

Drug Information Services Today: Current Role and Future Perspectives in Rational Drug Therapy

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ABSTRACT

Polypharmacy and complex drug treatment regimens are becoming increasingly common, which may lead to adverse drug reactions, drug interactions, medication nonadherence, and increasing costs and thus challenge the rational use of drugs. At the same time, the accessibility of drug information increases, and health care professionals may have limited opportunities and capabilities to search and critically evaluate drug information. Clinicians have reported difficulties in searching the best evidence and translating study findings into clinically meaningful information applicable to specific patients. Consequently, it remains a challenge to ensure the rational use of drugs in the years to come. Drug information centers (DICs) have been established to promote the rational use of drugs. One of the most important tasks of DICs is the question and answer services for health care professionals posing drug-related questions. DICs staffed by pharmacists and clinical pharmacologists hold expertise in searching for drug information and critical evaluation of the literature. The uniqueness in this service lies not only in the identification and interpretation of the scientific literature but also in the adaptation of the findings into specific clinical situations and the discussion of possible solutions with the enquirer. Thus, DICs could provide valuable decision support to the clinic. Taking into account the increasing number of possible drug-related questions that will arise today and in the future, the DICs will remain highly relevant in the years to come. However, the

DICs must follow the developments in health information technology to disseminate relevant, unbiased drug information to old and new users of the service. Moreover, the DICs are important tools to counterbalance the drug information published by the pharmaceutical industry. (*Clin Ther.* 2016;■:■■■-■■■) © 2016 Elsevier HS Journals, Inc. All rights reserved.

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INTRODUCTION

The increasing multimorbidity of patients and the complexity of drug therapies challenge the rational use of medicines, defined by the World Health Organization (WHO) as “patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.”¹ The WHO estimates that 2 billion people will be aged ≥60 years before 2050.² Today, in high-income regions, it is estimated that

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49% of the total burden of disease, measured as disability-adjusted life-years, is attributable to disorders in people aged ≥ 60 years. Among old people, the 4 most burdensome disorders are ischemic heart disease, stroke, chronic obstructive pulmonary disease, and diabetes,³ diseases tentatively prevented and treated with a variety of drugs and drug combinations. Moreover, even in younger patients, complex drug regimens are increasingly being used (eg, with anti-neoplastic, immunomodulating, and psychotropic medicines). Thus, in the years to come, the rational use of drugs will be more important than ever.

CHALLENGES TO THE RATIONAL USE OF DRUGS ON THE PRESCRIBER LEVEL

Organizational and funding issues to provide rational drug use remain the responsibility of governments and health care systems. However, much of the responsibility in prescribing rational drug therapy certainly lies on the individual prescribers. The use of polypharmacy (ie, the concurrent use of several drugs) has increased.⁴ Polypharmacy increases drug expenditure⁵ and the risk of adverse drug reactions, drug interactions, and medication nonadherence.⁶ In addition, the growth in use of traditional and complementary medicines is recognized. It is estimated that >100 million Europeans are currently users of traditional and complementary medicines.⁷ Although herbal products may improve health and quality of life, concerns remain regarding their pharmaceutical quality, efficacy, and tolerability. A single herbal product may contain hundreds of natural constituents, making it practically impossible to study the efficacy and tolerability of each constituent. These products may cause adverse events and toxicity⁸ as well as drug interactions.⁹ Studies have also found that physicians have limited knowledge of traditional and complementary medicines.¹⁰

The concept of precision medicine, where subgroups of patients from one large disease group would be expected to respond differentially to a particular drug,¹¹ is further complicating drug treatment. Precision medicine implies that the physician is aware of relevant diagnostic tests and biomarkers in addition to patient preferences to obtain customized drug therapy. Although applied pharmacogenomics (eg, in psychiatry) currently is mainly limited to

the cytochrome 450 liver enzymes,¹² refined disease classification based on genetic, biomarker, phenotypic, and psychosocial characteristics may lead to more advanced treatment decision algorithms in the future.¹¹ Thus, to achieve precision medicine is a future challenge.

Many questions arise in clinical care. A recent review found that clinicians raised 0.16 to 1.85 questions per patient seen, and many of these concerned drug treatment.¹³ The proportion of questions that were pursued varied from 22% to 85% among different studies, partly due to the use of different assessment methods. Of these, approximately 80% of the questions were successfully answered. Lack of time and the questions not being urgent or important for the patient's care were common barriers to pursuing a question.¹³ Physicians have also reported that the complexity of patients' comorbidities and contexts, as well as constantly changing resources, are barriers to pursue clinical questions.¹⁴ In addition, as the availability of drug information increases online, patients' access to both scientific and other information on diagnosis and treatment, along with other health issues, increases. In a study of 505 patients searching for online health information, two-thirds of those with a scheduled medical appointment planned to ask their physicians about the information, and two-fifths had printed out online information to share with the physician.¹⁵ Although the numbers may not be generalizable, these are interesting findings. Prescribers may be faced with questions based on any drug information available online.

THE EXTENT AND CHARACTERISTICS OF WRITTEN DRUG INFORMATION

One of the main challenges for prescribers in choosing the most rational drug therapy is the amount of information that exists. An overwhelming number of scientific articles is published every day.^{16,17} Alper et al¹⁷ estimated in 2002 that to keep up to date in primary care by reading scientific articles, physicians would have to read 7287 articles per month, spending a mean of 29 hours per weekday reading. On the basis of the number of cited references in publications from 1980 to 2012, Bornmann and Mutz recently estimated that the rate of increase in cited references in scientific articles is approximately 8% per year, meaning a

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