Relationship Between Time Consumption and Quality of Responses to Drug-related Queries: A Study From Seven Drug Information Centers in Scandinavia

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ABSTRACT

Purpose: The aims of this study were to assess the quality of responses produced by drug information centers (DICs) in Scandinavia, and to study the association between time consumption processing queries and the quality of the responses.

Methods: We posed six identical drug-related queries to seven DICs in Scandinavia, and the time consumption required for processing them was estimated. Clinical pharmacologists (*internal experts*) and general practitioners (*external experts*) reviewed responses individually. We used mixed model linear regression analyses to study the associations between time consumption on one hand and the summarized quality scores and the overall impression of the responses on the other hand.

Findings: Both expert groups generally assessed the quality of the responses as "satisfactory" to "good." A few responses were criticized for being poorly synthesized and less relevant, of which none were quality-assured using co-signatures. For external experts, an increase in time consumption was statistically significantly associated with a decrease in common quality score (change in score, –0.20 per hour of work; 95% CI, –0.33 to –0.06; $P = 0.004$), and overall impression (change in score, –0.05 per hour of work; 95% CI, –0.08 to –0.01; $P = 0.005$). No such associations were found for the internal experts' assessment.

Implications: To our knowledge, this is the first study of the association between time consumption and quality of responses to drug-related queries in DICs. The quality of responses were in general good, but time consumption and quality were only weakly associated in this setting. (*Clin Ther.* 2016;38:1738–1749)

Key words: drug information services, physicians, "quality assurance, health care", time factors.

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INTRODUCTION

There are no established accepted methods or criteria for measuring the quality of drug information centers' (DICs') responses to queries.[1] From the DICs' points of view, relevant quality assurance may include properly trained staff members, standardized working procedures, documentation of the working process,[2] and the use of co-signature by another staff member.[3] Most studies assessing the quality of drug information services have been designed as user satisfaction surveys, aiming to address health care professionals' evaluations of the responses.[4–7] Such surveys have been criticized as lacking objectivity[8,9] and as being biased by evaluation of one's own center and not including users not responding.[9] Some user surveys have been focusing on the impact of these services on patient care, assessed by health care professionals.[4–6,10–12] These methods have retrospective approaches, and the lack of controls to which the actual outcomes could be compared has been criticized.[9] In addition, many factors other than the DIC's response can affect patient outcome.[13] Scandinavian DICs have also published results from users' surveys, and the users have generally been very satisfied with the services.[4–6,14]

Regardless of outcome measures, such surveys do not indicate where the strengths and weaknesses of DICs' responses lie.[2] In order to ensure high quality of written responses from DICs, another proposed method of assessment is to use an external committee to review them.[9,13] Several studies have included such external reviews.[8,15,16] Yet another way of measuring the quality of responses from DICs has been to pose the same query to several DICs at the same time, comparing the responses given from different services to each other and/or to a "control response" giving the correct answer.[15–19]

Previous studies aiming to compare responses from different DICs to identical queries have generally revealed unsatisfactory results.[15,17–19] Halbert et al[19] posed the same telephone query to 90 different US DICs in 1977. Ten centers were not able to identify the drug in question, and 22 centers provided information that was judged to be less than adequate. Gallo et al[15] posed identical queries to 20 hospital-based US DICs. A panel of five clinical pharmacists assessed the directness, applicability, accuracy, and completeness of the answers. Only nine DICs provided an answer. The highest possible score was 100, and the responses' scores ranged from 23 to 84, with a median of 62.

In 1990, Beaird et al[18] randomly selected 59 of 154 DICs in the United States. They performed a telephone request requiring the identification of didanosine. If the center was able to identify the drug, the staff member was presented with a patient case with symptoms of acute pancreatitis. Of the 56 centers that were successfully contacted, only 16 identified the drug as didanosine, and 4 recognized the clinical symptoms of pancreatitis and associated it with the use of didanosine. Calis et al[17] evaluated responses from US DICs responding to four drug-related queries. Of the 79 centers that responded to all four queries, none provided a correct overall response to all, 13 had three overall correct responses, 42 had two overall correct responses, 21 had one correct overall response; 3 centers failed to answer any of the queries correctly.

Better results were reported from two literature search services in Australia serving general practitioners (GPs). The services focused on answering queries requiring thorough searching for evidence-based documentation. Both services answered the same 14 queries asked during the study period. One person with experience in evidence-based medicine rated the concordance between the reports. There were substantial intersite differences in the evidence sections of four of the reports, and minor differences in another four. There were, however, no substantial differences in the overall conclusions of the reports.[16]

The Scandinavian DICs provide written responses to almost all drug-related queries posed to the centers. The centers are quite similar in structure and types of queries, and have recently been studied in terms of time consumption when responding to drug queries.[20] That study revealed that time spent by staff members processing queries (in the present article designated *time consumption*) varied largely both between queries and between DICs. The quality of written responses from these centers has not previously been compared.

One aim of this study was to assess the quality of responses processed by Scandinavian DICs using both internal experts (clinical pharmacologists) and external experts (GPs). Another aim was to investigate whether there was an association between time consumed when processing the responses and their quality.