FUNDAMENTALS OF NURSING · STUDY GUIDE

Exam 9 Study Guide

This guide covers chapters 17 and 18. Chapter 17 is elimination: what normal urine and stool look like, how to tell retention from the types of incontinence, how to place and protect a catheter, how to treat constipation, impaction and diarrhea, and how to care for a stoma. Chapter 18 is comfort: how pain travels and how to assess it in anyone, how to treat it with several tools at once, how to keep a patient on opioids breathing, and how to protect sleep. Cover the steps of each worked case and solve it first.

WHAT THIS GUIDE COVERS

- Chapter 17 · kidneys, bladder and the micturition reflex, normal output and oliguria, factors that affect voiding, urinalysis and specific gravity, retention and bladder scanning, stress, urge, overflow, functional and reflex incontinence, bladder training and pelvic floor exercises, UTI, catheter insertion, the CAUTI bundle, bowel function and the gastrocolic reflex, stool form and color, constipation, impaction, diarrhea and C. difficile, enemas, laxative classes, bowel training, ileostomy versus colostomy, stoma assessment, pouching and specimen collection.
- Chapter 18 · the pain definition, transduction, transmission, perception and modulation, gate control, acute versus chronic, nociceptive versus neuropathic pain, meaning and bias, self report, PQRSTU, numeric, verbal, faces, FLACC, PAINAD and CPOT, reassessment, multimodal analgesia, acetaminophen, NSAIDs and adjuvants, opioid concepts, PCA, adverse effects, the sedation scale and naloxone, nondrug comfort, sleep regulation, stages and cycles, lifespan needs, sleep disorders, sleep hygiene, clustering care and sleep aids.

CHAPTER 17

Urinary and Bowel Elimination

Read it in full: **Chapter 17 in the textbook**. Practice it in the lab: **Bladder Bench** and **Stool, Stoma and Enema Station**.

What to know

The kidneys filter about 180 L of plasma a day and return all but 1 to 2 L. The bladder holds about 300 to 500 mL; the first urge comes at about 150 to 250 mL. Voiding is a sacral reflex (S2 to S4)

coordinated by the pons and controlled by the cortex. The female urethra is short (3 to 4 cm), so UTIs are more common in women. Normal adult output is about **1,500 mL a day**; less than **30 mL/hour** (0.5 mL/kg/hour) for 2 or more hours is reported, after checking for a kinked catheter or full bag.

Factors: aging (smaller capacity, nocturia, enlarged prostate, weaker pelvic tissue), caffeine and alcohol, diuretics, retention causing drugs (anticholinergics, antihistamines, opioids), privacy, pain, mobility, diabetes and spinal cord injury. Drugs can color urine (phenazopyridine orange, rifampin red orange). Urinalysis: specific gravity about 1.005 to 1.030 (high in dehydration, low in overhydration, fixed near 1.010 in advanced kidney disease); no glucose, ketones, protein or blood normally; leukocyte esterase and nitrites suggest UTI.

Urinary retention is failure to empty fully: suprapubic distension, small frequent voids of 25 to 50 mL, dribbling, restlessness or confusion. Causes include obstruction (prostate, impaction), drugs, anesthesia and neurologic disease. Try privacy, normal position, running water and pain control first. Use a **bladder scanner** before catheterizing (male setting after hysterectomy). A postvoid residual under about 50 to 100 mL is generally normal; above about 300 to 400 mL or the protocol threshold usually leads to intermittent catheterization.

Incontinence is common but not normal aging. **Stress**: leakage with coughing or lifting from a weak pelvic floor; teach pelvic floor (Kegel) exercises, held about 3 to 10 seconds, about 10 times, three times a day. **Urge**: overactive detrusor; bladder training, limit caffeine. **Overflow**: bladder cannot empty (prostate, neuropathy, anticholinergics); measure residual, intermittent catheterization. **Functional**: bladder works but the patient cannot reach the toilet (dementia, mobility); prompted or scheduled toileting. **Reflex**: spinal cord injury; watch for autonomic dysreflexia at T6 or above. Protect skin from incontinence associated dermatitis; do not restrict fluids.

A **UTI** usually comes from E. coli ascending the urethra. Cystitis: dysuria, frequency, urgency, suprapubic pain. Pyelonephritis adds fever, flank pain and costovertebral angle tenderness. Older adults often show **new confusion, falls or incontinence** instead. Teach fluids, voiding after intercourse and wiping front to back. Asymptomatic bacteriuria usually is not treated except in pregnancy and before some urologic procedures.

Catheters: intermittent (straight), indwelling (balloon usually 10 mL sterile water), suprapubic; adults usually 14 to 16 Fr. Insertion is sterile in the hospital. Female: dorsal recumbent or Sims; separate the labia with the nondominant hand (now contaminated), cleanse front to back, insert about 5 to 7 cm until urine flows, then 2.5 to 5 cm more; if the catheter enters the vagina, leave it and use a new one. Male: hold the penis at 60 to 90 degrees, insert about 17 to 22 cm until urine flows, then to the bifurcation. **Inflate only after urine flows**; stop if inflation hurts. Secure with slack, replace the foreskin, bag below the bladder and off the floor.

CAUTI risk rises every catheter day. The strongest prevention is avoiding unneeded catheters and **removing them early** (nurse driven protocols). Incontinence, convenience and getting a specimen from someone who can void are not indications. Keep the system closed, secured and below the bladder, no dependent loops, daily soap and water meatal care, a separate container for each patient when emptying, specimens from the **sampling port** with a sterile syringe (never the bag). After removal, expect a void within about 6 to 8 hours.

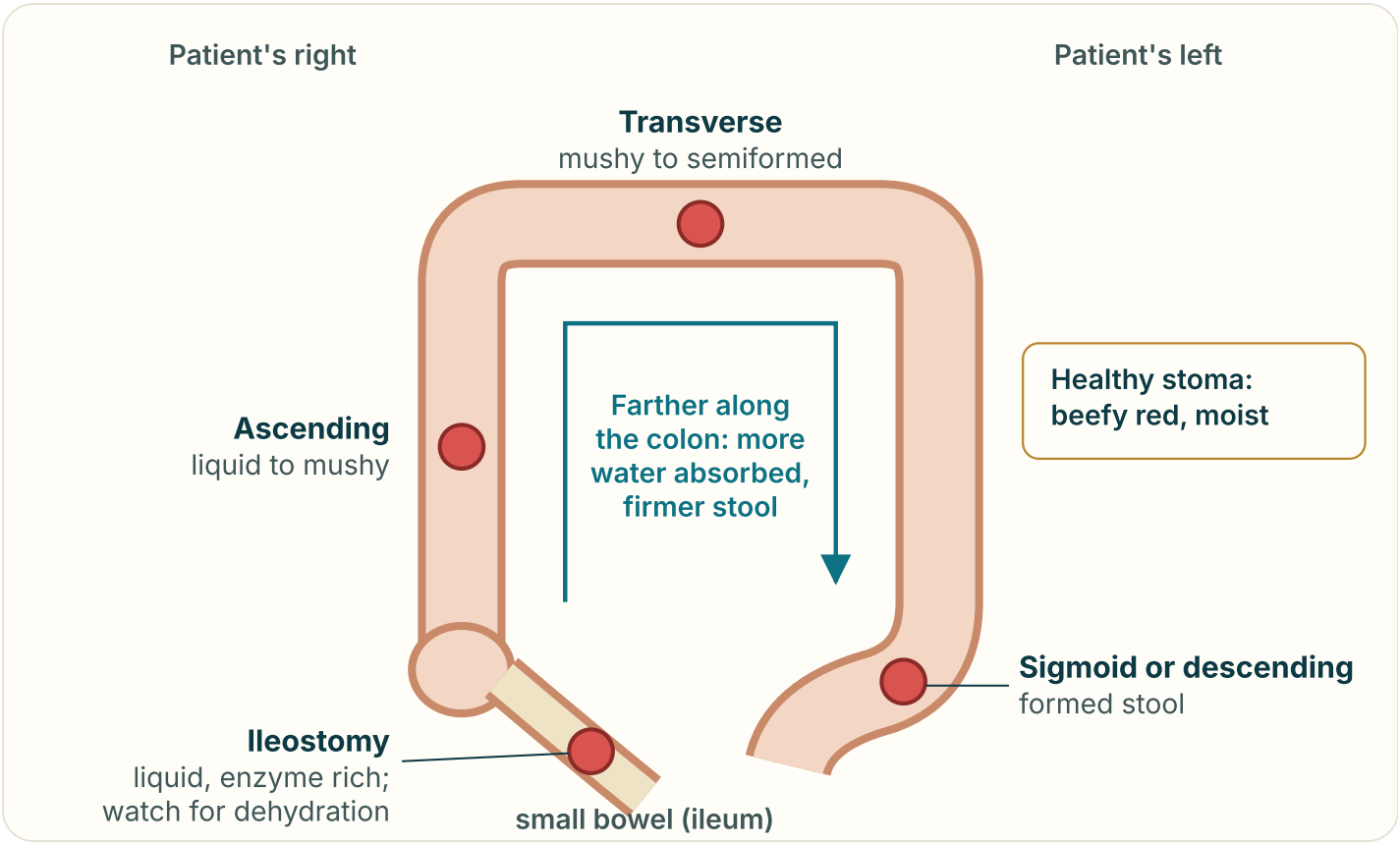
The colon turns about 1 to 1.5 L of chyme into formed stool. Mass movements follow meals through the **gastrocolic reflex**, so bowel routines work best 30 to 60 minutes after breakfast. The **Valsalva maneuver** slows the heart and is risky in heart disease, raised ICP and recent eye or abdominal surgery. Normal frequency ranges from three a day to three a week. Examine the abdomen in the order inspect, auscultate, percuss, palpate. Stool form follows transit time: types 1 and 2 hard, 3 and 4 ideal, 5 to 7 loose. Report **melena** (upper GI bleeding), bright red blood, clay colored stool (no bile), steatorrhea, mucus or pus, and **pencil thin** stool (narrowing).

Constipation: prevent with fiber (25 to 38 g, increased gradually), fluid (at least 1.5 to 2 L unless restricted), activity, routine and privacy. Start a bowel regimen (usually a stimulant laxative) **with every opioid**; tolerance never develops to opioid constipation, and bulk formers are wrong for it. **Fecal impaction**: liquid stool oozing around a hard mass with no formed stool, distension, urinary retention, confusion; treat with oil retention then cleansing enema or digital removal per order, watching for vagal bradycardia. **Diarrhea**: three or more loose stools in 24 hours; replace fluid and potassium, protect skin. For suspected **C. difficile**: contact precautions, soap and water, no antidiarrheals.

Enemas need an order. Position in **left Sims** with the right knee flexed, warm the solution to body temperature, insert the lubricated tip toward the umbilicus about 7.5 to 10 cm in adults, hang a large volume bag no higher than 30 to 45 cm above the anus, and lower it if cramping occurs. Tap water is hypotonic and not repeated; saline is safest for large volume; sodium phosphate is avoided in kidney disease and young children; oil retention is held at least 30 minutes. "Until clear" usually means no more than three. Laxative classes: bulk forming (full glass of water), stool softener (docusate), osmotic (PEG, lactulose, magnesium), stimulant (bisacodyl, senna; first choice with opioids), lubricant (mineral oil; aspiration risk). No laxatives with suspected obstruction.

An **ileostomy** (right lower quadrant) drains liquid, enzyme rich effluent soon after surgery, often 1 to 2 L a day at first; risks are dehydration, sodium and potassium loss and food blockage; teach 2 to 3 L of fluid and careful chewing. A sigmoid or descending **colostomy** (left lower quadrant) passes formed stool in about 3 to 5 days. A healthy stoma is **beefy red to pink and moist**, without pain sensation, and shrinks over 6 to 8 weeks. Pale, dusky, purple or black is reported at once. Empty the pouch at **one third to one half full**; cut the wafer about 2 to 3 mm (1/16 to 1/8 inch) larger than the stoma; change before a meal.

Specimens: routine urinalysis is best from the first morning void; a **clean catch** for culture is cleansed and collected midstream before antibiotics; catheter specimens come from the port; for a **24 hour urine**, discard the first void at the start time, collect everything after, include the final void at the end time, and restart if any urine is lost. Stool: void first, no toilet paper, send C. difficile tests only on unformed stool, and FIT needs no diet change.



The farther along the colon, the firmer the output. An ileostomy drains liquid, enzyme rich effluent and risks dehydration; a sigmoid colostomy passes formed stool.

LOCK THESE IN

- Report adult urine under 30 mL/h for 2 hours; check the catheter first.
- Scan before you catheterize; residual over about 300 to 400 mL often means intermittent catheterization.
- Stress: Kegels. Urge: bladder training. Overflow: catheterize. Functional: prompted toileting.
- Older adult with a UTI may show only confusion or falls.
- Inflate the balloon only after urine flows; remove catheters early; specimen from the port.
- Bowel regimen with every opioid; liquid oozing without formed stool means impaction.
- Enema: left Sims, bag 30 to 45 cm, tip 7.5 to 10 cm, warm solution.
- Healthy stoma is moist and red; dusky is an emergency. Empty at one third to one half full.

Key terms and comparisons: incontinence types and stool findings

Item	Mechanism or meaning	Nursing response
Stress incontinence	Weak pelvic floor; leaks with cough or lift	Pelvic floor exercises, treat cough, avoid constipation
Urge incontinence	Involuntary detrusor contractions	Bladder training, timed voiding, limit caffeine
Overflow incontinence	Bladder cannot empty; dribbles	Measure residual, intermittent catheterization
Functional incontinence	Cannot reach or use toilet in time	Prompted toileting, clear path, bedside commode
Melena	Upper GI bleeding	Report; vital signs and hemoglobin
Clay colored stool	No bile reaching the bowel	Report; check for jaundice
Pencil thin stool	Narrowing, possible tumor	Report for evaluation
Liquid oozing, no formed stool	Fecal impaction	Assess, report; no antidiarrheal

Priority rules: catheters, enemas and ostomies

Item	Rule
Catheter insertion depth	Female about 5 to 7 cm, then 2.5 to 5 cm more; male about 17 to 22 cm to the bifurcation
Balloon	Inflate after urine flows; stop if painful
CAUTI	Closed, secured, below bladder, off floor; remove early
24 hour urine	Discard first void; keep all after; include final void
Enema	Left Sims; 30 to 45 cm bag height; 7.5 to 10 cm tip in adults
Laxatives	Stimulant with opioids; none with suspected obstruction
Ileostomy	Liquid output; 2 to 3 L fluid; watch for dehydration
Pouch	Empty at one third to one half; wafer 2 to 3 mm larger than stoma

Worked cases

WORKED CASE 1 · NO URINE AFTER SURGERY

Mr. Hale, 69, is 6 hours after a hip replacement under spinal anesthesia. He has received 1,800 mL IV and has not voided. He is restless with a firm mass above the symphysis pubis.

STEP 1 · CHECK THE OUTPUT RULE

Six hours with no urine is far below 30 mL/hour, which would be at least 180 mL.

STEP 2 · NAME THE CAUSE

Spinal anesthesia, opioids, age and a possible enlarged prostate favor retention; the bladder is palpable.

STEP 3 · MEASURE

Scan the bladder before any catheter.

STEP 4 · ACT

Follow the retention protocol, often intermittent catheterization for a large volume.

RULE

More IV fluid or a diuretic treats the wrong problem.

WORKED CASE 2 · IMPACTION THAT LOOKS LIKE DIARRHEA

Mr. Ferraro, 88, with dementia, has been on oxycodone after a hip fracture. He passes small amounts of liquid stool every few hours, his abdomen is distended, he is eating less and more agitated, and his last formed stool was 5 days ago.

STEP 1 · RECOGNIZE

Opioids, immobility and no formed stool for 5 days with liquid seepage point to fecal impaction.

STEP 2 · ASSESS

Examine the abdomen and check for urinary retention.

STEP 3 · REPORT AND TREAT

Expect an oil retention enema then a cleansing enema, or digital removal, plus a scheduled bowel regimen.

RULE

An antidiarrheal would worsen the impaction. Watch the pulse during digital removal.

WORKED CASE 3 · HIDDEN ACETAMINOPHEN

Ms. Okafor, 72, takes hydrocodone with acetaminophen 325 mg, 2 tablets every 6 hours, and her daughter adds plain acetaminophen 650 mg every 6 hours.

STEP 1 · FROM THE COMBINATION TABLET

325 mg x 2 = 650 mg per dose; 650 x 4 doses = **2,600 mg** a day.

STEP 2 · FROM PLAIN ACETAMINOPHEN

650 mg x 4 doses = **2,600 mg** a day.

STEP 3 · TOTAL

2,600 + 2,600 = **5,200 mg** a day.

STEP 4 · JUDGE

Above the common 4 g ceiling for healthy adults and far above the 3 g or less often advised for older adults.

ACT

Stop the extra dose, notify the prescriber and teach the family to count acetaminophen in combination products.

WORKED CASE 4 · AN ILEOSTOMY LOSING TOO MUCH

Mr. Diaz, 34, is 2 days after an ileostomy for Crohn disease. The pouch collected 1,900 mL in 24 hours. He is thirsty, dizzy on standing, his urine is dark and potassium is 3.2 mEq/L.

STEP 1 · RECOGNIZE

High liquid output loses water, sodium and potassium.

STEP 2 · CONNECT THE CUES

Thirst, orthostatic dizziness, concentrated urine and low potassium mean dehydration.

STEP 3 · ACT

Report, expect IV fluid and electrolyte replacement, track intake, output and weight, and check orthostatics before walking.

RULE

Do not reassure that loose output is normal. Volume is the problem.

TRAPS PEOPLE FALL INTO

- **Giving fluid for low output in a full bladder.** Check for retention first with a scanner.
- **Restricting fluids for incontinence.** Concentrated urine irritates the bladder and promotes infection.
- **Inflating the balloon before urine flows.** The balloon may be in the urethra.
- **Taking a specimen from the drainage bag.** Use the sampling port with a sterile syringe.
- **Treating liquid stool in an immobile older adult as diarrhea.** Suspect impaction first.
- **Giving loperamide for suspected C. difficile.** It traps the toxin. Isolate and use soap and water.
- **Placing the patient on the right side for an enema.** Left Sims follows the rectum and sigmoid colon.
- **Calling a dusky stoma normal swelling.** Dusky or black means ischemia and is an emergency.
- **Keeping the first void in a 24 hour collection.** Discard it; the clock starts after it.

Chapter 17 self-test · ten items

1. Which urine output should be reported for an adult?

A. 40 mL per hour for the past 2 hours

B. 25 mL per hour for the past 2 hours

C. 1,600 mL over the past 24 hours

D. 60 mL per hour for the past 2 hours

B. 25 mL per hour for the past 2 hours Output under about 30 mL/hour for 2 or more hours is reportable.

2. A patient leaks urine when she coughs or laughs. Which teaching fits best?

A. Stopping urine flow while voiding
B. Using a urinary catheter at home
C. Pelvic floor muscle exercises
D. Restricting all fluids at night

C. Pelvic floor muscle exercises Stress incontinence responds to pelvic floor exercises. Repeatedly stopping the stream is not how they are done.

3. An older adult with a long term catheter becomes newly confused. What should the nurse suspect?

A. Expected aging of the bladder
B. A side effect of drinking water
C. Normal progression of dementia
D. A catheter associated infection

D. A catheter associated infection Confusion and falls are common atypical signs of infection in older adults.

4. During catheter insertion in a female patient, the catheter enters the vagina. What should the nurse do?

A. Leave it in place and insert a new sterile catheter
B. Pull it out, wipe it and reinsert it at once
C. Inflate the balloon and tape it to the thigh
D. Stop and finish the procedure the next day

A. Leave it in place and insert a new sterile catheter The misplaced catheter marks the vagina, and a new sterile catheter is used.

5. Which action best prevents CAUTI?

A. Removing the catheter as soon as possible
B. Irrigating the catheter once each shift
C. Cleaning the meatus with povidone iodine
D. Changing the catheter every three days

A. Removing the catheter as soon as possible Catheter days drive infection. Antiseptic meatal care and routine changes are not recommended.

6. A patient has black, tarry stool and takes no iron. What does this suggest?

A. Bile duct blockage
B. Lower GI bleeding
C. Fat malabsorption
D. Upper GI bleeding

D. Upper GI bleeding Melena is digested blood from an upper source.

7. A patient will start oxycodone after surgery. What bowel plan is appropriate?

A. Give a tap water enema each morning
B. Start a stimulant laxative regimen now
C. Wait until there is no stool for 3 days
D. Give a bulk forming fiber agent only

B. Start a stimulant laxative regimen now Tolerance does not develop to opioid constipation, so the regimen starts with the opioid.

8. In which position is a cleansing enema given?

A. High Fowler's
B. Right side lying
C. Left Sims position
D. Prone position

C. Left Sims position Left side down lets fluid flow by gravity into the rectum and sigmoid colon.

9. Two days after surgery, a colostomy stoma looks dark purple. What should the nurse do?

A. Apply a warm compress for an hour
B. Document it as expected swelling
C. Cut the wafer opening wider today
D. Report it to the surgeon at once

D. Report it to the surgeon at once A dusky or purple stoma suggests ischemia, an emergency.

10. A 24 hour urine collection starts at 0700. What should the nurse do with the 0700 void?

A. Send it to the lab right away
B. Discard it and start timing
C. Save it as the first sample
D. Add it at the end of the test

B. Discard it and start timing The first void is discarded; all urine after it is collected, including the final void at 0700 the next day.

Comfort, Pain, Sleep and Rest

Read it in full: **Chapter 18 in the textbook**. Practice it in the lab: **Pain Assessment Studio** and **Opioid Safety Watch**.

What to know

Pain is an unpleasant **sensory and emotional** experience associated with, or resembling, actual or potential tissue damage. It can exist without visible damage. The clinical principle: pain is whatever the person says it is, whenever they say it does. **Nociception** has four steps: **transduction** (nociceptors activated; prostaglandins and bradykinin sensitize them; NSAIDs and cold act here), **transmission** (fast A delta and slow C fibers to the dorsal horn and up; local anesthetics block), **perception** (awareness and meaning; distraction and imagery act here), **modulation** (endorphins and descending inhibition; opioids act here). Gate control: touch, heat, cold and calm can partly close the dorsal horn gate.

Acute pain protects, resolves with healing and often raises heart rate and BP. **Chronic pain** lasts beyond healing (commonly 3 months or more), has no protective purpose and usually has normal vital signs. **Nociceptive** pain comes from tissue: somatic is well localized; visceral is vague, cramping and may be referred (heart to arm or jaw, gallbladder to right shoulder). **Neuropathic** pain comes from nerve damage: burning, shooting, electric, with allodynia and hyperalgesia; it responds poorly to opioids alone and needs adjuvants. Fear, mood and meaning change pain; bias leads to undertreatment of minoritized patients, women, older adults and people with substance use disorders.

Assess on admission, regularly, with every new report, before and after every intervention and with any change. **Self report** is the standard; never substitute your impression, and accept the rating then explore it. Use PQRSTU: provoking and palliating, quality, region and radiation, severity, timing, and you (effect on function and the patient's **comfort function goal**).

Scales: **numeric** 0 to 10 (mild 1 to 3, moderate 4 to 6, severe 7 to 10), verbal descriptor, visual analog, **faces** (about ages 3 to 7 and adults with language barriers), **FLACC** (infants and preverbal children; five items 0 to 2), numeric from about age 8. For people who cannot self report: try self report first, look for causes, use a behavioral tool (**PAINAD** for advanced dementia, **CPOT** or

BPS for critically ill adults), ask a proxy, try an analgesic, and **assume pain is present** when a condition normally causes it. Vital signs are not a reliable sign of pain.

Reassess at peak effect: about **15 to 30 minutes after IV** and **30 to 60 minutes after oral** drugs, including function, sedation and respirations. New or changed pain (sudden severe abdominal pain, calf pain after surgery) is reported, not just medicated. **Multimodal analgesia** combines scheduled acetaminophen, an NSAID when safe, local techniques, adjuvants and comfort measures, with an opioid only for what remains. Give around the clock for continuous pain, premedicate before painful activities, prefer oral and avoid IM.

Acetaminophen: no anti inflammatory effect; hepatotoxic in overdose; commonly a maximum of 4 g a day in healthy adults and often 3 g or less for older adults, regular alcohol use or liver disease; count hidden doses in combination products. **NSAIDs**: GI bleeding (with food), kidney injury, cardiovascular risk, bleeding with anticoagulants; ketorolac limited to 5 days. **Gabapentinoids** and some antidepressants treat neuropathic pain; local anesthetics and epidurals need sensation, motor and blood pressure checks.

Opioids (morphine, hydromorphone, oxycodone, fentanyl, hydrocodone) act on mu receptors with no analgesic ceiling, but side effects limit the dose. Avoid meperidine; codeine and tramadol are unpredictable, and codeine is contraindicated under age 12. **Opioid naive** patients are at highest risk. **Tolerance** and **physical dependence** are expected and are not addiction; opioid use disorder is a disease with loss of control. Fentanyl patches are for opioid tolerant patients only, and heat raises absorption. With **PCA**, only the patient presses the button. Side effects: constipation (no tolerance, start a stimulant), nausea, sedation, respiratory depression, urinary retention, itching and orthostatic dizziness.

Sedation comes before respiratory depression. Risk peaks in the first 24 hours after surgery, with first doses, dose increases, at night, and with sleep apnea, obesity, age, organ disease, snoring and other sedatives. Check sedation and breathing before each dose and at peak, watching 30 to 60 seconds; do not rely on oximetry on oxygen. On the opioid induced sedation scale, S (sleeping, easy to arouse), 1 (awake) and 2 (slightly drowsy) are acceptable; **3** (frequently drowsy, drifts off mid conversation) means hold the opioid, stimulate and get the dose reduced; **4** (minimal or no

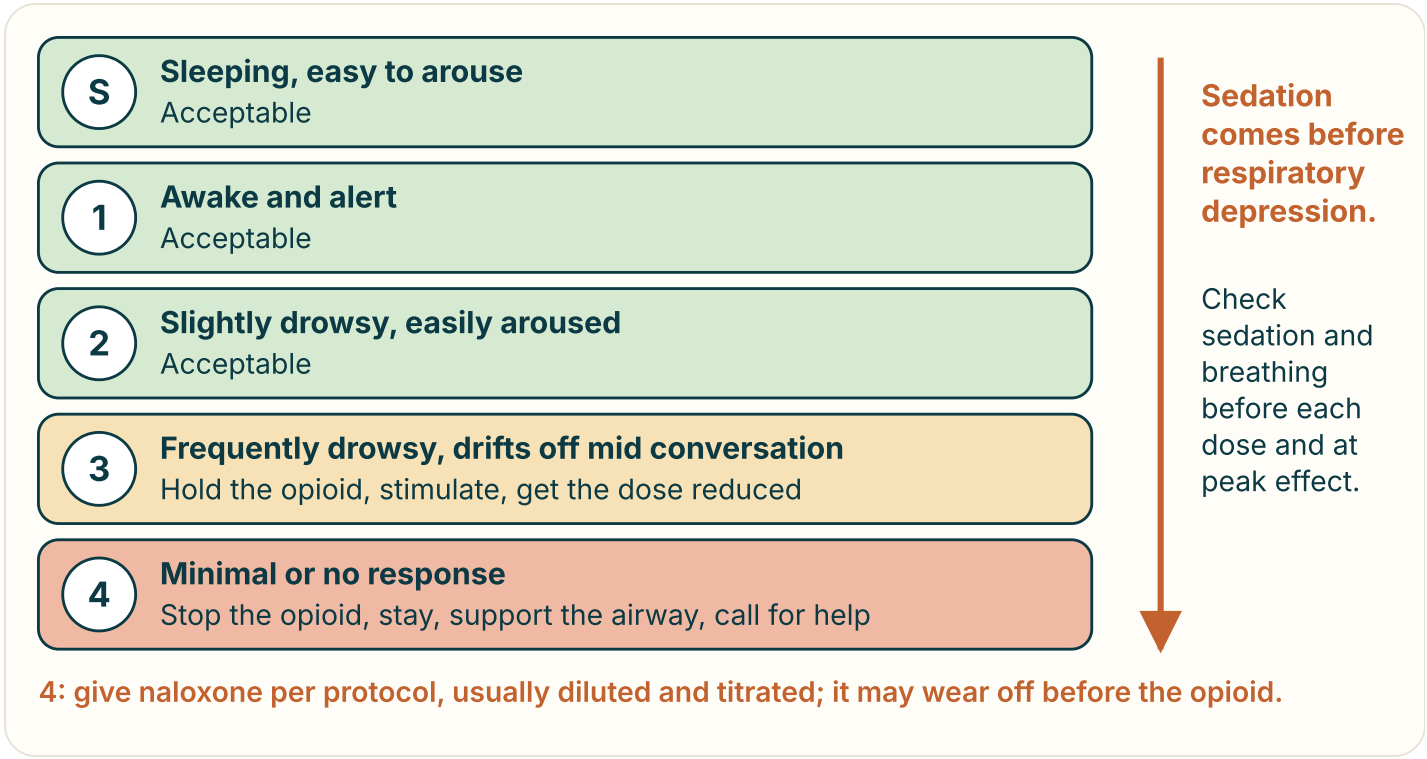
response) means stop the opioid, stay, support the airway, call for help and give **naloxone** per protocol, usually diluted and titrated in small IV doses. Naloxone may wear off first.

Comfort measures add to, never replace, needed analgesia: positioning, splinting, massage, heat (about 20 to 30 minutes) or cold (about 15 to 20 minutes) with a barrier, TENS, distraction, breathing, imagery, music, presence, prayer, and for infants swaddling, skin to skin contact and sucrose. Never use a deceptive placebo.

Sleep is regulated by the **circadian rhythm** (hypothalamic clock set by light; melatonin released in darkness) and **sleep pressure** (adenosine, blocked by caffeine). NREM has N1 (light, about 5%), N2 (about 45 to 55%) and **N3** (deep, slow wave, growth hormone and repair, sleepwalking, about 15 to 25%); **REM** (dreaming, muscle paralysis, memory, about 20 to 25%). A cycle lasts about **90 minutes**, four to six a night; N3 dominates early and REM lengthens toward morning. Needs: newborns 14 to 17 hours, adolescents 8 to 10, adults 7 or more, older adults about 7 to 8 with lighter, more broken sleep.

Disorders: **insomnia** (chronic at 3 nights a week for 3 months; **CBT-I** is first line), **obstructive sleep apnea** (snoring, witnessed pauses, daytime sleepiness; use home CPAP in hospital; dangerous with opioids and sedatives), central sleep apnea, narcolepsy with cataplexy, restless legs (check iron), parasomnias (guide a sleepwalker back to bed gently). Sleep hygiene: regular times, morning light, bed for sleep only, get up after about 20 minutes awake, no late caffeine or alcohol as a sleep aid, dark cool quiet room, no screens about an hour before bed, short early naps.

Hospital sleep loss worsens pain, mood, glucose and immunity and drives **delirium**. Dim lights, lower alarms where allowed, offer earplugs and masks, meet needs before sleep (toileting, oral care, repositioning, pain relief timed to peak at bedtime), and give diuretics earlier. **Cluster care** to protect at least one 90 minute cycle and ideally 4 hours, while still meeting ordered monitoring for unstable or opioid treated patients. Sleep aids are a last resort: zolpidem only when the patient can stay in bed 7 to 8 hours; avoid benzodiazepines, Z drugs and **diphenhydramine** in older adults (confusion, retention, falls). Always look for the cause of wakefulness first.



Watch sedation, not just oxygen saturation. Levels S, 1 and 2 are acceptable. Level 3 means hold the dose; level 4 is an emergency that calls for naloxone.

LOCK THESE IN

- Self report is the standard; never let vital signs or behavior overrule it.
- Transduction, transmission, perception, modulation.
- Neuropathic pain burns and shoots and needs adjuvants.
- Numeric for adults; faces or FLACC for children; PAINAD for dementia; CPOT for intubated adults.
- Reassess 15 to 30 minutes after IV, 30 to 60 minutes after oral.
- Sedation before respiratory depression: hold at level 3, naloxone at level 4.
- Only the patient presses the PCA button. Bowel regimen with every opioid.
- Cycles last 90 minutes; protect sleep with clustering; avoid diphenhydramine in older adults.

Key terms and comparisons: pain types and scales

Item	Features	Use or treatment
Acute pain	Protective, resolves with healing, may raise vital signs	Relief that allows breathing, coughing and walking
Chronic pain	3 months or more, normal vital signs, fatigue, depression	Function and quality of life; multimodal care
Visceral pain	Poorly localized, cramping, referred	Ask about radiation; report changes
Neuropathic pain	Burning, shooting, allodynia	Gabapentinoids, certain antidepressants, topicals
Numeric scale	0 to 10	Adults and children about 8 and older
Faces scale	Row of faces	About ages 3 to 7; language barriers
FLACC	Face, legs, activity, cry, consolability; 0 to 10	Infants and preverbal children
PAINAD	Breathing, vocalization, face, body, consolability; 0 to 10	Advanced dementia
CPOT or BPS	Face, movement, tension, ventilator compliance	Critically ill or intubated adults

Priority rules: opioid sedation scale and sleep

Level or item	Action
S: sleeping, easy to arouse	Acceptable
1: awake and alert	Acceptable; may give opioid
2: slightly drowsy, easily aroused	Acceptable; keep watching
3: frequently drowsy, drifts off mid sentence	Hold opioid, stimulate, notify to reduce dose
4: minimal or no response	Stop opioid, stay, airway, rapid response, naloxone
Naloxone for pain patients	Dilute and titrate small IV doses; watch for return of sedation
Sleep cycle	About 90 minutes; N3 early, REM late
Protected sleep	At least 90 minutes, ideally 4 hours or more

Worked cases

WORKED CASE 1 · PAIN THE PATIENT CANNOT REPORT

Mr. Albescu, 86, with advanced dementia, is 2 days after hip repair. He moans, grimaces and pulls at his dressing. His as needed opioid has not been given because he "never asks."

STEP 1 · ASSUME PAIN

Hip surgery reliably causes pain, so assume it is present.

STEP 2 · SCORE IT

Use PAINAD; moaning, grimacing and restlessness would score high.

STEP 3 · LOOK FOR OTHER CAUSES

Check for urinary retention, constipation and poor positioning.

STEP 4 · TREAT AND REASSESS

Give the ordered analgesic and reassess the behaviors at peak effect.

RULE

Waiting for him to ask, or sedating or restraining him, is the trap. Untreated pain drives delirium and falls.

WORKED CASE 2 · PCA BY PROXY

Mr. Strand, 64, with obstructive sleep apnea, is on his first night after knee replacement with a hydromorphone PCA. His wife has been pressing the button whenever he groans. He snores loudly, wakes only with a shake, drifts off mid sentence, RR 9 and shallow, SpO2 93% on 2 L.

STEP 1 · SCORE SEDATION

Drifting off mid sentence is level 3, close to 4. Unacceptable.

STEP 2 · SEE THROUGH THE OXIMETER

93% on oxygen is falsely reassuring; slow shallow breathing means CO2 is rising.

STEP 3 · ACT

Stop the PCA, stimulate and keep him awake, support the airway, monitor breathing closely, notify the provider or rapid response, have naloxone ready per protocol.

STEP 4 · THEN TEACH

Only the patient presses the button.

RULE

Removing the pillow and letting him sleep is the trap.

WORKED CASE 3 · TITRATING NALOXONE

Protocol: dilute naloxone 0.4 mg in 10 mL of saline and give 1 mL IV every 2 minutes until the respiratory rate improves.

STEP 1 · CONCENTRATION

0.4 mg / 10 mL = **0.04 mg per mL**.

STEP 2 · EACH DOSE

1 mL = **0.04 mg** (40 mcg).

STEP 3 · WHY SMALL DOSES

Small steps restore breathing without abruptly reversing all analgesia, which would cause severe pain, vomiting and withdrawal.

WATCH

Naloxone lasts 30 to 90 minutes and may wear off before the opioid. Keep monitoring; repeat doses or an infusion may be needed.

WORKED CASE 4 · PROTECTING SLEEP

Mrs. Hoang, 78, with heart failure, has slept poorly for two nights: furosemide at 2100, vital signs every 2 hours and a 0400 blood draw. At 0130 she is restless, pulling at her IV and asking where she is. Her family asks for something to help her sleep.

STEP 1 · RECOGNIZE

Acute nighttime confusion and agitation in an older adult suggest delirium, worsened by sleep loss.

STEP 2 · FIND THE CAUSE

Check for hypoxia, pain, a full bladder, low glucose and infection, and report the change.

STEP 3 · AVOID SEDATIVES

A hypnotic or diphenhydramine could deepen delirium and cause a fall.

STEP 4 · PLAN

Ask to move the diuretic to the morning, cluster care, reduce nonessential night vital signs if stable, reorient calmly, keep glasses and hearing aids close, invite family presence.

MATH

Between 2200 and 0200 there are 240 minutes, enough for 2 full 90 minute cycles if she is left undisturbed.

TRAPS PEOPLE FALL INTO

- **Doubting a pain rating because the patient is laughing.** Accept the report, assess further and treat.
- **Relying on vital signs to rule out pain.** Chronic pain often has normal vital signs.
- **Increasing the opioid for neuropathic pain.** Neuropathic pain needs adjuvants.
- **Giving a sedative to an agitated patient after surgery.** Assess pain, hypoxia and retention first.
- **Letting family press the PCA button.** PCA by proxy bypasses the safety lockout.
- **Trusting SpO2 on oxygen in a drowsy patient on opioids.** Watch sedation and respirations.
- **Giving a full undiluted naloxone dose to a pain patient.** Titrate small diluted doses per protocol.
- **Forgetting acetaminophen in combination products.** Count every source toward the daily limit.
- **Giving diphenhydramine to an older adult for sleep.** Anticholinergic effects cause confusion and falls.

Chapter 18 self-test · ten items

1. A patient rates pain 8 of 10 while chatting with visitors and has normal vital signs. What should the nurse do?

A. Wait to see if the vital signs rise later
B. Offer distraction instead of medication
C. Accept the rating, assess further and treat
D. Document that the pain seems exaggerated

C. Accept the rating, assess further and treat Self report is the standard. Behavior and vital signs do not disprove pain.

2. At which step of nociception do NSAIDs mainly act?

A. Modulation
B. Transmission
C. Perception
D. Transduction

D. Transduction NSAIDs block prostaglandin synthesis, which sensitizes nociceptors at transduction.

3. A patient describes burning, electric pain in both feet, and the sheets hurt. What type of pain is this?

A. Neuropathic pain
B. Somatic pain
C. Referred pain
D. Visceral pain

A. Neuropathic pain Burning, shooting pain with allodynia is neuropathic.

4. Which tool fits a 2 year old after surgery?

A. Numeric 0 to 10
B. The FLACC scale
C. Visual analog line
D. The PAINAD scale

B. The FLACC scale FLACC is a behavioral scale for infants and preverbal children.

5. When should pain be reassessed after an oral analgesic?

A. 5 to 10 minutes after the dose
B. 2 to 3 hours after the dose
C. At the next scheduled vital signs
D. 30 to 60 minutes after the dose

D. 30 to 60 minutes after the dose Reassess at peak effect: about 30 to 60 minutes for oral and 15 to 30 for IV.

6. A patient on an opioid falls asleep in the middle of answering a question. What should the nurse do?

A. Turn off the oxygen to wake the patient
B. Hold the opioid and assess breathing
C. Let the patient rest and check in 2 hours
D. Give the next dose as scheduled

B. Hold the opioid and assess breathing Drifting off mid sentence is level 3 sedation, which comes before respiratory depression.

7. A family member asks to press the PCA button while the patient sleeps. What should the nurse say?

A. Press it if the pain score is over 5
B. Press it whenever the patient groans
C. Only the patient should press the button
D. Press it every 15 minutes overnight

C. Only the patient should press the button PCA by proxy defeats the built in safety, because a sedated patient stops pressing.

8. A patient has had trouble sleeping most nights for six months. Which approach is recommended before medication?

A. Cognitive behavioral therapy for insomnia
B. A glass of wine one hour before sleeping
C. A nightly prescription hypnotic medication
D. Over the counter diphenhydramine at bedtime

A. Cognitive behavioral therapy for insomnia CBT-I is first line, ahead of medication.

9. A patient with obstructive sleep apnea is admitted after surgery. What should the nurse encourage?

A. Sleeping flat without any pillow
B. Skipping CPAP while on any oxygen
C. Taking a sedative to sleep deeply
D. Using the home CPAP device during sleep

D. Using the home CPAP device during sleep CPAP keeps the airway open, and the patient is at higher risk from opioids and sedatives.

10. An 80 year old cannot sleep. What is the best first action?

A. Assess for a cause such as pain or a full bladder
B. Give the ordered diphenhydramine right away
C. Turn on the television to help the patient relax
D. Ask the provider for a stronger hypnotic drug

A. Assess for a cause such as pain or a full bladder Look for the cause first. Diphenhydramine is a poor choice in older adults.

ONE PAGE

Cram sheet

Chapters 17 and 18 on one page. Say the rule and then its reason.

Elimination

Item	Rule
Output	About 1,500 mL a day; report under 30 mL/h for 2 h
Retention	Scan first; residual over about 300 to 400 mL often means catheterize
Incontinence	Stress Kegels; urge training; overflow catheter; functional prompting
UTI in older adults	Confusion, falls, incontinence
Catheter	Sterile; inflate after urine flows; secure; below bladder; remove early
Specimens	Clean catch midstream; port not bag; 24 h discard first void
Stool red flags	Melena, clay colored, pencil thin, steatorrhea
Opioids	Start a stimulant laxative with the first dose
Impaction	Liquid oozing, no formed stool; no antidiarrheal
C. difficile	Contact precautions, soap and water, no antidiarrheals
Enema	Left Sims; bag 30 to 45 cm; tip 7.5 to 10 cm
Ostomy	Ileostomy liquid and dehydrating; healthy stoma moist red; empty at one third to one half

Pain and sleep

Item	Rule
Definition	Sensory and emotional; self report is the standard
Nociception	Transduction, transmission, perception, modulation
Types	Acute vs chronic; nociceptive vs neuropathic
Scales	Numeric, faces, FLACC, PAINAD, CPOT
Reassess	15 to 30 min IV; 30 to 60 min oral
Acetaminophen	Max commonly 4 g; often 3 g or less for older adults; count combinations
Opioid risk	Naive, first 24 h, night, sleep apnea, other sedatives
Sedation scale	Hold at 3; naloxone at 4
PCA	Only the patient presses
Sleep	90 minute cycles; N3 early, REM late; adults 7 h or more
Disorders	CBT-I for insomnia; CPAP for OSA
Hospital sleep	Cluster care; avoid diphenhydramine and benzodiazepines in older adults

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