Allergy and cross-allergy medication decision support.

Kell Greibe

Connected Digital Health in Denmark, Islands Brygge 39, DK-2300, Copenhagen, Denmark

Abstract

Checking known allergies when prescribing is mandatory, but time consuming. Few (if any) clinical decision support (CDS) databases contain information on cross-allergy reactions. This new centralized CDS module makes access to allergy as well as cross-allergy alerts available to hospitals. A centralized CDS service based on SNOMED CT allergy structure and a specially developed cross-allergy table is configured to work together. The CDS will respond to automatic web service requests from the hospital electronic medication system (EMS) during prescription and return allergy and cross-allergy information and alerts. The result is clinically useful information physicians can use as a basis for a more effective and safer treatment.

Keywords:

Decision support systems, Clinical - systematized nomenclature of medicine - hypersensitivity.

Introduction

Physicians often lack the time to familiarize themselves with the details of particular allergies or other drug restrictions.

CDS, based on a structured terminology as SNOMED CT, can help doctors get an overview, by automatically alerting important allergy information. Using SNOMED CT rather than local terminologies or the ATC classification will resolve known problems with combination drugs as it becomes possible to warn against all active ingredients in a preparation.

Methods

A proof of concept (POC) set up to show the usefulness and clinical safety of a centralized CDS system performing allergy and cross-allergy checking based on the allergy structure built into SNOMED CT and a unique newly developed cross-allergy table.

Key components and purpose:

To document patient allergy in the vendor medication system:

A subset of SNOMED CT allergy concepts is created including the substances found in a new cross-allergy table.

To connect vendor systems with the central service:

Web services are developed to connect the centralized CDS to the medication systems automatically during prescription.

To convert local drug codes to SNOMED codes:

A mapping is made between the local drug terminology, SNOMED codes as well as ATC codes.

To use the SNOMED structure for allergy checking:

New drug concepts are created in a Danish SNOMED drug extension in the product hierarchy.

To match drugs and allergy in the central service:

A script is developed to make allergy and cross-allergy alerts possible using the SNOMED CT hierarchical structure.

Use and testing

During prescription in an EMS the code of drug and the SNOMED CT allergy code will be matched in the central service. The EMS will receive an alert with the code for the alerted drug and a text message detailing the precautions the physician should take. The alert will be treated in the vendor system as specified by the vendor and the physicians involved, e.g. a simple message box or a total system halt. The central system will alert both for allergy and cross-allergy. SNOMED CT is used as the link between allergy, substance and trade products whereas the cross-allergy table has been developed by allergologists and specifies which substances that cross-react. The system will be tested by comparing, both manually and automatically, the allergy alerts with the expected alerts, to insure correctness and safety. Clinicians will test the clinical value as well as the usefulness of the service.

Conclusion

Patient treatment quality is expected to improve.

Physicians will have peace of mind and not worry about allergy and cross-allergy i.e. have more time to care for patients.

Vendors get a possibility to further develop their own unique CDS services based on the central database of knowledge.

The project is unique, and as far as we know, the only one using central services in combination with SNOMED to provide CDS modules for an entire country with international possibilities for any country adopting SNOMED CT.

Address for correspondence
keg@sdsd.dk