Topical skin drug application

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Revised: May 19, 2025

Introduction

Topical medications are applied directly to the skin surface or mucous membranes. These medications include lotions, pastes, ointments, creams, gels, powders, shampoos, and aerosol sprays. Absorption occurs through the epidermal layer into the dermis.[1][2] The extent of absorption depends on the vascularity of the region. Nitroglycerin, fentaNYL, nicotine, and certain supplemental hormone replacements cause systemic effects. Most other topical medications cause local effects. Ointments have a fatty base, which is an ideal vehicle for drugs such as antimicrobials and antiseptics. Application of topical medications should typically occur two or three times per day to achieve their therapeutic effect.

Equipment

- Gloves
- Patient's medication administration record
- Prescribed medication
- Optional: adhesive tape, comb or brush, fine-toothed comb (for nits), other personal protective equipment, soap, sterile gauze, terry-cloth slippers, towel, transparent semipermeable dressing, washcloth, water, white cotton gloves

Preparation of Equipment

Inspect all equipment and supplies. If a product is expired, is defective, or has compromised integrity, remove it from patient use, label it as expired or defective, and report the expiration or defect as directed by your facility.

Implementation

- Avoid distractions and interruptions when preparing and administering the medication *to prevent medication errors.*[3][4]
- Verify the practitioner's order.[5][6][7][8]
- Reconcile the patient’s medications at each care transition and when the practitioner prescribes a new medication *to reduce the risk of medication errors, including omissions, duplications, dosing errors, and drug interactions.*[9][10]
- Compare the medication label to the order in the patient's medical record.[5][6][7][8]
- Check the patient's medical record for an allergy or contraindication to the prescribed medication. If an allergy or contraindication exists, don't administer the medication, and notify the practitioner.[5][6][7][8]
- Check the expiration date on the medication. If the medication is expired, return it to the pharmacy and obtain new medication.[5][6][7][8]

- Visually inspect the medication for loss of integrity. Don't administer the medication if its integrity is compromised.[5][6][7][8]
- Discuss any unresolved concerns about the medication with the patient's practitioner.[5][6][7][8]
- Perform hand hygiene.[11][12][13][14][15][16]
- Confirm the patient's identity using at least two patient identifiers.[17]
- Provide privacy.[18][19][20][21]
- Explain the procedure to the patient and family (if appropriate) according to their individual communication and learning needs *to increase their understanding, allay their fears, and enhance cooperation.*[22] Answer any questions.
- If the patient is receiving the medication for the first time, teach the patient and family (if appropriate) about potential adverse effects and discuss other concerns related to the medication.[5][6][7][8]
- Verify that you're administering the medication at the proper time, in the prescribed dose, and by the correct route *to reduce the risk of medication errors.*[5][6][7][8]
- If your facility uses bar-code technology, use it as directed by your facility.
- Perform hand hygiene.[11][12][13][14][15][16]

◆ ***Clinical alert:*** If your facility's hazardous drug list contains the drug you're about to administer, put on personal protective equipment as directed.[23] ◆

- Put on gloves and, as needed, other personal protective equipment *to comply with standard precautions and prevent medication absorption through your skin.*[24][25][26]
- Help the patient assume a comfortable position that provides access to the area to be treated.
- Expose the area to be treated. Make sure that the skin or mucous membrane is intact (unless the practitioner has ordered the medication to treat a skin lesion, such as an ulcer). *Applying medication to broken or abraded skin can cause unwanted systemic absorption and result in further irritation.*
- If necessary, clean the skin of debris, including crusts and epidermal scales, with mild soap and water and a washcloth. Blot gently with a towel.
- Remove medication from the skin, if it remains from a previous dose, *to prevent skin irritation from medication accumulation.*
- Change your gloves if they become soiled. Perform hand hygiene before putting on the new pair of gloves.[11][12][13][14][15][16][25]

Applying paste, cream, gel, or ointment

- Open the container. Place the lid or cap upside down *to prevent contamination of the inside surface.*
- Apply the medication to the affected area with long, smooth strokes that follow the direction of hair growth (as shown below). *This technique avoids forcing medication into hair follicles, which can cause irritation and lead to folliculitis.* Avoid excessive pressure when applying the medication *because excessive pressure could abrade the skin.* Alternatively, follow the manufacturer's instructions or practitioner's order.

Applying other topical medications

- To apply shampoos, follow package directions. (See *Using medicated shampoos*.)

USING MEDICATED SHAMPOOS

Medicated shampoos include keratolytic and cytostatic agents and coal tar preparations. They can help treat such conditions as dandruff, psoriasis, and head lice.

Contraindications, adverse effects, warnings, precautions, and application instructions may vary depending on the specific medicated shampoo that you're using. Check the label on the shampoo before starting the procedure.[27] [28] [29]

To apply a medicated shampoo, follow these steps:

- Perform hand hygiene.[11] [12] [13] [14] [15] [16]
- Put on gloves and, as needed, other personal protective equipment *to comply with standard precautions*.[25] [26]
- Prepare the patient for shampoo treatment.
- Shake the shampoo bottle well *to mix the solution evenly.*
- Wet the patient's hair thoroughly and wring out excess water.
- Apply the proper amount of shampoo as directed on the label.
- Work the shampoo into a lather, adding water, as necessary. Part the hair and work the shampoo into the scalp, taking care not to use your fingernails.
- Leave the shampoo on the scalp and hair for as long as instructed (usually 5 to 10 minutes). Then rinse the hair thoroughly.
- Towel-dry the patient's hair.
- After the hair is dry, comb or brush it. Use a fine-tooth comb to remove nits, if necessary.
- Remove and discard your gloves and, if worn, other personal protective equipment.[24]
- Perform hand hygiene.[11] [12] [13] [14] [15] [16]

- To apply aerosol sprays:
  - Shake the container, if indicated, *to mix the medication completely.*
  - Hold the container 6" to 12" (15 to 30 cm) from the skin or follow the manufacturer's recommendation.
  - Spray a thin film of medication evenly over the treatment area, away from the patient's face, *to prevent direct inhalation of the spray.*
- To apply powders:
  - Dry the skin surface, being sure to include skinfolds where moisture collects.
  - Apply a thin layer of powder over the treatment area. Apply it away from the patient's face *to prevent direct inhalation of the powder.*
- *To protect applied medications from coming in contact with others or from soiling the patient's clothes,* tape sterile gauze or apply a transparent semipermeable dressing over the treatment area, if appropriate. Note that, with certain medications (such as topical steroids), applying a semipermeable dressing over the treatment area may be contraindicated. Check the medication's prescribing information and cautions. If you're applying a topical medication to the patient's hands or feet, cover the site with white cotton gloves for the hands or terry-cloth slippers for the feet, if appropriate.

Completing the procedure

- Monitor the patient's skin for adverse effects of the medication, such as irritation, an allergic reaction, or skin breakdown.
- Discard used supplies and dressings in appropriate receptacles.[24]
- Remove and discard your gloves and, if worn, other personal protective equipment.[24]
- Perform hand hygiene.[11] [12] [13] [14] [15] [16]
- Document the procedure.[30] [31] [32] [33]

Special Considerations

- Don't apply ointments to mucous membranes as liberally as you would to skin, *because mucous membranes are usually moist and absorb ointment more quickly than skin.*
- Never apply ointment to the eyelids or ear canal unless ordered. *The ointment may congeal and occlude the tear duct or ear canal.*

Patient Teaching

If the patient will apply the medication at home, teach how to apply and remove it. To ensure understanding, ask for a return demonstration. Also teach the patient and family (if appropriate) about the medication's potential adverse effects.

Complications

Complications associated with topical skin drug application may include:

- skin irritation
  - rash
  - allergic reaction
- systemic reactions related to the administered medication.[27] [28]

Documentation

Documentation associated with topical skin drug application includes:

- medication administered
  - medication name
  - medication strength
  - dose
  - route of administration
  - date and time of administration
  - site of administration
- skin's appearance and integrity before administration
- adverse reactions
  - name of practitioner notified
  - date and time of practitioner notification
  - prescribed interventions
  - response to those interventions[34]
- response to and tolerance of therapy
- teaching provided to the patient and family (if applicable)
  - understanding of that teaching
  - follow-up teaching needed.

This procedure has been reviewed by the Academy of Medical-Surgical Nurses.

AMSN Academy of Medical-Surgical Nurses

Related Procedures

- Scabies treatment
- Scabies treatment, pediatric
- Topical skin drug administration, home care
- Topical skin drug application, pediatric

Related UpToDate Patient Teaching Handouts

- How to use topical medicines
- Topical corticosteroid medicines

References

(Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions)

1. Institute for Quality and Efficiency in Health Care. (2021). *Using medication: Topical medications*. Retrieved April 2025 from https://www.informedhealth.org/topical-medications.html
2. Craven, R. F., et al. (2021). *Fundamentals of nursing: Concepts and competencies for practice* (9th ed.). Wolters Kluwer.
3. Westbrook, J., et al. (2010). Association of interruptions with an increased risk and severity of medication administration errors. *Archives of Internal Medicine, 170*(8), 683–690. Retrieved April 2025 from https://doi.org/10.1001/archinternmed.2010.65 (Level IV) Abstract | Complete Reference
4. Institute for Safe Medication Practices. (2012). Side tracks on the safety express: Interruptions lead to errors and unfinished…Wait, what was I doing? *Nurse Advise-ERR, 11*(2), 1–4. Retrieved April 2025 from https://www.medscape.com/viewarticle/778966
5. Accreditation Commission for Health Care. (2023). Standard 16.01.03. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals.* (Level VII)
6. Centers for Medicare and Medicaid Services. (2024). Condition of participation: Nursing services. 42 C.F.R. § 482.23(c).

7. DNV GL-Healthcare USA, Inc. (2024). MM.1.SR.3. *NIAHO® accreditation requirements, interpretive guidelines and surveyor guidance – revision 24.* (Level VII)
8. The Joint Commission. (2025). Standard MM.06.01.01. *Comprehensive accreditation manual for hospitals.* (Level VII)
9. Accreditation Commission for Health Care. (2023). Standard 25.02.03. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals*. (Level VII)
10. The Joint Commission. (2025). Standard NPSG.03.06.01. *Comprehensive accreditation manual for hospitals*. (Level VII)
11. The Joint Commission. (2025). Standard NPSG.07.01.01. *Comprehensive accreditation manual for hospitals.* (Level VII)
12. Centers for Disease Control and Prevention. (2002). Guideline for hand hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *MMWR Recommendations and Reports, 51*(RR-16), 1–45. Retrieved April 2025 from https://www.cdc.gov/mmwr/pdf/rr/rr5116.pdf (Level VII)
13. World Health Organization (WHO). (2009). *WHO guidelines on hand hygiene in health care: First global patient safety challenge, clean care is safer care*. Retrieved April 2025 from https://iris.who.int/bitstream/handle/10665/44102/9789241597906_eng.pdf?sequence=1 (Level VII)
14. Accreditation Commission for Health Care. (2023). Standard 07.02.05. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals.* (Level VII)
15. Centers for Medicare and Medicaid Services. (2024). Condition of participation: Infection prevention and control and antibiotic stewardship programs. 42 C.F.R. § 482.42.
16. DNV GL-Healthcare USA, Inc. (2024). IC.1.SR.3f. *NIAHO® accreditation requirements, interpretive guidelines and surveyor guidance – revision 23-1.* (Level VII)
17. The Joint Commission. (2025). Standard NPSG.01.01.01. *Comprehensive accreditation manual for hospitals.* (Level VII)
18. Centers for Medicare and Medicaid Services. (2024). Condition of participation: Patient's rights. 42 C.F.R. § 482.13(c)(1).
19. Accreditation Commission for Health Care. (2023). Standard 15.01.16. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals.* (Level VII)
20. DNV GL-Healthcare USA, Inc. (2024). PR.2.SR.5. *NIAHO® accreditation requirements, interpretive guidelines and surveyor guidance – revision 24.* (Level VII)
21. The Joint Commission. (2025). Standard RI.01.01.01. *Comprehensive accreditation manual for hospitals.* (Level VII)
22. The Joint Commission. (2025). Standard PC.02.01.21. *Comprehensive accreditation manual for hospitals.* (Level VII)
23. The United States Pharmacopeial Convention (USP). (2020). *USP general chapter <800> hazardous drugs: Handling in healthcare settings*. Retrieved April 2025 from https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare
24. Occupational Safety and Health Administration. (2019). *Bloodborne pathogens, standard number 1910.1030*. Retrieved April 2025 from https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030 (Level VII)
25. Siegel, J. D., et al. (2007, revised 2024). *2007 guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings*. Retrieved April 2025 from https://www.cdc.gov/infection-control/media/pdfs/Guideline-Isolation-H.pdf (Level VII)
26. Accreditation Commission for Health Care. (2023). Standard 07.02.04. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals.* (Level VII)
27. Hanes, E. (2021). *Medicated shampoos: Why they're used and how they work*. Retrieved April 2025 from https://www.healthgrades.com/right-care/skin-hair-and-nails/medicated-shampoos-why-theyre-used-and-how-they-work

28. Cunha, J. P. (2021). *Coal tar shampoo*. Retrieved April 2025 from https://www.rxlist.com/coal_tar_shampoo/generic-drug.htm
29. Centers for Disease Control and Prevention. (2024). *Treatment of head lice*. Retrieved April 2025 from https://www.cdc.gov/lice/treatment/?CDC_AAref_Val=https://www.cdc.gov/parasites/lice/head/treatment.html
30. The Joint Commission. (2025). Standard RC.01.03.01. *Comprehensive accreditation manual for hospitals.* (Level VII)
31. Accreditation Commission for Health Care. (2023). Standard 10.00.03. *Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals.* (Level VII)
32. Centers for Medicare and Medicaid Services. (2024). Condition of participation: Medical record services. 42 C.F.R. § 482.24(b).
33. DNV GL-Healthcare USA, Inc. (2024). MR.2.SR.1. *NIAHO® accreditation requirements, interpretive guidelines and surveyor guidance – revision 24.* (Level VII)
34. The Joint Commission. (2025). Standard RC.02.01.01. *Comprehensive accreditation manual for hospitals*. (Level VII)

Additional References

- Stacey, S. K., & McEleney, M. (2021). Topical corticosteroids: Choice and application. *American Family Physician, 103*(6), 337–343. Retrieved April 2025 from https://www.aafp.org/pubs/afp/issues/2021/0315/p337.html

Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions

The following leveling system is adapted from *Evidence-Based practice in nursing & healthcare: A guide to best practice,* Fifth edition, by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt (2023).

Level I	Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)
Level II	Evidence from well-designed single RCTs (experimental)
Level III	Evidence from well-designed nonrandomized controlled trials (quasi-experimental), systematic reviews of a complete body of evidence, and intervention studies using mixed methods
Level IV	Evidence from well-designed case-control and cohort studies (observational)
Level V	Evidence from systematic reviews of qualitative and descriptive studies
Level VI	Evidence from single descriptive and qualitative studies, evidence-based practice implementation, and quality improvement projects
Level VII	Evidence from expert opinion, expert committee reports, and literature reviews

Data from Gyatt, G., & Rennie D. (2002). Users' guides to the medical literature. American Medical Association; Harris, R. P., et al. (2001). Current methods of the U.S. Preventative Services Task Force: A review of the process. American Journal of Preventative Medicine, 20, 21-35.