

## Reminders of Drug Effects on Laboratory Test Results

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Drug effects on laboratory test results are difficult to take into account without an online decision support system. In this study, drug effects on hormone test results were coded using a drug-laboratory effect (DLE) code. The criteria that trigger the reminders were defined. To issue reminders, it was necessary to write a computer program linking the DLE knowledge base with databases containing individual patient medication and laboratory test results. During the first 10 months, 11% of the results from hormone samples were accompanied by one or more DLE reminders. The most common drugs to trigger reminders were glucocorticoids, furosemide, and metoclopramide. Physicians facing the reminders completed a questionnaire on the usefulness of the reminders. All respondents considered them useful. In addition, DLE reminders had caused 74% of respondents to refrain from additional, usually performed examinations. In conclusion, drug effects on laboratory tests should always be considered when interpreting laboratory results. An online reminder system is useful in displaying potential drug effects alongside test results.

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Drugs often alter laboratory test results; the literature reports >40 000 drug effects on laboratory tests (1). These effects may cause misinterpretation of laboratory data and lead to unnecessary further tests, missed diagnoses, and additional costs, as pointed out in the case report below.

The vast amount of medical information, with its varying quality and ready availability, has to date made it

laborious to take drug-laboratory effects (DLEs)<sup>5</sup> into account in everyday patient care. The prevalence of DLEs is not negligible: as many as 12% of patients have had laboratory results potentially affected by drugs in a general medical ward (2). The effects of drugs on laboratory tests have been published in extensive catalogs (1, 3-6), from which data have to be sought manually with active effort. A modern solution for bringing this knowledge to clinical routine is computerization and automatic reminders. Because physicians are already flooded with information, it is important to remind them only of the effects relevant for the patient in question. This requires storing individual medications in a structured way and coding the data on DLEs in a logical way as well as building a reminder system that can be integrated into the laboratory information system (LIS) and hospital information system (7). Until now, there have been very few computer applications offering automatic monitoring of DLEs (2, 8).

In Turku University Central Hospital, coding of drug effects in clinical chemistry was started in 1995 when a DLE code was developed (9). In November 1998, an online reminder system built on the DLE knowledge base became operational. The system produces reminders in cases where patient medication may affect the results of hormonal laboratory tests. This report describes the DLE reminder system in detail and presents the reminders issued during the first 10 months as well as clinicians' attitudes toward the reminders.

### Case

In April 1998, a 66-year-old man was admitted to our hospital because of vertigo and impaired swallowing and speech. He had a history of obstructive bronchitis, diabetes, and left hemiparesis following cerebral infarction. His medication comprised dipyridamole, glibenclamide, and

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<sup>5</sup>Nonstandard abbreviations: DLE, drug-laboratory effect; LIS, laboratory information system; TSH, thyroid-stimulating hormone, thyrotropin; FT<sub>4</sub>, free thyroxine; ATC, Anatomical Therapeutic Chemical; and ID, identification code.

# Drug Effects On Laboratory Test Results

**Karin Nielsen-Saines**



## **Drug Effects On Laboratory Test Results:**

## Whispering the Strategies of Language: An Emotional Quest through **Drug Effects On Laboratory Test Results**

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