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Therapeutic Drug Monitoring as a Tool to Identify Medication Errors

In response to your leading article on medication errors caused by confusion of drug names,[1] we wish to highlight our own experiences with this in India as seen in our therapeutic drug monitoring outpatient clinic.[2]

The first case was a 28-year-old male patient with generalised tonic-clonic seizures who was receiving prophylaxis with phenytoin sodium. The patient presented with a bottle containing trihexyphenidyl, an anticholinergic drug, instead of phenytoin sodium. The error was made by the pharmacist and occurred because the bottles containing phenytoin and trihexyphenidyl looked identical, came from the same manufacturer and were stored next to each other. The patient realised that the drug dispensed was not phenytoin because the size of the tablets was different.

In the second case, a 40-year-old male patient with bipolar I disorder, who was receiving carbamazepine, presented with complaints of diplopia, insomnia and irritability. The levels of carbamazepine were found to be 17.41 μg/mL, well above the therapeutic range. On close history taking, it was found that the patient was taking carbamazepine from two different manufacturers; Tegrital®[1] (Novartis Pharma) and Zen Retard® (Intas Pharmaceuticals). Tegrital® had been prescribed by the neurologist and Zen Retard® by his general practitioner. He was instructed to discontinue Zen Retard® and 2 weeks later his subsequent blood level of carbamazepine was 8.41 μg/mL, well within the therapeutic range. He also improved symptomatically.

In the third case, a 16-year-old male patient presented with symptoms and signs of phenytoin toxicity and was found to have toxic phenytoin levels (26.27 μg/mL) and subtherapeutic levels of phenobarbital (8.9 μg/mL). On history taking, it was found that the patient was taking both Eptoin® (phenytoin 100mg [Abbott India]) and Epilan® (phenytoin 100 mg + phenobarbital 30mg [Anglo French Pharmaceuticals]), the first being prescribed by the neurologist and the second by a general practitioner. The patient was weaned off Epilan® and subsequently improved.

In the final case, a 28-year-old male patient who was being treated with a combination of phenobarbital and phenytoin was found to have toxic levels of phenytoin (40.2 μg/mL) during a routine follow-up visit. It transpired that he been prescribed twice the daily dose of phenytoin by the pharmacist, who gave him phenytoin tablets instead of phenobarbital, since the two drugs were kept in close proximity in the pharmacy.

World wide, medication errors have been attributed to poor handwriting and look alike and sound alike medication.[3-5] The medication errors seen by us were the result of inadequate history taking on the part of the physician, patients not giving medication details either due to fear of offending the physician or lack of knowledge and finally, dispensing errors on the part of the pharmacist. Given the scenario of numerous medications available today, we concur with Hoffman and Proulx[1] that the responsibility of patient safety is a joint one – between the regulators, the pharmaceutical industry, the healthcare professionals and the patients themselves. This in turn can result from effective communication between the players involved. A comprehensive list of similar-sounding brand names in India in alphabetical order is available on our institutional web site (see www.kem.edu/dept/clinical_pharmacology) and apart from the Davis table from Hospital Pharmacy, a more exhaustive table of drug name pairs can be found on www.usp.org/pdf/patientsafety/qr762001-03-01.pdf.

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1 The use of tradenames is for product identification purposes only and does not imply endorsement.

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