Drug Monitoring, Therapeutic

Therapeutic drug monitoring is used for measuring the level of some medications as a way to determine the most effective dose and or to avoid toxicity.

WHY IS IT IMPORTANT?

The drugs that are monitored have some special features. Most of them work best over a small range. Below this range, the drug is not effective and the patient begins having symptoms again; above this range, the drug has bad or toxic side effects that you want to avoid. Since many people take more than one medication, there may be interactions between the drugs that affect the way the body absorbs or metabolizes one of them. Also, some patients do not take medications as prescribed or instructed. Monitoring identifies these cases.

WHAT DRUGS ARE MONITORED?

There are several categories of drugs that require monitoring. The following are some of those drugs.

DRUG CATEGORY: Cardiac drugs
DRUGS IN THAT CATEGORY: Digoxin, quinidine, procainamide, N-acetyl-procainamide (a metabolite of procainamide)
TREATMENT USE: Congestive heart failure, angina, arrhythmias

DRUG CATEGORY: Antibiotics
DRUGS IN THAT CATEGORY: Aminoglycosides (gentamicin, tobramycin, amikacin) Vancomycin, Chloramphenicol
TREATMENT USE: Infections with bacteria that are resistant to less toxic antibiotics

DRUG CATEGORY: Antiepileptics
DRUGS IN THAT CATEGORY: Phenobarbital, phenytoin, valproic acid, carbamazepine, ethosuximide, sometimes gabapentin, lamotrigine
TREATMENT USE: Epilepsy, prevention of seizures

DRUG CATEGORY: Bronchodilators
DRUGS IN THAT CATEGORY: Theophylline, caffeine
TREATMENT USE: Asthma, Chronic obstructive pulmonary disorder (COPD), neonatal apnea

DRUG CATEGORY: Immunosuppressants
DRUGS IN THAT CATEGORY: Cyclosporine, tacrolimus, sometimes sirolimus, mycophenolate mofetile
TREATMENT USE: Prevent rejection of transplanted organs

DRUG CATEGORY: Anti-cancer drugs
DRUGS IN THAT CATEGORY: Methotrexate
TREATMENT USE: Various cancers, rheumatoid arthritis, non-hodgkin's lymphomas, osteosarcoma, psoriasis

DRUG CATEGORY: Psychiatric drugs
DRUGS IN THAT CATEGORY: Lithium, desipramine, some antidepressants (imipramine, amitriptyline, nortriptyline, doxepin)
TREATMENT USE: bipolar disorder (manic depression), depression

HOW DOES TDM WORK?

Through years of testing, the optimum blood level range for each drug has been determined. (Remember, though, that each of us is different and the best drug level for one person may be different from another person.) For most of the drugs listed, blood is drawn right before a dose is given. For some drugs, the blood collection will take place after the dose is given at a specific time (for example, 90 minutes later); this time will vary and may be as long as 8 hours after dosing). Drawing the blood at the correct time is very important. The amount of drug measured in the blood will be used to determine if a patient is getting the right amount of the medication and, in some cases, to calculate the amount of drug that will be given the next time. So, if you are scheduled to have your blood drawn for a drug level, make sure you know if you are to take the drug before or after the blood draw is done. If you forget and do the opposite (take the drug when you are supposed to wait), let someone in the caregiver's office or lab know before the blood is collected.

FAQ'S

1. How does my caregiver determine how much drug to give me?

There are many factors to consider. Some of them are your weight, body composition, age, temperature, gastric movement, nutrition, renal, liver, and heart conditions, burns, shock, and trauma.

2. What should I do if I forget to take my medication on time?

Do not double your dose the next time. Consult your caregiver or pharmacist to find out what you should do.

3. Can I monitor myself at home?

No. Usually blood must be collected at specific times and tests done on special laboratory equipment.

FOR MORE INFORMATION, VISIT: http://www.labtestsonline.org/

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