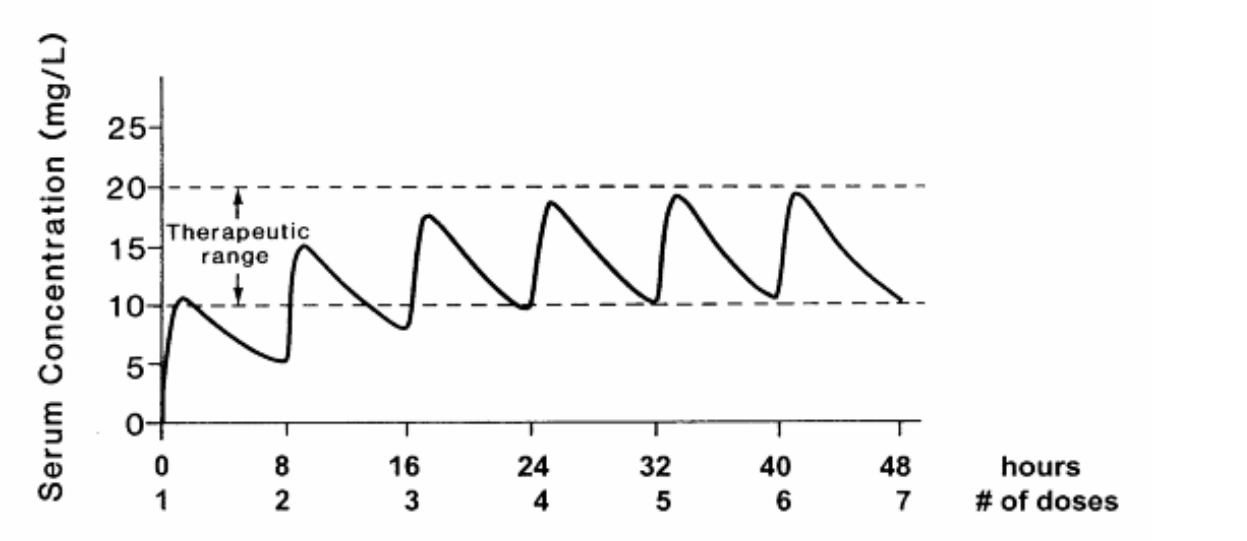
BIOCHEMISTRY BY-LINE

ST. BONIFACE GENERAL HOSPITAL August 2005

PHLEBOTOMY AND THERAPEUTIC DRUG MONITORING

The figure illustrates expected blood concentrations for a fictitious drug upon repeated dosing. After 5 drug half-lives, steady state equilibrium is essentially achieved. Although the drug absorption equals its elimination at steady-state, there is still a wide swing between peak and trough concentrations. Trough values are usually used as literature reference values because the drug blood-tissue equilibrium is best approximated at this time. For these two reasons it is appropriate to draw blood for drug quantitation at trough times.



For inpatients at SBGH blood trough measurements are drawn up to 45 minutes before the next dose. Exceptions are for a) digoxin in which blood is collected up to 4 hours before the next dose and for b) the tricyclic antidepressants and lithium in which blood is collected in the morning (ie. approximately 10 hours after the last dose).

Logistically it is best if the drug can be dosed between 0800-0900 h and 1500-1600 h to coincide with 0700 and 1400 h regular laboratory phlebotomy times. Other timed collections may be booked during weekdays with the laboratory at least 2 hours prior to requiring it.

The same restrictions do not apply to patients seen in ACF, Emergency Department and clinics. However, times of i) actual blood collection; ii) last dose, and; iii) next dose will be included on the drug report (as they are for inpatients) when this information is provided.

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