

Q1 What is the disadvantage of the following?

- (A) Multiple doses cannot be administered
- (B) Does not provide instant relief
- (C) Drug can get deposited in the oropharynx
- (D) Must be administered in hospital settings



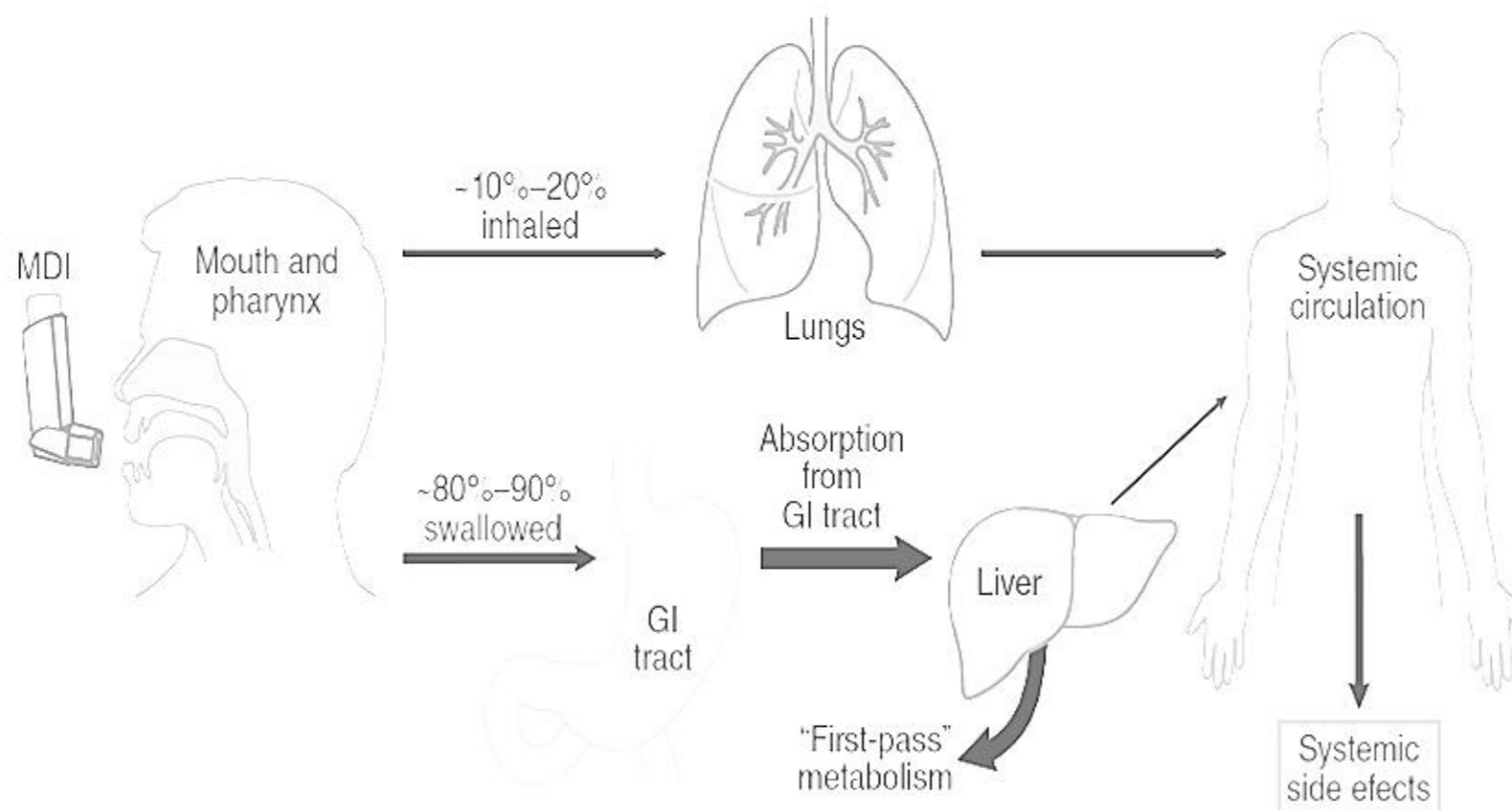
Ans: (C) Drug can get deposited in the oropharynx

Ref: Goodman Gilman, 13/e, pg 730

The image given is of a pressurized metered dose inhaler (pMDI), more commonly referred to as an 'inhaler'.

- ❖ pMDIs are convenient, portable, and typically deliver /50-200 doses of the drug.
- ❖ However, of the total drug delivered, only 10%-20% enters the lower airways with a conventional pMDI.
- ❖ This can be reduced by the use of a spacer.

Fate of a drug administered by the inhaled route:



Ref: Goodman Gilman, 13/e, pg 730

- Q2 Which drug promotes bone formation among the following?
- (A) Bisphosphonates
 - (B) Raloxifene
 - (C) Calcitonin
 - (D) Teriparatide

Ans: (D) Teriparatide

Ref: Goodman Gilman, 13/e, pg 899

- ❖ Teriparatide (PTH1-34) and abaloparatide (PTHrP(1-34)) are the only anabolic agents currently available that increase new bone formation.
- ❖ They are approved for use in treating severe osteoporosis in patients at a high risk for fracture

Note: The other three options are anti-resorptive (prevent bone resorption)

Influences affecting bone turnover

↑ Resorption	↓ Resorption
Corticosteroids	Androgens/Estrogens
Parathormone	Calcitonin
Thyroxine (excess)	Growth hormone
Hypervitaminosis D	Bisphosphonates
Prostaglandin E ₂	Fluoride
Interleukin 1 & 6	Gallium nitrate
Alcoholism	Mithramycin
Loop diuretics	Thiazide diuretics

Ref: KDT, 7/e, pg 335

Q3 Which of the following drugs worsens myasthenia gravis?

- (A) Lignocaine
- (B) Penicillin
- (C) Alpha blockers
- (D) Meropenem

Ans: (A) Lignocaine

Ref: Harrison, 19/e, pg 2706

Drugs to be avoided in patients with myasthenia gravis (due to worsening of the condition):

Drugs That May Exacerbate MG

Antibiotics

Aminoglycosides: e.g., streptomycin, tobramycin, kanamycin

Quinolones: e.g., ciprofloxacin, levofloxacin, ofloxacin, gatifloxacin

Macrolides: e.g., erythromycin, azithromycin

Nondepolarizing muscle relaxants for surgery

D-Tubocurarine (curare), pancuronium, vecuronium, atracurium

Beta-blocking agents

Propranolol, atenolol, metoprolol

Local anesthetics and related agents

Procaine, Xylocaine in large amounts

Procainamide (for arrhythmias)

Botulinum toxin

Botox exacerbates weakness

Quinine derivatives

Quinine, quinidine, chloroquine, mefloquine (Lariam)

Magnesium

Decreases acetylcholine release

Penicillamine

May cause MG

Drugs with Important Interactions in MG

Cyclosporine

Broad range of drug interactions, which may raise or lower cyclosporine levels.

Azathioprine

Avoid allopurinol—combination may result in myelosuppression.

Ref: Harrison, 19/e, pg 2706

Q4 A combination of codeine + dextromethorphan is being launched as an anti-tussive. This combination -

- (A) Should not be prescribed as it is irrational
- (B) Should not be prescribed due to increased risk of addiction
- (C) Can be prescribed as it is more effective
- (D) Can be prescribed as the drugs have different mechanisms of action

Ans: (A) Should not be prescribed due to increased risk of addiction

Ref: KDT, 7/e, pg 220

- ❖ Abuse liability is low with codeine, but present.
- ❖ Though dextromethorphan is considered non-addicting, some drug abusers indulge in it.

Q5 Which of the following drugs reduces mortality in COVID-19 patients?

- (A) Dexamethasone
- (B) Remdesivir
- (C) Favipiravir
- (D) Hydroxychloroquine

Ans: (A) Dexamethasone

Ref: Up To Date. Coronavirus disease 2019 (COVID-19): Management in hospitalized adults. (https://www.uptodate.com/contents/coronavirus-disease-2019-covid-19-management-in-hospitalized-adults?source=history_widget#H2223242197)

Dexamethasone:

- ❖ Oral or intravenous dexamethasone reduced 28-day mortality among hospitalized patients compared with usual care alone.
- ❖ The recommended dose is 6 mg daily for 10 days or until discharge, whichever is shorter.

Remdesivir:

- ❖ Remdesivir reduces time to recovery in hospitalized COVID-19 patients, particularly those on low-flow oxygen therapy.
- ❖ However, 28-day mortality is not affected.
- ❖ The recommended dose is 200 mg intravenously on day 1 followed by 100 mg daily for 5 days total (with extension to 10 days if there is no clinical improvement and in patients on mechanical ventilation or ECMO)

Favipiravir:

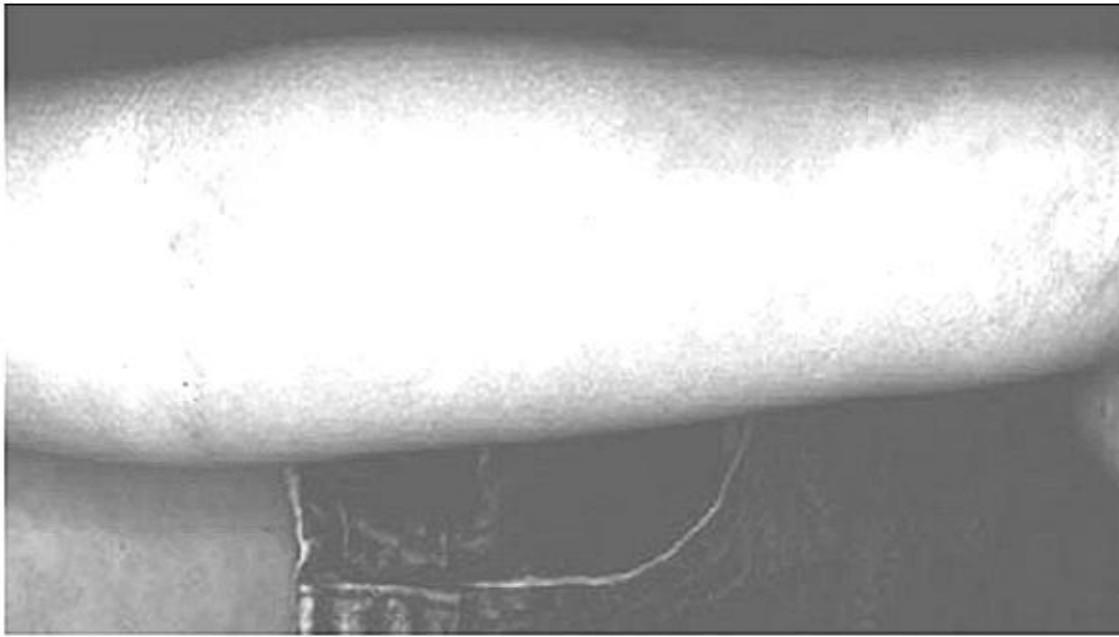
- ❖ Favipiravir can lead to faster rate of viral RNA clearance from upper respiratory tract specimens at day 5.

- ❖ However, the mortality benefit is uncertain.

Hydroxychloroquine:

- ❖ Hydroxychloroquine is not recommended for treatment of hospitalized COVID-19 patients due to lack of clear benefit and potential for toxicity (mainly QTc prolongation)

Q6 A child presented with complaints of cough and sore throat. He was prescribed an antibiotic but later presented with the following rash. Which antibiotic was most likely prescribed to the patient?



- (A) Fexofenadine
- (B) Salbutamol
- (C) Ampicillin
- (D) Prednisolone / Corticosteroids

Ans: (C) Ampicillin

The patient probably had infectious mononucleosis, presenting with cough and sore throat.

The risk of rash due to ampicillin is increased in patients with infectious mononucleosis.

Ref: Goodman Gilman, 13/e, pg 1030

- ❖ Skin rashes of all types may be caused by allergy to penicillin.
- ❖ The incidence of skin rashes appears to be highest following the use of ampicillin, at about 9%.

Rashes follow the administration of ampicillin frequently in patients with infectious mononucleosis, but in such cases, patients can tolerate subsequent courses of ampicillin without experiencing a rash.

Q7 The mechanism of anti-migraine drug causing angina-like symptoms is -

- (A) Release of NO
- (B) Inactivation of calcium channels
- (C) 5-HT receptor antagonism
- (D) 5-HT receptor agonism

Ans: (D) 5-HT receptor agonism

Ref: KDT, 7/e, pg 178-179

- ❖ The triptans are effective in migraine on account of vasoconstriction of cranial blood vessels on account of 5-HT_{1B/1D} agonism.
- ❖ However, the same vasoconstriction is also responsible for bradycardia, coronary vasospasm and risk of myocardial infarction as serious, but infrequent adverse effects.
- ❖ Ischemic heart disease is a contraindication to the use of triptans.

Q8 Which of the following drugs are used for absence seizures?

- A. Carbamazepine
- B. Valproate
- C. Ethosuximide
- D. Gabapentin

- (A) a, b and c
- (B) b and c only
- (C) b only
- (D) d only

Ans: (B) b and c only

Ref: Harrison's, 19/e, pg 2552

Drugs for absence seizures:

Typical Absence	Atypical Absence, Myoclonic, Atonic
Valproic acid	Valproic acid
Ethosuximide	Lamotrigine
Lamotrigine	Topiramate
Lamotrigine	Clonazepam
Clonazepam	Felbamate
	Clobazam
	Rufinamide

Ref: Harrison's, 19/e, pg 2552

Q9 Which of the following drugs causes least sexual side effects?

- (A) Fluoxetine
- (B) Venlafaxine
- (C) Mirtazapine
- (D) Imipramine

Ans: (C) Mirtazapine

Ref: KDT, 7/e, pg 463

Sexual dysfunction is not a problem with mirtazapine.

Adverse effects of mirtazapine:

- ❖ Sedation
- ❖ Increased appetite
- ❖ Weight gain

Q10 Match the following dilutions of adrenaline with the correct route of administration:

DILUTION		ROA	
1.	1:1000	A.	Intra-cardiac
2.	1 : 10,000	B.	Intra-muscular
3.	1 : 1,00,000	C.	Local Anaesthesia

Ans: 1-B, 2-A, 3-C

Ref: KDT, 7/e, pg 133

Dilutions of adrenaline:

Dilution	Route / Use
1:1000	IM s. c.
1:10,000	Intracardiac As compresses for epistaxis
1:1,00,000 to 1:2,00,000	IV In combination with local anasthetics

Q11 A patient is prescribed penicillin and gentamicin together for his symptoms.

Therapeutic drug monitoring is needed for -

- (A) Penicillin as it shows allergic reactions
- (B) Gentamicin as it has a narrow therapeutic index
- (C) Both the drugs as both penicillin and gentamicin show narrow therapeutic index
- (D) Neither as both show a wide therapeutic index

Ans: (B) Gentamicin as it has a narrow therapeutic index

Ref: KDT, 7/e, pg 34

Drugs requiring therapeutic drug monitoring (Mnemonic: DAT-LAAT-MC)

- ❖ Digoxin
- ❖ Antiarrhythmics
- ❖ Theophylline
- ❖ Lithium
- ❖ Aminoglycosides
- ❖ Anti-epileptics
- ❖ TCAs
- ❖ Methotrexate
- ❖ Calcineurin inhibitors

Q12 Match the following drugs with their correct antidotes

DRUG		ANTIDOTE	
1.	Heparin	A.	Levocarnitine
2.	Ethylene glycol	B.	Protamine
3.	Hydroflourix acid	C.	Fomepizole
4.	Valproate	D.	Calcium gluconate

Ans: 1-B, 2-C, 3-D, 4-A

Ref: Goodman Gilman, 13/e, pg 63

Antidotes for common poisonings:

TABLE 4-9 ■ COMMON ANTIDOTES AND THEIR INDICATIONS

ANTIDOTE	POISONING INDICATION(S)
Acetylcysteine	Acetaminophen
Atropine sulfate	Organophosphorus and carbamate pesticides
Benztropine	Drug-induced dystonia
Bicarbonate, sodium	Na ⁺ channel blocking drugs
Bromocriptine	Neuroleptic malignant syndrome
Calcium gluconate or chloride	Ca ²⁺ channel blocking drugs, fluoride
Carnitine	Valproate hyperammonemia
Crotalidae polyvalent immune Fab	North American crotaline snake envenomation
Dantrolene	Malignant hyperthermia
Deferoxamine	Iron
Digoxin immune Fab	Cardiac glycosides
Diphenhydramine	Drug-induced dystonia
Dimercaprol (BAL)	Lead, mercury, arsenic
EDTA, CaNa ₂	Lead
Ethanol	Methanol, ethylene glycol
Fomepizole	Methanol, ethylene glycol
Flumazenil	Benzodiazepines
Glucagon hydrochloride	β adrenergic antagonists
Hydroxocobalamin hydrochloride	Cyanide
Insulin (high dose)	Ca ²⁺ channel blockers
Leucovorin calcium	Methotrexate
Methylene blue	Methemoglobinemia
Naloxone hydrochloride	Opioids
Octreotide acetate	Sulfonylurea-induced hypoglycemia
Oxygen, hyperbaric	Carbon monoxide
Penicillamine	Lead, mercury, copper
Physostigmine salicylate	Anticholinergic syndrome
Pralidoxime chloride (2-PAM)	Organophosphorus pesticides
Pyridoxine hydrochloride	Isoniazid seizures
Succimer (DMSA)	Lead, mercury, arsenic
Thiosulfate, sodium	Cyanide
Vitamin K ₁ (phytonadione)	Coumarin, indanedione

Ref: Goodman Gilman, 13/e, pg 63



