Drug prescription

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22nd Nov 2018

Name of the dentist
Address of the dentist
(License number)

Name of the patient
Address of the patient

Date of birth

Rx

Generic name of medicine | Dose

Sig

(frequency of administration)

Dis

(quantity dispensed)

Signature | Date of script

Hand-written

Abbreviations used as headings

- Rx, recipe
  - What is the drug, or what is the recipe to make the drug?
- Sig., signetur
  - How should the drug be used?
    - Route of administration
    - Method of administration
    - Dosage per administration
    - Frequency
    - Duration
    - Purpose
    - Other special instructions
- Disp., dispense
  - How much should be dispensed to the patient?

Prescription abbreviations

- Abbreviations relate to:
  - Route of administration
  - Frequency of administration
  - Time of administration
  - Circumstances of administration

Route of administration

- O - oral
- S.C. – subcutaneous
- I.M. – intramuscular
- I.V. - intravenous

Frequency of administration

b.d.	bis die	Twice daily
b.i.d.	bis in die	Twice daily
t.i.d.	ter in die	Three times per day
t.d.s.	ter die sumendus	To be taken three times daily
q.i.d.	quarter in die	Four times daily
q.d.s.	quarter die sumendus	To be taken four times daily
q	quaque	Every

Time of administration

a.c.	ante cibium	Before food (meals)
p.c.	post cibium	After food (meals)
mane		Morning
nocte		At night
stat	statium	Immediately, at once
p.r.n.	pro re nata	When required

Pharmaceutical preparations

cap	capsules
tab	tablets
syr	syrup
top	topical
btl	bottle
crm	cream
oint	ointment
elix	elixer
loz	lozenges

Calculation of doses

- Most does quoted are usually for healthy, 65-75kg adults

- Doses should be prescribed according to the patient's weight, age and medical status

Age	Fraction of adult dose	% of adult dose
20 years+	Adult dose	Adult dose
12 years	3/4	75
7 years	1/2	50
3 years	1/3	33.3
1 year	1/4	25
Infant	1/8	12.5

- Things to take into consideration;
  - Indications and contraindication(s)
  - Hypersensitivity reaction(s)
  - Pregnancy
  - Drug interaction(s)
  - Adverse effects
  - Patients special circumstances (sports, travel…etc).

Drug use in pregnancy;

Class	Safety to fetus
A	**No risk in controlled human studies:** Adequate and well-controlled human studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters)
B	**No risk in other studies:** Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women OR Animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus in any trimester.
C	**Risk not ruled out:** Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
D	**Positive evidence of risk:** There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
X	**Contraindicated in pregnancy:** Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

Source: FDA (via wikipedia)

- Therapy can be specific when it is targeted towards the causative agent, such as anti-bacterial and anti-viral agents,
- Or it can be non-specific when the cause is not known, such as anti-septic, anti-inflammatory and immune-modulating agents.
- Therapy can be topical or systemic or both.

Your patients is Ahmad Ali
He is 11 years old (born on 5/5/2006)
He has artificial heart valves and requires dental extraction.

Write a prescription for Ahmad.

Drug Prescription

Name: Ahmad Ali
Date of Birth: 5/5/2006

Rx:
Amoxycillin 2.0 grams stat dose

Sig.:
Take FOUR capsules as a single dose, 30 minutes before the dental extraction

Signature

Name (stamp)

Drug Prescription

Name: Ahmad Ali
Date of Birth: 5/5/2006

Rx:
Betadine mouthwash

Sig.:
Gargle with 10-15ml of the mouthwash for ONE minute, then spit out. Do this THREE times everyday for five days. DO NOT SWALLOW

Disp. ONE bottle

Signature

Name (stamp)

Topical therapy

- Antimicrobial
  - Anti-septic
  - Anti-viral
  - Anti-fungal
  - Anti-bacterial
- Analgesic
  - Anesthetic
- Anti-inflammatory
  - Cortico-steriods

Topical therapy

- Topical therapy has the advantage of;
  - ➢Being applied directly to the lesion
  - ➢Having little or no systemic absorption
  - ➢Being retained for a relatively long time
- Agents contain two main ingredients; the active drug and a vehicle.

Anti-septic agents

- The most widely used is Chlorhexidine.
- It has antibacterial and antifungal activities.

Chlorhexidine

- Broad spectrum antimicrobial. Effective against a wide range of Gram negative and Gram positive bacteria, facultative anaerobes and aerobes, and yeasts, and some viruses.

- Chlorhexidine has a cationic nature (+ve charge), so it binds strongly to skin and mucosa, and is thus very poorly absorbed.
- It also binds strongly to bacterial cell wall (-ve charge).
- After an oral rinse, 30% of the wash is retained within oral fluids.
- At low doses → leakage of K^+ and PO_4^- → bacteriostatic.
- At high doses → cytoplasmic components precipitate → bacteriocidal.

- Pregnancy class B.

- Adverse effects;
  - ➢staining of teeth, mucosa, tongue and restoration. Occurs early (1 wk post-treatment) and can be irreversible).
  - ➢Irritation (burning) sensation of the tongue and mucosa, disturbed sensation.
- Hypersensitivity reaction to chlorhexidine is extremely rare.

- Sig.
  - ➢Use the mouthwash after brushing and flossing teeth. Swish 15ml around mouth for 30 seconds, then expectorate. Do this 2-4 times daily. Do not swallow. Do not eat for 2-3 hours after application.

Miconazole

- Action: fungistatic activity on a number of fungi, by inducing permeability of the fungal cell wall membrane → ionic instability → inhibit ergosterol synthesis.
- Precautions: miconazole can inhibit metabolism of drugs that are metabolized by cytochrome P450 enzyme system. Therefore, concomitant use with anti-coagulant (coumarin derivatives) leads to increased activity of the anti-coagulant.

- Coumarin derivatives include;
  - ➢Warfarrin
  - ➢Cyclosporin
  - ➢Tacrolimus
  - ➢Simvastatin
  - ➢Lovastatin
- Pregnancy: class A

- Adverse reactions;
  - ➢Nausea
  - ➢Vomiting
  - ➢Diarrhea
  - ➢Anorexia
  - ➢Rarely, allergy

- Sig.
  - ➢Apply gel on the tongue, swash it around the mouth and keep it for as long as possible, then spit it out. Do not swallow.
- Dis.
  - ➢Daktarin oral gel 20mg/ml 15g tube.
  - ➢Daktarin oral gel 20mg/ml 40g tube.

Nystatin

- Antifungal antibiotic, action is probably due to binding to sterol in the cell membrane of the fungus → channels or pores → leakage of intracellular components
- Overall it is a safe drug, rare allergic reactions.

- Pregnancy class A
- Adverse effects; GIT disturbances in large doses (nausea, diarrhea…etc). It is not absorbed by the GIT.

- Sig.
  - ➢100,000 - 200,000 units q6 hours
  - ➢Apply 1.0ml and keep for as long as possible then swallow. Do not eat for one hour after the dose. Continue treatment at least 48 hours after clinical symptoms disappear.
- Dis.
  - ➢Oral drops 100,000 units/ml, 24 ml bottle

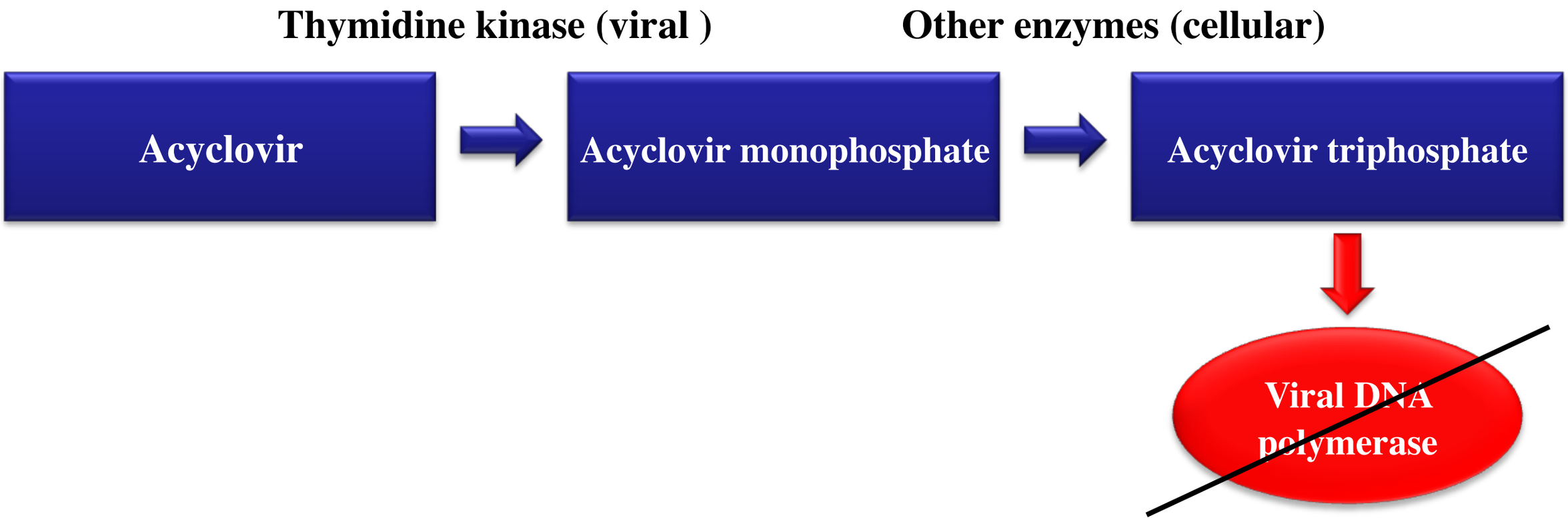
Amphotericin

- Amphotericin has high affinity to ergosterol of the fungal cell membrane. Binding to ergosterol → damage → increased permeability → cell death.
- Oral topical application is not absorbed systematically and is well tolerated.
- No reported side effects, except for mild GIT distress.
- Pregnancy class B

- Sig.
  - ➢Allow one lozenge to dissolve slowly in the mouth after meals every six hours for 7-14 days. (take denture out).
- Dis.
  - ➢10mg lozenges. 28-56 lozenges.

Acyclovir

- Antiviral agent that is active against HSV 1 and 2, and to lesser extent VZV.
- Acyclovir needs to be phosphorylated in order to become active;



Acyclovir

- It is well tolerated on the lips, but application to the mucosa causes irritation.
- Adverse effects include; dryness, burning and stinging.
- Pregnancy class B

Acyclovir

- Sig.
  - ➢Apply cream on the lesion (or impending lesions) five times each day for five days. Start treatment as early as possible.
- Dis.
  - ➢Cream 50mg/g (5% w/w) 2g, 5g or 10g tube

Topical anesthetics

Benzydamine

- Anti-inflammatory, analgesic, anaesthetic.
- Temporarily relieves painful inflamed conditions of the mouth, including mouth and denture ulcers and sore gums.

- It is non-steroidal (structurally), and it differs chemically from non-steroidal anti-inflammatory agents being a base rather than an acid.
- It possesses local anaesthetic action;
  - ➢inhibits the biosynthesis of prostaglandins under certain conditions
  - ➢Stabilizes cellular membranes

- Precautions;
  - ➢Bezydamine is absorbed by oral mucosa → metabolized in the liver → excreted in urine, hence;
  - ➢Use with caution in patients with severe hepatic and/ or renal impairment.

- Pregnancy class B

- Local adverse reactions;
  - ➢oral numbness
  - ➢burning or stinging sensation
  - ➢dryness or thirst
  - ➢tingling
  - ➢warm feeling in mouth
  - ➢altered sense of taste

- Sig.
  - ➢Apply approximately 1 cm of gel with finger.
  - ➢Gently massage into sore area.
  - ➢Do not eat or drink for 15 minutes.
  - ➢Apply every two to three hours up to a maximum of 12 times/ day.
  - ➢Do not use for more than seven days.

- Dis.
  - ➢ Gel 10 g.

Anti-inflammatory

Glucocorticoids

- Steroids secreted by the adrenal cortex, along with mineralocorticoids and adrenal androgens
- Have anti-inflammatory and immune-suppresser actions.
- The main glucocorticoid is cortisol (hydrocortisone).
- The overall actions of glucocorticoids are to enhance the production of glucose, and reduce functions that contradict that.
- Glucocorticoids regulate metabolism of protein, carbohydrate and lipids.

Glucocorticoids

- As an immune-supprsant;
  - ➢Suppress cell-mediated immunity by inhibiting genes that code for IL-1, 2, 3, 4, 5, 6 and 8 plus INF-γ
  - ➢Suppresses humoral immunity by inhibiting the synthesis of IL-2 receptor on B-cells.

Glucocorticoids

- As an anti-inflammatory;
  ➢They inhibit phospholipase A2 production.
  ➢Phospholipase A2 is essential for the production of arachidonic acid synthesis which will form PG (through cyclooxygenase pathway) and leukotriens (through lipoxygenase pathway) that are essential for inflammatory responses.

Topical Corticosteroids

- Have various potencies.
- Potency is measured by the vasoconstriction produced when the topical drug is applied.
- Vasoconstriction depends on;
  - Concentration
  - Ability to penetrate epithelium
  - Intrinsic activity of drug

Mild	
Desonide	0.05%
Hydrocortisone	0.5%, 1%
Hydrocortisone acetate	0.5%, 1%
Moderate	
Betamethasone valerate	0.02%, 0.05%
Triamcinolone acetonide	0.02%
Potent	
Betamethasone dipropionate	0.05%
Betamethasone valerate	0.1%
Triamcinolone acetonide	0.1%
Very potent	
Betamethasone dipropionate	0.05% in optimized vehicle

Topical Corticosteroids

- Adverse side effects;
  - ➢Damage to collagen. This will lead to mucosal atrophy, fragility and easy bruising.
  - ➢Telangiectasia
  - ➢Infections (oral candidosis)
  - ➢Sometimes local irritation
  - ➢Absorption may cause suppression to the hypothalamic-pitutary-adrenal axis.