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ORIGINAL ARTICLE

Quality of interaction database management systems

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KEY WORDS
Drug interaction;
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Quality assurance

Abstract
Objective: To identify drug interaction databases (DID) and assess the quality of their structures.
Method: A search was made of the literature for DID and a series of exclusion and structural quality criteria were defined (at least 4 quality criteria: classification according to severity, classification according to level of evidence, bibliographical reference data, description of clinical management, and 11 criteria used for weighting). The level of compliance of every DID with the criteria defined was analysed, together with the level of compliance of each criteria in each DID.
Results: A total of 54 DID were identified, 30 of which complied with exclusion criteria and 15 of which did not meet the minimum criteria. The rest of the criteria were evaluated in 9 DID: Bot-plus and Medinteract (100%), SEFH Guide, Lexi-interact and Medscape (89%), Hansten (83%), Micromedex and Stockley (78%), Drug Interactions Facts (68%). Ninety-two percent of the DID describe the mechanism of action, 87% classify the information according to the active ingredient, 75% do not state they have any conflict of interest, classify according to level of severity, have electronic format, and are easy to search. A total of 67% are specific DID, 62% are classified according to level of evidence, contain bibliographical references, and describe clinical management.
Conclusions: A third of the DID comply with the minimum criteria. Differences were observed in the level and compliance criteria among Spanish and foreign DID. Some of the main DID used as references in the bibliography have significant structural defects: no web presentation, no multi-check function and others.

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PALABRAS CLAVE
Interacciones medicamentosas;
Bases de datos;
Evaluación de calidad

Calidad estructural de las bases de datos de interacciones

Resumen
Objetivo: Identificar bases de datos de interacciones medicamentosas (BDIM) y valorar su calidad estructural.
Método: Se realizó una búsqueda bibliográfica de BDIM y una definición de criterios de exclusión y calidad estructural (4 criterios de calidad mínima: estratificación según grado de gravedad, clasificación según nivel de evidencia, referencia bibliográfica de datos, descripción del manejo clínico, y 11 criterios que aportaban peso ponderal). Se analizó el grado de cumplimiento en cada BDIM de los criterios definidos y el grado de cumplimiento de cada criterio en todas las BDIM.
Resultados: Se identificaron 54 BDIM de las que 30 cumplían criterios de exclusión y 15 no reunían criterios mínimos. Se valoró el resto de los criterios en 9 BSM: Bot-plus y Medinteract (100%), Guía de la SEFH, Lexi-interact y Medscape (89%), Hansten (83%), Micromedex y Stockley (78%), Drug Interactions Facts (68%). El 92% de las BDIM describen mecanismo de acción, el 87% estructura la información por principio activo, el 75% no declara tener conflicto de intereses, estratifica según grado de gravedad, tiene soporte informático y la búsqueda es ágil. El 67% son BDIM específicas, el 62% clasifica según nivel de evidencia, contiene referencias bibliográficas y describe el manejo clínico.
Conclusiones: Un tercio de las BDIM cumplen criterios mínimos. Se encontraron diferencias en el grado y el criterio de cumplimiento entre las BDIM españolas y las de otros países. Algunas de las principales BDIM utilizadas como referentes en la bibliografía presentan importantes deficiencias estructurales: la falta de presentación web y de función multi-check y otras.

Introduction

Interactions between medications administered to a patient contribute to concomitant morbi-mortality and, in many cases, could be preventable. A study carried out in Denmark upon 26 337 patients with at least 2 prescribed medications detected 21 293 different combinations, of which 4.4% carried a risk of producing a severe interaction. In this same study, 1.2% of hospitalisations were related to medicinal interactions.[1]

In Spain, the APEAS study[2] found that 47.8% of adverse events detected in the primary health care field were due to medications, of which 3.5% were a consequence of medicinal interaction. Another published study reveals that 9.9% of the population over 65 years of age is at risk of clinically significant interactions. The study notes that there is an exponential growth in the risk of interactions being produced with a higher number of medications.[4,6] Polymedication could therefore present a risk of interaction. In Australia 14% of the general population uses more than 4 medications, and in the population over 75 years of age this figure increases to 40%. Data from the UK indicates that 30% of the population over 75 years takes more than 4 medicines. In Spain, a study carried out in a rural area with basic health care indicated that 11.37% of the population was over 65, with an ageing population of 65% and an average prescription rate of 4 medications, and a greater number of prescribed medicines tallying with increased age.[7]

However, management of medicinal interactions in clinical consultation is not easy. The introduction of new technologies in primary health care and hospitals has brought a development in the form of computerised clinical history, which has opened up the possibility of incorporating decision support systems (DSS) with regard to interactions, which alert the user at the moment of prescribing medicines and report on possible courses of action. However, the introduction of these systems is not yet widespread. According to an investigation carried out in Spain in 2007, computer-assisted prescription is in place in only 22.4% of hospitals.[8] In primary health care, the development of electronic prescription has not apparently been accompanied (thus far) by tools for the clinical management of interactions. However, many have incorporated complete databases in consultation format, in order that the clinic may utilise them at their discretion and in specific cases.

In the absence of a DSS, any clinic that wishes to carry out a systematic follow-up of medicinal interactions must manage by itself the data sources and their assigned clinical relevance, ie, the influence which the data will have upon any modification of the therapeutic plan. And it is here where the range in databases and sources of information regarding interaction is such that it usually becomes impossible to manage physically. Furthermore, in a study carried out on just 5 databases,[9] it was found that the quality was very unevenly spread and the concordance was scarce, making it difficult to pinpoint real clinical importance in each of the interactions.[10]

The objective of this study is to assess the structural quality of various drug interaction databases (DID) in order to be able to subsequently create a decision support system.