IOWA POISON CONTROL CENTER

Poison HOTLINE

1-800-222-1222

February 2018

Did you know ……

Clozapine (Clozaril ®) can cause life-threatening agranulocytosis (low white blood cell count) in 0.38% to 2% of patients taking the medicine therapeutically.

Following a potential clozapine overdose, the IPCC suggests an initial leukocyte count with differential be obtained at admission. The leukocyte and granulocyte count should also then be monitored once or twice weekly for four weeks following overdose.

National Poison Prevention Week (NPPW) **is March 18-24, 2018.** Order your NPPW poster and materials HERE.

Medication Half-Life in Toxicology

The biological half-life (T1/2) of a chemical or medication is the time required for the amount of the chemical / medication in the body to decrease to 1/2 of its original amount. In other words, it is the time required for 50% of the chemical / medication to be eliminated from the body while the other 50% remains in the body. The T1/2 can be a measure of the total body burden (total amount in the body) or a specific tissue concentration (e.g. blood concentration).

A common scenario dealt with at the Iowa Poison Control Center: a patient comes into the ED after taking unknown amounts of alprazolam and APAP. The patient is drowsy, talking and VS are stable. Question posed to the IPCC's nurse or pharmacist from the ED's health care providers is: What is the half-life of the medications and for how long do they need to monitor the patient?

The half-life in THERAPEUTIC dosing for alprazolam is 11.8 hours and for APAP is 2-3 hours. Each drug presents separate issues. Alprazolam overdoses are monitored until the symptoms resolve. APAP is treated based on the 4 hour, or later, blood concentration charted on a nomogram. With both drugs the half-life does not enter into treatment decision making.

Another misconception is that one half-life is the total duration of the drug's effects or the time it takes to eliminate all the drug from the body. In ONE half-life only HALF of the drug has been eliminated. Generally it takes 5 half-lives for a drug to be totally eliminated. This elimination only applies to therapeutic drug dosing, not in overdoses.

There have not been many studies looking at the kinetics of drugs in overdoses. In general, there is no relationship between a drug's therapeutic half-life and the duration of the drug's effects in a significant overdose.

Things that affect drug TOXICOkinetics and duration of effects in overdose:

1. Rate of drug dissolution
2. Degree of absorption
3. Speed of absorption
4. Degree of protein binding
5. Drug's volume of distribution
6. Urine pH
7. Chronicity of exposure
8. CYP450 induction or inhibition
9. Saturation of metabolic pathways
10. Enter-enteric or entero-hepatic recirculation

Denise Brumm RN, CSPI
Certified Specialist in Poison Information

POISON Help 1-800-222-1222

Hotline Editor: Edward Bottei, MD
Post and share this edition of **Poison Hotline** with your colleagues. Send comments or questions to Poison Hotline, 712-234-8775 (fax) or Tammy.Noble@UnityPoint.org. To subscribe or unsubscribe from this distribution list, contact the IPCC education office at 712-279-3717. Read past issues of **Poison Hotline** at www.iowapoison.org.