

Science Education Collection

Preparing and Administering Topical Medications

URL: <https://www.jove.com/science-education/10259>

Overview

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Topical medications are applied directly to the body surfaces, including the skin and mucous membranes of the eyes, ears, nose, vagina, and rectum. There are many classes of topical medications, such as creams, ointments, lotions, patches, and aerosol sprays. Medications that are applied to the skin to produce slow, controlled, systemic effect are also referred to as transdermal. Transdermal absorption can be altered if lesions, burns, or breakdowns are present at the application site. Many transdermal medications are delivered via adhesive patch to achieve the slow, controlled, systemic effect. The patch should be applied to clean and hairless skin areas that do not undergo excessive movement, such as the back of the shoulder or thigh. Other topical creams or eye ointments should be applied according to the packaging and manufacturer instructions using an application device. When instilling eardrop medications, never occlude the ear canal, as this may increase pressure and rupture the ear drum.

Medications that can be administered via a topical route include antibiotics, narcotics, hormones, and even chemotherapeutics. This requires adherence to the five "rights" of medication administration and three checks during the administration process to ensure the safe administration of these medications. Also, the administration of the topical medications requires wearing gloves to protect the healthcare provider from accidental exposure and absorption of the medication. Topical medications should never be applied with the bare hands. This video will demonstrate techniques of the safe administration of topical medications, including transdermal patch (skin), optical (eye), and otic (ear) application, within the context of the standards of safe medication practices.

Procedure

1. General medication administration considerations.

1. In the patient's room, review the patient's medical history for medication allergies and previous administration times in the electronic Medication Administration Record (MAR).
2. Confirm any patient preferences regarding topical transdermal patch administration, such as preferred site of application, any previous side effects, and previous applications of transdermal patches. Address any patient concerns prior to acquiring and preparing the medication.
3. Disinfect the hands by washing with soap and warm water, or by using a hand sanitizer if the hands are not visibly soiled; apply vigorous friction for at least 20 s. From this point on, you must maintain a distraction/disruption-free environment to prevent medication errors while dispensing and administering medications.
4. Acquire the topical medications from the medication dispensing device, using the five "rights" during the first safety check, as indicated in the "Safety Checks and Five Rights of Medication Administration" video.

2. Complete the second safety check using the five "rights" of medication administration.

1. Complete the "Right Patient" for the second safety check by confirming that you have acquired topical transdermal, optic, and/or otic medications for the right patient on the MAR.
2. Compare the medication names listed on the label with the medication names listed on the MAR. At this point, the "Right Medication" step is complete.
3. Complete the "Right Dose" step by comparing the topical dose/concentrations listed on the label with the dose/concentrations listed on the MAR. Some prescriptions specify the exact amount to be applied, and these are generally supplied as single-dose applications in a patch form. If the medication is in an ointment tube, such as nitroglycerin, the MAR will describe the amount to be applied (e.g., "squeeze out one inch of medication"). The medication will be secured to the skin with an occlusive dressing to allow for gradual absorption.
4. Verify that the medication routes listed on the label are consistent with the routes listed on the MAR. At this point, the "Right Route" step is complete.
 1. Some topical medications are available in different concentrations, depending upon the location to which they are to be applied. It is your responsibility to verify that the concentration of the topical medication provided is appropriate for the location specified in the prescription.
5. Review the MAR to confirm that it is the right time for administration. At this point, the "Right Time" step is complete.

3. Gather the necessary supplies, such as clean gloves and sterile gauze for cleaning. Additional supplies, like cottons balls, sterile swabs, or occlusive dressing may be necessary in certain cases. Cotton balls may be needed for eardrop administration. Topical antibiotic medications should be applied using swabs to prevent cross-contamination of

the application site with environmental contaminants. Occlusive dressing is necessary for the application of ointment, such as nitroglycerin.

1. Review information regarding the proper application of topical medications with a nursing drug guide and institutional policies. Topical steroidal creams should be applied using gloves to prevent the accidental absorption of hormones into your skin.
2. Take the medications and supplies with you to the patient's room. Upon entering the patient's room, perform hand hygiene, as described previously.

4. Complete the third safety check using the five "rights" of medication administration. Refer to the "Safety Checks and Five Rights of Medication Administration" video.

1. Verify that the patient is wearing the correct name band by asking him/her to state his/her name and date of birth. Compare this information with that provided on the name band.
2. Compare the patient's name and medical record number (MRN) from the name band with the patient identifiers provided on the MAR. At this point the, "Right Patient" step for the third safety check is complete.
3. Compare the topical medication names listed on the label with the medication names listed on the MAR. At this point, the "Right Medication" step is complete.
4. Compare the topical medication dose/concentrations listed on the label with those listed on the MAR. At this point, the "Right Dose" step is complete.
5. Compare the medication routes listed on the label with the medication routes and application sites listed on the MAR.
6. Review the MAR to confirm that it is the right time for administering the medications. At this point, the "Right Time" step is complete.

5. Teach the patient about the topical medication.

1. Tell the patient the medication name, indication, and action.
2. Review with the patient any side effects or adverse effects associated with the medications.
3. Discuss any patient concerns regarding the medications and address them prior to administering the medications. Should the patient refuse the medication, ensure that he/she is aware of the potential physiological/psychological impact of the refusal on his/her health and recovery.

6. Administer the topical transdermal patch medication.

1. Inform the patient that application of the topical transdermal patch medication will require exposing the application site. Ensure the patient's privacy and dignity by covering intimate body sites as much as possible with a blanket or towel during administration.
2. Before administration, again wash hands with soap and warm water, applying vigorous friction for at least 20 s. Put on clean gloves.
3. In the case of transdermal patch application, determine the last site of administration. Carefully remove the previously applied patch and clean the skin of any remaining medication.
4. Expose the application site and, if necessary, clean the site according to institutional policy and standards of nursing practice.
5. Wash hands with soap and warm water, applying vigorous friction for at least 20 s. Put on clean gloves.
6. Apply the topical transdermal patch medication according to instructions provided on the MAR, institutional policy, and/or nursing drug guide.
 1. Apply the new patch by carefully removing the outer packaging, removing the clear protective liner, and placing it in an area free of hair and that undergoes little movement.
 2. If using ointment topical medication, such as nitroglycerin, squeeze out the appropriate amount of topical percutaneous medication onto a measurement and application device.
 3. Apply clear, occlusive dressing over the ointment application device, securing it to the skin. Never rub or massage ointment into the skin, as this may increase the absorption rate.
7. Label the transdermal patch medication with the initials, time, and date of application using an indelible marker.
8. Wash the hands with soap and warm water, applying vigorous friction for at least 20 s.

7. Administering ophthalmic (eye) medication.

1. Describe the application process and ensure patient privacy, as described in step 6.1.
2. Wash hands and don clean gloves, as described in step 6.2.
3. Assist the patient to lie back, with the head tilted and neck extended. If neck injuries are present, do not extend the neck.
4. Assess the eyelids and inner canthus for crusts or drainage. If drainage or crusts are present, gently cleanse the area with normal saline and gauze pads.
5. Administering ophthalmic (eye) drops.
 1. While holding the eyedrop medication in the dominant hand, gently rest the heel of the hand on the patient's forehead. Hold the medication approximately 1-2 cm above the lower lid.
 2. With the non-dominant hand, gently pull the lower lid down to expose the conjunctival sac. Ask the patient to look up towards the ceiling. A cotton ball or tissue may be used to hold the lower lid down.
 3. Point the tip of the medication bottle towards the conjunctival sac, keeping it 1-2 cm above the eye. Allow the prescribed number of drops to fall into the conjunctival sac. If drips do not fall with gravity, you may need to gently squeeze the medication bottle. Never allow the tip of the bottle to touch the conjunctival sac or eye. If drops fall outside the lid or the patient blinks, causing a drop to miss the eye, repeat the procedure.

4. Release the lower eyelid and ask the patient to gently close his/her eyes.
6. Administering ophthalmic (eye) ointment.
 1. Again, rest the heel of the dominant hand on patient forehead while holding the ointment medication 1-2 cm above the lower lid.
 2. With the non-dominant hand, gently expose the inner conjunctiva of the lower lid using a fingertip or a cotton ball.
 3. Gently squeeze a thin line of ointment medication along the inner conjunctiva, from inner canthus to the outer canthus. Make sure to break the ribbon of ointment by turning the hand before lifting away, as the medication may otherwise pull away from the conjunctiva.
 4. Release the lower eyelid and ask the patient to blink and gently rub the eyelid to disperse the medication.
7. Remove the gloves and complete hand hygiene.

8. Administering otic (ear) drops

1. Patient education on the administration procedure and hand hygiene with glove application should be completed as described in steps 6.1 and 6.2. The patient may experience a feeling of water or hear bubbling in the ear as the medication is administered.
2. Ask the patient to lie on his/her side, with the affected ear (*i.e.*, the ear that requires medication administration) towards the ceiling.
3. Gently roll the medication between both hands for 10-20 s to both re-suspend particles and to warm the medication prior to administration. Cold ear medications may cause dizziness or nausea when administered.
4. Using the non-dominant hand, gently pull the ear auricle up and outward to straighten the ear canal. For children 3 years old and younger, grasp the pinna and pull down and back to straighten the canal.
5. Hold the medication bottle with the dominant hand approximately 1 cm above the ear canal and instill the prescribed number of drops. Never allow the tip of the medication bottle to touch the ear or the ear canal.
6. Release the ear and gently place the medication bottle on the bedside table.
7. To ensure medication application down the ear canal, gently rub the tragus and/or gently tug the ear pinna.
8. Ask the patient to remain on his/her side for 2-3 min to aid in medication absorption.
9. As with all medication administration and patient contact, remove gloves and complete hand hygiene.

9. Document the medication administrations.

1. Documentation of topical medications should include the name of the medication, topical medication application site, date, exact time administered, and your initials. Safe medication practice for transdermal patch administration also requires the removal of previous patch documentation. In addition, any assessments required prior to administration should be included in the documentation.

10. Prior to leaving the room, remind the patient about any side effects/adverse effects or considerations for which he/she should notify the nurse.

1. The absorption of transdermal medications is significantly increased during exercise. Educate the patient about decreasing the intensity of exercise, to monitor for any side effects, and exercising in indirect sunlight or at times that are cooler.
2. Inform the patient that blurry vision after the administration of eye medication is common and will clear as the medication is absorbed.

11. Upon exiting the patient room, disinfect your hands again, as has been described earlier.

Applications and Summary

This video reviewed the steps of topical medication administration. While the administration of topical medications may appear to be simple and harmless, it is associated with many side effects if not performed properly. Many transdermal patch pain medications, such as fentanyl, can be harmful or even deadly when a previous pain medication patch is not first removed. These patches can sometimes be transparent and difficult to find; never assume that the patch has fallen off or has been removed by the patient. A thorough skin check is required prior to administration to avoid adverse effects. In addition, assessment of the application site prior to administration is critical to prevent the skin irritation caused by the medication. Unexpected inflammation and irritation should be reported to medical staff to prevent further tissue damage.

A common mistake is administering topical medication at a concentration unsuitable for the application site. For instance, a topical antibiotic has formulations for both the skin and eyes and, if applied incorrectly, could result in the loss of vision. Cool or cold otic medications may also cause dizziness and nausea. Another common mistake is a failure to remove the patch medication before applying a new one, resulting in a higher dose of the medication, which constitutes a medication error. Previous patch medications may still contain active medication, which will continue to be absorbed after the intended length of use, resulting in a medication overdose. In addition, the removal of any transdermal patch medications prior to magnetic resonance imaging (MRI) is necessary to prevent serious skin burns.

References

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