavy periods
ov/o, oo-, lact/o, galact/o	egg, egg, milk, milk	anovulation, oocyte, galactorrhea	no ovulation; immature egg; milk discharge

Word part	Meaning	Example term	What it means
orchi/o, test/o	testis	orchiopexy, testicular	testis fixed; of the testis
epididym/o, vas/o, vesicul/o	epididymis, vas deferens, seminal vesicle	epididymitis, vasectomy	inflamed duct; vas cut
prostat/o, balan/o, scrot/o	prostate, glans, scrotum	prostatectomy, balanitis	prostate removed; glans inflamed
spermat/o, semin/i, andr/o	sperm, semen, male	spermatogenesis, androgen	sperm formation; male hormone
crypt/o, varic/o, hydr/o + -cele	hidden, twisted vein, water + swelling	cryptorchidism, varicocele, hydrocele	undescended testis; scrotal veins; fluid
lei/o, aden/o, my/o	smooth, gland, muscle	leiomyoma, adenomyosis	fibroid; glands in uterine muscle
nat/o, part/o, toc/o	birth, labor, labor	neonatal, postpartum, dystocia	newborn; after delivery; hard labor
-gravida, -para; nulli-, primi-, multi-	pregnancy, delivery; none, first, many	primigravida, multipara	first pregnancy; delivered more than once
amni/o, chori/o, placent/o	amnion, chorion, placenta	amniocentesis, chorioamnionitis	fluid sampling; membrane infection
embry/o, fet/o, omphal/o, terat/o	embryo, fetus, navel, malformation	omphalocele, teratogen	navel protrusion; defect-causing agent

OB, GYN and newborn abbreviations

Abbreviation	Meaning	Abbreviation	Meaning
LMP	last menstrual period	EDD, EDC	estimated date of delivery or confinement
G/P, GTPAL	gravida / para; term, preterm, abortions, living	hCG	human chorionic gonadotropin
SROM / AROM	spontaneous / artificial rupture of membranes	PROM	premature rupture of membranes
NSVD	normal spontaneous vaginal delivery	VBAC	vaginal birth after cesarean
FHR, NST, BPP	fetal heart rate; non-stress test; biophysical profile	GDM	gestational diabetes mellitus
IUGR, FGR	intrauterine or fetal growth restriction	SGA / AGA / LGA	small / appropriate / large for gestational age
NICU, RDS	neonatal intensive care unit; respiratory distress syndrome	CPD	cephalopelvic disproportion
TAH-BSO	total abdominal hysterectomy, bilateral salpingo-oophorectomy	D&C, LEEP	dilation and curettage; loop excision
HSG	hysterosalpingography	PID, PCOS	pelvic inflammatory disease; polycystic ovary syndrome
STI, HPV, HSV	sexually transmitted infection; papillomavirus; herpes simplex	IVF / ART	in vitro fertilization / assisted reproduction
BPH, TURP	benign prostatic hyperplasia; transurethral resection	PSA, DRE, ED	prostate antigen; rectal exam; erectile dysfunction

Worked cases

WORKED CASE 1 · READING A GTPAL ENTRY

Ms. Okonkwo's chart reads G4 T2 P1 A1 L3. Explain each number and check that they agree.

STEP 1 · READ EACH LETTER

Four pregnancies; two term births; one preterm birth; one loss before 20 weeks; three living children.

STEP 2 · CHECK THE PREGNANCIES

T + P + A = 2 + 1 + 1 = 4, which matches G4 (she is not pregnant now).

STEP 3 · CHECK THE CHILDREN

Two term babies + one preterm baby = 3, which matches L3.

ANSWER

The entry is consistent: **gravida 4, para 3** (three deliveries at viability).

WORKED CASE 2 · COUNTING TWINS

A woman's only pregnancy ended in a term delivery of twins. Write gravida and para.

STEP 1 · COUNT PREGNANCIES

One pregnancy: G1.

STEP 2 · COUNT DELIVERIES, NOT BABIES

One delivery at viability: P1.

ANSWER

G1 P1 (with two living children). Para 2 would be a charting error.

WORKED CASE 3 · DECODING A COMBINED OPERATION

Decode TAH-BSO.

STEP 1 · EXPAND

Total abdominal hysterectomy with bilateral salpingo-oophorectomy.

STEP 2 · BREAK THE LONG WORD

salping/o (tube) + oophor/o (ovary) + -ectomy (removal); bilateral means both sides.

ANSWER

Removal of the uterus through an abdominal incision, plus both tubes and both ovaries.

WORKED CASE 4 · MENORRHAGIA OR METRORRHAGIA

Ms. Ito has heavy periods that come on schedule. Ms. Lund bleeds at random times between periods. Name each.

STEP 1 · HEAVY BUT ON TIME

men/o (menses) + -rrhagia: **menorrhagia**.

STEP 2 · WRONG TIMING

metr/o (uterus) + -rrhagia: **metrorrhagia**.

WHY IT MATTERS

Heavy regular bleeding points toward fibroids or bleeding disorders; irregular bleeding points toward anovulation, polyps or, after menopause, cancer.

TRAPS PEOPLE FALL INTO

- **Reading salping/o as always the uterine tube.** In an ear note it is the eustachian tube.
- **Reading vas/o as always a blood vessel.** In this chapter it is the vas deferens.
- **Writing prostrate.** The gland is the prostate.
- **Swapping menorrhagia and metrorrhagia.** Heavy on time vs bleeding at the wrong time.
- **Calling BPH hypertrophy.** It is hyperplasia: more cells.
- **Counting twins as para 2.** Para counts pregnancies delivered, not babies.
- **Mixing hysterotomy and hysterectomy.** A cut into the uterus vs removal of it.
- **Writing "the adnexa is."** Adnexa is plural only.
- **Mixing perine/o and peritone/o.** Pelvic floor vs abdominal lining.
- **Reading congenital as inherited.** Present at birth; a teratogen can cause it.

Chapter 12 self-test · ten items

1. Which root is usually used in the operation that removes an ovary?

A. ovari/o

B. salping/o

C. oophor/o

D. hyster/o

C. oophor/o The Greek oophor/o takes the surgical suffix: oophorectomy. Ovari/o gives the adjective ovarian.

2. Bleeding from the uterus at irregular times between periods is:

A. Metrorrhagia
B. Menorrhagia
C. Dysmenorrhea
D. Oligomenorrhea

A. Metrorrhagia Metr/o is the uterus. Menorrhagia is a heavy period that still comes on time.

3. What is the first menstrual period called?

A. Menopause
B. Menorrhea
C. Amenorrhea
D. Menarche

D. Menarche -arche means beginning. Menorrhea is normal flow and amenorrhea is absence of flow.

4. In which order do sperm travel?

A. Epididymis, testis, urethra, vas deferens
B. Testis, vas deferens, epididymis, urethra
C. Vas deferens, testis, epididymis, urethra
D. Testis, epididymis, vas deferens, urethra

D. Testis, epididymis, vas deferens, urethra Made in the testis, matured in the epididymis, carried by the vas deferens, out through the urethra.

5. A benign smooth-muscle tumor of the uterus is a:

A. Rhabdomyoma
B. Leiomyoma
C. Adenomyosis
D. Endometrioma

B. Leiomyoma Lei/o (smooth) + my/o (muscle) + -oma. It is the fibroid.

6. A testis that never descended into the scrotum is:

A. Orchitis
B. Cryptorchidism
C. Varicocele
D. Testicular torsion

B. Cryptorchidism Crypt/o means hidden. A varicocele is dilated scrotal veins.

7. Which procedure checks whether the uterine tubes are open?

A. Sonohysterography
B. Transvaginal ultrasound
C. Hysterosalpingography
D. Culdocentesis

C. Hysterosalpingography Contrast is placed through the cervix and x-rays show whether it spills from the tubes.

8. A woman pregnant for the first time is a:

A. Nulligravida
B. Multipara
C. Primipara
D. Primigravida

D. Primigravida Primi- (first) + -gravida (pregnancy). A primipara has delivered once.

9. In GTPAL, a delivery at 34 weeks is counted under:

A. P, preterm
B. T, term
C. A, abortions
D. L, living

A. P, preterm Preterm is 20 to 37 weeks. Term is 37 weeks or later.

10. Which statement about preeclampsia is correct?

A. It begins before 20 weeks of gestation
B. It is defined by seizures in pregnancy
C. Proteinuria is not required to diagnose it
D. It is low blood pressure in late pregnancy

C. Proteinuria is not required to diagnose it It is new hypertension after 20 weeks with proteinuria or end-organ signs. Seizures make it eclampsia.

Cram sheet

Everything from chapters 11 and 12 in one place. Cover the right column and see if you can rebuild each row.

Word parts to know

Group	Parts and meanings
Kidney	ren/o, nephr/o; cortic/o; medull/o; glomerul/o; tubul/o; cali/o; pyel/o renal pelvis
Drainage	ureter/o; cyst/o, vesic/o bladder; trigon/o; urethr/o; meat/o; ur/o, urin/o
Urine findings	-uria; -uresis; olig/o; noct/i; py/o; bacteri/o; albumin/o; glycos/o; keton/o; azot/o; crystall/o
Female	gynec/o; vulv/o, episi/o; colp/o, vagin/o; cervic/o; hyster/o, metr/o, uter/o; salping/o; oophor/o, ovari/o; mamm/o, mast/o
Cycle and milk	men/o; -arche; -rrhea; -rrhagia; ov/o, oo-; lact/o, galact/o; gravid/o; -cyesis
Male	orchi/o, test/o; epididym/o; vas/o; vesicul/o; prostat/o; pen/o; balan/o; scrot/o; spermat/o; semin/i; andr/o
Pregnancy	nat/o; part/o; toc/o, -tocia; -gravida; -para; amni/o; chori/o; placent/o; embry/o; fet/o; omphal/o; terat/o

Key terms and comparisons

Pair or set	The difference
ureter vs urethra	kidney to bladder vs bladder to outside
pyel/o vs py/o	renal pelvis vs pus
oliguria vs anuria	under about 400 mL/day (0.5 mL/kg/hr) vs under about 100 mL/day
azotemia vs uremia	lab finding vs symptoms
nephritic vs nephrotic	leaks cells vs leaks protein
prerenal, intrarenal, postrenal	perfusion, kidney tissue, obstruction
storage vs emptying failure	urgency, frequency, incontinence vs hesitancy, weak stream, retention
menorrhagia vs metrorrhagia	heavy on time vs between periods
hyperplasia vs hypertrophy	more cells vs bigger cells
hysterotomy vs hysterectomy	cut into vs removed
gravida vs para	pregnancies vs deliveries at viability
antepartum vs prenatal	mother's delivery vs infant's birth

Numbers and abbreviations

Item	Meaning or value
Urethra length	female about 4 cm; male about 20 cm
CKD stage 5	eGFR under 15 (ESKD)
GTPAL weeks	term 37 or later; preterm 20 to 37; abortion before 20
Apgar	5 signs, 0 to 2 each, at 1 and 5 minutes, maximum 10
Newborn and term	neonate first 28 days; preterm before 37 weeks; post-term after 42
UA, BUN, eGFR, I&O, PVR	urinalysis; kidney labs; fluid balance; residual
UTI, CAUTI, AKI, CKD, ESKD	infection; kidney failure spectrum
HD, PD, ESWL, PCNL, TURP, BPH	dialysis; stone and prostate procedures
LMP, EDD, SROM, AROM, NSVD, VBAC	pregnancy dates and delivery
TAH-BSO, D&C, LEEP, HSG, PID, STI	GYN procedures and diagnoses
NICU, RDS, SGA, AGA, LGA	newborn care and size

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