MEDICINES MONITORING

Why do we monitor drugs?

Gender

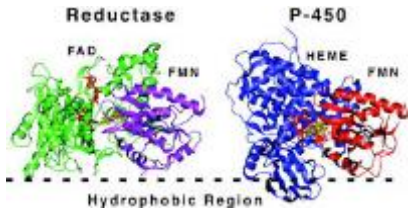
Size: Height and weight and fat stores

Age

EVERYONE IS DIFFERENT

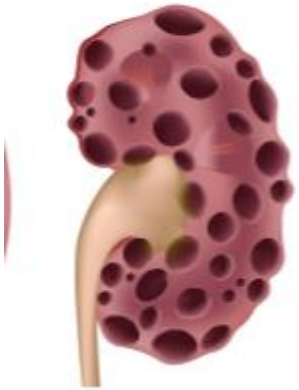
This affects the way we handle drugs-
You have clues about some however others you don't
e.g. the patient's biochemistry
You can't accurately predict how all these things will influence drug a particular drug level.

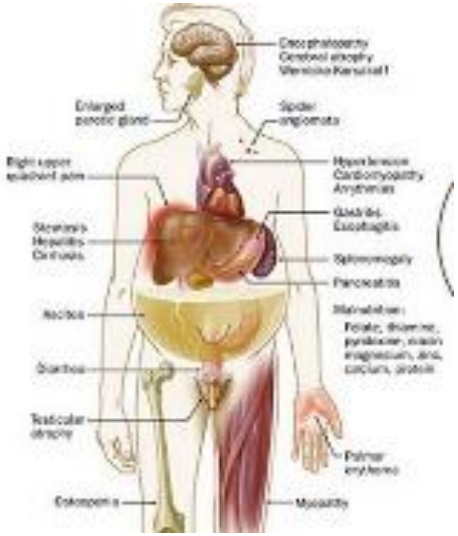
Genetics



Other drugs the patient is on

Kidney Disease





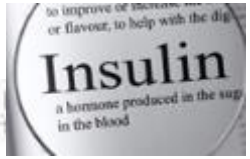
Liver and other diseases

Too much Heparin

Not enough Heparin

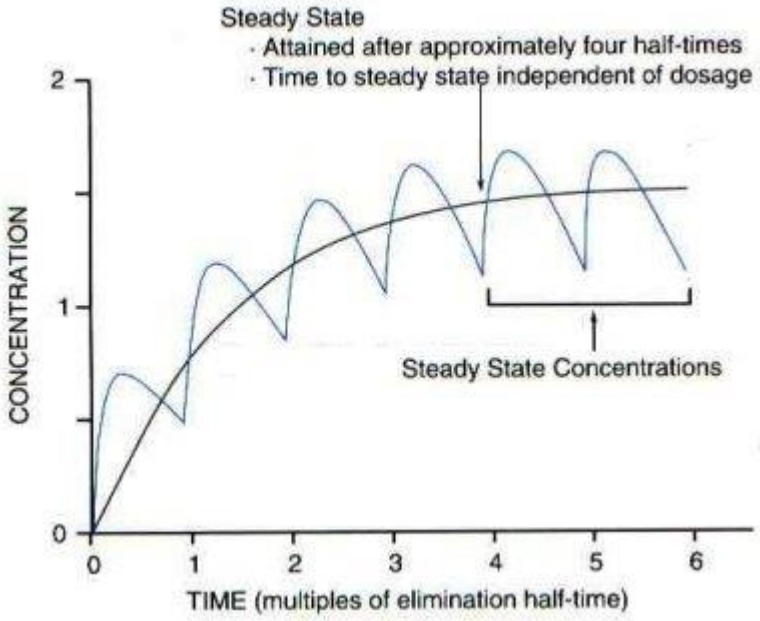
TO AVOID COMPLICATIONS OF POOR DRUG MONITORING

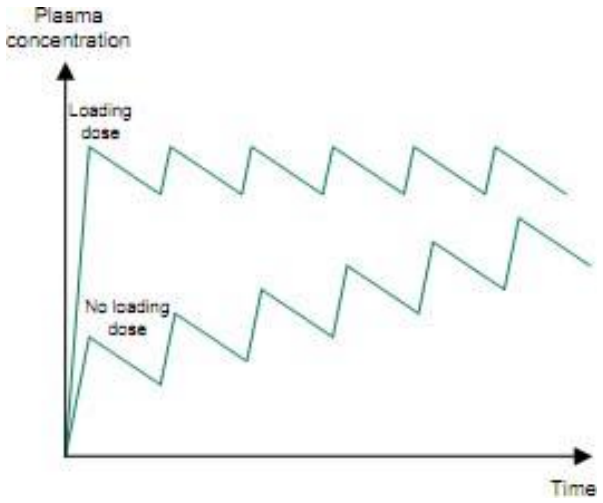
Toxic or sub-therapeutic levels could be ***your*** last warning if things have gone wrong before a major complication.



THINGS CHANGE including DRUG LEVELS

(If you don't measure you won't know how they have changed)





INSULIN - MONITORING

- Why should we do this?
- When should we do this?
- What to do if results are abnormal?

  Erroneous testing??

  Firstly check BGL again but by another method before acting!

  Send a sample to lab if necessary

- **What could be the causes? Think!**

✓ Patient's condition?

✓ I/V Hydration/TPN/enteral/food/nil by mouth?

✓ Insulin strength/dosage/rate?

INSULIN - MONITORING

Why ?

- To ensure the blood glucose levels (BGL) are within the given parameters
- “4 is the floor!”
- Critical care patients may be unable to communicate the signs and symptoms of Hypoglycaemia and hyperglycaemia
- To monitor the I/V insulin requirements

When ?

- Hourly - until the BGL is stable
- As guidelines/protocols dictates

Causes ?

Hypoglycaemia

TPN/ enteral feed stopped/ nil by mouth

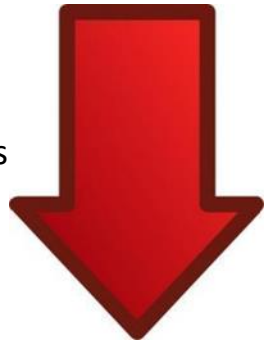
Too much insulin/ diabetic medications

Infection/sepsis

Alcohol

Certain medications

Certain diseases/ tumours



Hyperglycaemia

Omission of diabetic medication/ insulin stopped

Stress

Illnesses – DKA: HHS

Dehydration

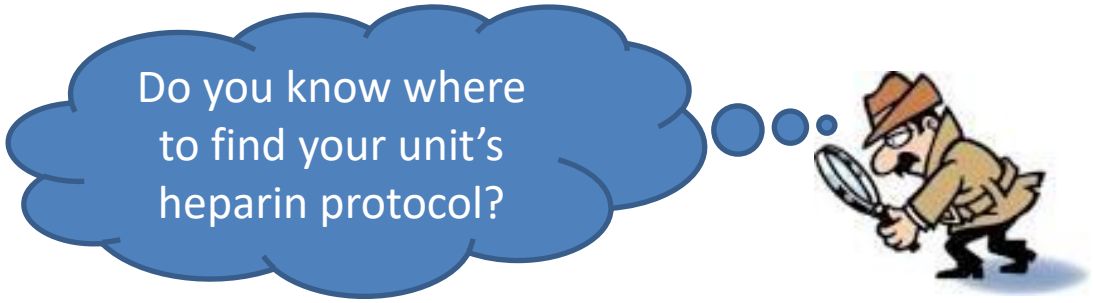
Certain medications - steroids

Pregnancy

HEPARIN MONITORING

The following parameters should be monitored

- APPT as per the protocol being followed
- Platelet count, daily. Heparin can cause HIT Heparin induced Thrombocytopenia, which can be fatal
- Prothrombin time ~ daily
- Haematocrit, urinalysis (for haematuria) ~ daily
- Concurrent drug therapy – aspirin containing drugs should be avoided as this inhibits platelet function



OTHER DRUGS THAT ARE IMPORTANT

- **Other Antibiotics (e.g. Vancomycin)**
- **Immunosuppressive drugs (e.g. Tacrolimus, Cyclosporin)**
- **Anticonvulsants (e.g Phenytoin)**
- **Aminophylline**
- **Digoxin**

Do you know how to find out how and when to send the drug levels on your unit?

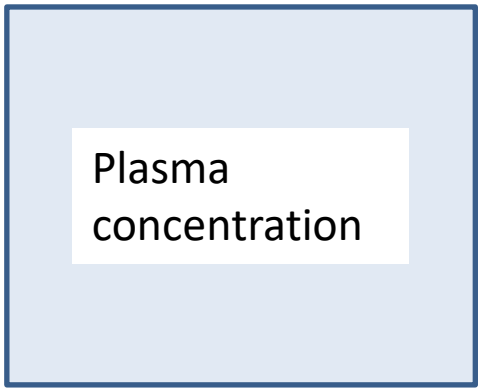
WHY WE GIVE A LOADING DOSE

Without a loading dose an infusion of a drug will take a long time (**7 half lives of the drug**) to reach the desired plasma concentration as it has to fill the plasma **while it is also** being removed

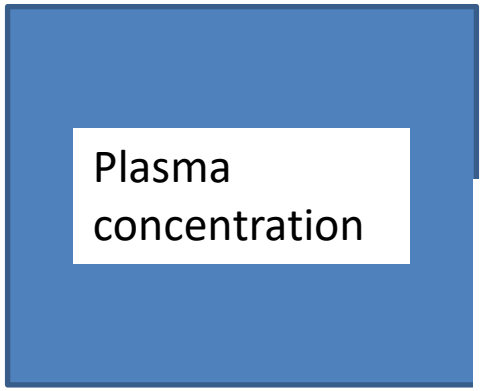
Continuous infusion

Continuous infusion

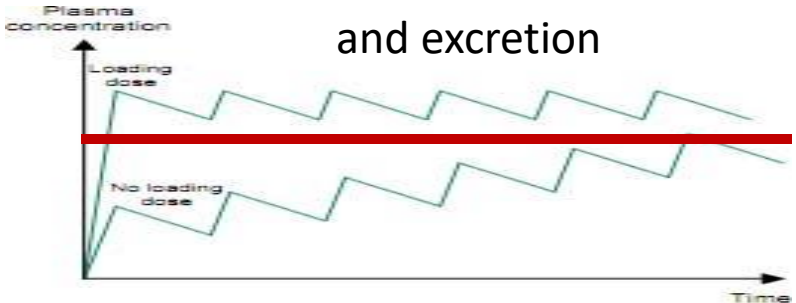
Loading dose



Drug metabolism and excretion



Drug metabolism and excretion



Where do we keep our protocols?

- If this slide is used it will have to be completed by each unit locally
- If they don't want to do this they can use slide 9.

What are the bite size learning resources for drug monitoring?

- Heparin scenario
- Insulin and feed scenario
- Gentamicin dosing scenario