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Drug Interaction Information: Too Many "Cooks"?

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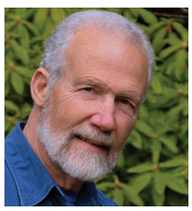

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The process by which drug interaction information is generated, analyzed, and provided to health care practitioners is complex. Consider how many people are involved in generating the data, analyzing the evidence, and molding all of the information into what health professionals use in the clinical setting.

Data Generators

Basic scientists do vital research on the molecular mechanisms of drug–drug interactions (DDIs) and work on methods to predict drug interactions based on the interactive properties of the drugs being studied. There are also clinical scientists who do controlled drug interaction studies in healthy subjects and, sometimes, groups of patients; these pharmacokinetic studies occasionally include an assessment of adverse drug interaction outcomes, especially if patients are involved. Practitioners also generate data by identifying case reports of suspected DDIs and sending them to journals for publication or to adverse-reaction registries at agencies, such as the FDA. Increasingly, epidemiologists are engaged in assessing how often particular DDIs cause adverse effects in large patient populations.

These data generators have produced an enormous amount of information that has been published in tens of thousands of publications over the past few decades. Although much good information is published, there is also a considerable amount of scientifically questionable material. Since the volume of information is so large, individual clinicians cannot possibly read and digest it all. This is problem 1: the huge volume of published drug interaction data of questionable quality and where information analysts enter the picture.

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Information Analysts

Information analysts read the papers generated by data generators, author review articles and books, and produce electronic databases of DDIs. Occasionally, health care organizations issue guidelines on certain high-profile DDIs. Government agencies, such as the FDA, also analyze drug interaction data and work with pharmaceutical companies to produce official prescribing information. A recent paper from Germany, however, found numerous inconsistencies and misleading information on DDIs in the prescribing information from the United States, the United Kingdom, and Germany.[1]

Unfortunately, there are not enough information analysts to enable these health care professionals to truly specialize in certain areas of drug interactions. Few information analysts possess an in-depth and nuanced understanding of the drug interactions among the cocktails of drugs used to treat HIV, AIDS, epilepsy, or cancer. This lack of general drug interaction expertise leads to improper assessment of published reports in some cases. This is one of the reasons for the wide range in opinions among secondary sources as to the clinical importance of drug interactions. This is problem 2: not enough high-quality information analysts with both general and specialized knowledge of DDIs.

Clinical Decision Support Producers

The people who prepare clinical decision–support (CDS) products are faced with the daunting task of looking at what the information analysts produce and converting this to a product that can be used quickly by a busy clinician. CDS producers also sometimes consult original articles to clarify the details of certain DDIs. Deciding which DDIs to include in their products and how they will be presented to the clinician is seldom straightforward; however, some CDS producers do this better than others.

CDS producers also face legal issues: potential liability becomes an issue when deciding to include a given DDI and denoting its level in their system. This is part of the reason that most CDS systems include DDIs with questionable clinical importance. This leads to problem 3: the tendency—due to legal and other reasons—to include far too many drug interactions in CDS systems.

Summary

Improvements are needed among data generators, information analysts, and CDS producers alike. Funneling resources and energy toward information analysts may be the best place to start because the highly qualified individuals among this group of health care professionals are better able to filter out the questionable information from the data generators and to produce more clinically useful data for the CDS producers.

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