Preventing ICU Infections

CLABSI, CAUTI, VAE, C. difficile and MDRO bundles, isolation by organism, hand hygiene and quality measures

CLABSI: INSERTION AND LINE CARE

- Checklist; anyone may stop insertion for a sterility break
- Ultrasound; subclavian preferred in ICUs (SHEA 2022), femoral avoided (CDC 2011)
- Maximal barrier: cap, mask, sterile gown and gloves, full-body drape
- Prep: 2% chlorhexidine (CHG) in alcohol, dried before puncture
- Daily CHG bath (ICU, age >2 months)
- Scrub the hub ≥5 s (CHG-alcohol or 70% alcohol), let dry; or antiseptic caps
- CHG dressing: transparent every 7 days, gauze every 2, sooner if damp, loose or soiled
- Tubing: continuous sets 96 h to 7 days; blood or lipids within 24 h; propofol 12 h (label)
- Daily need review; no routine line changes

CAUTI: FEWER CATHETER DAYS

CDC 2009 also lists prolonged immobilization.

INDICATED (SHEA 2022)	NOT INDICATED
Acute urinary retention (scanned)	Incontinence, convenience
Hourly output that changes therapy	ICU status alone
Selected surgery; end-of-life comfort	Routine postoperative use
Open pressure injury or graft, incontinent	Urine sample if able to void

- Alternatives: external catheter (male or female), intermittent catheterization, bladder scan
- Sterile insertion, smallest bore; closed system, bag below bladder and off floor, no kinks
- Meatal hygiene without antiseptic; culture from the port, never the bag
- Daily review, nurse-driven removal; after surgery ideally within 24 h (CDC 2009)
- Avoid: scheduled catheter or bag changes, routine irrigation, testing or treating asymptomatic bacteriuria

VAP AND VENTILATOR-ASSOCIATED EVENTS

- Avoid intubation: HFNC or NIV when safe
- Daily paired SAT and SBT; light, benzodiazepine-sparing sedation
- Early mobility; early enteral, not parenteral, nutrition
- Head of bed 30–45°; daily toothbrushing, no chlorhexidine oral care
- Circuit changed only if soiled or malfunctioning
- Subglottic suction tube if ventilated >48–72 h

Adults ventilated ≥4 days; PEEP 0–5 counts as 5.

TIER	NHSN 2026 SURVEILLANCE CRITERIA
VAC	After ≥2 stable days, minimum PEEP up ≥3 or FiO_2 up ≥0.20 for ≥2 days
IVAC	VAC + T >38 or <36 °C or WBC ≥12,000 or ≤4,000 + new antibiotic ≥4 days
PVAP	IVAC + quantitative culture, or purulent secretions plus an organism

C. DIFFICILE AND RESISTANT ORGANISMS

- Test only ≥3 new unformed stools in 24 h, no laxative in 48 h; no test of cure
- Contact precautions once diarrhea starts; private room and toilet
- Continue ≥48 h after diarrhea resolves (IDSA/SHEA 2017)
- Soap and water after care; dedicated equipment; sporicidal cleaning (EPA List K, e.g., bleach)
- Stewardship: limit fluoroquinolones, clindamycin, 3rd/4th-generation cephalosporins, carbapenems
- Universal ICU decolonization: daily CHG bath plus 5 days of nasal mupirocin (REDUCE MRSA)
- C. auris: EPA List P disinfectant; alcohol rub works

SAFETY Alcohol does not kill C. diff spores, and quaternary ammonium alone does not kill C. auris.

ISOLATION BY ORGANISM

**Also contact. COVID-19 (any care) and influenza AGPs (intubation, bronchoscopy, open suction, CPR): N95, gown, gloves, eye protection (CDC).*

TYPE	ORGANISMS	PPE AND ROOM
Airborne	TB, measles, varicella*, disseminated zoster*	Fit-tested N95; AIIR, door closed
Droplet	Influenza, meningococcus, pertussis, mumps	Surgical mask on entry
Contact	MRSA, VRE, CRE, C. auris, RSV, scabies	Gown and gloves on entry; own equipment
Contact (enteric)	C. difficile, norovirus	Contact PPE, soap-and-water hands, sporicidal cleaning

Ends: meningococcus 24 h and pertussis 5 days into therapy; norovirus 48 h after symptoms.

HAND HYGIENE AND SSI

- WHO 5 moments: before patient contact, before an aseptic task, after body fluid risk, after patient contact, after touching surroundings
- Alcohol rub (≥60%) unless soiled or after C. diff or norovirus; gloves never replace it
- Prophylaxis ≤60 min before incision (120 for vancomycin, fluoroquinolones); redose long cases
- Stop at closure (SHEA 2022, CDC 2017); cardiac surgery up to 48 h (STS 2006)
- Clip, don't shave; CHG-alcohol prep; decolonize S. aureus before cardiac and orthopedic surgery
- Keep above 35.5 °C; postop glucose 110–150 (SHEA 2022; STS cardiac under 180)

QUALITY MEASURES EXAMS TEST

MEASURE	HOW IT WORKS
Device-associated rate	Infections ÷ device days × 1,000
SIR (NHSN)	Observed ÷ predicted infections; below 1.0 is better
CMS HAC Reduction Program	CLABSI, CAUTI, SSI, MRSA bacteremia, C. diff, PSI 90; worst 25% lose 1%

- NHSN CLABSI: line >2 days plus a pathogen, or a commensal twice with fever, chills or hypotension
- NHSN CAUTI: Foley >2 days, ≥10^5 CFU/mL, plus fever >38.0 °C or suprapubic or CVA tenderness

EXAM TIP Removing the device is the best prevention. Rising rate: audit the bundle, test a fix (PDSA). CLABSI and CAUTI are nurse-sensitive indicators.

Sources (25) are listed with links at icubasics.com/sheets/infection-prevention.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. ICU Basics is an independent study aid not affiliated with any certifying body.