Retrospective Evaluation of the Prescribing Behavior of Residents with respect to Nephrotoxic Drugs

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ABSTRACT
This study is a preliminary analysis of the prescription behavior of residents in a teaching hospital, with respect to nephrotoxic drugs during a 2-month period. The overdose rate was 3%. Only 5.1% of the doctors were responsible for 51% of the nephrotoxic drug overdoses.

OBJECTIVES
To build a renal dosing reference database for nephrotoxic drugs and assess the incidence of the overdosage of nephrotoxic drugs.

MATERIAL AND METHODS
We constructed a MS-SQL 2000-based Renal Dose Reference Database (RDRD) for nephrotoxic drugs from several sources. Prescription data for two months (1 May-30 June, 2006) were retrieved from the information system of a 1,004-bed tertiary care hospital. Four main database files were examined: 1) data on the patients who were hospitalized during the period, 2) data on the doctors who wrote prescriptions during the period, 3) laboratory data on the patients, and 4) medication order data. The identities of all the patients and doctors involved were removed from the data, which was then examined, cleaned, transformed, and loaded into a small Data Mart for analysis. The dataset contained information on 6,453 patients, 847 doctors, and 614,625 medication orders. There were 75,179 orders for the 127 nephrotoxic drugs targeted, and these involved 5,070 patients. After eliminating the orders for drugs prescribed only once during the course of hospitalization, 40,210 medication orders for 4,101 patients remained. The serum creatinine level and abbreviated Modification of Diet in Renal Disease (MDRD) study equation were used to calculate creatinine clearance. Ultimately, we determined that 158 doctors ordered 79 different drugs involving 16,020 medication orders for 1,360 patients.

RESULTS AND CONCLUSION
Of the 158 doctors, 53 doctors wrote 481 orders that resulted in medication overdoses, out of a total of 16,020 medication orders (overdose rate: 3%). Surprisingly, 8 of the 158 doctors (5.1%) wrote 245 of the 481 overdose orders (51%). The recommended dose was more than doubled in 67% of the total overdoses (366 of 481 overdoses). This study found that a small fraction of doctors caused most of the overdoses. Retraining these careless residents should increase patient safety.