



لجان الدفوعات

# DISPENSING



MORPHINE ACADEMY

MORPHINE  
ACADEMY

# Nasal Preparations

هذه الطرق التي لا تعني فيها الدواء تجاذباً للقناة اللمفية (G/T) ← [تعني ما يمر عبر الحمة أو الأوعية]

# Parenteral Routes of administration

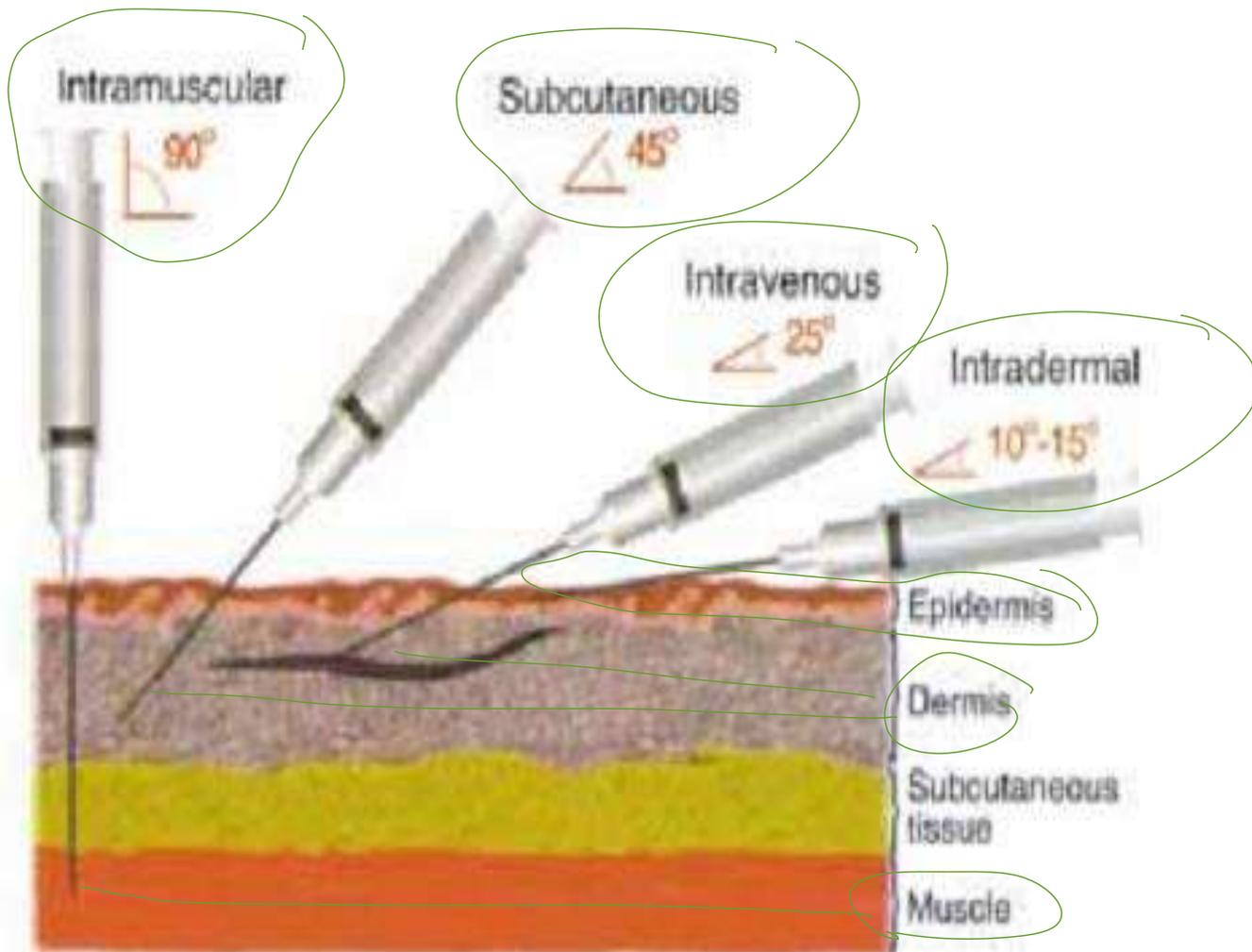
بالسريرية

## 1. Injection dependent routes of administration: (طرق تعتمد على الحقن)

- Intravenous (I.V)
- Intramuscular (I.M)
- Intradermal (I.D)
- Subcutaneous (S.C)
- Epidural
- Intrathecal

## 2. Injection independent routes of administration: (طرق لا تعتمد على الحقن)

- Intranasal (انفي)
- Inhalation (استنشاق)
- Ophthalmics (عيني)
- Otic (اذني)



**Figure 29-18** Angles of Insertion for Parenteral Injections.

# Injection Independent Routes:

- Pharmaceutical dosage forms and drug delivery systems applied topically to the eye, nose, or ear can include solutions, suspensions, gels, ointments, and drug-impregnated inserts.
- **Injection independent** since a needle or catheter is not required to administered formulations via these routes.

# 1. Intranasal

يُستخدم لإيصال الدواء إلى الجهاز التنفسي العلوي.

- Intranasal administration has typically been used to administer drugs to the upper respiratory tract.
- The absorption of some drugs give blood concentrations that are very similar to concentrations seen when the drug is intravenously administered.

i.v

بعض الأدوية لها نفس معدل الكمية في الدم

متراب من حيث معدل ١.٧ ← وهذا الأسلوب ينجلي للعديد من الأدوية بدلاً من أن تكون systemic deliver

- Because of this favorable absorption, intranasal administration has been investigated as a possible route of systemic administration for drugs such as insulin, glucagon, progesterone, propranolol, and narcotic analgesics (to mention a few).

طريق أدوية  
جهاز تنفسي  
عبر  
الأنف :

الحالات نادرة  
الاستعمال  
أدوية قلب  
مستند قوية

# 1. Intranasal

- Solutions, suspensions, and gels. → Dosage Forms
- The liquids are typically sterile, isotonic, buffered, and preserved so as to not interfere with the nasal cilia.
- The buffered products are generally at pH between 4 and 8
- Osmotic pressures ranging from 200 to 600 mOsmol/L are acceptable for intranasal administration.

علاج الأنف

مقدمات

Buffered

عناصر متوازنة

اهداف الأنف

# # Methods of giving:

## 1. Intranasal

بى كىبىبا انبا مكنه تنزل للخلف و تنبلع ← فبقتل الامصاف  
الانفي.

- Generally solutions and suspensions are administered as drops.
- Solutions can also be administered as a fine mist from a nasal spray bottle. <sup>رذاذ ناعم</sup>
- Nasal sprays are preferred to drops because drops are more likely to drain into the back of the mouth and throat and be swallowed.
- If the drug is sufficiently volatile, it can be administered as a nasal inhaler. <sup>التركيبة</sup> The inhaler is a cylindrical tube with a cap that contains fibrous material impregnated with a volatile drug. The patient removes the cap, and the inhaler tip is placed just inside the nostril. As the patient inhales, air is pulled through the tube and the vaporized drug is pulled into the nasal cavity.

ار sprays احده من ال saline لانه يعوزع الهدا بكل افضل و يقبل ابتلاكه عبر العم.

استنشاق

الاستنشاق  
لبتروك  
بما اذا  
كنت الصادق  
معالجتي

المريض يستنشق من خلال الأنبوب ← حتى يدخل البخار للتجويف الانفي

# calibration :

# 1. Intranasal

# مهم جداً من كمية الدواء التي يتوصل إليها مفعلة ادرنية

- If drops or sprays are used, the quantity of drug administered in each drop or each spray should be calibrated.
- **To calibrate a dropper:**

- drop the formulation into a small graduated cylinder (5 ml or 10 ml)

# using the dropper the patient will use

- count the number of drops required to dispense 3 ml of solution

- divide the number of drops by 3; this will give the number of drops per ml

- calculate the number of drops needed to dispense the volume of formulation in one dose

# NASAL DECONGESTANT SOLUTIONS

- Most preparations intended for intranasal use contain adrenergic agents and are employed for their decongestant activity on the nasal mucosa.  
*إزالة الاحتقان*  
*صناعات أدوية أنفية*  
*→: وظيفتها*
- Most nasal decongestant solutions are aqueous, rendered isotonic to nasal fluids (approximately equivalent to 0.9% sodium chloride), buffered to maintain drug stability while approximating the normal pH range of the nasal fluids (pH 5.5 to 6.5), and stabilized and preserved as required.  
*NaCl*

← لحفظ الملحون الميكروبياد النحل.

# NASAL DECONGESTANT SOLUTIONS

- they are best used for short periods (no longer than 3 to 5 days), and the patient should be advised not to exceed the recommended dosage and frequency of use بعض الامراض يجب احتياجه
- Most solutions for nasal use are packaged in dropper bottles or in plastic spray bottles, usually containing 15 to 30 mL of medication Capacity
- The patient should be advised to discard the solution if it becomes discolored and/or contains precipitated matter

مع صلاحية المنتج : انا ما في تفصيله او ترتيب ← لازم يتلف

# PROPER ADMINISTRATION AND USE OF NASAL DROPS AND SPRAYS

- To minimize the possibility of contamination, the pharmacist should <sup>(1)</sup> point out to the patient that the nasal product should be used by one person only <sup>(2)</sup> and kept out of the reach of children.

\* لازم ہر شخص کے لیے مخصوص ہے۔ لہذا استعمال کرنے والوں کو بتایا جائے۔

# How to Use Intranasal Drops

- Blow your nose gently to clear the nostrils. النفخ بلطف لتنظيف الأنف
- Wash your hands with soap and warm water. اليدوس الحار الصابون
- Lie down on a bed with your head tilted back and the neck supported (allow the head to hang over the edge of the bed or place a small pillow under your shoulders). Tilt your head back so that it is hanging lower than your shoulders. (Note: If putting drops into the nose of a child, lie the child on his or her back over your lap. The head should be tilted back.) مقاسه تديراسك مع حافة السرير او تحة حدة صغيرة مت الكف  
للأطفال: على ظهره بفضلك، وراية مائل للخلف

- Draw up a small amount of medication into the medicine dropper.
- Breathe through your mouth.
- Place the tip of the medicine dropper just inside your nostril (about 1/3 inch). Avoid touching the dropper against the nostril or anything else. 1cm  
له تبب مهمة العقاقير لأي نوع
- Place the directed number of drops into your nostril.

- Repeat steps 3 - 7 for the other nostril if directed to do so.
- Remain lying down for about 5 minutes, so the medication has a chance to spread throughout your nasal passages. خليل مقلتي
- Replace the medicine dropper to its container and tightly close the bottle.
- Wash your hands

# How to Use Intranasal Drops



# How to Use Intranasal Sprays or Pumps

- Blow your nose gently to clear the nostrils.
- Wash your hands with soap and warm water.

- Hold your head in an upright position. الرأس مستقيم

- Close one nostril with one finger.

- With the mouth closed, insert the tip of the spray or pump into the open nostril. Sniff in through the nostril while quickly and firmly squeezing the spray container or activating the pump.

انتباه! استنشق من الأنف : امضغ بقوة وسرعة مع البخاخ.

- Hold your breath for a few seconds and then breathe out through your mouth. امسك لثقل.

- Repeat this procedure for the other nostril only if directed to do so. تكرر نفس العملية بالفتحة الثانية

- Rinse the spray or pump tip with hot water and replace the cap tightly on the container. اغسل

- Wash your hands.

تسليم  
المرغوبة  
المرغوبة  
بعد الانتهاء

# ملاحظات مهمة لـ sprays:

## How to Use Intranasal Sprays or Pumps

- The patient should be told not to shake the plastic squeeze bottle but be sure to remove the plastic cap
- Remove the bottle tip from the nose while maintaining pressure on the bottle sides so as not to aspirate any nasal material into the bottle.

لا تترج العبوة البلاستيكية فقط  
أزل الغطاء قبل الاستخدام.



حجب البخاخ عن الأنف وانت ضاحك  
على العبوة حتى يخرج لمزيد من الانف للداخل

# How to Use Intranasal Sprays or Pumps

- Wipe the tip with alcohol or some other appropriate agent, release the pressure on the sides, and repeat the application as necessary
- Sprays should always be administered with the patient upright. Spraying medicine into the nostrils should not be performed with the head over the edge of a bed (the preferred procedure for administration of nasal drops) because it could result in systemic absorption of the drug rather than a local effect.

\* وإنما البخاخ يُستعمل والبرص مستعمل (فتزيد العقار الذي يحتاج البرص له) (لورا)

\* وإذا استعمل البخاخ على البرص لورا ← من غير الاعتقاد الجهازي systemic absorption بل التأثير الكومفر.

## 2. Inhalation

الهدف منها الوصول للرئتين

الرئتين

- Inhalation dosage forms are intended to deliver drugs to the lungs.
- The lungs have a large surface area and a rich blood supply to the alveolar epithelium both of which favor rapid absorption. (1+2)
- However, there is considerable variability in the absorption of drugs from the lungs so that this route is not considered an alternative to intravenous administration.
- Drugs administered via this route are to affect pulmonary function or treat allergic symptoms.
- Examples of drugs administered by inhalation include adrenocorticoid steroids (e.g., beclomethasone), bronchodilators (e.g., isoproterenol, metaproterenol, albuterol), and antiallergics (e.g., cromolyn).

① مساحة سطح كبيرة جدًا ② اعداد دواء كثيرة

النتيجة: بناء على الخصائص الجزيئية

لا تعتبر بديل موثوق عن الـ I.V. كما ان الامتصاص من الرئة قد يتفاوت كثير من المريض لـ لذلك

علاج الحساسية

تأثير على الجهاز التنفسي

# # Dosage forms:

## 2. Inhalation

- Inhalation formulations are generally solutions, suspensions, and powders.
- These formulations are administered via an aerosol or a dry powder inhaler.
- **Aerosols** are devices where liquid or suspension droplets are the internal phase and a gas is the external phase.
- Commercial aerosols are typically metered dose inhalers (MDI) that deliver a fixed dose in a spray with each actuation of the device.
- For compounded inhalation solutions, atomizers, nebulizers, and vaporizers are the aerosol devices.

بخاخ / رذاذ

جهاز ليعول السائل لورذاذ دقيقه مرداداران

جهاز بخار

افضل  
Gel and  
Magne

جهاز يُستخدم كعلاج الاستنشاق

# Nebulizer



- A widely used instrument capable of producing fine particles for inhalation therapy is the nebulizer <sup>وعصارة أنزيم</sup>
- This apparatus contains an atomizing unit in a bulbous glass chamber. A rubber bulb at the end of the apparatus is depressed and the medicated solution is drawn up a narrow glass tube and broken into fine particles by the passing airstream.

آلية العمل :

① عند ضغط الرطبات rubber bulb ← يُحب المحلول الدوائي لأمع انبوب الزجاجي صغره.

② يمر تيار هواء فبكر الماء لجسيمات دقيقة.

- 3 • The larger, heavier droplets of the mist do not exit the apparatus but fall back into the reservoir of medicated liquid.
- 4 • The lighter particles do escape with the airstream and are inhaled by the patient, who operates the nebulizer with the exit orifice in the mouth, inhaling while depressing the rubber bulb

3) العقران الثقيلة يترجع للخزانة.

4) الجسيمات الخفيفة: تخرج مع تيار الهواء وبخلاف المرشحة من طريق الفم.

# Counseling:

# Nebulizer

- 1 The pharmacist should advise the patient on the proper technique to use the nebulizer and provide additional instructions, such as not to exceed physician's instructions and to use the smallest amount of product necessary to afford relief.
- 4 The pharmacist may also advise on how to cope with any dryness of the mouth and should emphasize the need to clean the nebulizer after use and explain how to do it.

4 معالجة جفاف الفم إذا حصل (شرب الماء / استخدام مرطب)

5 تنظيف الجهاز بعد كل استخدام ← لمنع نمو البكتيريا.

1 استخدام الجهاز بالطريقة الصحيحة (المنش يبدأ أثناء تنفيسه).

2 الالتزام بتعليمات الطبيب وعدم تجاوز الجرعة.

3 استخدام أقل كمية دواء تكفي لإمدان الراحة.

# Vaporizer

- The common household vaporizer produces a fine mist of steam that may be used to humidify a room.
- When a volatile medication is added to the water in the chamber or to a medication cup, the medication volatilizes and is also inhaled by the patient.

جهاز منزلي شائع لإنتاج بخار ماء ناعم  
لترطيب الجو.  
fine steam mist



إذا أُضيف دواء متطاير إلى الماء  
(أو تكون مضمحا للدواء) ← يغيّر الدواء مع البخار

حبوب الكافور المبردة بتسحقه المزيج  
مع البخار والدواء.

# علامة سرية :  
دواء مثل يقول لوزان جزيئات دقيقة، يدخل مباشرة  
للرئة ← Nebulizer .  
دواء متطاير مع بخار ماء، يُتدمم غالباً لترطيب +  
تنشئة ← Vaporizer .

## 2. Inhalation



DPI

- Commercially available dry powder inhalers contain their dry powders in manufactured cartridges or disks. اعزاز
- When the patient administers a dose, the device is first activated by some mechanical motion and the dry powder becomes ready for inspiration.
- Then the patient inhales through the device mouthpiece and the powder is drawn into the pulmonary tract along with the inspired air.

13 المريض يفعل الجهاز بحركة ميكانيكية (لف العمود مثلا)

2) فينتشر جزء من ال powder وليس جاهز لاستنسه.

3) المريض يجب نفث عييه من فوهة الجهاز ← فينتقل ال powder مع الهواء للثقة.

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# # Gaseous Inhalation:

## 2. Inhalation

التنوير كانوا يستخدموه.



- Certain gases, such as oxygen and ether, are administered by inhalation

عن طريق الاستنشاق مباشرة.

- Sterile Water for Inhalation, USP, and Sodium Chloride Inhalation, USP, may be used as vehicles for inhalation solutions.

① التنفس يسبق صفو الجهاز والتنفس / ② نمط التنفس / ③ عمق التنفس.

## 2. Inhalation

• Regardless of the formulation or the administration device, inhalation therapy also depends on the coordination, the breathing patterns, and the respiration depth of the patient at the time of administration.

• Inhalation devices produce either liquid droplets or powder particles upon actuation.

• There is a strong correlation between the inspired particle size and its final deposition inside the lungs: تنسب بالبحر والغم ← شاع بيل حاتوصل للارتبة

1 - Large particles (about 20 microns) impact in the back of the mouth and throat and are eventually swallowed rather than inhaled.

2 - Particles from 1 to 10 microns reach the terminal bronchioles and are more available for local therapy. ← توقع لا اقل ← افضل لا oral therapy

3 - Smaller particles (0.6 micron) penetrate to the alveolar sacs where absorption is most rapid, but retention is minimal since a large fraction of the dose is exhaled

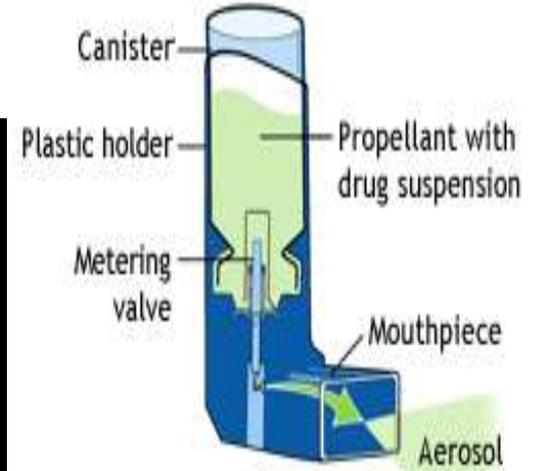
← يتوصل لا alveolar sacs ← امتصاص سريع به! (بنا حاتقبل فترة طويلة (retention) قليلة) 8-9 جزء كبير منها يتوزع للخارج

Inhalation → deposition site → particle size.

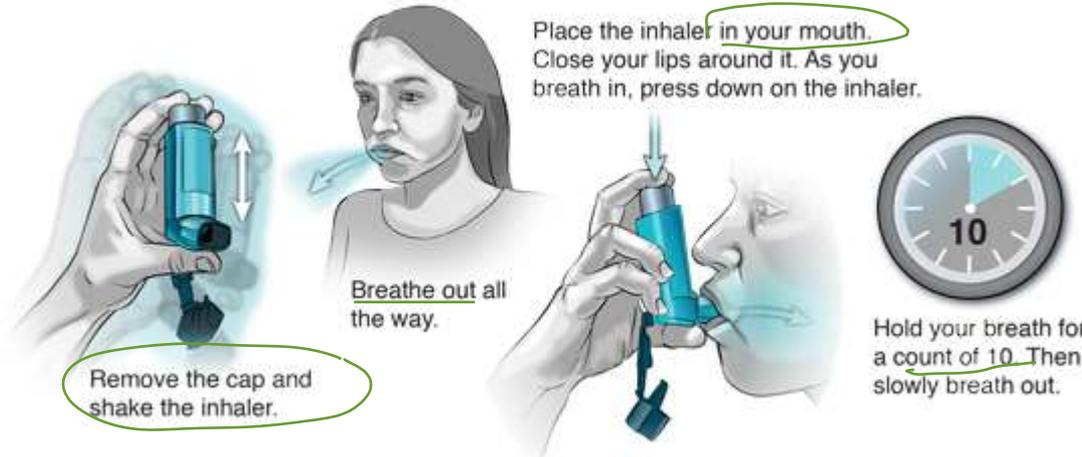
# Inje 2.1



Routes:



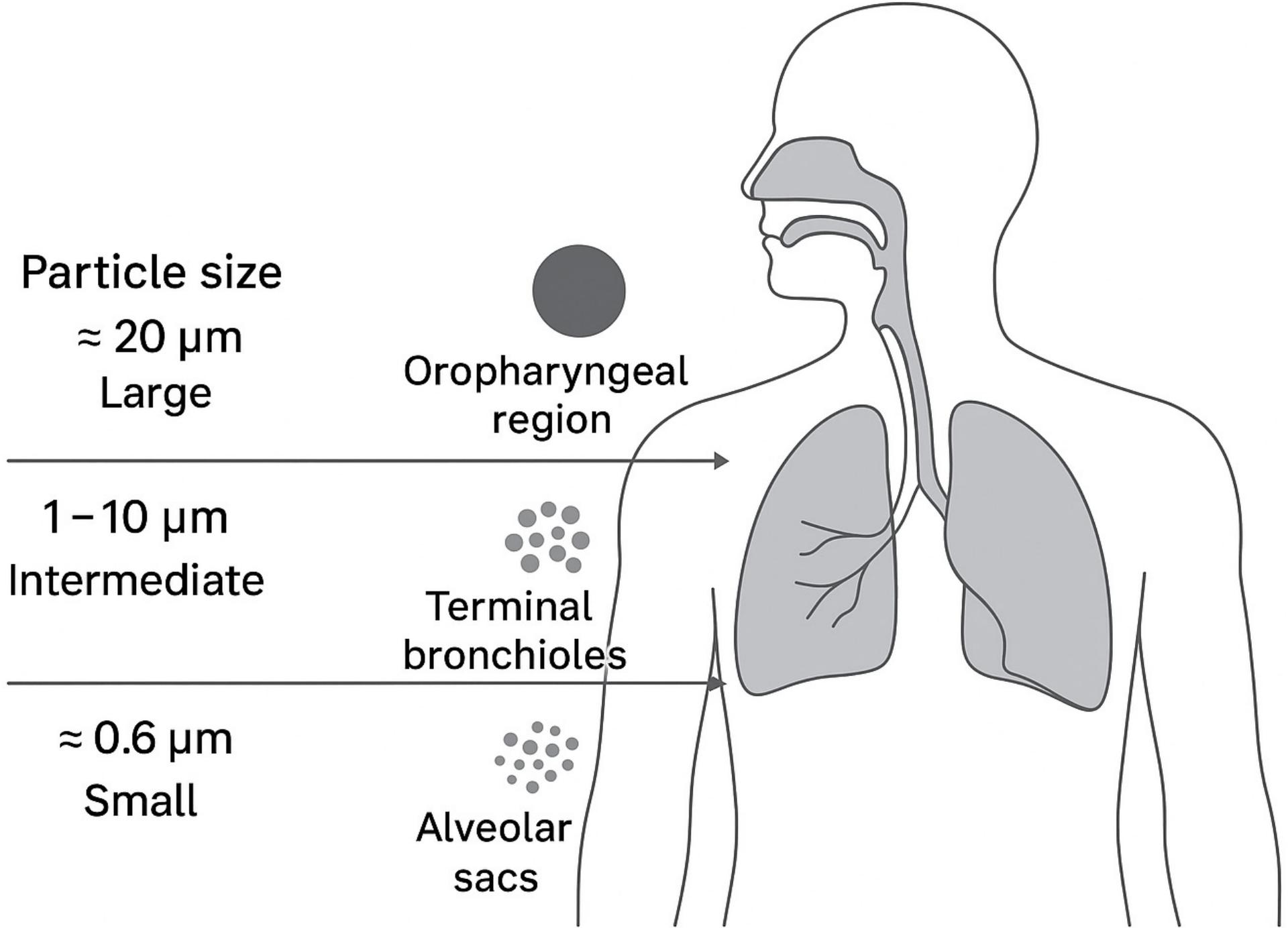
Particle size (µm)	Deposition site (مكان الترسيب)	الملاحظات
≈ 20 µm (كبيرة)	oropharyngeal (الفم والبلعوم region)	ما توصل للرئة → تُبتلع مع اللعاب.
1 – 10 µm (متوسطة)	terminal (القصبية النهائية bronchioles)	أفضل حجم لعلاج موضعي (local therapy).
≈ 0.6 µm (صغيرة جدًا)	alveolar (الحويصلات الهوائية sacs)	امتصاص سريع جدًا، لكن retention قليل → معظم الجرعة تُزفر.



كبيرة → تعلق بالفم

متوسطة → توصل للقصبية (أفضل تأخير للأجسام)

صغيرة جدًا → توصل للحويصلات (أفضل سرعة مع الرئتين)



صَبَّغًا اسْتَبْرَحَ خَلْمًا وَاِنَّا مَعْتَصِمَةٌ اِنَّهُ فِي لَهْتِي فَضَاءً ۝۱۰

مع العموم استبرح زي ما تقنا هو ايشاء الله و القائل كاه هيك

دعواتكم وقالنا انقل ايشاء الله 6