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 accep-
tance 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

by

Ronald Ray Brown

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Completed March 13, 1979

Commencement June, 1979

APPROVED:

Redacted for Privacy
_____
Associate Professor of Pharmaceutical Science
                              in charge of major

Redacted for Privacy
_____
Dean of Pharmacy School

Redacted for Privacy

_____
Dean of Graduate School

Date thesis is presented ___March 13, 1979_____

Typed by Mary Kost for __Ronald Ray Brown_____

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF TABLES

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.[1,2] 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[3-12] and many of these studies have
recently been reviewed.[12] Some investigators have assessed drug
information services by analyzing users' satisfaction with the
service[3,4,5] and others have done so by examining the complexity of
the information provided.[9] A third group of studies attempted to
assess the acceptance of information services in the patient care
area.[6,8,12] Cardoni and Thompson[12] 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[6] and Keyes et al[8] evaluated
the acceptance of a clinical pharmacy consultation service by deter-
mining use of information they had provided.

Barker[13] 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.[14] 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

Outcome	Number of Outcomes
Desirable	29
Undesirable	5
Neutral	13
Unable to Classify	13
Total	60

Table 2. Acceptance of Information Provided By A Regional Drug

Information Service: Chi Square Analysis of Outcomes[a]

	Outcome		
	Desirable	Undesirable	Neutral
Observed	29	5	13
Expected[b]	15.67	15.67	15.67

[a]x^2=19.06, with 2 degrees of freedom.

[b]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

	Outcome	
	Desirable	Neutral
House Staff[b]	25	3
Other Requestors[c]	4	10

[a]X^2=16.11, with 1 degree of freedom.

[b]House Staff=Medical-Surgical Residents and Interns.

[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[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 objectiv-
ity 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

1. Collins GE and Lazarus HL: Drug Information Services Handbook, Publishing Sciences Group, Inc., Acton, Mass., 1975, pp 1-7.

2. Parker PF: The University of Kentucky Drug Information Center, Am J Hosp Pharm 22:42-47 (Jan) 1965.

3. Pearson RE, Schmalgemeier W, Bendall M and Mehta P: Michigan Regional Drug Information Network, Part III: Utilization of Information Received From a Drug Information Center, Am J Hosp Pharm 29:229-234 (Mar) 1972.

4. Pearson RE, Thudium VF and Phillips GS: Michigan Regional Drug Information Network, Part IV: Description and Evaluation, Am J Hosp Pharm 29:312-320 (Apr) 1972.

5. Briggs GG and Smith WE: Pharmacist-Physician Consultations in a Community Hospital, Amer J Hosp Pharm 31:247-253 (Mar) 1974.

6. Bell JE, Bouchard VE, South JC et al: A New Approach to Delivering Drug Information to the Physician through a Pharmacy Consultation Program, Part IV: Evaluation Results, Am J Hosp Pharm 30:300-310 (Apr) 1973.

7. Smith GH, Sorby DL, Sharp LJ: Physician Attitudes Toward Drug Information Services, Am J Hosp Pharm 32:19-25 (Jan) 1975.

8. Keyes PW, Smith JC and Duffy Sr MG: Quality of Care Evaluation Applied to Assessment of Clinical Pharmacy Services, Am J Hosp Pharm 32:897-902 (Sep) 1975.

9. Grace M, and Wertheimer AJ: Judgemental Questions Processed by a Drug Information Center, Am J Hosp Pharm 32:903-904 (Sep) 1975.

10. Merritt GJ, Garnett WR and Eckel FM: Analysis of a Hospital-
    based Drug Information Center, <u>Am</u> <u>J</u> <u>Hosp</u> <u>Pharm</u> 34:42-46 (Jan) 1977.

11. Halbert MR, Kelly WN and Miller DE: Drug Information Centers:
    Lack of Generic Equivalence, <u>Drug</u> <u>Intell</u> <u>Clin</u> <u>Pharm</u> 11:728-735
    (Dec) 1977.

12. Cardoni AA and Thompson TJ; Impact of Drug Information on Patient
    Care, <u>Am</u> <u>J</u> <u>Hosp</u> <u>Pharm</u> 35:1233-1237 (Oct) 1978.

13. Barker KN: The Role of Research in Evaluating Pharmaceutical
    Services in Hospitals, <u>Am</u> <u>J</u> <u>Hosp</u> <u>Pharm</u> 26:200-209 (Apr) 1969.

14. Mendenhall W: Introduction to Probability and Statistics,
    Duxbury Press, North Scituate, Mass., 4th ed. 1975, pp 286-290.