Separating the wheat from the chaff: essential information in therapeutics

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Prescribing is a complex decision-making process influenced not only by patients' needs, but also by other factors, such as available resources, priorities of national healthcare policies, and market pressures [1]. The information on medicines and therapeutics that reaches prescribers is also one of these factors. The need for continuous updating of this information is vital for both healthcare professionals and healthcare systems, although keeping up with therapeutic advances in health care is challenging [2].

In the last two decades, access to scientific publications and other sources of medical information has changed dramatically, from the need to gain access to information to the need to select it. More than ever, genuine data and news are diluted in an ocean of banalities. For example, it took 20 years, hundreds of studies, and millions of treated patients to realize that the so-called second-generation antipsychotics are actually no better than the older drugs in terms of efficacy and side-effect profiles [3].

New information and communication technologies give users the opportunity to retrieve a wealth of information [4, 5]. Nevertheless, the reliability, quality, and relevance of the information retrieved to clinical and public health

vary, and the information overload carries an inevitable risk of “infoxication”.

Too often commercial interests—rather than clinical or therapeutic needs—drive the conception, design, analysis, interpretation, and dissemination of clinical research [6, 7]. In addition, recent cases of fraud, suppression of negative results, and selectivity in terms of publication, such as those on selective COX-2 inhibitors [8], selective serotonin re-uptake inhibitors, antidepressants [9], and rosiglitazone [10], have shown that peer-reviewed medical literature cannot always be regarded as a valid and reliable source of information [11, 12]. The design of pre-marketing trials, the conduct of post-marketing surveillance, and communication to prescribers are driven by the need to sell. Table 1 summarizes the main problems associated with the dissemination of information on medicines.

The real meaning of words: is it possible to define “essential information” in therapeutics?

More than 30 years ago, a World Health Organization (WHO) expert committee noted that despite the fact that thousands of medicines had been marketed in previous years, their public health impact was uncertain. WHO defined essential medicines as those that satisfy the healthcare needs of the majority of the population [13]. The WHO concept of essential medicines, launched in 1977, helped to establish that some medicines are more helpful than others and that essential medicines should therefore be available at all times in adequate amounts and in the appropriate dosage forms—and at a price that individuals and the community can afford [14].

Similarly, in order to promote a healthy and cost-effective use of medicines, prescribers, other healthcare professionals,

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Table 1 Key problems and needs in information on therapeutics**The problems**

- **Information overload:** information technologies have made vast quantities of information readily available – risk of “infoxication”
- **Biased or misleading information:** the data are not always reliable, accurate, relevant, or easy to interpret [2]
- **Market interests** drive research priorities, publication of data, and the dissemination of information [11]
- **Language divide:** since international medical literature is mostly in English, non-English-speaking healthcare professionals are at disadvantage

The steps

- **Selection:** identifying the most reliable, relevant, and problem-oriented information
- **Appraisal and synthesis,** from a clinical, epidemiological, and public health perspective
- **Format:** such as length, detail, format, visual format
- **Design:** such as “Dear Dr.” letters, information sheet, bulletin, clinical guideline, formulary, prescribing guide, etc.
- **Channel:** such as the Internet (e-mail, posting in reference web, social networks), printed materials
- **Dissemination,** to reach as many intended targets as possible, in as many formats as needed

regulators, healthcare system managers, and the academia should identify and select the information that satisfies the needs of knowledge on therapeutics within the healthcare system. We propose the term *essential information in therapeutics*, as that which is likely to change clinical practice. Essential drug information should be reliable, relevant, balanced, and processed:

- **Reliable**, i.e., in as much as it is as evidence-based as possible and at the same time highlights the remaining areas of clinical uncertainty.
- **Relevant**, i.e., it is helpful for clinical practice, in the context of local needs and local patterns of utilization.
- **Balanced**, i.e., it takes into account comparative data on clinical pharmacology (e.g., pharmacodynamics, pharmacokinetics, dose-finding and dose-response relationships, interindividual variability), the natural history of the disease or symptoms, and the available evidence on effectiveness and safety. This demands a systematic approach and specialist knowledge.
- **Processed**, i.e., it is based on a systematic and critical review and appraisal of published and unpublished evidence and is presented in a synthetic and digestible format.

The purpose of essential information is to optimize therapy to the benefit of patients and society [15]. To this aim, essential information should be produced by bodies/agencies that are independent of the pharmaceutical industry and other market interests, with expertise in clinical pharmacology.

In addition, essential information must be communicated. Communication among healthcare professionals consists not only in disseminating information, but also sharing the objectives of cost-effective and high-quality patient-oriented clinical practice.

Knowledge management should be a fundamental strategic component of all healthcare systems policies. In

this context, the procedures to identify relevant new information on the effectiveness and the safety of therapeutic and preventive interventions should be made available to prescribers through the collaboration of related institutions [e.g., drug and therapeutics committees (DTC), healthcare and medicines regulatory authorities, the academia, etc.]. For example, Scandinavian countries have made important contributions in developing drug information and continuous medical education [16]. This knowledge should be the basis for developing pharmaceutical policies, drawing therapeutic guidelines, establishing priorities for pre-graduate teaching and continuous medical education, and designing support tools for prescribers [17]. In European countries, examples include the National Institute for Health and Clinical Excellence in England, and the Scottish Medicines Consortium in Scotland.

In summary, rather than having free access to vast quantities of information, healthcare professionals in both developed and developing countries need guidance in accessing to high-quality, clinically relevant, and updated information [18, 19]. Identifying and disseminating this information to the relevant audience is a complex endeavor, and one in which clinical pharmacologists play an important role as guides to good prescribing. Essential information should be reliable, relevant, balanced, and processed, and likely to change or consolidate established clinical practice. National public healthcare authorities and managers of healthcare provider organizations have the managerial and ethical duty to facilitate and to promote the provision of essential information [20].

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