



# Child and Adolescent Nursing Practicum

## Topic 7

# Topical Drug Administration in Pediatric

By

Mrs. Natthaya Cherngchalard Chooprom, MSN





## Objectives of learning

The topic aims to develop in students an understanding of, and an ability to provide topical drug administration in pediatric safely



## Topical Medications...

- 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 can be administered via a topical route include antibiotics, narcotics, hormones, and even chemotherapeutics.



# Classification of Topical Medications

## Includes two basic types:

- A) External- that are spread or dispersed on the cutaneous surface covering the affected area.
- B) Internal- that are applied to the mucous membrane of eye (conjunctiva), ear, oropharyngeal cavity, nasal cavity, vagina or anorectal region for local activity.

## Classification Based on physical state

(A)Solid: Powder, Aerosol, Plaster

(B)Liquid: Lotion, Liniment, Solution, Emulsion, Suspension, Aerosol

(C)Semi-solid: Ointment, Cream, Paste, Gel, Jelly, Suppository



## Ointment/Cream

- Viscous semisolid preparation
- Applied externally to skin or mucous membrane (eye, nose, vagina, rectum)

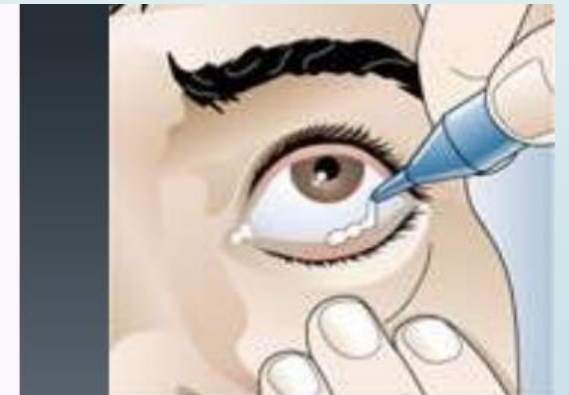
### Evaluation of ointments

Penetration

Rate of release of medicaments

Absorption of medicaments into blood stream

Irritant effect



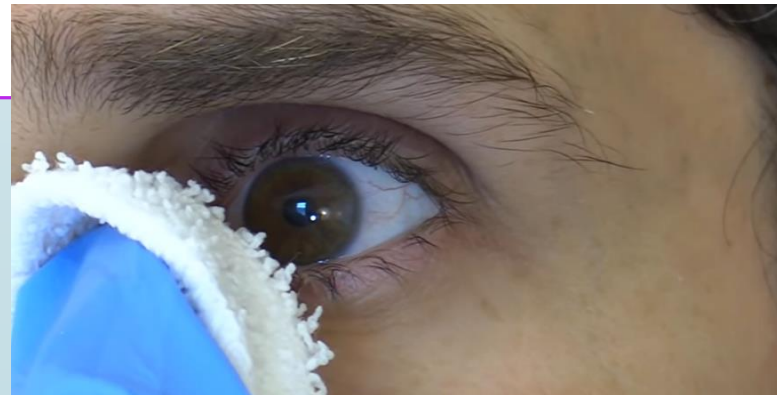
<https://www.slideshare.net/doctormansij/topical-route-mansij>





# Administering ophthalmic (eye) medication

1. Describe the application process and ensure patient privacy
2. Wash hands and don clean gloves
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.
5. If drainage or crusts are present, gently cleanse the area with normal saline and gauze pads.



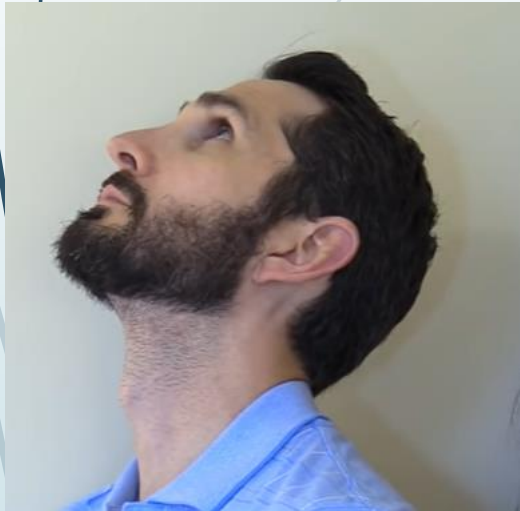


## **Administering ophthalmic (eye) medication**

- 6. While holding the eye drop medication in the dominant hand, gently rest the heel of the hand on the patient's forehead.**
- 7. Hold the medication approximately 1- 2 cm above the lower lid.**
- 8. With the non-dominant hand, gently pull the lower lid down to expose the conjunctival sac.**
- 9. Ask the patient to look up towards the ceiling.**
- 10. A cotton ball or tissue may be used to hold the lower lid down.**
- 11. Allow the prescribed number of drops to fall into the conjunctival sac.**
- 12. If drips do not fall with gravity, you may need to gently squeeze the medication bottle**
- 13. Never allow the tip of the bottle to touch the conjunctival sac or eye.**



# Administering ophthalmic (eye) medication







# Administering ophthalmic (eye) medication





## Note !!! Ophthalmic (eye) medication Drop & Ointment

- ✓ This is a sterile solution.
- ✓ Contamination of the dropper or eye solution can lead to a serious eye infection.
- ✓ If irritation persists or increases, discontinue use immediately.
- ✓ Generally, eye makeup should be avoided while using eye solutions.
- ✓ You may want to use a mirror when applying the drops, or it may be much easier to have someone help you instill your eye drops.
- ✓ For ointment, apply medication on a thin ribbon from inner canthus outward without touching eye or eyelash □ For an older child, we should instruct child to gently close the eyes to allow medication to be dispersed.

Let's watch the this clip...



## Administering otic (ear) medication

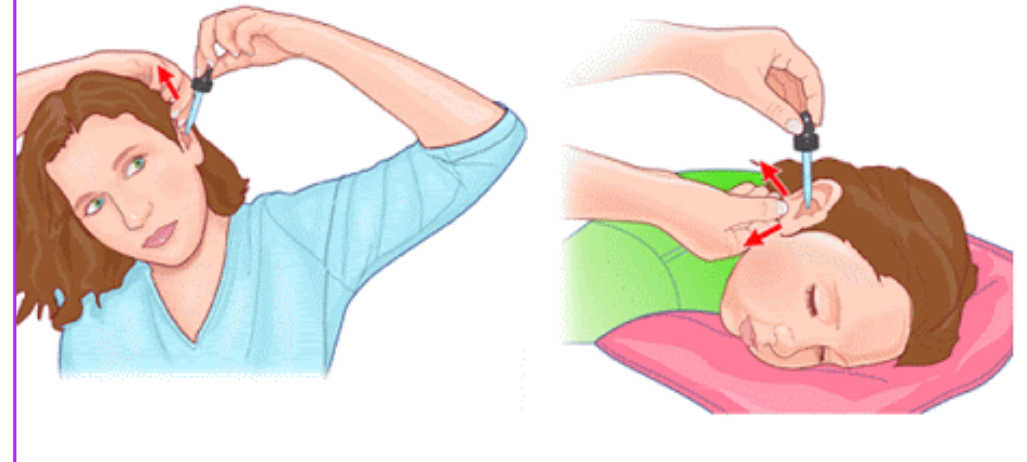
- Typically they are in the form of drops.
- This route is upsetting because child cannot see the procedure
- Ensure that medication is at room temperature.
- Cold ear drops cause pain & vertigo



# Administering otic (ear) medication

## PROCEDURE

1. Place child in supine or side lying position with affected ear exposed.
  2. Pull pinna downward & back in children under 3 years.
  3. Pull pinna upward and back in children over 3 years.
- Instill medication using dropper
  - Have the child remain in the same position for several minutes.
  - Massage the area anterior to promote passage of medication







## Inhaled drug administration

- The inhaled route of drug administration is widely accepted as being the optimal way of giving drugs, such as corticosteroids and bronchodilators for the treatment of patients with airflow obstruction, e.g. asthma, cystic fibrosis.
- The inhaled route allows relatively small doses of drugs to be delivered to produce high concentrations in the airway but minimizes absorption into the systemic circulation.
- This will then reduce the incidence of side effects from the medication. However, a proper inhaler technique with inhaler devices is essential to achieve the correct dose.



# Inhaled drug administration

## Aerosol

- A suspension of small solid or liquid particles in a gas

## Nebulizers

- The devices are used to generate aerosols of liquid particles in a gas cloud

## Inhalers

- Are the devices used to generate aerosols of solid particles



# Inhaled drug administration Devices

There are various devices available:

- metered dose inhalers (MDIs),
- MDIs with spacers,
- dry powder inhalers (DPIs) and
- breath-activated MDIs (BA-MDI).
- Nebulizer







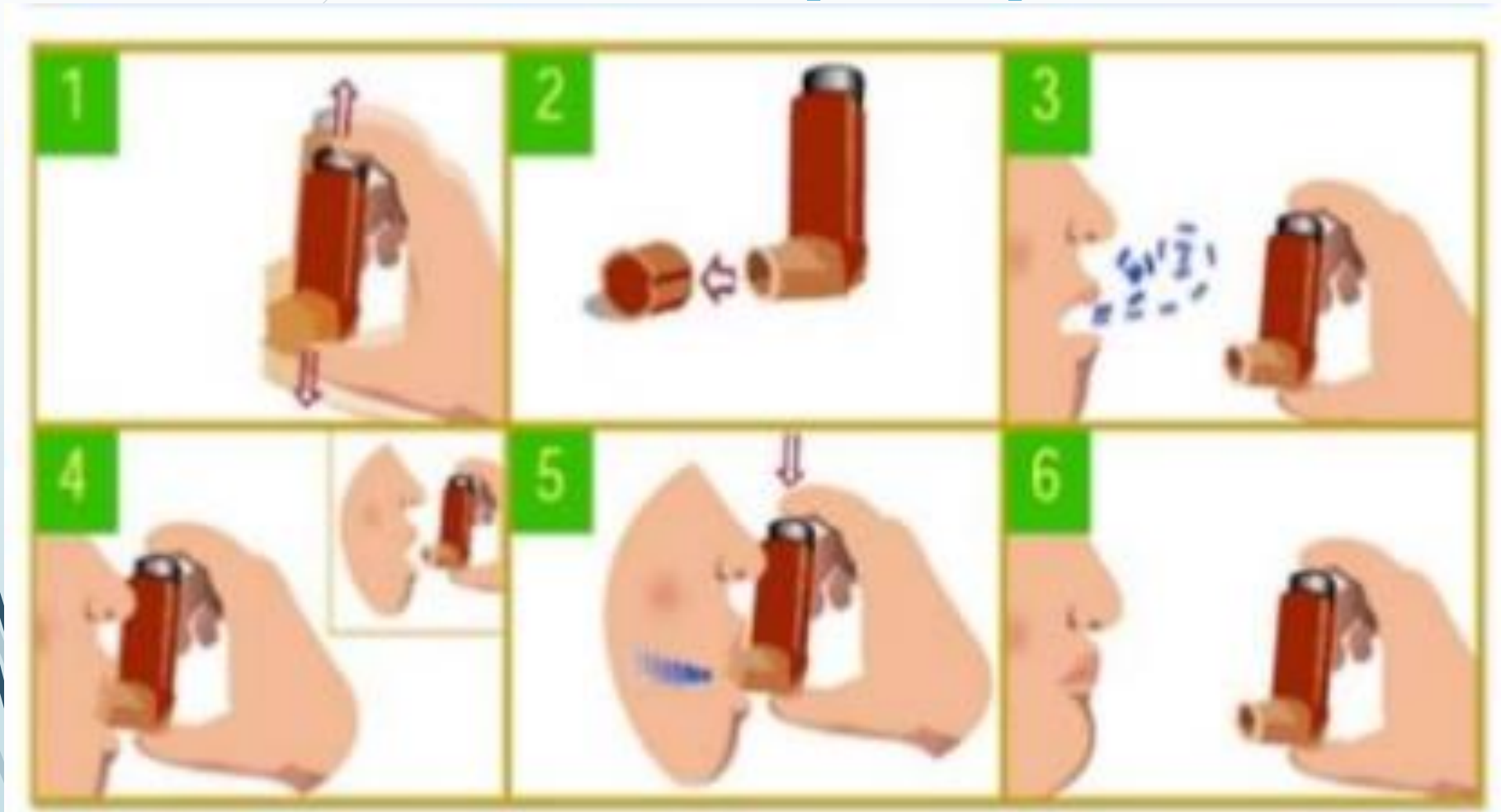
## Metered dose inhalers (MDIs)



- Adequate coordination is required.
- Procedure
  - 1) shake inhaler to ensure inhaler is primed.
  - 2) Ask the child to exhale, place the mouthpiece in the child's mouth.
  - 3) The child should commence breathing in as soon as the inhaler is pressed downwards to release the medication.
  - 4) They should continue to breathe in slowly and hold their breath for 10 seconds.
  - 5) If a second dose is required, the child should wait 30 seconds before this is administered.



# Metered dose inhalers (MDIs)







## Breath-activated MDIs (BA-MDIs)



- These devices allow the patient to prime the inhaler first and then when the patient takes a breath, the inhaler is activated. It avoids the need to coordinate breathing with release of the inhaler. It is useful for older children if they are able to use the device effectively.

## Dry powder inhalers (DPIs)

These are small and portable, like MDIs, but require less coordination. The drug delivery to the lungs is dependent upon the patient's peak inhaled flow rate. These may be useful for children over 5 years who are unwilling or unable to use a MDI with a spacer device.

The technique is the same as for MDIs but the number of doses available should be checked on the counter, then hold it horizontally, open the casing and push the level until it clicks. The dose is then ready for administration.



## Spacer Devices

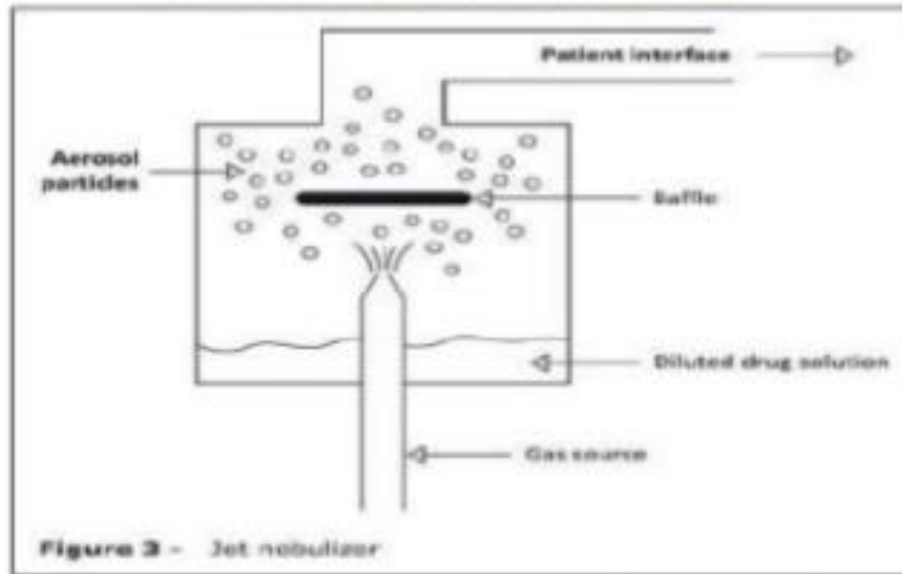


- Spacer devices slow down the particles and make coordination of activation and inhalation much less critical.
- They are useful for infants and children with poor inhaler technique.
- Corticosteroid and bronchodilator therapy should be delivered by a pressurized MDI and spacer device (with a facemask if necessary) to children under 5 years.
- For children aged 5–15 years, corticosteroid therapy should be delivered by a MDI and spacer device.
- Spacers should be replaced annually or as the child grows and the spacer no longer is fit for their size.
- Cleaning should be carried out in accordance with manufacturer's instructions.

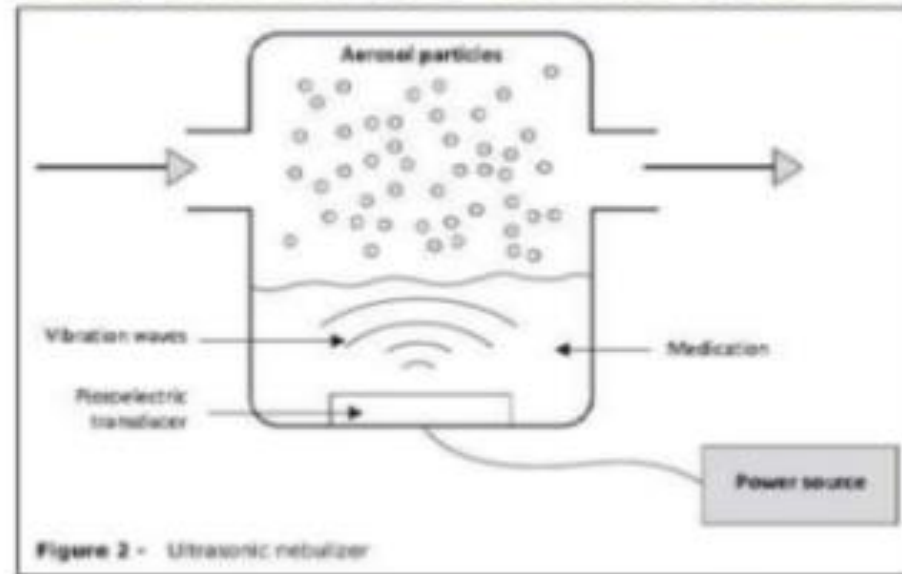


# Nebulizers (mist inhalation form)

## Jet nebulizer



## Ultrasonic nebulizer





## Nebulizers (mist inhalation form)

- Useful in children
- Handicapped persons
- Seriously ill patients Ventilated patients
- Elderly individuals
- High doses can be given
- Combination drugs can be given
- Enhancement of secretion clearance
- Sputum induction (physiotherapy)
- Humidification of respired gases
- Prevent dehydration
- Prevent or relieve bronchospasm
- Plenty of drugs can be used



# Technique



- 1. Measure correct amount of saline solution using a clean dropper. Put the saline into the nebulizer cup.**
- 2. Measure correct amount of medicine using a clean dropper and add it to nebulizer cup containing the saline.**
- 3. If you are using a premixed medicine, add the correct amount.**
- 4. Attach mouthpiece to T-shaped part. Fasten this unit or mask to the cup.**
- 5. Turn on air compressor. - If connected to ventilator: to inspiratory limb with airflow 6-8 L/min**



# Technique (Cont.)



- 6. Put mouthpiece in mouth, between teeth and seal lips tightly around it.**
- 7. Take slow, deep breaths in through the mouth**
- 8. If you are unable to take slow, deep breaths, breathe normally into mask.**
- 9. Hold each breath for 1 -2 sec before breathing out or hold each breath for 1-5 sec every 3-5 inhalations.**
- 10. Continue breathing this way until medicine is gone from the cup (about 5-15 minutes).**

Let's watch the this clip...

**Thank you**

**Do not forget to do hw.**