Further experience in essential hypertension with low doses of captopril will be required to determine whether converting enzyme inhibition can be extended to the much larger group of mild to moderate hypertensive patients.

Captopril in congestive cardiac failure

Captopril can produce considerable short term haemodynamic improvement in patients with refractory heart failure, and there is evidence of long term symptomatic relief. Its beneficial effects appear to result from actions on both arterial and venous sides of the circulation. As with other recent developments in managing heart failure by reduction of preload or afterload, or both, captopril should at present be reserved for patients with persistent symptoms and signs not responding to conventional treatment with diuretics or digoxin or both. Patients taking diuretics should start with a low dose of captopril, which may then be increased under close supervision.

Conclusion

Since most patients with hypertension can be adequately controlled by once daily treatment with a beta-blocker or a thiazide diuretic and with few adverse reactions the drugs described above will have limited appeal for first line treatment at present. Prazosin and captopril have a place in treating the more resistant forms of hypertension and prazosin might also be used in low doses, combined with a diuretic, for those patients who are unable to take a beta-blocker. Labetalol has the disadvantage of its dosing frequency while indoramin has the disadvantage of its unwanted effects.

Both prazosin and captopril may improve symptoms in patients with refractory congestive cardiac failure. There is no evidence, however, that these agents alter the clinical course of

the disease. For the present their use should be restricted to those patients who remain symptomatic despite conventional treatment with diuretics or digitalis preparations, or both.

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New Devices

Drug convertarule

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Abstract

A convenient pocket ruler has been developed that allows conversion between metric and molar measurements of many of the drugs for which therapeutic monitoring in the circulation is commonly used. The ruler also gives information to the clinician on suggested therapeutic ranges for the incorporated drugs.

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Introduction

The fine tuning of plasma drug concentration to optimise pharmacological response and avoid toxicity is an attractive concept that is finding increasing favour with clinicians. In most hospitals departments of biochemistry provide estimations of drug concentrations. Clinical pharmacists and clinical pharmacologists may help to interpret the figures and provide advice on adjustment of the dosage to help attain a therapeutic concentration. Drug concentrations are increasingly being provided in the molar units favoured by scientists, despite the fact that drugs are still prescribed in metric amounts. Several conversion scales have been produced.¹ To avoid possible errors of interpretation, we have developed a convenient pocket ruler that not only converts molar units to metric units but also provides information on the therapeutic ranges of several drugs for which routine plasma monitoring is commonly used.

Drug convertarule (figs 1-4)

For each drug on the convertarule there is a dual row of figures with metric units above and molar units below. The box through which the figures are visualised shows the recommended therapeutic ranges for the drugs when the rule is in the "resting" position with only the handling tab visible on each side. A colour code has been used for those drugs for which there is good clinical evidence to support a therapeutic range. The codes are yellow for low concentrations, blue for

the therapeutic range, and red for potentially toxic concentrations. For the aminoglycosides, gentamicin and tobramycin, the colour coding for the peak and trough concentrations are in the metric and molar columns respectively. The rows have been left uncoloured for those drugs for which a therapeutic range has been suggested but remains to be confirmed. All the values have been taken from the reviews included in a recently published textbook *Therapeutic Drug Monitoring*.² The table lists the ranges of figures incorporated in the convertarule.

Suggested therapeutic ranges incorporated into the drug convertarule

Drug	Metric units	Molar units
Carbamazepine	4-10 mg/l	17-42 μmol/l
Ethosuximide*	40-100 mg/l	283-708 μmol/l
Phenobarbitone	10-40 mg/l	43-172 μmol/l
Primidone*	5-12 mg/l	23-55 μmol/l
Phenytoin	10-20 mg/l	40-80 μmol/l
Valproic acid*	50-100 mg/l	347-693 μmol/l
Digoxin	0.8-2 ng/ml	1-2.6 nmol/l
Disopyramide*	2-4 mg/l	7.1-20.6 μmol/l
Lignocaine	1.5-5.0 mg/l	6.4-21.3 μmol/l
Quinidine*	1.5-5.5 mg/l	6.2-16.9 μmol/l
Procainamide	4-10 mg/l	17-42.5 μmol/l
Theophylline	10-20 mg/l	55.5-111 μmol/l
Lithium	4-11 mg/l	0.6-1.6 mmol/l
Gentamicin: peak	5-10 mg/l	9-18 μmol/l
Gentamicin: trough	≤ 2 mg/l	≤ 3.7 μmol/l
Tobramycin: peak	5-10 mg/l	11-21 μmol/l
Tobramycin: trough	≤ 2 mg/l	≤ 4.3 μmol/l

* Unconfirmed.

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