cal care books, visit our website www.ejaypee.com, for detailed information on critical care books, visit our website www.ejaypee.com, for detailed information on critical care books,

Safdarjung Manual of Intensive Care



Editor-in-Chief
Anirban Hom Choudhuri

Associate Editors
Saurav Mitra Mustafi
Santvana Kohli

Foreword
Harish C Sachdeva

JAYPEE

JAYPEE BROTHERS

Contents

SECTION 1: Core Principles of Critical Care

Section Editor: *Vandana Talwar*

1. **Initial Assessment, Stabilization, and Triage 3**
   Nidhi Agrawal, Shilpi Agarwal
2. **Introduction to Critical Illness and Intensive Care Unit Philosophy 8**
   Pradeep Kumar Verma
3. **Fundamentals of Hemodynamic Monitoring 11**
   Pratibha Mudgal, Kiran Mahendru
4. **Fluid, Electrolytes, and Acid–Base Management 20**
   Ira Balakrishnan M, Preeti Agrawal
5. **Pharmacology in Critical Care (Sedatives, Vasopressors, and Inotropes) 32**
   Anirban Hom Choudhuri

SECTION 2: Basics of ICU Care

Section Editor: *Ajay Kumar*

6. **Respiratory Failure and Mechanical Ventilation 41**
   Saurav Mitra Mustafi, Mansi Jain
7. **Circulatory Shock: Recognition and Management 49**
   Santvana Kohli, Megha Wadhwani
8. **Acute Kidney Injury, Renal Support and Continuous Renal Replacement Therapy Strategies 55**
   Priyanka H Chhabra, Vanya Chugh
9. **Neurological Emergencies 63**
   Madhu Bala, Sahil Diwan
10. **Extracorporeal Membrane Oxygenation and Extracorporeal Therapies 77**
    Saurav Mitra Mustafi, Richa Chauhan

SECTION 3: Organ System Support

Section Editor: *Shruti Jain*

11. **Acute Respiratory Distress Syndrome and Advanced Ventilatory Strategies 89**
    Shruti Jain

JAYPEE BROTHERS

12. Acute Exacerbation of Chronic Obstructive Pulmonary Disease and Asthma.....102
Milthi Manoj

13. Sepsis and Septic Shock 110
Vanya Chugh

14. Sedation and Paralysis Guidelines in the ICU and ICU Delirium 118
Santvana Kohli, Nishtha Kachru

15. Multiorgan Dysfunction Syndrome.....125
Manisha

16. Endocrine and Metabolic Emergencies: Part I.....130
Preeti Thakur, Shruti Jain

17. Endocrine and Metabolic Emergencies: Part II.....137
Kanika Rustagi, Milthi Manoj

SECTION 4: Critical Care Syndromes

Section Editor: *Sahil Diwan*

18. Toxicology 147
Ajay Kumar, Bhavya Krishna

19. Tropical Infections in Critical Care.....164
Sahil Diwan, Devansh Garg

20. Cardiac Emergencies: Cardiogenic Shock, Intra-aortic Balloon Pump, and Arrhythmias 179
Sahil Diwan, Abhinav Aggarwal

21. Hematological and Coagulation Emergencies 196
Sumita Chaudhry, Aditi Jain

22. Gastrointestinal and Hepatic Emergencies 212
Anirban Hom Choudhuri

SECTION 5: Procedures, Technology, and Safety

Section Editor: *Pravin Kumar*

23. Infection Control, Bundles and Device-associated Infections in the Intensive Care Unit.....229
Santvana Kohli, Bhavya Krishna

24. Vascular Access, Arterial Transducers, and Damping Concepts in Critical Care 238
Ajay Kumar, Sandeep Mangla

JAYPEE BROTHERS

25. Airway Management, Intubation Strategies, and Front-of-Neck Access 246
Pratiti Choudhuri, Paridhi Kaler

26. Point-of-Care Ultrasound 258
Pravin Kumar

27. Hemodynamic Monitoring 267
Pravin Kumar

28. Safety, Communication, and Human Factors in Intensive Care Unit Practice 274
Dimple Pandey, Nisha Jain

29. Intensive Care Unit Procedures: Chest Tube Insertion, Bronchoscopy, Percutaneous Tracheostomy 280
Preeti Thakur, Kanika Rustagi

SECTION 6: Special Populations and Future Directions

Section Editor: *Priyanka H Chhabra*

30. ICU Management of Trauma and Burns: Resuscitation, Complications, and Rehabilitation 291
Abhishek Verma

31. Oncological Emergencies 298
Anirban Hom Choudhuri

32. Global Perspectives, Ethics and End of Life Care 303
Deepa Kerketta Khurana

33. Pediatric and Obstetric Critical Care 307
Priyanka Gupta, Bhavya Krishna

34. Intensive Care Unit Research, Innovation, and Artificial Intelligence 317
Priyanka H Chhabra, Savithri Gundlur

Index 321

JAYPEE BROTHERS

SECTION 5

Procedures, Technology, and Safety

Section Editor: *Pravin Kumar*

23. **Infection Control, Bundles and Device-associated Infections in the Intensive Care Unit**
Santvana Kohli, Bhavya Krishna

24. **Vascular Access, Arterial Transducers, and Damping Concepts in Critical Care**
Ajay Kumar, Sandeep Mangla

25. **Airway Management, Intubation Strategies, and Front-of-Neck Access**
Pratiti Choudhuri, Paridhi Kaler

26. **Point-of-Care Ultrasound**
Pravin Kumar

27. **Hemodynamic Monitoring**
Pravin Kumar

28. **Safety, Communication, and Human Factors in Intensive Care Unit Practice**
Dimple Pandey, Nisha Jain

29. **Intensive Care Unit Procedures: Chest Tube Insertion, Bronchoscopy, Percutaneous Tracheostomy**
Preeti Thakur, Kanika Rustagi

JAYPEE BROTHERS

CHAPTER 23

Infection Control, Bundles and Device-associated Infections in the Intensive Care Unit

Santvana Kohli, Bhavya Krishna

ABSTRACT

Healthcare-associated infections, particularly device-associated infections, remain a major cause of preventable morbidity and mortality in the intensive care unit (ICU). This chapter reviews the epidemiology, pathogenesis, and clinical impact of ICU-acquired infections, with emphasis on CLABSI, VAP, and CAUTI. It highlights the role of infection-control practices, care bundles, surveillance, and antimicrobial stewardship in reducing infection rates and improving outcomes, underscoring the importance of sustained compliance and safety culture in critical care settings.

INTRODUCTION

Healthcare-associated infections (HAIs) pose a significant challenge in intensive care units (ICUs) and contribute significantly to patient morbidity, mortality, prolonged hospital stay, and increased healthcare costs. Critically ill patients are particularly vulnerable due to the severity of illness, immune dysfunction, frequent exposure to invasive procedures, and prolonged hospitalization. Among HAIs, device-associated infections (DAIs) constitute a substantial and largely preventable proportion.

The use of invasive devices in intensive care units (ICUs), such as central venous catheters (CVCs), endotracheal tubes, and urinary catheters, is integral to modern intensive care practice. However, these devices, besides being a necessity, also breach natural anatomical and immunological barriers, facilitating microbial entry and colonization. DAIs therefore serve as important quality indicators of ICU performance, reflecting adherence to infection prevention practices.

A structured approach incorporating infection control measures, evidence-based care bundles, surveillance, and antimicrobial stewardship is hence essential to reduce their burden.

EPIDEMIOLOGY AND BURDEN OF DISEASE

The DAIs account for a significant proportion of ICU-acquired infections globally. Surveillance data from the Center for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) and the International Nosocomial Infection Control Consortium (INICC) demonstrate higher rates of DAIs in low- and middle-income countries (LMICs), including India, compared with high-income nations.

There are several risk factors for DAIs, as described in **Table 1**. In Indian ICUs, ventilator-associated pneumonia (VAP), central line-associated bloodstream infection (CLABSI), and catheter-associated urinary tract infection (CAUTI) account for the majority of DAIs.

JAYPEE BROTHERS

TABLE 1: Risk factors for device-associated infections.

Patient-related	*Device-related*	*System-related*
• Advanced age • Immunosuppression • Comorbidities • Severity of illness	• Prolonged dwell time • Biofilm formation • Multiple insertions • Emergency insertion	• Low-income countries • Inadequate staffing • Poor protocol adherence • Lack of training • Resource constraints

TABLE 2: Common device-associated infections in the intensive care unit (ICU) with respective causative organisms.

Device	*Associated infection*	*Common pathogens*
Central venous catheter (CVC)	CLABSI	*Staphylococcus aureus, Enterococci, Candida* spp., *gram-negative bacilli*
Endotracheal tube	VAP	*Pseudomonas aeruginosa, Acinetobacter* spp., *Klebsiella* spp., *Staphylococcus aureus*
Urinary catheter	CAUTI	*Escherichia coli, Klebsiella* spp., Enterococci, *Candida* spp.

The DAIs are associated with prolonged mechanical ventilation, increased ICU and hospital length of stay, excess antimicrobial use, and significant healthcare costs. Mortality due to HAI can be attributed to various factors such as infection type, causative pathogen, and host factors, ranging from approximately 10% to 40%. VAP and CLABSI are particularly associated with adverse outcomes, mainly when caused by multidrug-resistant organisms (MDROs).

CLINICAL IMPACT

- Increased ICU and hospital length of stay
- Increased antimicrobial resistance and consumption
- Increased cost of care
- Increased mortality (especially VAP and CLABSI)
- Increased workload and resource utilization

Table 2 summarizes common device-associated infections in the ICU, including CLABSI, VAP, and CAUTI, along with their frequently implicated pathogens.

PATHOGENESIS OF DEVICE-ASSOCIATED INFECTIONS (FIG. 1 AND FLOWCHART 1)

The central mechanism underlying DAIs is the formation of *biofilms on device surfaces.* Biofilms are structured communities of microorganisms embedded within an extracellular polymeric matrix that adheres to surfaces, both biotic and abiotic. Once formed, biofilms protect organisms from host immune responses and significantly reduce susceptibility to antimicrobial agents.

Microorganisms gain access to invasive devices through multiple routes:

- Extraluminal migration of skin flora along the device tract during or after insertion.
- Intraluminal contamination through hubs, ports, and connectors during handling.
- Ascending colonization, particularly in urinary catheters.
- Microaspiration of contaminated oropharyngeal secretions in mechanically ventilated patients.

JAYPEE BROTHERS

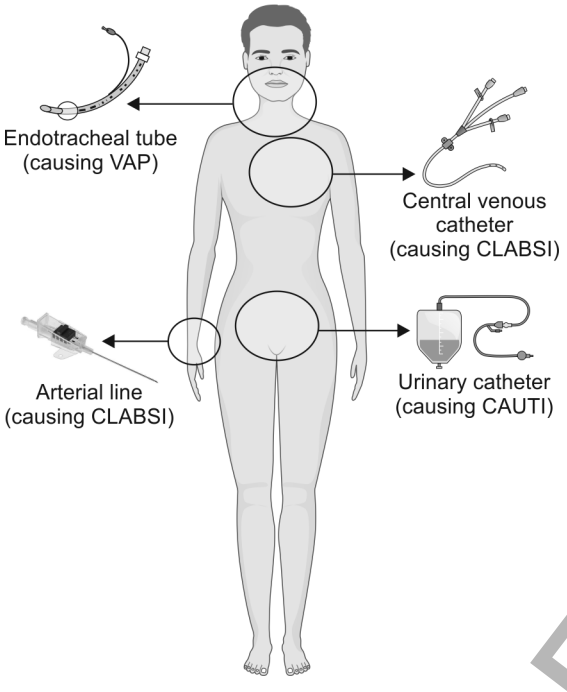
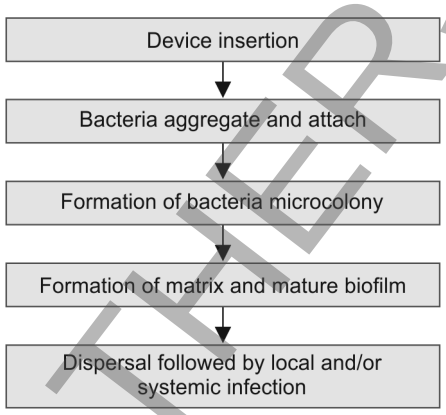


Fig. 1: Common sites of device associated infections (DAIs) in the intensive care unit (ICU). (CAUTI: catheter-associated urinary tract infection; CLABSI: central line-associated bloodstream infection; VAP: ventilator-associated pneumonia)

Flowchart 1: Pathogenesis of device-associated infections (schematic).



BUNDLES: RATIONALE AND EVIDENCE

Care bundles are structured sets of evidence-based practices that, when performed collectively and reliably, improve patient outcomes.

Key Characteristics of Effective Bundles

- Limited number of elements (usually 3–5)
- Evidence-based
- Easily measurable
- Applied consistently

Bundles are most effective when compliance approaches 100%. Partial adherence does not yield the same benefit.

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION

Definition: Primary bloodstream infection occurring in a patient who has had a central venous catheter in place for >48 hours, where the infection is not attributable to another identifiable source.

Common pathogens:

- *Staphylococcus aureus (CoNS or* coagulase negative *Staphylococcus aureus)*
- *Enterococcus*
- Gram-negative bacilli
- *Candida*

Risk factors:

- Femoral vein catheterization
- Prolonged catheter dwell duration
- Breaks in aseptic insertion or maintenance practices
- Frequent line manipulations
- Emergency or nonsterile insertion
- Inadequate hub and port disinfection

The implementation of bundle-based care **(Table 3)** has been shown to significantly reduce CLABSI rates and should be reinforced through the use of checklists and audits.

JAYPEE BROTHERS

TABLE 3: Central line-associated bloodstream infection (CLABSI) prevention bundle.

Strategy	*Description*
Hand hygiene	Strict adherence to hand hygiene before catheter insertion, access, and maintenance
Maximal barrier precautions	Use of cap, mask, sterile gown, sterile gloves, and full-body sterile drape during catheter insertion
Chlorhexidine skin antisepsis	Skin preparation with >0.5% chlorhexidine in alcohol prior to insertion and during dressing changes
Hub and port disinfection	Scrubbing the hub/ports with alcohol or chlorhexidine-alcohol for at least 15–30 seconds before access
Optimal site selection	Preference for subclavian vein (when appropriate) and avoidance of femoral site to reduce infection risk
Sterile dressing changes	Use of sterile technique for dressing changes with transparent semipermeable or sterile gauze dressings
Prompt removal of unnecessary lines	Daily assessment of catheter need with prompt removal of unnecessary central lines
Prompt removal of unnecessary lines	Reduces duration of catheterization, biofilm formation, and CLABSI risk

VENTILATOR-ASSOCIATED PNEUMONIA

Definition: VAP is defined as pneumonia developing 48 hours or more after endotracheal intubation and initiation of mechanical ventilation.

Incidence: The incidence of VAP ranges from 5 to 20 episodes per 1,000 ventilator days. VAP is associated with prolonged ventilation, increased ICU stay, higher antibiotic consumption, and increased mortality.

Common pathogens:

- *Early VAP: Streptococcus pneumoniae, H. influenzae*
- *Late VAP: Acinetobacter, Pseudomonas, Klebsiella,* Methicillin-resistant *Staphylococcus aureus (MRSA)*

Impact: Increased ICU stay, mortality, and antibiotic use.

Microaspiration of contaminated secretions, impaired mucociliary clearance, and endotracheal tube biofilms play a crucial role in its pathogenesis.

Table 4 shows ventilator care bundle strategies for prevention of VAP in ICU patients.

CATHETER-ASSOCIATED URINARY TRACT INFECTION

Definition: Urinary tract infection (UTI) in a patient with an indwelling urinary catheter for >2 days.

Common pathogens:

- *Escherichia coli*
- *Klebsiella*
- *Enterococcus*
- *Candida*

The CAUTI is often overdiagnosed due to asymptomatic bacteriuria.

Table 5 shows strategies for prevention of CAUTI in ICU patients.

MULTIDRUG-RESISTANT ORGANISMS IN INTENSIVE CARE UNIT

The ICU is a major reservoir for MDROs due to high antibiotic pressure and vulnerable patient populations.

JAYPEE BROTHERS

TABLE 4: Ventilator care bundle for VAP prevention.

Strategy	*Description*
Head-of-bed elevation (30 or more)	Reduces risk of aspiration of gastric and oropharyngeal contents unless contraindicated
Proper sedation protocol and daily sedation interruption/holiday	Minimizes duration of mechanical ventilation and facilitates neurological assessment and early weaning
Oral care with chlorhexidine	Decreases oropharyngeal colonization with pathogenic microorganisms
Subglottic secretion drainage	Prevents microaspiration of secretions pooled above the endotracheal tube cuff
Gastric ulcer prophylaxis	Reduces stress-related mucosal bleeding while balancing risk of gastric colonization
Daily readiness to wean documented/daily spontaneous breathing trials	Promotes early liberation from mechanical ventilation when clinically appropriate
Cuff pressure documented at least twice daily	Maintains adequate seal to prevent microaspiration without causing tracheal injury
Strict hand hygiene before and after patient contact	Prevents cross-transmission of pathogens during patient care and airway manipulation

TABLE 5: Catheter-associated urinary tract infection (CAUTI) prevention strategies.

Strategy	*Description*
Avoid unnecessary catheterization	Indwelling urinary catheters should be inserted only for appropriate, evidence-based indications
Aseptic insertion technique	Catheter insertion must be performed using strict aseptic technique with sterile equipment
Consider external catheter system (condom catheter)	External urinary collection devices should be preferred in suitable male patients to reduce CAUTI risk
Closed drainage system	Maintain a continuously closed urinary drainage system to prevent bacterial entry, which should be placed below level of bed to prevent backflow
Secure catheter properly	Adequate catheter fixation prevents urethral trauma and inadvertent disconnections
Catheter and perineal care daily	Routine hygiene of the catheter insertion site and perineum reduces microbial colonization
Review catheter indication and necessity daily	The ongoing need for urinary catheterization should be assessed daily with prompt removal when no longer indicated
Order urine cultures only when urinalysis abnormal or patient symptomatic	Urine cultures should be obtained only in symptomatic patients or when urinalysis suggests infection, to avoid overtreatment

Common MDROs in Indian ICUs:

- Carbapenem-resistant Enterobacterales (CRE)
- *Acinetobacter baumannii*
- *Pseudomonas aeruginosa*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Vancomycin-resistant Enterococci (VRE)

Risk Factors for Multidrug-resistant Organism Colonization and Infection

- Prolonged ICU stay
- Prior antibiotic exposure
- Mechanical ventilation
- Invasive devices
- Cross-transmission due to poor hand hygiene

JAYPEE BROTHERS

Prevention Strategies

- Strict hand hygiene
- Contact precautions for colonized or infected patients
- Cohorting of patients and staff when feasible
- Environmental decontamination
- Antimicrobial stewardship

Active surveillance cultures (ASCs) may be considered in outbreak settings or high-risk units.

INFECTION PREVENTION AND CONTROL IN INTENSIVE CARE UNIT

Effective infection prevention in the ICU relies on strict adherence to standard infection control practices. These measures aim to interrupt transmission of microorganisms, reduce environmental contamination, and protect both patients and healthcare workers.

Table 6 shows key infection prevention and control (IPC) practices in the ICU, outlining core components, measures, and their objectives in reducing healthcare-associated infections.

Hand hygiene, as proposed by the World Health Organization (WHO) shown in **Figure 2**, remains the single most effective intervention for preventing HAIs. Compliance should be reinforced through regular audits, feedback, and availability of hand hygiene resources at point of care.

TABLE 6: Common infection prevention and control (IPC) practices in the ICU.

Component	*Key measures*	*Objective*
Hand hygiene	Alcohol rubs, soap and water	Interrupt transmission
Standard precautions	PPE, sharps safety	Protect patients and staff
Transmission precautions	Contact, droplet, airborne	Prevent cross-infection
Environmental hygiene	Surface and equipment cleaning	Reduce contamination
Surveillance	Monitoring HAI rates	Quality improvement

(PPE: Personal protective equipment; HAI: Healthcare-associated infections)

Strategies for Infection Prevention and Control in Intensive Care Unit

The IPC in ICUs is a multifaceted process requiring coordinated, evidence-based interventions across clinical, organizational, and behavioral domains.

- *Infection control team and leadership:* Effective IPC programs require a multidisciplinary team led by a capable program leader with strong organizational and interpersonal skills.
- *Surveillance of HAIs and alert organisms:* Continuous surveillance of HAIs is fundamental. At a minimum, ICU surveillance should include bloodstream infections and pneumonia. Automated real-time detection of MDROs, along with regularly updated ICU-specific cumulative antibiograms, supports timely interventions and informed antimicrobial choices.
- *Hand hygiene:* Hand hygiene **(Fig. 2)** remains the cornerstone of IPC. Enhanced performance feedback mechanisms are critical to improving and sustaining hand hygiene compliance among ICU staff.
- *Active screening strategies:* In ICUs with high MDRO prevalence, ASCs help anticipate invasive infections and guide targeted preventive and therapeutic strategies. Screening may be universal or targeted to high-risk groups and can also inform appropriate antimicrobial therapy.
- *Contact isolation practices:* The role of universal glove and gown use in ICUs is debated. Decisions should be individualized based on local epidemiology, patient risk, compliance with standard precautions, and available resources.

JAYPEE BROTHERS

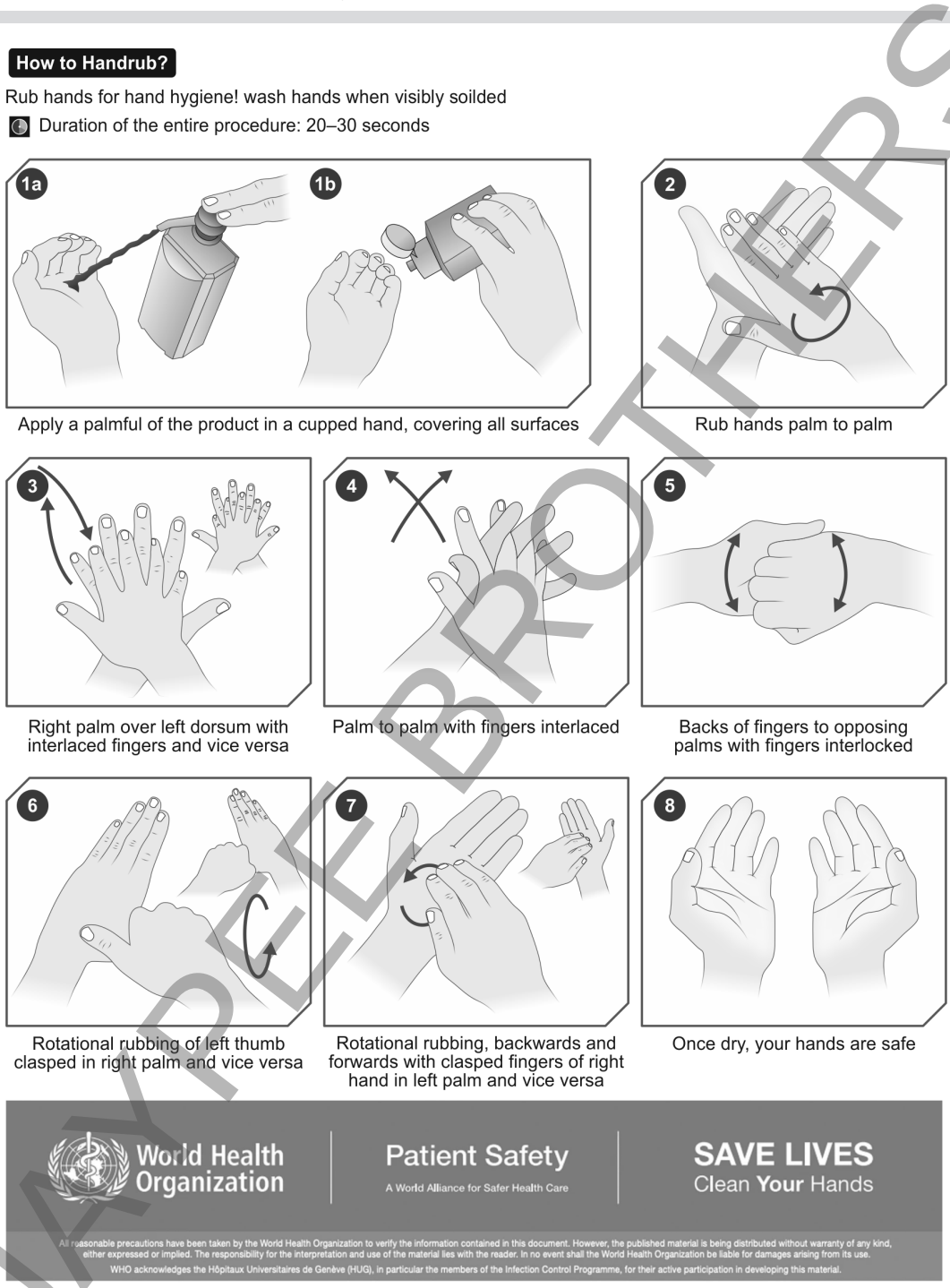


Fig. 2: Steps of hand rubbing.
Source: Adapted from WHO Technical document dated 4 May 2009.

JAYPEE BROTHERS

- *Decontamination strategies:* Universal daily bathing with 2% chlorhexidine can reduce HAIs due to both gram-positive and gram-negative MDROs. Targeted decolonization should be personalized according to patient risk factors such as immunosuppression, severity of illness, and microbiota status.
- *Environmental disinfection:* Enhanced routine cleaning with monitoring is preferred. No-touch disinfection technologies are best reserved for terminal or discharge cleaning to reduce staff workload and exposure.
- *Care bundles:* ICU care bundles, such as those for VAP, CLABSI, and CAUTI, integrate multiple evidence-based practices. Their success depends on high compliance and continuous feedback.
- *Education and training:* Healthcare simulation is particularly valuable in ICU settings for training technical and teamwork skills in a safe, high-fidelity environment.
- *Antimicrobial stewardship:* IPC and antimicrobial stewardship are interdependent. Coordinated, multidisciplinary collaboration is essential to prevent infections and preserve antibiotic effectiveness for the future.

SURVEILLANCE, ANTIMICROBIAL STEWARDSHIP, AND QUALITY IMPROVEMENT

Continuous surveillance of DAIs using standardized definitions is essential for benchmarking, outbreak detection, and quality improvement. Antimicrobial stewardship complements infection prevention by reducing selective pressure and antimicrobial resistance. The common modes of surveillance of various DAIs are shown in **Table 7**.

Table 8 shows common barriers to infection control practices in the ICU, their impact on patient outcomes, and corresponding solutions.

TABLE 7: Common surveillance definitions used for various DAIs in ICU.

Infection	*Denominator*	*Rate expressed as*
VAP	Ventilator days	per 1,000 ventilator days
CLABSI	Central line days	per 1,000 line days
CAUTI	Catheter days	per 1,000 catheter days

(CAUTI: catheter-associated urinary tract infection; CLABSI: central line-associated bloodstream infection; DAIs: device associated infections; ICU: intensive care unit; VAP: ventilator-associated pneumonia)

TABLE 8: Common barriers to infection control practices in intensive care unit (ICU) and solutions.

Barrier	*Impact*	*Solution*
Noncompliance	Higher infection rates	Education
High workload	Missed steps	Checklists
Limited resources	Inconsistent care	High-impact focus

TABLE 9: Monitoring indicators.

Indicator Type	*Examples*
Process indicator	Hand hygiene compliance
Structure indicator	Availability of hand rub dispensers
Outcome indicators	CLABSI/VAP/CAUTI rates

(CAUTI: catheter-associated urinary tract infection; CLABSI: central line-associated bloodstream infection; VAP: ventilator-associated pneumonia)

Table 9 shows key monitoring indicators in the ICU, including process, structure, and outcome indicators with relevant examples.

INFECTION CONTROL PRACTICES IN SPECIAL INTENSIVE CARE UNIT SETTINGS

The IPC strategies must be tailored for neonatal intensive care units (NICUs), pediatric intensive care units (PICUs), and low-resource ICUs due

JAYPEE BROTHERS

to differing host factors and infrastructure. NICU care emphasizes aseptic device handling, early catheter removal, safe skin antisepsis, breast-milk hygiene, cohorting, and antimicrobial stewardship for vulnerable preterm neonates. PICUs require age-appropriate devices, pediatric care bundles, and caregiver hand-hygiene education. In low-resource settings, HAIs can be reduced through low-cost measures: hand hygiene, staff training, aseptic practices, and rational antibiotic use.

FUTURE DIRECTIONS IN INFECTION PREVENTION

Future IPC advances combine technology with improved understanding of host-pathogen interactions. Antimicrobial-coated devices and biofilm-resistant biomaterials reduce DAIs. Real-time EHR-integrated surveillance enables early detection of HAIs and multidrug resistance, while artificial intelligence (AI) risk models identify high-risk patients, guide prevention, and support antimicrobial stewardship. However, benefits depend on proper implementation within strong IPC frameworks. These technologies must complement—not replace—core measures including hand hygiene, aseptic technique, environmental cleaning, and staff education, which remain fundamental to patient safety.

CONCLUSION

Device-associated infections remain a major yet largely preventable cause of morbidity and mortality in ICU patients. Strict adherence to infection control practices, implementation of evidence-based care bundles, timely removal of invasive devices, continuous surveillance, and antimicrobial stewardship are central to reducing infection rates. Establishing a culture of safety and accountability is essential for sustained improvement in patient outcomes.

SUGGESTED READING

1. CDC. (2011). Guidelines for the Prevention of Intravascular Catheter-Related Infections. [Online] Available from https://www.cdc.gov/infection-control/media/pdfs/Guideline-BSI-H.pdf [Last accessed July, 2026].
2. Klompas M, Branson R, Cawcutt K, Crist M, Eichenwald EC, Greene LR, et al. Strategies to prevent ventilator-associated pneumonia. Clin Infect Dis. 2014;58:1-11.
3. Magill SS, O'Leary E, Janelle SJ, Thompson DL, Dumyati G, Nadle J, et al. Emerging infections program hospital prevalence survey team. Changes in prevalence of healthcare-associated infections in U.S. hospitals. N Engl J Med. 2018;379:1732-44.
4. Medioli F, Franceschini E, Mussini C, Meschiari M. Update on infection prevention in the ICU. Curr Opin Crit Care. 2025;31(5):529-38.
5. Pronovost P, Needham D, Berenholtz S, Sinopoli D, Chu H, Cosgrove S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. N Engl J Med. 2006;355:2725-32.

JAYPEE BROTHERS

for detailed information on critical care books, visit our website www.ejaypee.com, for detailed information on critical care books, visit our website www.ejaypee.com, for detailed info

Safdarjung Manual of
Intensive Care

Salient Features

- Provides evidence-based, protocol-driven clinical guidelines for the comprehensive management of critically ill patients across diverse ICU settings
- Integrates current international recommendations with India-specific clinical realities, ensuring applicability in resource-variable environments
- Covers core and advanced critical care domains, including hemodynamic shock, respiratory failure, sepsis, neurocritical care, renal replacement therapies, and mechanical circulatory support
- Emphasizes pathophysiology-guided decision-making, linking bedside assessment to rational therapeutic strategies
- Features stepwise algorithms, flowcharts, and tables to facilitate rapid clinical application during emergencies
- Incorporates recent advances in critical care, including artificial intelligence-assisted monitoring, point-of-care ultrasound, and precision hemodynamic management
- Addresses complex clinical scenarios and special populations, including ECMO, organ donation, pregnancy, immunocompromised hosts, and end-of-life care
- Highlights practical ICU pearls, pitfalls, and evidence-based controversies, aiding exam preparation and real-world practice
- Includes structured learning elements, such as key points, clinical pathways, and guideline summaries, optimized for DM and DrNB trainees
- Serves as a single-reference resource combining scientific rigor with bedside relevance for intensivists, fellows, and practicing critical care specialists.

This book offers a comprehensive, evidence-based approach to contemporary critical care practice, integrating international guidelines with real-world clinical applicability. Designed for intensivists and postgraduate trainees, including DM and DrNB candidates, it addresses core and advanced domains of critical care through structured protocols, clinical algorithms, and practical bedside guidance. Emphasizing pathophysiology-driven decision-making, the text bridges foundational concepts with emerging technologies, complex clinical scenarios, and resource-sensitive strategies. Serving as both a learning tool and a point-of-care reference, this volume aims to enhance clinical competence, support examination preparation, and ultimately improve outcomes in critically ill patients.

Anirban Hom Choudhuri MD FICCM PGDMLE FIAMLE is a Senior Critical Care Physician, Teacher, Author, and Researcher. He currently serves as the Director Professor and Head, Department of Critical Care Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India. He has made significant contributions to the fields of critical care through teaching, training, and research. His areas of expertise include hemodynamic monitoring, sepsis management, organ support therapies, and multidisciplinary ICU care. A committed Educator, he actively mentors super-specialty trainees, fostering evidence-based practice and clinical excellence and has been honored with Sarvapalli Radhakrishnan distinguished Professor Award in 2021. He is widely acclaimed for his dedication to advancing critical care standards and improving outcomes for critically ill patients through scientific rigor and compassionate care. He has edited several books like *Imaging in Critical Care Medicine* (Taylor & Francis), *Interpreting Laboratory Tests in Intensive Care* (Taylor & Francis), and *Antibiotic Precision in Critical Illness* (Taylor & Francis).

Shelving Recommendation
CRITICAL CARE

ISBN 978-93-0952-023-5

Buy from ejaypee

JAYPEE BROTHERS

JAYPEE BROTHERS