

DIS100: Disinfection Practices for Intravenous Therapy

Study Guide

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Completion education. No accredited nursing contact hours awarded.

Course Description

Master skin antisepsis, antiseptic agent selection, hub and needleless-connector disinfection, and environmental cleaning standards including hand hygiene and glove selection, per INS 2024 and CDC guidance.

How to Use This Guide

This is a condensed, high-yield reference. Skim the key terms and the quick-reference tables, confirm you can explain each high-yield point, then read the section summaries to spot any gap. Return to the on-site lesson for full detail, and attempt the post-test cold. Passing score: 90%.

Key Terms at a Glance

Term	What it means
hands, skin, hub/connector, and environment	Each control point has its own agent, technique, and timing, and each depends on a principle that recurs throughout infection prevention: friction plus contact time plus complete drying equals disinfection.
Agent	use an alcohol-based hand rub when hands are not visibly soiled;
Clean (non-sterile) gloves	are appropriate for routine peripheral access and visual dressing assessment.
Sterile gloves	are required for central line dressing changes and for any procedure that requires aseptic manipulation of key parts.
Aseptic Non-Touch Technique (ANTT)	is the organizing discipline for all of this.
Preferred agent	greater than 0.5% chlorhexidine gluconate (CHG) in alcohol.
Alternatives	when CHG is contraindicated (allergy, or age/skin restrictions per manufacturer): povidone-iodine or 70% alcohol.
Technique	apply with friction using a back-and-forth scrubbing motion, then allow the antiseptic to

Term	What it means
Drying time	CHG/alcohol typically dries in about 30 seconds on dry skin;
Passive disinfection caps	(alcohol-impregnated port protectors) screw onto the connector between accesses.
The rushed scrub	a single quick swipe across the connector instead of deliberate friction across the entire surface and threads.
Accessing while wet	the most common single error, driven by impatience.
Recontaminating the prepped site	palpating a vein after skin antisepsis without re-prepping.
Touching key parts with gloved hands	steadying a septum or hub with a fingertip because the glove feels clean.

High-Yield Points

- **Objectives** By the end of this module, the learner will be able to: Describe the four disinfection control points in an IV administration system: hands, skin, hub/connector, and environment. Perform hand hygiene correctly and select clean versus sterile gloves for the task. Choose the appropriate skin antiseptic agent and apply it with correct technique and drying time. Perform “scrub the hub” disinfection before every access and describe passive disinfection caps. Apply Aseptic Non-Touch Technique (ANTT) by protecting key parts and key sites. Maintain a clean field and disinfect shared equipment, including ultrasound probes.
- **Clinical Pearl** Gloves create a false sense of security. The most common ANTT failure is touching a key part — steadying a connector septum with a gloved fingertip, for example — because the glove feels protective. The glove protects the clinician, not the key part. Train yourself to identify key parts before you begin and to keep every finger off them throughout.
- **Caution** A wet antiseptic has not finished working. Inserting or applying a dressing while the prep is still wet not only skips the antimicrobial contact time but can trap the liquid antiseptic against the skin, contributing to chemical irritation and, with CHG in neonates and fragile skin, potential skin injury. Let it dry — every time, completely.
- **Clinical Pearl** Notice the shared logic across all four control points: an appropriate agent, mechanical friction, adequate contact time, and complete drying. When you teach or audit disinfection, checking those four elements at each control point is a faster and more reliable review than memorizing separate rules for each surface.
- **Key Take-aways** Four control points break the chain of infection: hands, skin, hub/connector, and environment. Hand hygiene before and after every contact; alcohol rub unless hands are visibly soiled. Gloves never replace hand hygiene. Greater than 0.5% CHG in alcohol is the preferred skin antiseptic; apply with friction and let it air dry completely. Scrub the hub with friction before EVERY access and let it dry; passive disinfection caps protect between accesses. ANTT protects key parts and key sites — never touch them, even with gloved hands. Drying time is part of disinfection: a wet surface is not a disinfected surface.

Quick-Reference Tables

Agent	Role	Approx. drying/contact time
>0.5% CHG in alcohol	Preferred for insertion and dressing changes	~30 seconds
Povidone-iodine	Alternative when CHG contraindicated	~1.5–2 minutes
70% alcohol	Alternative / hub disinfection	Allow to dry fully

Control point	Primary practice	Timing
Hands	Alcohol rub or soap and water; ANTT	Before and after every contact
Skin	>0.5% CHG in alcohol, friction, air dry	At insertion and every dressing change
Hub / connector	Scrub with friction; allow to dry	Before every access
Environment	Clean field; EPA-registered disinfectant	Before procedure; between patients

Section-by-Section Summary

The key idea of each lesson section, condensed to the essentials. Use it to review fast and spot any gap before the post-test.

Disinfection Practices for Intravenous Therapy

DIS100 · ~1 hour · Completion education · Aligned to the INS Infusion Therapy Standards of Practice, 9th edition (2024) and CDC guidance

The Chain of Infection Starts at the Surface

Most catheter-associated bloodstream infections are preventable. The organisms responsible almost always travel from a small number of predictable sources: the patient's own skin flora, the clinician's hands, the catheter hub and needleless connector, and contaminated equipment or surfaces.

This module is organized around the four control points of an IV administration system: hands, skin, hub/connector, and environment. Each control point has its own agent, technique, and timing, and each depends on a principle that recurs throughout infection prevention: friction plus contact time plus complete drying equals disinfection.

Key Point Disinfection is not a single act but a chain of four: clean hands, antiseptic skin, a scrubbed hub, and a clean environment. A break at any link can result in a bloodstream infection, so every link is treated as essential.

Control Point 1: Hand Hygiene and Glove Selection

Hand hygiene is the foundational infection-prevention practice and the most important single behavior for preventing healthcare-associated infection. It is performed before and after any catheter contact — before insertion, before and after accessing, before and after dressing changes, and before and after glove use.

- Agent: use an alcohol-based hand rub when hands are not visibly soiled; use soap and water when hands are visibly soiled or after contact with body fluids. Alcohol-based rub is faster, more effective against most organisms, and better tolerated by skin.
- Gloves do not replace hand hygiene. Perform hand hygiene before donning gloves and again after removing them. Gloves can have micro-perforations and hands are contaminated during removal, so hygiene remains mandatory.
- Clean (non-sterile) gloves are appropriate for routine peripheral access and visual dressing assessment.
- Sterile gloves are required for central line dressing changes and for any procedure that requires aseptic manipulation of key parts.

Aseptic Non-Touch Technique (ANTT) is the organizing discipline for all of this. ANTT requires the clinician to identify the key parts (the sterile-critical components such as the syringe tip, connector septum, and catheter hub) and the key sites (the insertion site and prepared skin), and to never touch them — even with gloved hands.

Control Point 2: Skin Antisepsis

The patient's skin is the most common source of the organisms that cause catheter-related infection, so skin antisepsis before insertion and at every dressing change is critical.

- Preferred agent: greater than 0.5% chlorhexidine gluconate (CHG) in alcohol. The combination gives CHG's broad, persistent antimicrobial activity plus alcohol's rapid kill, and it is the CDC- and INS-preferred agent for skin preparation.

- Alternatives when CHG is contraindicated (allergy, or age/skin restrictions per manufacturer): povidone-iodine or 70% alcohol.
- Technique: apply with friction using a back-and-forth scrubbing motion, then allow the antiseptic to fully air dry. Do not fan, blot, or wipe it dry — the drying interval is part of the antiseptic's mechanism of action.
- Drying time: CHG/alcohol typically dries in about 30 seconds on dry skin; povidone-iodine requires roughly 1.5 to 2 minutes of contact and drying time to achieve its effect.
- Do not palpate the prepped site after antisepsis unless you re-prep or use sterile technique; touching the site recontaminates it.

Control Point 3: Hub and Connector Disinfection (Scrub the Hub)

The needleless connector and catheter hub are handled at every access, which makes them a leading route for intraluminal contamination and bloodstream infection. “Scrub the hub” is the practice that closes this route, and it is performed before every access — for each flush, each medication, and each administration-set connection, with no exceptions.

- Scrub the connector surface with mechanical friction using an alcohol or CHG/alcohol pad for the time specified by your product, commonly about 15 seconds.
- Then allow the connector to dry completely before accessing it. A wet connector is not a disinfected connector.
- Passive disinfection caps (alcohol-impregnated port protectors) screw onto the connector between accesses. They provide continuous disinfection during the dwell and reduce contamination, and they remove the need to scrub at the moment of access only when applied and left in place per the product instructions and facility policy.
- Friction matters as much as the agent. A quick single wipe does not generate the mechanical action needed to remove biofilm precursors from the ridged connector surface.

Remember The two failure modes of scrubbing the hub are too little friction and too little drying. Scrub with intent across the entire surface and the threads, then give it the seconds it needs to dry.

Control Point 4: Environmental Cleaning and Equipment

The immediate environment and shared equipment are the fourth control point. Even flawless hand, skin, and hub practice can be undone by a contaminated work surface or a shared device that was not cleaned between patients.

- Establish a clean field before beginning. Disinfect the work surface and any shared equipment — infusion pumps, ultrasound machines, procedure trays — per facility protocol using an EPA-registered disinfectant with the correct contact (wet) time.
- For ultrasound-guided access, use sterile gel and a sterile probe cover, and disinfect the probe between patients. The probe contacts the sterile field and is a recognized transmission route if not managed.
- Single-patient-use supplies are never shared between patients. Discard opened single-use items and manage multi-dose vials strictly per policy, including dating on opening.
- Maintain the integrity of sterile packaging and the sterile field throughout the procedure; a compromised package or a field breached by reaching across it is no longer sterile.

Common Disinfection Failures and How to Prevent Them

Most disinfection breaches in real practice are not knowledge gaps; they are shortcuts taken under time pressure. Recognizing the predictable failure patterns is the fastest route to reliable technique.

- The rushed scrub: a single quick swipe across the connector instead of deliberate friction across the entire surface and threads. The correction is to scrub with intent for the product-specified duration, treating the connector like a surface that must be mechanically cleaned, not merely touched with alcohol.
- Accessing while wet: the most common single error, driven by impatience. Wet alcohol has not finished its antimicrobial work, and accessing a wet surface drives contamination inward. The correction is to build the drying pause into the workflow rather than treating it as dead time.
- Recontaminating the prepped site: palpating a vein after skin antisepsis without re-prepping. The correction is to palpate before antisepsis, or to re-prep and use sterile technique if the site must be touched again.
- Touching key parts with gloved hands: steadying a septum or hub with a fingertip because the glove feels clean. The correction is to identify key parts before starting and to keep every finger clear throughout.
- Skipping hand hygiene around gloves: assuming gloves make hand hygiene optional. The correction is a fixed habit of hygiene both before donning and after removing gloves.

Remember When you audit yourself or a colleague, watch for the pause. The presence of a genuine drying pause after skin antisepsis and after scrubbing the hub is the single most reliable outward sign that disinfection is being done correctly, because it is the step most often sacrificed to save seconds.

Special Populations and Skin Integrity

Antiseptic selection and technique are adjusted for patients whose skin or physiology changes the risk calculus. The general preference for greater than 0.5% CHG in alcohol holds broadly, but several situations demand attention to the manufacturer instructions and facility policy.

- Neonates and premature infants: immature skin absorbs antiseptics more readily and is more prone to chemical burns and irritation. CHG use in the very young is governed by manufacturer age and weight restrictions and by facility policy; when CHG is not appropriate, an alternative agent is selected and excess antiseptic is not left pooling against the skin.
- Fragile or compromised skin: in older adults, patients on long-term steroids, or those with dermatologic conditions, the same principle of complete drying without pooling protects against skin injury while still achieving antisepsis.
- Known sensitivity or allergy: a documented CHG or iodine reaction requires an alternative agent; the reaction and the substitution are documented and communicated.

Across all of these populations, the discipline is the same: choose the agent the evidence and the product labeling support for that patient, apply it with friction, and let it dry completely without leaving it to pool against vulnerable skin.

Documentation, Bundles, and Audit

Disinfection practice is only as strong as the system that sustains it. Individual technique is reinforced by care bundles, standardized documentation, and honest audit.

- Document the antiseptic agent used, hand hygiene and aseptic technique, dressing type and condition, and the site assessment at each contact.
- Bundle the practices: hand hygiene, skin antisepsis, maximal barrier precautions at insertion, daily review of line necessity, and scrub-the-hub at every access.
- Audit with direct observation. Because the most common failures are behavioral (the missing pause, the touched key part), they are visible only when someone watches practice in real time, not in the chart.

Reference Infusion Nurses Society. Infusion Therapy Standards of Practice , 9th edition.

Concepts Tested on the Post-Test

Each item is a topic the post-test probes. Exact wording may differ; the underlying concept is what you must be able to reason through. If any feels unfamiliar, revisit that section above.

1. The preferred skin antiseptic for VAD insertion and dressing changes is:
2. After applying skin antiseptic you should:
3. How often should the needleless connector/hub be disinfected?
4. Do gloves replace hand hygiene?
5. Which procedure requires STERILE gloves?
6. 'Scrub the hub' technique requires:
7. Aseptic Non-Touch Technique (ANTT) means:
8. Povidone-iodine differs from CHG/alcohol mainly in that it:
9. Passive disinfection caps (port protectors) work by:
10. For ultrasound-guided access, infection prevention includes:
11. Hand hygiene with alcohol-based rub is appropriate when:
12. A connector that is still wet with antiseptic at the moment of access is:
13. The four disinfection control points in an IV administration system are:
14. The recurring principle shared by all four control points is:
15. When are soap and water preferred over alcohol-based hand rub?

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