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The Maudsley® Prescribing Guidelines in Psychiatry, Fifteenth Edition. David M. Taylor, Thomas R. E. Barnes and Allan H. Young. © 2025 David M. Taylor. Published 2025 by John Wiley & Sons Ltd. Chapter 11 Plasma level monitoring of psychotropic drugs The measurement of blood or plasma drug concentrations is widely known as therapeutic drug monitoring or TDM. It is often used in psychiatry but not always well used. The interpretation of drug concentrations (drug ‘levels’) is a complex process that requires a thorough understanding of pharmacokinetics. Some principles are outlined here. First-order pharmacokinetics The metabolism and excretion of most drugs follow first-order elimination kinetics. The key feature of this model is that clearance of a drug is constant when expressed in volume per unit time – usually L/h. The mass of drug cleared (metabolised or excreted) increases as blood concentration increases. For example, if clearance of a drug is 10L/h and the concentration is 5mg/L then 50mg (10×50mg) will be cleared in an hour. If the concentration increases to 10mg/L then 100mg will be cleared in an hour. The concept of first--order pharmacokinetics is important to the understanding of steady state. Steady state Repeated dosing of any drug that is not completely removed within the dosing interval will inevitably lead to accumulation. That is, the second dose will add to what remains of the first and the third dose will add to what remains of the first and second doses. As the drug concentration in the blood increases, the mass of the drug cleared will also rise, according to first-order principles. Eventually, a point is reached where blood levels remain stable within a specific peak-to-trough range – this is steady state. It is important Pharmacokinetics

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