

A collage of medical and scientific imagery including a DNA double helix, laboratory glassware, a chemical structure, and various pills.

Bio Pharma

Lama Nofal

Parenteral Routes of Administration

- Parenteral administration is injection or infusion by means of a needle or catheter inserted into the body

يتم اعطاؤه عن طريق هذول

الها مميزة خاصة

- Parenteral forms deserve special attention

- complexity

- widespread use

- potential for therapeutic benefit and danger

- The term *parenteral* comes from Greek words

- para, meaning outside

- enteron, meaning the intestine

like erythromycin

hight acidity

يتأثر بـ

- This route of administration bypasses the alimentary canal

Parenteral Dose Forms

□ Parenteral preparations must be **sterile** معقمة

□ free of microorganisms

خالية من المايكروبات والجراثيم

□ To ensure sterility, parenterals are prepared using

□ aseptic techniques

□ special clothing (gowns, masks, hair net, gloves)

□ laminar flow hoods placed in special rooms

Parenteral Dose Forms

□ IV route intra vein

- directly into a vein

□ Prepared in hospitals and home healthcare pharmacies

يتم استخدامه بهاي الاماكن

- antibiotics
- chemotherapy
- nutrition
- critical care medications

Parenteral Dose Forms

□ Intramuscular (IM) injections

intra muscular

□ into a muscle



□ Subcutaneous injections

□ under the skin

below the skin



□ Intradermal (ID) injections

□ into the skin

through the skin



Parenteral Dose Forms

different gauges

مقاييس

different sizes

- Disposable syringes and needles are used to administer drugs by injection
- Different sizes are available depending on the type of medication and injection needed



اختلاف الـ gauges يعني اختلاف المكان الذي تعطى فيه الحقنة

اختلاف الـ sizes يحدد كمية الجرعة التي لازم اعطيها
مثلا ما بينع اعطي جرعة 3 مل IM
بس بقدر اعطيها IV

Advantages and Disadvantages of the Parenteral Route

rapid onset

- The IV route is the fastest method for delivering systemic drugs
 - preferred administration in an emergency situation
- It can provide fluids, electrolytes, and nutrition
 - patients who cannot take food or have serious problems with the GI tract
- It provides higher concentration of drug to bloodstream or tissues
 - advantageous in serious bacterial infection

Advantages and Disadvantages of the Parenteral Route

هون يتم إعطاء الدواء على فترات طويلة
وتركيز ثابت بالتالي يقل التذبذب وبنحافظ على
تركيز الدم ثابت

- IV infusion provides a continuous amount of needed medication
 - without fluctuation in blood levels of other routes
- infusion rate can be adjusted
 - to provide more or less medication as the situation dictates

يمكن تعديلها حسب وضع
المريض

Advantages and Disadvantages of the Parenteral Route

- ❑ Traumatic injury from the insertion of needle
- ❑ Potential for introducing:
 - ❑ toxic agents
 - ❑ microbes
 - ❑ pyrogens
- ❑ Impossible to retrieve if adverse reaction occurs
 - ❑ injected directly into the body

لذلك لا يمكن التراجع عنها ابدا واي خطأ رح
يشكل مصيبة لانها بتدخل الجسم على طول

Advantages and Disadvantages of the Parenteral Route

- Intramuscular (IM) and subcutaneous routes of administration are convenient ways to deliver medications
- Compared with the IV route:
 - onset of response of the medication is slower
 - duration of action is much longer
- Practical for use outside the hospital
- Used for drugs which are not active orally

ملائمة

يمكن استخدامها
خارج المستشفى

وتستخدم للأدوية التي لا يوجد لها فعالية
أثناء الشرب

Advantages and Disadvantages of the Parenteral Route

- For intramuscular (IM) and subcutaneous routes of administration, the injection site needs to be “prepped”

- using alcohol wipe

Correct syringe, needle, and technique must be used

Rotation of injection sites with long-term use

- prevents scarring and other skin changes
 - can influence drug absorption

ابر الانسولين تعطى
subcutaneous
لذلك ينصح بتوزيع المكان
الي يتم الحقن فيه عشان ما
يصير عنا
irritation
وعشان يكون الامتصاص
احسن

Parenteral Dose Forms

Do not use SQ or SC abbreviations. Instead, write out subcutaneous to minimize potential medication errors.

غير محبوب استخدام الاختصارات عشان
مايصير في غلط بفهم الاختصار

اغرس اليوم شجرة تنم
في ظلها غداً

Advantages and Disadvantages of the Parenteral Route

through the skin

- The intradermal (ID) route of administration is used for diagnostic and allergy skin testing
 - patient may experience a severe local reaction if allergic or has prior exposure to a testing antigen

Dispensing and Administering Parenteral Medications

- ❑ Most parenteral preparations are made up of ingredients in a sterile-water medium
 - ❑ the body is primarily an aqueous (water-containing) vehicle
- ❑ Parenteral preparations are usually:
 - ❑ solutions
 - ❑ suspensions

Dispensing and Administering Parenteral Medications

مباشرة داخل
الدم

□ IV injections and infusions are introduced directly into the bloodstream

لازم نتجنب وجود هذول الشغلتين لانهم
خطيرات

□ must be free of air bubbles and particulate matter

□ introduction of air or particles might cause embolism, blockage in a vessel, or severe painful reaction at the injection site

انسداد

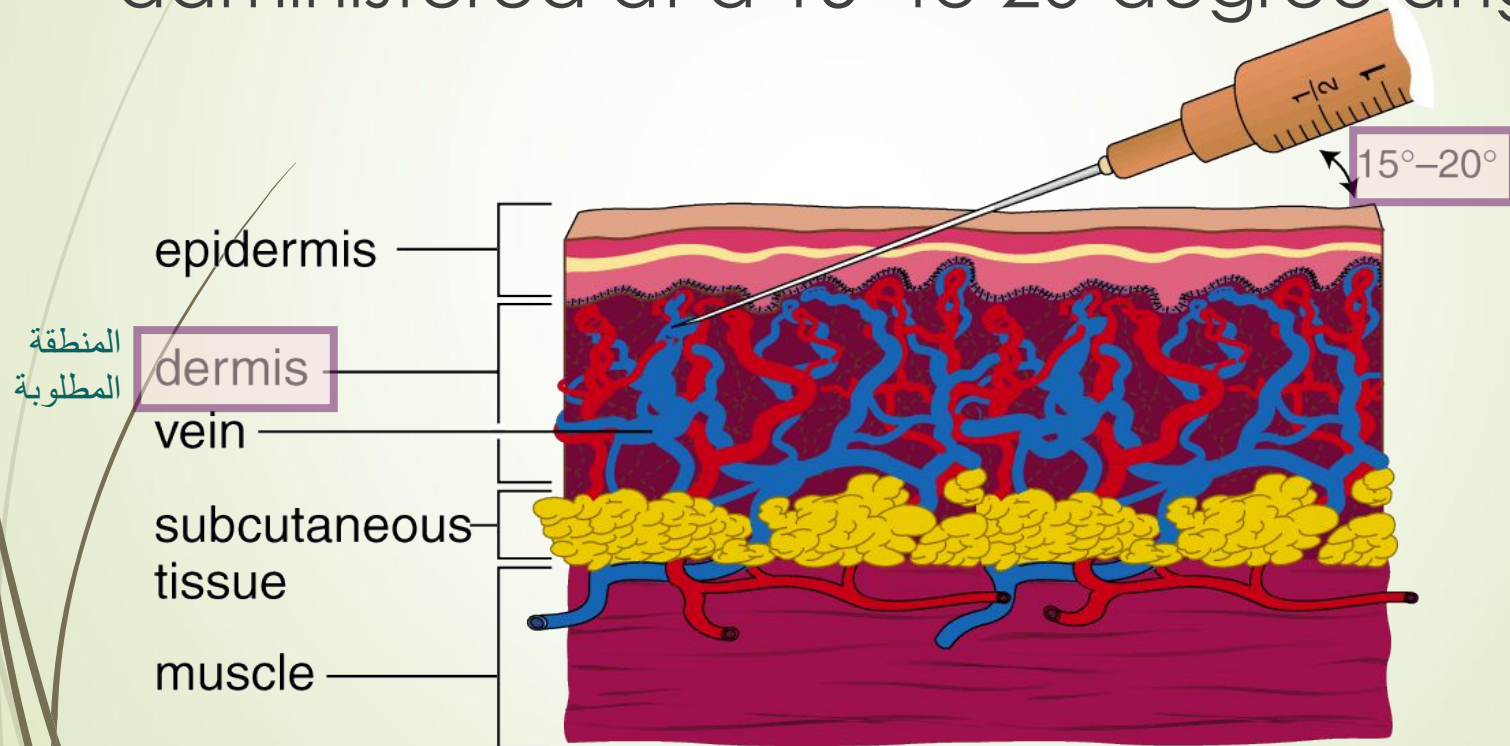
Intravenous Injections or Infusions

rapid onset

- Fast-acting route because the drug goes directly into the bloodstream
 - often used in the emergency department and in critical care areas
- Commonly used
 - for fluid and electrolyte replacement
 - to provide necessary nutrition to the patient who is critically ill

Intravenous Injections or Infusions

- Intravenous (IV) injections are administered at a 15- to 20-degree angle

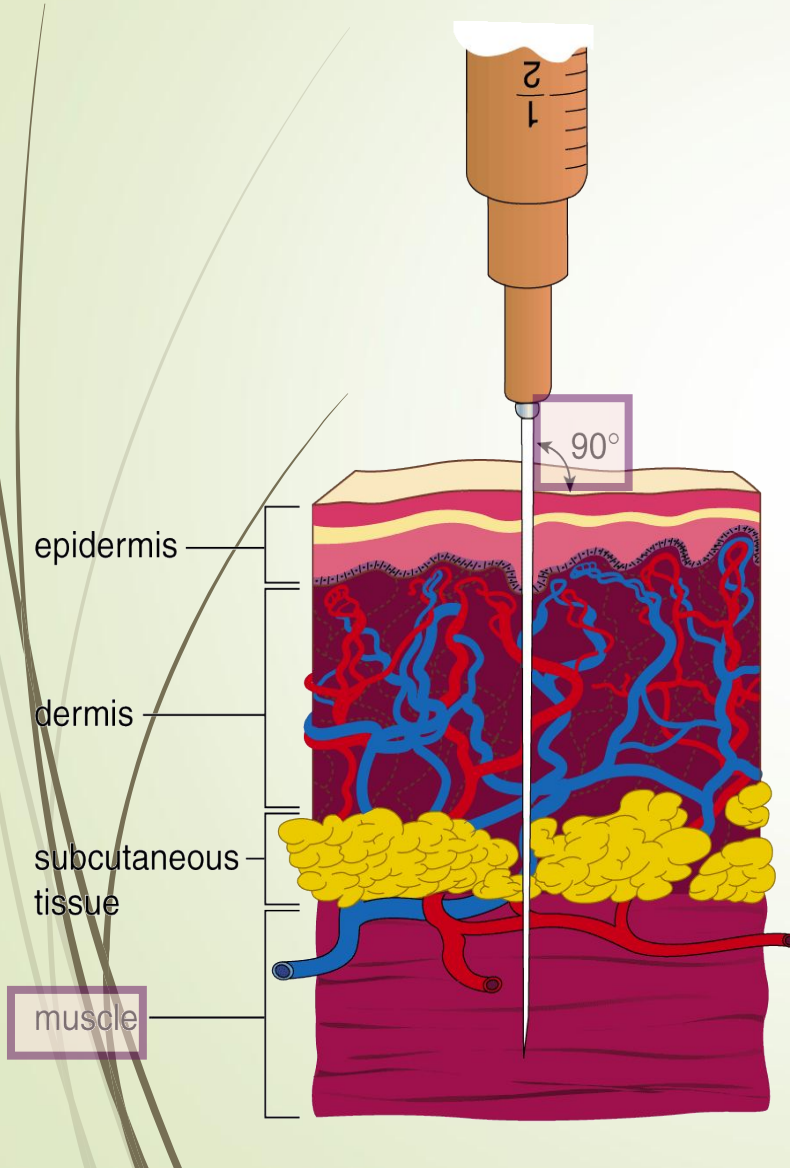


Intramuscular Injections

- Care must be taken with **deep IM injections** to avoid hitting a vein, artery, or nerve
بحاول قدر الإمكان اكون بعيد عنهم
- In adults, IM injections are given into upper, outer portion of the gluteus maximus
 - large muscle on either side of the buttocks
- For children and some adults, IM injections are given into the deltoid muscles of the shoulders

الكتف من فوق

Intramuscular Injections



- Typical needle is 22- to 25-gauge ½- to 1-inch needle
- Intramuscular (IM) injections are administered at a 90-degree angle
- volume limited to less than 3 mL

Intramuscular Injections

- Used to administer

- antibiotics

- vitamins

- iron

- vaccines

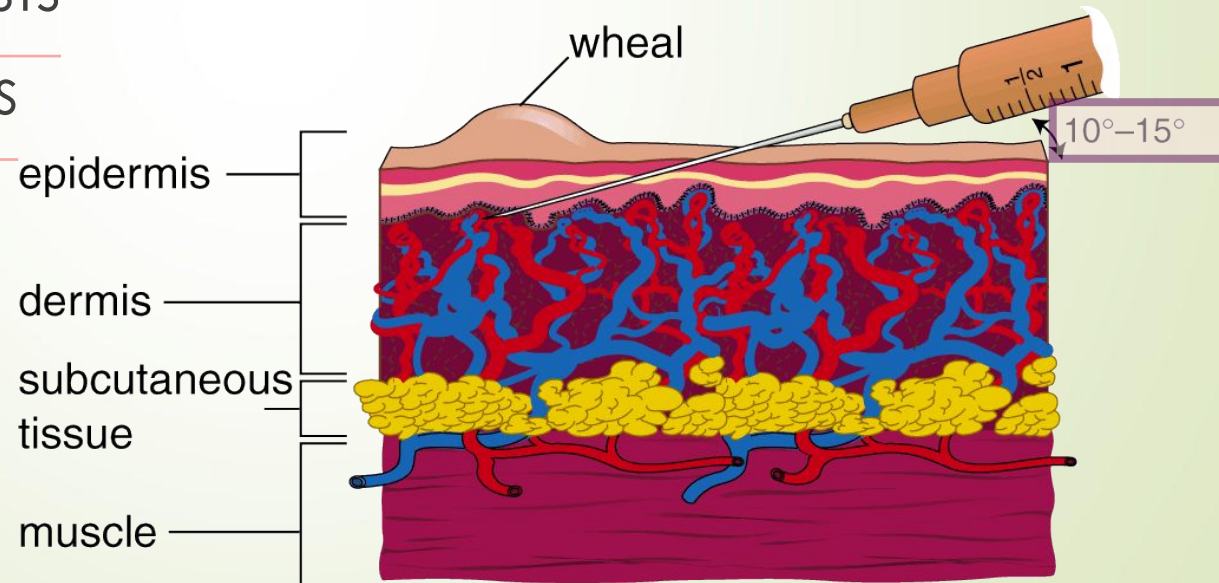
- Absorption of drug by IM route is unpredictable

يختلف من شخص لآخر ومن
عضلة الى أخرى

- not recommended for patients who are unconscious or in a shocklike state

Intradermal Injections

- Given into capillary-rich layer just below epidermis for
 - local anesthesia
 - diagnostic tests
 - immunizations



Intradermal Injections

- Examples of ID injections include
 - skin test for tuberculosis (TB) or fungal infections
 - typical site is the upper forearm, below the area where IV injections are given
 - allergy skin testing
 - small amounts of various allergens are administered to detect allergies
 - usually on the back

Subcutaneous Injections

- Administer medications below the skin into the subcutaneous fat
 - outside of the upper arm
 - top of the thigh
 - lower portion of each side of the abdomen
 - not into grossly adipose, hardened, inflamed, or swollen tissue
- Often have a longer onset of action and a longer duration of action
 - compared with IM or IV injection

Subcutaneous Injections

- Insulin is given using 28- to 30-gauge short needles
 - in special syringe that measures in units
- Insulin is administered following a plan for site rotation
 - to avoid or minimize local skin reactions
- Absorption may vary depending on
 - site of administration
 - activity level of the patient

الشباب انو اغلب
استخدامها بكون لابر
الانسولين

Subcutaneous Injections

ابر الانسولين يكون الها نوعين

1" pens
2" vials

يجب تبريده

- Keep insulin refrigerated
- Check expiration dates frequently التأكد من تاريخ الانتهاء
 - opened vials should be discarded after one month
- A vial of insulin is agitated and warmed by rolling between the hands and should never be shaken
- The rubber stopper should be wiped with an alcohol wipe موجودة بالـ

vial

Subcutaneous Injections

- When administering insulin, air is injected into vial
 - equal to the amount of insulin to be withdrawn
- Air is gently pushed from syringe with the plunger
- Patient should plan meals, exercise, and insulin administration
 - to gain the best advantage of the medication
 - avoid chances of creating hypoglycemia

لازم ما ننسى انو لازم نفرغ الهوا من الابرة



Subcutaneous Injections

Do not shake insulin.

منع بات

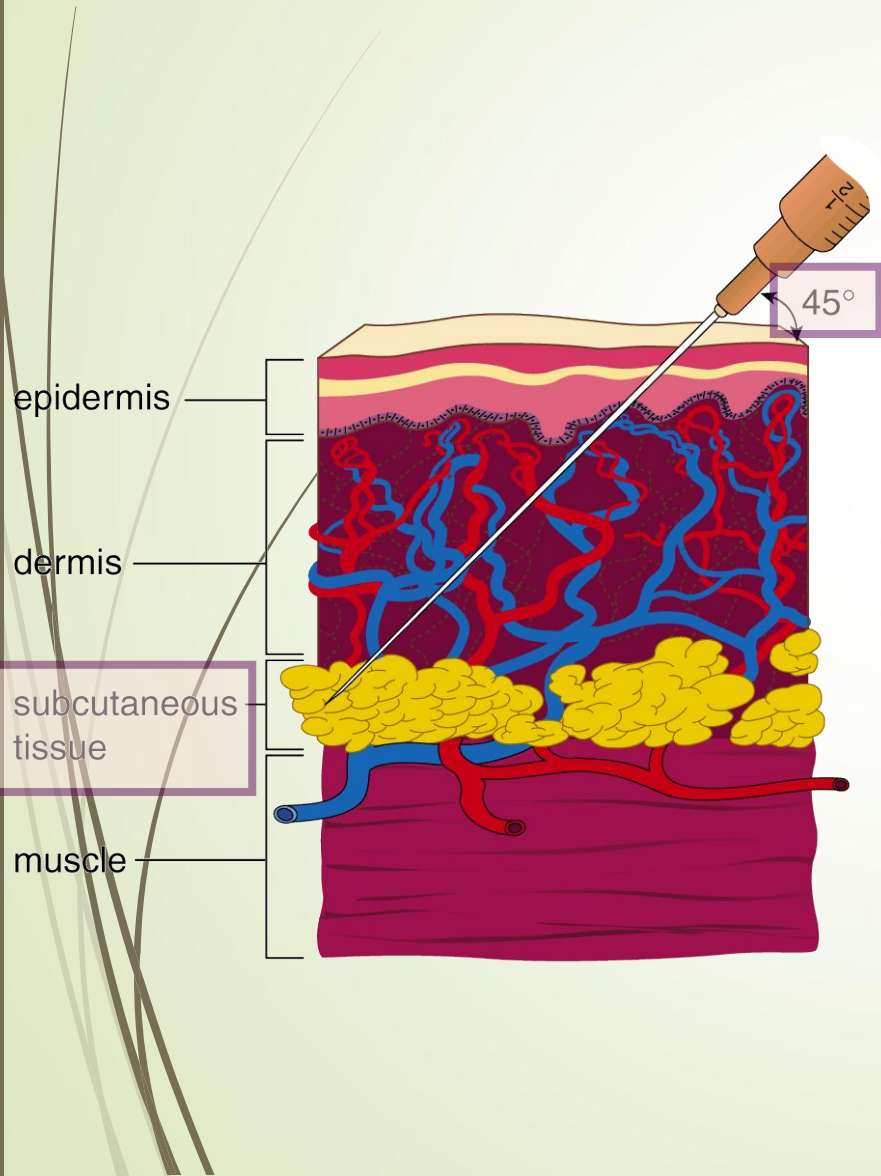
Subcutaneous Injections

- Medications administered by this route include:
 - epinephrine (or adrenaline)
 - for emergency asthmatic attacks or allergic reactions
 - مميع □ heparin or low molecular-weight heparins
 - to prevent blood clots
 - sumatriptan or Imitrex يستخدمو في علاج الشقيقة
 - for migraines
 - many vaccines

Subcutaneous Injections

- Normally given with the syringe held at a 45-degree angle
 - طبعاً مع مراعاة الفروقات بين المرضى الكبار بالعمر أو الي عندهم سمنة مفرطة والعكس
- in lean older patients with less tissue and obese patients with more tissue, the syringe should be held at more of a 90-degree angle
- Correct length of needle is determined by a skin pinch in the injection area
 - الطول الصحيح للابرّة بتحدد من خلال المكان الي رح يتم فيه الحقن
- proper length is one half the thickness of the pinch

Subcutaneous Injections



- Given at a 45-degree angle
 - 25- or 26-gauge needle, 3/8 to 5/8 inch length
- No more than 1.5 mL should be injected into the site
- to avoid pressure on sensory nerves causing pain and discomfort



Discussion

What factors may influence the choice of a parenteral route of administration?

Answer: Choice may be influenced by considerations of onset or duration of action and setting where drug is to be administered.

يعطيكم العافية