



Computer System Helps Reduce Adverse Drug Side Effects and Interactions in ICU Patients

The results of the study were published in the journal Intensive Care Medicine.

"We previously verifiably improved physician's prescriptions with our "AiDKlinik" tool and showed that no new errors were introduced. However, we have now proven that laboratory values and clinical findings are also changed. Not many systems in the world can maintain that they have been able to reduce clinically relevant events due to drug interactions by almost half," says Professor Dr. Walter E. Haefeli, Medical Director of the Department of Clinical Pharmacology and Pharmacoepidemiology at Heidelberg University Hospital.

Erroneous prescriptions, interactions not taken into account, contraindications, or restrictions on use are often the cause of avoidable adverse drug effects. The "AiDKlinik" drug information system developed at the hospital helps to reduce such undesired events. While the condition of patients in the ICU frequently requires that they be given certain drugs despite known interactions, the goal is to prevent clinically relevant events that could endanger the patients.

Data from 265 patients were examined for the study in an intensive care unit at Heidelberg University Hospital. The study included only patients who were given eight or nine drugs simultaneously. On the second day after admission, the prescribed medication was checked using the drug information system. At the next rounds, the physicians responsible for the patient were given a report on potential drug interactions and, if necessary, concrete recommendations to avoid clinical effects.

Using this procedure, the adverse events in connection with drug interactions were reduced by 43 percent. Some of the most critical events, such as changes in the ECG and electrolyte imbalances, which can lead to severe arrhythmia, were reduced by 64 percent and 80 percent respectively. In addition, fewer patients needed additional drugs to treat side effects.

The "AiDKlinik" drug information system was developed in recent years by the Department of Clinical Pharmacology and Pharmacoepidemiology at Heidelberg University Hospital in conjunction with the hospital pharmacy and Medizinische Medien Informations GmbH (MMI, Neu-Isenburg) and has since been continuously expanded. It is an Internet-based electronic guideline that can be used by hospitals and practices. Numerous relevant patient data such as age, renal function, pregnancy, etc. are included in information processing. The information system currently includes around 64,000 drugs and is implemented in the entire university hospital. The information stems from the Pharmindex database, issued by the medical publishing house Medizinische Medien Informations GmbH and is updated every 14 days.

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Journal Reference:

T Bertsche, J Pfaff, P Schiller, J Kaltschmidt, MG Pruszydlo, W Stremmel, I Walter-Sack, WE Haefeli, J Encke. Prevention of adverse drug reactions in intensive care patients by personal intervention based on an electronic clinical decision support system. Intensive Care Medicine, 2010; DOI: 10.1007/s00134-010-1778-8

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