AN ABSTRACT OF THE THESIS OF

Ronald Ray Brown for the degree of Master of Science

in Pharmacy presented on March 13, 1979

Title: A METHODOLOGY FOR EVALUATING ACCEPTANCE OF A REGIONAL DRUG INFORMATION SERVICE: ASSESSMENT IN THE PATIENT CARE SETTING

Abstract approved: Redacted for Privacy

Freya Hermann

This paper describes a methodology developed for evaluating the acceptance of a regional drug information service in providing patient-specific information. This methodology employs a blinded study design and uses activity in the patient chart for determining the acceptance of information.

A total of 60 requests were referred to the regional drug information service, and 47 (78.33%) of these were analyzed. Of these 47 requests, 34 (72.34%) were patient-specific responses, 29 (85.29%) were classified as desirable, which demonstrated acceptance of the information by requestors.

Patient-specific information was primarily sought by health care professionals providing direct patient care. They originated
25 of the 29 (86.21%) requests for patient-specific information.

It is concluded that the methodology is useful for the evaluation of acceptance of patient-specific information provided by a regional drug information service. The importance of this finding is discussed.
A Methodology For Evaluating Acceptance of
A Regional Drug Information Service:
Assessment In The Patient Care Setting

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I would also like to express deep appreciation to Connie Rosson for her valuable assistance in conducting this research. Her efforts contributed greatly to the success of this study.
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A METHODOLOGY FOR EVALUATING ACCEPTANCE OF A REGIONAL DRUG INFORMATION SERVICE: ASSESSMENT IN THE PATIENT CARE SETTING

Introduction

Evolution of drug information services can be traced from the centrally located drug information service at the University of Kentucky, established in 1962, to the delivery of information at the patient's bedside today. The support of a drug information service has been of greatest importance to the development of clinical pharmacy services.

Several investigators have attempted to evaluate the usefulness of drug information services and many of these studies have recently been reviewed. Some investigators have assessed drug information services by analyzing users' satisfaction with the service and others have done so by examining the complexity of the information provided. A third group of studies attempted to assess the acceptance of information services in the patient care area. Cardoni and Thompson studied the results of information provided by a hospital-based drug information center. In their study evaluation was made through interview technique and the requestors judged acceptance. Studies by Bell et al and Keyes et al evaluated the acceptance of a clinical pharmacy consultation service by determining use of information they had provided.

Barker had first suggested that a drug information service be measured most rationally by the effect it has on the care of a given patient. Based on his thoughts, a methodology for evaluation was
developed and used to assess the acceptance of a regional drug information service in the patient care setting of a hospital. This paper describes this methodology and reports the results of the assessment.

**Development of Methodology and Study Design**

The study was conducted at the Portland V.A. Medical Center, a 527-bed, acute-care hospital affiliated with the University of Oregon Health Sciences Center, during a two-year period, January 1977-December 1978. The V.A. Pharmacy Service routinely uses the Oregon Poison Control-Drug Information Center (OPC-DIC), referring all drug information requests which require literature search beyond the sources available at the hospital. During the study these requests were recorded on a drug information log form and telephoned to the OPC-DIC. The regional drug information service responded to these requests in the usual manner. To standardize the delivery of responses for purposes of this study and to provide for an unbiased evaluation of acceptance, responses were transmitted to the requestors of the information by a designated pharmacy resident.

The pharmacy resident recorded the response to a given question, as received from the OPC-DIC, on the appropriate drug information log form and filled out an outcome evaluation form. This latter form was later used by the investigator and contained the following information: name of patient, social security number, ward, date of response, and nature of request. The pharmacy resident then trans-
mitted the response exactly as it had been presented by the regional drug information service. The investigator was not informed of the nature of the response, however, to prevent bias. Therefore he was blinded to the experiment.

After an appropriate period of time, the pharmacy resident provided the investigator with the outcome evaluation form. The investigator used this form to evaluate the outcome of the consultation, using the patient chart when appropriate. Recent activity in the patient chart relevant to the request was recorded on the form under "Evidence". The areas of the patient chart which had been reviewed were also recorded on the form.

The blindfold on the investigator was then removed by revealing the response. He could now use the recorded evidence for classifying the consultations into one of four outcomes:

1. Desirable - providing a consultation that is accepted by the requestor as a solution to the clinical problem.
   1.1. A writing of an order or note, implementing the information provided;
   1.2. No writing of an order or note, implementing the information provided;
   1.3. A change in an order, implementing the information provided;
   1.4. No change in an order, implementing the information provided.

2. Undesirable - providing a consultation that is not accepted
by the requestor as a solution to the clinical problem.

2.1. A writing of an order or note, but not implementing the information provided;

2.2. No writing of an order or note, and not implementing the information provided;

2.3. A change in an order, but not implementing the information provided;

2.4. No change in an order, and not implementing the information provided.

3. Neutral - providing a consultation that is not patient-specific. Information is of a general nature.

4. Outcomes that cannot be classified - not enough information to place the consultation in one of the above categories.

4.1. Patient information lost;

4.2. Patient records unavailable;

4.3. Drug information log form lost;

4.4. Outcome evaluation form lost.

Results of the classification of outcomes were tabulated and then analyzed by Chi Square analysis. The objectives of data analysis were: 1) to determine the relative frequency with which information provided by a regional drug information center was used to solve a patient-specific problem, and 2) to investigate whether it was possible to document the acceptance of drug information in the patient care area.
Results

During the study period 60 questions were referred to the regional drug information service. The results of the classification of outcomes, using the study criteria, are shown in Table 1.

The 13 requests that were evaluated as unable to classify occurred as a result of the following: 1) patient information lost (10), 2) patient records lost (2), and 3) outcome evaluation form lost (1). These 13 responses were lost for evaluation.

The remaining 47 requests were categorized as patient-specific (34 requests, 72.34%) and patient non-specific (13 requests, 27.66%). Outcomes for the 47 requests were analyzed by Chi Square Analysis\(^{14}\) to determine: 1) whether the information provided by a regional drug information service was accepted by the requestor, and 2) whether there was a correlation between the type of requestor and outcome (desirable or neutral). The results of these analyses are shown in Tables 2 and 3. The value of the test statistic $X^2$, exceeds the critical value for $X^2$ for both analyses ($p=.005$), with appropriate degrees of freedom.

Table 2 shows that the regional drug information service had a statistically significant effect in causing desirable outcome. That is, the information provided by the regional drug information service was used by the requestor for solving a patient-specific problem for 29 of 47 requests (61.7%).

Table 3 shows that there is a dependence between the type of requestor and outcome, and this dependence is statistically significant.
Table 1. Classification of Outcomes Using Study Criteria

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desirable</td>
<td>29</td>
</tr>
<tr>
<td>Undesirable</td>
<td>5</td>
</tr>
<tr>
<td>Neutral</td>
<td>13</td>
</tr>
<tr>
<td>Unable to Classify</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 2. Acceptance of Information Provided By A Regional Drug Information Service: Chi Square Analysis of Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Desirable</th>
<th>Undesirable</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>29</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Expected</td>
<td>15.67</td>
<td>15.67</td>
<td>15.67</td>
</tr>
</tbody>
</table>

\( \chi^2 = 19.06 \), with 2 degrees of freedom.

Expected frequencies are assumed to occur equally among each of the three outcomes, if they were to occur by chance.
Table 3. Analysis of Dependence of Outcome on Type of Requestor

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Desirable</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>House Staff\textsuperscript{b}</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Other Requestors\textsuperscript{c}</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

\(\chi^2=16.11\), with 1 degree of freedom.

\textsuperscript{b}House Staff=Medical-Surgical Residents and Interns.

\textsuperscript{c}Other Requestors=Staff Physician (4), Nurse (4), Pharmacist (4), Dietician (1), and Research Technician (1).
The house staff, primary care providers at this hospital, are more likely to use information provided in patient-specific situations, whereas the requestors classified as "other" are more likely to use information provided for patient non-specific situations.

**Discussion**

The results show that the regional drug information service provided information which was accepted by the requestors of the information as basis for their decisions. Beyond that, the study demonstrates that it is possible to evaluate objectively whether acceptance occurs. Earlier evaluations of drug information services focused on requestor satisfaction. More recently, investigators concentrated on benefit to the patient as a much more direct measure of the value of a drug information service. Barker\textsuperscript{13} called attention to the need for evaluation by assessing acceptance in the patient's chart. He added that the investigator must be as free as possible from bias when evaluating a pharmacy service. Because of its blind experimental design, this study represents increased objectivity over those reported in the literature. The investigator examined the patient's chart for evidence of activity without knowing what information had been given to prompt the activity. His interest in having information accepted could therefore not influence his observation. Results further showed that not all requests could be evaluated by this method. The outcome of patient
non-specific requests could not be measured because, by definition, the information would be used for patients in general. Evidence of acceptance could not be expected in a specific patient's chart. For evaluation of these requests, one would have to use previously described methods, such as requestor satisfaction surveys or requestor interview techniques.

With this method however, it was possible to determine the relative frequency with which patient non-specific requests occurred. In addition, we could identify which type of requestor was most likely to seek patient non-specific information. Knowing the frequency and origin of information requests is important for the provision of drug information in terms of organization as well as budgeting decisions.

The relatively large number of requests in the category "outcomes cannot be classified" were lost to the study. This was probably due to the difficulty of controlling requestors and documents in this large teaching hospital. Contributing factors were the complexity of ongoing training programs for health care professionals and the nature of their training rotation schedules. It is unlikely that these dropouts affected the outcome of the study.

The importance of objectively evaluating acceptance of drug information services lies in the fact that it provides the strongest possible justification for seeking financial support. The enormous pressure to practice cost containment and demonstrate benefit of service has created the need for detailed justification. Quality
and quantity of drug information services must be carefully documented and evaluated. With this methodology it will be possible to identify the individuals who benefit directly from a drug information service.

Conclusion

A methodology employing a blinded evaluator was used to assess the acceptance of a regional drug information service in the patient care setting. It appears to be a useful tool, as evidenced by the results of this study.

The study showed that a regional drug information service provided patient-specific information which was accepted by requestors in making decisions relative to the care of a given patient. The study also identified requests that were patient non-specific, but acceptance of these requests could not be evaluated.

This methodology appears to be a useful tool for providing evaluation of a pharmacy service. The evaluation process is essential for justification and could have an important impact on efforts to secure renumeration for drug information services.
References


