

AUTOMATED MANAGEMENT INFORMATION SYSTEMS IN HUMAN SERVICES:

DATA APPLICATIONS IN A COMMUNITY HEALTH CENTRE

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Report of a Practicum Presented to


The Faculty of Graduate Studies

at The University of Manitoba

For the Degree of

MASTER OF SOCIAL WORK

**School of Social Work
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Winnipeg, Manitoba**

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BY

ANNE E. VAUGHAN

A practicum submitted to the Faculty of Graduate Studies
of the University of Manitoba in partial fulfillment of the
requirements of the degree of

MASTER OF SOCIAL WORK

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For Peter

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AUTOMATED MANAGEMENT INFORMATION SYSTEMS IN COMMUNITY HEALTH CENTRES

Abstract: *The practicum reported herein was an exercise in the review and analysis of an automated data base belonging to a community health centre (CHC). The objective was to study data applications in a CHC. The task was to produce a descriptive report of the CHC programs for internal management use, based upon data stored in the agency's automated management information system. This report is divided into three parts: 1) a review of pertinent literature; 2) a description of the practicum; and 3) a summaric discussion of the practicum experience. A copy of the report produced for the practicum agency is appended.*

Introduction

Automated management information systems (MIS's) are a fact of life in the human services. The purpose of this review is to study MIS data applications in human service agencies, specifically community health centres. Tefft (1983) defines an MIS as an administrative computing package with three generic elements which can be viewed conceptually as: "management (the means of accomplishing tasks through other people), information (knowledge communicated between people), and system (a set of related components held together by a common goal)" (p. 38). Literature examining MIS design and implementation in human service agencies has grown substantially in the past five years. Broadly, these are studies of computer applications at specific management and clinical levels in both large and small health and social welfare organizations. In this paper, data applications have been defined simply as the use of computer produced statistical

information.

Data applications have been implied in the computer applications literature but rarely addressed directly. An MIS can be described in chronologically overlapping phases of growth: planning, design, implementation, operation, maintenance and re-design. Data applications fall most clearly within the later and often ignored phases of MIS maintenance, data retrieval and reporting. It has been assumed that, given critical attention to the design and implementation phases, an MIS will produce useful data once it is fully in place. Few researchers have demonstrated useful data analysis and reporting, and there is a paucity of documentation of this aspect of MIS development in the human services literature.

The changing technological ability to manage and store information requires imagination as well as new technical literacy to explore the potential significance of this rich resource. This new medium challenges management to be innovative. Can effective use of this medium actually improve the message? If so, what lessons can be learned to ensure its effectiveness? To achieve an appreciation for these questions, several aspects of the subject of data utilization will be treated in the sections to follow.

The first section will provide a brief history of MIS development in the human service sector. It includes an overview of MIS design and implementation, and encompasses a condensed review of administrative decision-making literature with reference to MIS's as an underused

source of information. The second section describes the process of entering into consultation with Community Health Centre management for the purpose of examining its MIS data and to report on the findings of this examination. The third and final section discusses a self-evaluation of the consultation process in relation to the attempt to provide useful information to the Community Health Centre.

Prevalence of MIS in Human Services

The rise in the production and use of automated management information systems is part of what has been referred to variously as an electronic information evolution, revolution, explosion or perhaps most expressively, a "birthquake". In a summary of these technological changes, Willeges (1984) notes that since the mid 1940's and the ENIAC computer, up until the modern micro electronics, "computers have become the most prodigious machines created by humankind" (p.109). He compares it to a tidal wave. Large bureaucratic organizations bore the brunt of the 'tidal wave' in the developmental period beginning 25 years ago. In the human services, this was mainly in health and some income transfer programs (Chelmsky, 1973; Neufeldt, 1970; Rodnick, 1977; Tefft, 1983). As the technology advanced from main frame to mini to micro and 'super' micro (capable of handling multiple users) computers, the proliferation of information to users and potential users has been massive.

Documentation of computer developments range from esoteric

papers (often unpublished and embedded in highly specialized technological literature of computer science professionals) to consumer marketing magazines and trade journals relating to specific hardware, software, peripherals and accessories (such as buyer's guides, glossaries, user manuals, etc.). Academic studies focus on discipline specific research and use, and also contribute widely divergent analyses of developments, applications and sociological effects of the information explosion. It is an extremely complex mixture of town and tower contributions to the industry.

Human service policy and planning bureaucrats and professionals have responded more slowly (though not without influence) than business to the multifarious advancements. In the sixties, large public bureaucratic organizations developed systems to perform routine administrative tasks (Schoech, 1982). By the mid-seventies smaller human service organizations also began developing systems to meet the demand for greater accountability in budgetary and program planning (Catherwood, 1974; Fein, 1975; Hoshino and McDonald, 1975; Rosenberg and Brody, 1975; Sullivan, 1982 and many others). The eighties are seeing an increasing emphasis on smaller, multiple purpose systems. Networks of computers are developing both within and between organizations.

The search for what is popularly referred to as "user-friendly systems" or increased compatibility between the computer and the non-computer scientist user, has become a major consumer demand. It has been commonly held that the priorities of the programmer are not

always consistent with those of the user. Heisenberg (1958), an atomic physicist, states that "what we observe is not nature itself, but nature exposed to our method of questioning" (p.107). We find that the perspective of the observer influences the observed. Capra (1975) explains: "the observer decides how he is going to set up the measurement and this arrangement will determine, to some extent, the properties of the observed object" (p.140). Similarly, when a computer scientist designs the MIS from his/her perspective, the MIS becomes a reflection of how the programmer sees the agency rather than how the agency sees itself. More "user-friendly" MIS's can allow greater management control of information. The effects of this phenomenon are evident in the process of developing automated human service information systems. Business and computer science interests have traditionally formulated the questions and subsequently adapted their answers to human service needs. Senior management's earlier disillusionment with costly and inaccessible computer systems that were largely controlled with the use of highly skilled and mobile computer scientists reflects the growth pains of a new technology.

Today private firms specializing in software development are now more numerous than those marketing hardware. Human service administrators confront mounting direct involvement and responsibility for MIS design and maintenance decision-making as the trend toward "user-friendly" software reduces the need for intensive on-site interventions by computer programming specialists. But a trade-off exists between 1) purchasing pre-packaged, easy to initiate software grounded in a business perspective; or 2) engaging in the arduous

process of custom designing human service programs with alternate and unique social program features.

Human Service MIS Functions

Throughout the quarter century of development, the main functions served by computers fall into three areas: 1) reduction of work load for routine administrative tasks (Budd, 1978); 2) increased efficiency and accountability; and 3) policy and program planning (Rosenberg, 1974; Velasquez, 1981). In addition to collecting financial, personnel, client and service data, human service organizations are beginning to develop performance and outcome measurements useful to clinicians and researchers as well as management (Bloom, 1975; Dush, 1983; Endres, 1982; Tefft, 1983; Ciarlo, 1981; Schoech, 1982). Allen (1982) discusses the structure of applications and data in relation to these needs:

Closely related to the issues of organization and control is the determination of an overall structure for applications and data. Although the concept of a total information system or total data base was dismissed long ago because most efforts in that direction bogged down in the detail of corporate politics, the need for a master plan for information systems has never been greater. This grand design must decide: (1) what the major data collections will be; (2) how they should be related, if at all; (3) what types of application systems will feed and draw on these collections; and finally, (4) how the applications systems will be related (p. 85).

Although computer applications in human service agencies generally encompass research, management, and clinical practice, either in isolation or in combination, administrative uses are by far the most

pervasive. Tefft (1983) outlines reasons for this development:

1. Increased size, complexity and specialization of service organization
2. Expanding need for quantitative documentation of services to meet accountability demands and permit third-party reimbursement
3. A trend toward increased emphasis on program outcomes as measured by various performance indicators
4. A thrust, at least in theory, toward enhanced service integration within and between agencies
5. Mandated planning and evaluation (p. 36).

Management has been the catalyst for computerization. Health organizations have been in the fore-front of this development among the human services due in part to the increasing public demand for accountability.

MIS Data: A Neglected Asset

Until recently, frequently changing computer technology necessitated that management of MIS design and development was an end in itself. It was assumed that once data processing and storage functions were integrated into the operating organization, the MIS would produce information useful to management within the organization. This implies that the MIS can be handed from technically sophisticated computer programming personnel to management as a complete 'package' which could then be possessed, learned and applied as a management accessory or tool. The important, though perhaps over-worked analogy of the

life-cycle to the developmental stages of MIS, contributes a unique shift in focus from design, development and implementation (or conception and growth), to an emphasis on maturity and regeneration (or production, results and redesign). Each stage of the design and implementation process directly affects the usability of the information the MIS will produce. Fry and Teorey (1978) are computer scientists who advocate the introduction of custom-designed software which would allow the agency data base administrator (a non-computer scientist) to have greater control at each of the life cycle steps. The user could have some well protected control over data base design over time and as needs for information change. The system would then move from a static tool to a dynamic resource which might reform and change to meet the requirements of a 'living' organization. Their model reflects the concepts embodied in an open systems design.

The position of the data base administrator in relation to the organization is a major factor in how information will be produced and thus used. Bennett and Trute (1985), Tefft (1983), and Allen (1982) emphasize the need for top level management commitment and control of the MIS. Fry and Teorey (1978) note that "today the main problem facing the data base administrator is not whether to use these MIS's, but how to use them effectively" (p. 151). Experience in design and implementation of MIS's has led to a consensus around major problems encountered along the way. Baker (1981) writes in reference to the hasty movement by large bureaucratic organizations to automate the most easily routinized function: "one of the greatest problems with automation, in fact, is that we often tried to computerize all this trivia, without first thinking

through the question of whether this information was of any use, and if so, how" (p. 4). He recommends increased selectivity when deciding what to automate. Catherwood (1974) also suggests that "any proposed management information system must be tested as to the usefulness of the information output and must be subjected to the question 'what value is the information after it is produced?'" (p. 60). Alternately, Fein (1975) discusses the possibility that the "data system may provide answers to questions that an institution may not even be willing to ask" (p. 24). These are only a few examples of issues to be confronted when integrating an automated management system into an established work environment. They illustrate experiences of information overload and shifts in personnel power dynamics. They represent a myriad of potential barriers to the use of MIS produced data.

An anonymous article published in *Modern Hospital* (1971) reported the results of a survey completed in 1970 by the Hospital Financial Management Association from 2,800 American hospitals and health care facilities. Only 503 of the 2,800 responding hospitals had installed computers, 75 had computers on order and 1,106 used an outside computer service (p. 41). At that time, the H.F.M.A. found that "only half of the computer installations reported employed any systems analysts" (p. 41). The reporter was critical of the "dangerous tendency towards installing the equipment today and worrying about its use tomorrow" (p. 41).

The theme of underuse is a recurrent one throughout the literature. It is only one of a number of problems which form the experience of frantic attempts to keep pace with technological changes

without prior research and knowledge (Gruber, 1981; Large, 1980; Wessel, 1976). The issue of 'pre-guessing' what data requirements would be several months or even years ahead of the data's actual availability is unavoidable. However, in recent years, the trend toward user-oriented rather than programmer-oriented systems has begun to reduce the need for a closed system design which did not allow for a structural change once the system was designed and operating.

Many of these early and continuing person-computer themes have been captured provocatively in illustrations by Marcks reproduced in a text on computer-assisted information retrieval by Wessel (1976). For example, one illustrates machines producing heaps of unintelligible scraps piled on the floor while people scratch their heads in bewilderment. They highlight the intimidation of people by machine; the lack of experience of the user; the unpredictability or uncertainty surrounding output of data; the over abundance of output generated; the inappropriate production of excess data; the non-use of information due to inaccessibility; and ultimately the rejection of the entire system as a result of its perceived ineffectiveness in providing useful data to those who request it. Holland (1976) writes "new information and knowledge often go unrecognized and technically magnificent systems for information retrieval go unused. The field of information systems has extensively addressed the issues of data collection, processing and presentation. Actual *utilization*, however, has not been so successfully demonstrated" (p.26). Allen, in an article entitled "An Unmanaged Computer System Can Stop You Dead" (1982), noted that "the biggest cost of computer application is people" (p. 78). His list of people related MIS

problems in a business environment include: changing economics; shortage of programmers; falling behind the pace of technological change; poor management; applications backlogs; inflexible design; obsolete applications; ineffective steering committees; and lack of integration.

Recently, a trend can be detected toward a convergence of experiences in the understanding of the complexity of data utilization across disciplines. Robert Parke (1978), a statistician commenting at the 1978 Conference of European Statisticians, noted that in his field:

Recent decades have been characterized by growth, and official statisticians have been able to concentrate on the building of ever more and ever larger mechanisms for collecting increasing volumes of data. It is now time for statisticians to improve their digestion. ... Where the ingestive mode puts a premium upon such skills as sampling and data processing, the digestive mode calls for greater emphasis on analytical skills and on skill in compact presentation. (p. 39)

The implication is clear. Statistical tables and graphs are not enough on their own. They must be analysed for specific purposes and presented meaningfully. We have come to understand that greater emphasis must be placed upon utilization as the key to successful integration with the organization and maintenance of systems. It is not enough to produce aggregated statistics. There must be a direct link with the goals and objectives of the users. Utilization is inherent to system design and development and should not be considered separate from them.

Decision-making and Data Analysis for Community Health Centres

An MIS is attractive to managers for a variety of reasons as mentioned briefly above. For many of the same reasons, MIS's draw the attention of researchers. Obviously such information systems can facilitate the organization, storage, retrieval and analysis of comprehensive data collected over time. Research departments in large human service agencies and research or information officers in small organizations alike could easily be swamped with statistical analyses and reporting projects. Without management controls, the production of massive amounts of irrelevant data could consume potentially valuable agency resources. Senior management or executive policies are used to keep the research activities pertinent to current agency decision-making issues. Senior management, not researchers, make the decisions. In community health centres, however, it is rare to find authority delegated to a senior administrator whose job description is *restricted* to the collection, retrieval and analysis of information for management decision-making. Scarce financial resources, combined with an insatiable public demand for services place priorities for clinical service personnel above those of management information personnel. Hence, the decision-maker is also required to be a researcher and few individuals have specialized knowledge and the time required to conduct meaningful research. The quality of management, research or both must suffer where this occurs. In a small agency there are multiple levels of management responsibilities which place complex information demands on an MIS administrator.

In his delineation of an administrative perspective for mental health MIS's, Tefft (1983) succinctly presents two important administrative conceptual guides. The first is adapted from Sorensen and Elpers (1978) and is grounded in the idea that information produced by computer is not equally useful to all human service managers (p.40). His listing of hierarchical levels of decision-making within organizations associates the planning and control tasks common for each level. These levels are: 1) strategic planning (senior management, executive director) 2) tactical planning and control (middle management, program director) and 3) operational control (lower management, clinical team leader) (p. 40). Community health centres are most commonly governed by a voluntary board of directors to whom senior management report. Program managers are responsible for the provision of health and social service programs. The size and structure of the organization influences the form, quantity and nature of information required in each of these levels. An MIS is a concentrated source of information which makes the distinctions between levels less obvious. Reports produced for members of the board of directors interested in long range planning, for example, commonly provide statistics which may be too condensed to be useful to middle management. While line workers who most often provide service information, may never see the reports their recording efforts help to produce. It is important to identify the management level for whom the data is to be produced and to provide information appropriate to the objectives and functions of individuals or groups. At its best, an MIS will provide only partial information bearing on the question or questions asked of it at any level in the organization. It should augment current decision-making practices of the agency.

To return to the initial perspective of the senior manager/researcher, it is clear that a person in this position would be most sensitive to the needs of the executive level of the agency or at least in a better position to ask appropriate questions of the MIS at this level. It would be unrealistic to expect the full potential of an agency MIS to be explored at all levels given this limitation.

Administrative Data Bases and Data Applications

It has been noted above that MIS functions are numerous and that various levels of management have differing information requirements from a shared system. It is increasingly the practice that research consultants are retained by agencies for the purposes of conducting program evaluation research.

Roos, et al. (1979) provided a case study examining the use of administrative data banks for research and evaluation purposes. Their discussion specified a process of assessing the validity of large data bases which were not originally intended for research. They demonstrated the need for caution when attempting to use data over which the researcher had no design and collection controls. There may be no quality assurance monitoring present in the automation process. Still, it is often the case that senior management requires program evaluation research to be conducted. Rather than burden already overloaded staff with additional information collection duties, the choice is to tap the MIS resources. In 1979, Statistics Canada introduced this kind of change with

the development of experimental data from administrative social records on individual Canadians (Statistics Canada, 1984, p. 1). Automated administrative information systems make it possible, though limiting, to use the same data for both research and management functions.

Program evaluation research is a considerable and rapidly growing field of study. In a very real way, the literature addresses the issues arising in both management decision-making literature and the use of automated information systems. An article which provided clear support for the descriptive review of programs attempted in the practicum experience described later in this paper was written by Edwards, Guttentag and Snapper (1975). In it they described "five complaints about folkways of evaluation researchers" (p. 142). These complaints merit attention in some detail. Their first disagreement was with evaluation research designs in which programs are conceived of as fixed, unchanging objects that can be observed at various times and places for experimental or quasi-experimental purposes (p. 142). Secondly, they regreted the insistence on causal inferences since "evaluation-research contexts seldom permit enough precision for the construction of useful models" (p. 143). They offered the observation that "questions beginning 'why...' are really questions beginning 'what...' ill phrased" (p. 143). Thirdly, they identified what they call "pseudo-experiments" or the propensity for experimental and quasi-experimental research "as the high road to knowledge" (p. 143). In particular, they cited examples of controls that do not control, small sample sizes, the difficulty of random assignment in a social experiment. Though they did not suggest that experimental designs should not be

attempted, they counselled avoidance and specified that a convergent validity approach be used wherever possible. Fourthly, they argued that the distinction between planning, formative and summative evaluations are not useful in relation to the kinds of decision problems faced at each stage of the program's development. Therefore, they did not see the need for the association of particular evaluation techniques with stages of the program's development. They suggested that evaluation ideally should be continuous since the program is ongoing.

The final approach reviewed by Edwards, Guttentag and Snapper (1975) is that of the "baseball statistician." Similar to simple baseball statistics like batting averages and earned runs, etc. the approach is to provide as detailed a description as possible to the program manager. They write:

It provides decision makers with a set of numbers at least some of which must be relevant to their interests and the program's purposes. And it provides sponsors with evaluation reports that are thick and heavy enough to be thorough, and detailed enough to be thoroughly unread. ... A massive and unreadable book with an indexing system that permits retrieval of an occasional stimulating statistic can be a useful and appealing product of a research project (p. 146).

This approach is limited to describing the program (the 'what...' questions) without attempting to provide answers directed at causality (the 'why...' questions). At least some program specific data would be made available to program management no matter what questions they ask. As a result of these considerations, Edwards, Guttentag and Snapper (1975) concluded their discussion with a preference for the baseball statistician's approach in most cases:

If forced to choose between the experimentalist's and the baseball statistician's approaches to program evaluation, we will choose the latter almost every time. Fact-gathering, however dull it may be, is indispensable to everything that comes after. And a reasonably exhaustive compendium of relevant facts about a program can, in principle and sometimes in practice, be interrogated by a decision maker about whatever he really wants to know (p. 147).

Much of the MIS literature related to human services deals with the identification of records relevant to community health centres and services. Articles such as that written by Gulbinat (1982) reinforce the need for complete descriptive statistical information relevant for monitoring, planning and administering health services. Emphasis is placed on the collection of basic information in a systematic way over time. The simple presentation of this information aggregated at regular intervals to management is a first and necessary step in providing feedback from an MIS.

Management Use of MIS Reports

Human services literature which investigates questions such as who uses MIS produced data and how it is used, is extremely scarce. However, considerable attention has been given to theoretical approaches, definitions and dimensions which are required for investigations to progress. Kling (1980) examined recent empirical studies of computing use in organizations and provided an excellent summative table of theoretical perspectives adopted by social analysts of computing (p. 64). A major contribution came from Weiss (1980), who developed a methodology to study the usefulness of social science

research to decision-makers by focusing on variables operating at the moment specific research reports were received by individual decision-makers. Rich (1981) also conducted a cogent and influential study and defined use or utilization to refer to the entrance of information in the policy-making process (p. 109). He reported that "because process takes precedence over substance in determining utilization, social science information will be used only if it adheres to the protocols and conventions of the user agency" (p. xii).

Schoech's (1982) text Computer Use in Human Services is a most comprehensive guide. In addition to a step by step guide to developing MIS's in human service organizations, he reviews theoretical perspectives, relates these to knowledge derived from experience and discusses the importance of data administration and the balance between the use of information and control in data processing. His conclusion includes a careful elaboration of training requirements for social service professionals as a key to more effective usage. Trute (1983) further elaborated the process of design and implementation with the use of a case example. Detailed analyses of major factors affecting the success or failure of MIS's are given. Tefft (1983) undertook a review which innovatively integrates research from a variety of disciplines. Tefft shed some light on questions of how managers actually make use of information in the decision-making process and where MIS produced information impacts on the organizational decision-making process. From his experience and review of the literature, Tefft detailed five components which have been found to influence management utilization of data. These are: 1) Definitional issues - instrumental, conceptual and

persuasive uses of information; 2) quality of information; 3) problem definition and problem solving process; 4) organizational structure and culture and; 5) intrapersonal and interpersonal dynamics.

In addition to these specific points regarding the use of information, Tefft considered computer-based information as a distinct source. He states: "We believe that computer systems are in some ways dissimilar from other modes of information production and have certain system-specific implications or consequences" (p. 237). The rational structure of the MIS does not become fully operationalized once in interaction with agency clinical, clerical and management personnel (cf. Kling, 1980; Trute, 1983). Issues arising here are: the specialized language or jargon separating the user from the system consultants; inadequate training of users; the potential for symbolic use of computers to give the agency the appearance of being progressive and efficient; privacy and confidentiality of client/patient records and system security.

Taking these factors into consideration, the need to produce reports for the managers/decision-makers seems a formidable task. How does one proceed? What information should be included and how should it be presented? Two researchers have focused directly on the improvement of use of computer based data by management. The approaches are quite different. Pauley et al. (1982) uses an approach which involves a behavioral definition of management information use and identifies disruptions in the behaviors comprising information use to suggest an intervention design for program evaluators intending to

reduce disruptions and promote use (p. 123). Six clearly definable steps of information use are given to guide the evaluator. What is important to learn from this study is that it assumes the MIS data is being generated for the purpose of program evaluation which will be conducted by professional evaluators. Careful guidelines are given for information production and integration with management behavior or functioning. Outside professionals rather than agency staff are responsible for monitoring the process. Consequently, the aim is to justify the cost of the evaluation data with increased efficiency and effectiveness of service delivery.

Rapp (1984), on the other hand, developed the idea that inappropriate information is provided in poorly produced reports. Rapp reported on a study conducted with the Kansas Department of Social and Rehabilitation Services, "in part to assess the use of computer generated reports by personnel in the seventeen decentralized area offices" (p. 71). His subjects were asked to specify how often they based fourteen management actions upon six separate data based reports received monthly. He concentrated his study on the variable clusters affecting information use. These were: "1) the skills, knowledge and attitudes of the manager; 2) the format and content of the report and; 3) the organizational culture and contingencies" (p. 73). His study is the only one which could be found to address the content of reports specifically. "Five principles for evaluating and designing performance reports which would facilitate their use by human service managers" were delineated as follows:

1. Every report needs a standard by which actual performance can be compared.
2. Reports should contain only the numbers needed by the receiver. Too much unneeded information reduced the likelihood of even the needed data being used. If a manager has to sort through hundreds of numbers to locate the critical few, one is not likely to spend the time.
3. Aesthetics are important. Graphs are often easier to read than data presented in tabular form. Conclusions are more likely to 'leap off the page'.
4. Each report should have a descriptive title and clear labels.
5. The level of aggregation included in the report should match the recipient's place in the organization. If serious about providing information to help a person do his or her job better, then the data must say very clearly something about the person's job (p. 78).

The above listed directives for report writing are invaluable given additional criteria: the purpose of the report is instrumental; the manager trusts the quality and source of the information from which the report is produced; the report is relevant to the immediate needs of the manager and can be integrated into the agency problem solving mechanisms or processes; and the individual or individuals for whom the report is intended to be useful perceive it to be in their own interests as well as those of the agency they serve.

Evaluation research has been an important source of information in understanding the utilization of data. With the increased sophistication of MIS, the trend has been toward improved research techniques and designs for both treatment and outcome measurements. The level of technical sophistication exhibited by the staff and the data base administrator (staff or consultant) dictates, to a large degree, what

measurements can reasonably be implemented and what products will result.

PRACTICUM SETTING AND PARAMETERS OF PRACTICUM TASKS

Practicum Objectives

The Practicum objectives were to study the applications of data produced by a computer-based information system in a community health centre; to become familiar with the statistical analyses appropriate for a particular data base and setting; and to present analysed data in a meaningful way to constituents within the health centre. The practicum was an exploratory exercise to extract information pertinent to program planning and management personnel. For the purpose of the practicum, data applications include the retrieval, analysis and presentation of statistical information produced by the automated information system.

The design, implementation and maintenance phases in the process of installing an MIS in human service organizations are the predominant areas of study in the new and still developing MIS literature in the human services literature. As noted in the literature review above, one phase in the process which receives particularly inadequate attention is that of data applications (Bennett and Trute, 1983). A National League for Nursing publication (1977) stated that, apparently, administrators do not make maximum use of the tremendous resources already available to them: "planning for and selecting specific information to be tabulated, whether manually or by computer, should include the need for, and

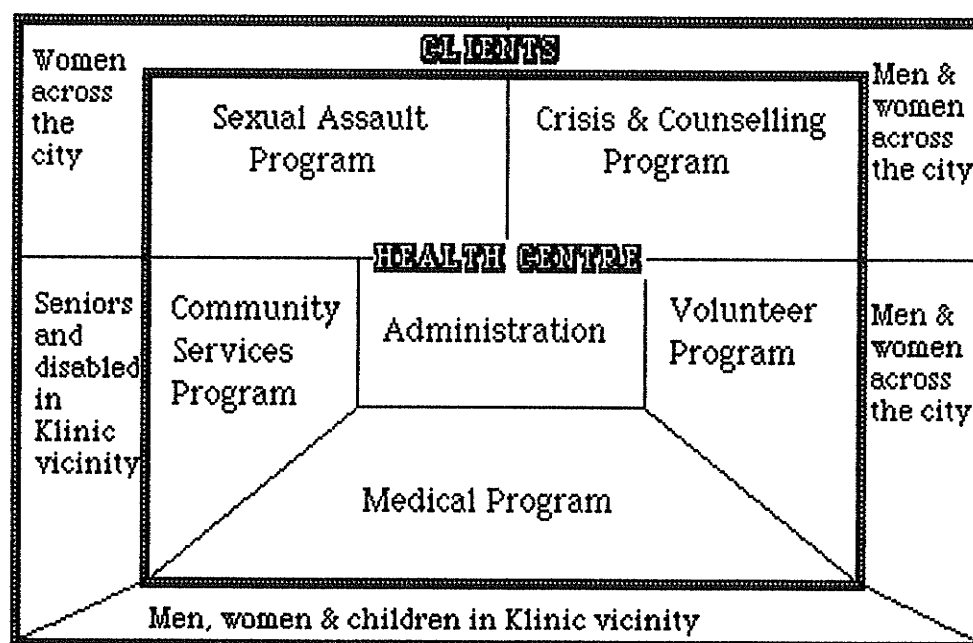
subsequent use and interpretation of, the kinds of data required" (p. 25). In the design phase, emphasis is placed on the identification of all potential uses the agency may have for the MIS. After the selection of the appropriate and feasible functions and the actual implementation of the system has progressed, there is a period of 'fine tuning' and continuous evaluation. The tendency is to collect as much information as possible in anticipation of some future need: with limited resources (personnel and finances) this may not be appropriate. Making use of the data is an integral part of the total system. Fein (1975) wrote: "when reports and data are asked for and used, this indicates an acceptance of the system that speaks more vividly than words about the data's importance" (p. 24). The design, implementation and maintenance of an MIS is justified when the data collected is used and analysed for the practical purposes of organizational administration. This practicum was in part, an attempt to provide this kind of justification for an information system in a community health centre.

Practicum Setting

Klinic Community Health Centre, Incorporated is a unique human service resource in the Winnipeg community. Klinic offers a distinctive combination of health and social services administered from a single location. Crisis intervention and counselling, sexual assault crisis counselling, and outreach services to elderly and disabled clients are the major services provided free of charge to all clients in addition to medical care. The following overview of the health centre is designed to highlight two main points. First, at the time of the practicum activities,

Klinic consisted of five programs largely independent from but sharing a central administration. Secondly, the public perception of Klinic could alter according to the program first contacted by the client. In a sense, Klinic offers different profiles to its constituents. For example, the Sexual Assault Program is targetted to women, has a high profile advocacy role in the community and is closely affiliated with the women's movement. In contrast, the Community Services Program finds its clients among the elderly and disabled living in the neighbourhood of the Klinic premises and has a different informal social service network.

Figure 1. Overview of Health Centre Programs and Client Population



For over fourteen years Klinic has had a varying role in the community and has endured numerous funding and service modifications. It has attempted to remain responsive to the changing needs of the community while at the same time acquiring stability as an

entity. Staff, volunteer and client populations were continually increasing in number. Today base funding is secure through Manitoba Health Services Commission (M.H.S.C.). However, the period of fiscal restraint has led to increased demands for efficient accounting and service recording procedures and a need to undergo increasingly rigorous public scrutiny. Klinik is not unique in this regard. Tighter administrative control is the order of the day. Hence, an original investment in the Klinik Information System. At the time the Klinik Information System was first conceived, Klinik was in the forefront of MIS technology and inventing its own record-keeping system for the purpose of automation.

The Klinik Information System

In 1978 the Manitoba Health-Centres Project was funded by the federal government, Health and Welfare Canada, National Health Research and Development Program, to develop a model for health information analysis that incorporated both the medical and social service components of health care. Four health centres were originally selected for study. Klinik Community Health Centre was one of these.

Five basic operating principles guided the development of the model. These were listed in a report by Trute, Tefft, Scuse, (1981):

1. Each centre should control and manage its own system through a well-established administrative infrastructure.
2. The backbone of the system should be simple, checklist reporting forms tailor-made for each centre.

3. The fundamental unit of analysis should be the patient/practitioner encounter.
4. System development should proceed in three stages. The first stage involved recording social-demographic information about patients, the second stage recording process information concerning each health care episode, and the third stage measuring the outcomes of comprehensive care.
5. Technology should: 1) maximize ease of data entry and retrieval to unsophisticated users yet maintain adequate security safeguards, 2) maximize portability and flexibility of software adaptation to different computer hardware, and 3) develop software as self-contained modules allowing centres to select only those modules which were applicable to their services, thus minimizing costs (p. 9-10).

The system adhered to these principles. The practicum agency had progressed to the second stage of recording process information regarding each health care episode. Though the system structure was available for the design of outcome measurements, this very ambitious step was not attempted in the agency.

At each of the health centres, forms designed by the staff at the Health-Centres Project were used to record client socio-demographic information. The staff at the Health-Centres Project office gathered the forms and entered the information into a computerized information-management system developed by the Health-Centres Project and using University of Manitoba computer hardware facilities. The data generated was used to produce: 1) provincial government reporting tables; 2) internal management reports; and 3) special studies for the health centres (Scuse, 1981).

The Health-Centres Project completed the study, developed the

Manitoba Health-Centres Information System (MANHIS), provided feedback reports to the participating health centres remaining in the study and closed the project in 1981. During the termination phase of the Health-Centres Project, the management staff at Klinik decided to apply for further funding to continue the use of the Information System without Health-Centres Project staff support. Funding was obtained and Health-Centres Project staff were asked by Klinik to make modifications to the system which would allow the transfer of input and maintenance functions to the Klinik premises and management control. A programming consultant familiar with the Health-Centres Project was retained to provide services as needed. Klinik hired personnel responsible for data-entry. The task of management of the Information System was added to the job description of the Assistant Executive Director. No additional management level staff was assigned to the Information System. Subsequent personnel changes were experienced with the result that few of the original participants in the design of the system remained after four years had passed.

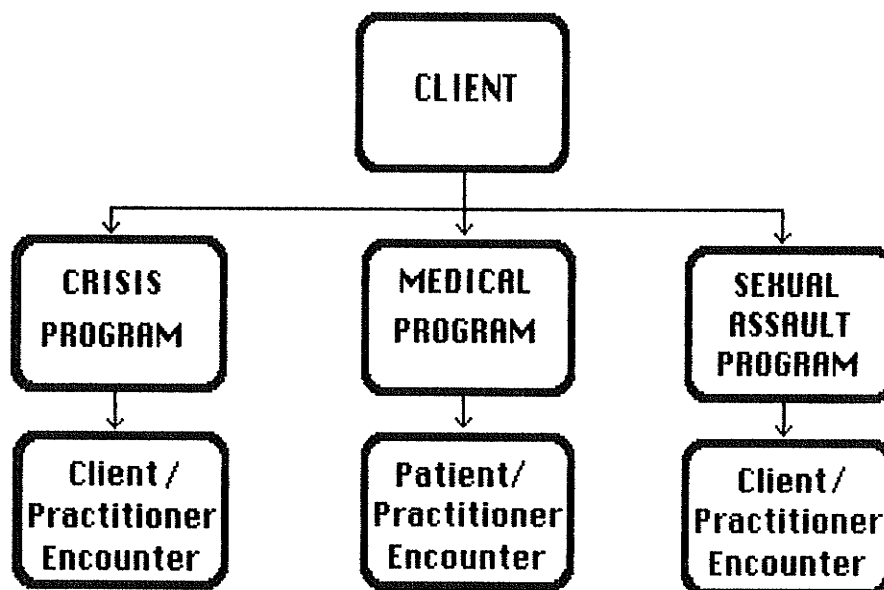
The Information System's use was discontinued by Klinik in March 1984. It was at this time that the practicum negotiations were initiated. Forms from Klinik's five major programs were selected for completion of data entry for the most recent months of service to complete a full 12 month period which could be compared with previous years. The programs were: the Sexual Assault Program, the Crisis and Counselling Program, the Primary Care Program, the Community Outreach Program, and the Volunteer Program. A total of ten different forms (developed between September 1978 and January 1980) were used by these programs

to record service recipient registration information and service contacts or encounter information.

File Structure and Data Retrieval

The data base file structure was highly sophisticated to accommodate a number of health centres with diverse form requirements. However, a general knowledge of the structure was adequate to begin using the retrieval and analysis programs. An adapted version of the illustration provided in the documentation (Scuse, 1981) will serve to clarify the structure as far as is necessary for the discussion which follows.

Figure 2. Sample Health Centre Data Base File Structure



Segment 1, Client: Health centre registration
 Segment 2, Program: Program registration
 Segment 3, Encounter: Single visit (p. 21)

MANHIS was designed to make the tasks of data-entry and data-retrieval operations as easy to use as possible by people who were not sophisticated computer programmers (Scuse, 1981). Certain file protection features were built into the system which guaranteed safety of the master file and eliminated certain kinds of data entry errors. This included a batch method of updating the master file with the use of a temporary file. Initially it was necessary to become familiar with the procedures required to enter and store the data. The system was well documented for each point of interaction with the user so that, with access to data entry personnel and the programming consultant, it was not difficult to gain a conceptual and practical understanding of the process. Similarly, simple data retrievals could be learned with little reference to a computer programming language. It was necessary to learn some special retrieval commands which referenced specific key variables in the file. Sufficient retrieval programs had already been provided in combination with the statistical analysis package of SPSS (Statistical Package for the Social Sciences) (Nie et al., 1975), that it was seldom necessary to alter the retrieval requested.

The Clinic Information System Report

PHASE 1: Contract Agreement

Since the automated Clinic Information System had not been actively used for three years (with the exception of one program), there were a number of problems and uncertainties requiring clarification.

Although staff continued to use the forms designed for the dual purpose of record keeping and clinical use, they had received little system produced feedback from their collection efforts during those three years.

The primary contact person for Klinik was the Assistant Executive Director. She agreed that management needed to receive feedback from the Information System. The timing was opportune since the use of the Information System was being terminated and preparatory work was underway for a replacement system. The management staff had already decided to investigate the possibility of installing a micro computer. In this instance, student and health centre goals were highly complementary. While the student was afforded the opportunity to manipulate and analyse a large data base, the health centre was to be provided with a tangible planning report resulting from the system. The health centre management also hoped to learn from the old system before committing themselves to a new system.

A deliberate boundary between the old and new systems was drawn. The practicum focussed on the original system data base. The health centre hired a separate consultant regarding plans for a new system. Advice and suggestions arising from analyses of data were directed to the Assistant Executive Director, who took responsibility for presenting this information to the management committee and the Board of Directors as appropriate. Involvement by the student in ongoing health centre activities was kept to a minimum with this arrangement.

Several meetings were held at the university and at the health centre with relevant centre personnel. During these early meetings, the

resources and limitations of both the student and the health centre regarding the practicum were identified. The health centre was committed to adding to the Information System data base so that the most recent information could be compared with previous years which had already been input. Access to the computer consultant retained by Klinik and access to the staff member responsible for data entry was also arranged. The health centre agreed to supply clerical support for the preparation of a final report. The review of the Klinik Information System would be limited to a descriptive analysis of the data. Student computer units were assigned and analytical work was completed at no further cost to the client. The outcome was to be a report which could be studied by management staff and members of the Board of Directors for the purposes of planning.

PHASE 2: Review of the Quality of Data Contained in the Information System

Before undertaking a statistical analysis descriptive of the Klinik Information System data base, it was essential to determine to what extent the system files could be trusted. The diversity of Klinik's five program services was reflected in the Information System. The information was aggregated from different sources. Form completion procedures were defined by program administrative needs independent from those of other program areas. Transfer of information from line staff to information system staff also varied from one program to another. Several important issues remained to be answered. Were the forms used

to collect the information completed and entered into the system as intended by the original design of the system? Were the procedures used by each program consistent over the years the Klinik Information System data base was being managed by the health centre? Were there entire sections of the Klinik data base which were unreliable for statistical purposes?

To attempt to answer these questions, the following line of action was taken: 1) a study of all available written documentation on the system in the agency; 2) informal interviews with each program director and the data entry staff to determine the exact use and processing of the registration and encounter forms; 3) consultation with the Information System programming consultant regarding the structure of and access to the data base; 4) ongoing meetings with the practicum advisor for advice and guidance; 5) production of a reference listing of frequencies on selected variables for each form in the system in all programs crosstabulated by year; 6) comparison of the information gleaned from the documentation and informal agency interviews with the listings actually produced by the system; 7) identification of specific data quality problems and verification of these problems with the Assistant Executive Director, data entry staff, and programming consultant; 8) production of a written review identifying portions of the data base which appeared to be unreliable and specifying the program files which would be included in the analyses for a final report to Klinik.

These above steps were taken and a report entitled "The Quality of

Data Contained in the Clinic Information System" (Appendix II, p. 208) was presented to the Assistant Executive Director. It described what was in the data base, what was missing and to some extent why some data was missing, and what was unreliable for analytical purposes and finally, where possible, reasons for the presence of unreliable data. The review revealed a need to limit analysis to programs with the most reliable and useful information. On the basis of the review and given the limits of time, it was suggested that both registration and encounter information for the Sexual Assault Program would be analysed and that the Registration information for each of the Medical, Counselling, Community Outreach and Volunteer Programs would be examined in the final report.

This report went a long way towards informing management of the deteriorated system contents and to a limited extent, how it came about. Early interviews with program directors revealed that few could conceive of the nature and scope of information that could be produced from their forms from the computer. All discussed the usefulness of the forms for record-keeping and anticipated making only a few changes to the forms for a new system. Each believed that a new system would be an improvement on the old because they expected the new system would provide immediate feedback on demand. Only management staff in one program were aware of the data resources the system offered and made use of the them. Although significant problems were found to exist in the manner in which data collection and computer entry were monitored by Clinic management, it was beyond the scope of a data oriented review to identify the specific problems involving management control of the

program recording procedures. Nor was it within the scope of the task to study a new system.

Presentation of this review to the Board of Directors and to program management staff was done by the Assistant Executive Director with the Management Committee during regularly scheduled meetings. The review had identified large amounts of data which could not be used. It was a disappointing discovery for Crisis Program management in particular since analyses of the encounter form used by that program were not to be included in the final report. The data quality review had avoided identification and placement of blame regarding areas of poor data quality. For the purpose of the management committee meetings, the emphasis was upon the positive inclusions rather than omissions for the final report. Staff had tended to blame the Information System for its own failure and avoid scrutiny of their involvement. When faced with a document which presented a detailed review of the state of the system, there were understandably mixed reactions. The results of these meetings as shared by the Assistant Executive Director indicated that the findings of the data quality review were not questioned in themselves though they aroused some resentment. The Assistant Executive Director used examples of other hospital information systems to illustrate that with rapid technological developments, it was not uncommon for one system to give way to a new one, and that Klinik's experience was normal. The outcome of the meetings was the delineation of a process for the identification of changes to the data collection forms currently in use, in preparation for a new micro-computer information system. The integrity of the Klinik Information System forms was unanimously

agreed upon and it was decided that they should be retained and improved upon.

PHASE 3: Descriptive Statistical Analysis of Data by Program

A number of technical problems arose during the analysis phase of the practicum. The first and most important obstacle was the fact that there was so much data that it was easy to become lost in the figures. Once the decision had been made to remain confined to providing the health centre with feedback from specific forms, the question was how much and what format should this feedback take. It was here that the lack of guidance from literary sources was most evident. Bell and Serow's (1982) brief discussion on the display of data is a good example of the degree of specificity and simplicity required to be useful to the practitioner wishing to present aggregated data in a meaningful way. It was extremely tempting to become fascinated with minute detail without regard for its specific relevance or purpose to the agency and its current needs. The experience was analogous to the story of the 'Midas touch' where each data file which was opened appeared to be a goldmine of information. It was a bit like lifting handfuls of coins and letting them fall through one's fingers, hoping the most valued gold coins would shine the brightest or somehow stand out to make the task of sorting an easier one. Clearly this was not a systematic approach to analysis.

To control for this lack of direction, I attempted to restrict the analysis to one program at a time. Each program had only one or two forms and, therefore, a general limit on the number of variables and

how the variables on the forms could be combined for crosstabulation purposes. Since there was one program which offered more reliable data than the others, it was the first to be studied. This was a laborious process indeed. Rather than list the numerous right and wrong turns and distractions encountered along the way, I will provide a list of process questions used to keep the report format developing in a consistent manner:

1. Examine the client registration form for all programs combined. How are their numbers subdivided between programs?
2. Examine the program encounter forms to discover the number of client/practitioner encounter forms entered into the system by program.
3. Which variables are not useful? For example, which variables had been entered for the purpose of record identification only?
4. Which demographic variables need to be presented by age, sex or otherwise to be meaningful? (for example, education)
5. Are there interesting trends for specific variables from year 1 to year 4 or across subgroups?
6. Which registration and encounter forms were possible to combine to relate selected variables from each form?

To explore the answers to these questions, I experimented with presenting the data in the form of charts and graphs as well as tables. It was a matter of enhancing certain aspects of the data, finding the right level of aggregation to be meaningful and providing summative highlights or relevant details for each table, graph or chart to be included in the report. Once the process and format had been completed for the first program, the task for each following program was less

burdensome. Nevertheless, the work of extracting information from such a huge source of data meant that a lot of interesting data was excluded from the final report for the sake of time and simplicity.

PHASE 4: Report Writing

The final report (provided as Appendix II) presented a descriptive analysis of selected, reliable, data base contents. Care was taken to include at least some feedback to each of the five programs using the registration form data. Since the Sexual Assault Program was the most diligent monitor of its interactions with the Information System and made the greatest use of data retrieval reports, this program offered the richest source of information. A detailed descriptive analysis of this program's service and registration data was produced, thereby providing a strong illustration of data applications in a descriptive program review.

PHASE 5: Review of Report with Program Directors

The completed draft of the report was separated into sections by program and distributed to each program director for review and criticism. Personal consultations were held with each director to clarify and interpret tables as necessary. Where historic anecdotes were provided by the directors to provide a context for particular trends or figures, they were also asked to provide documentation for verification.

Notes and documents provided in these meetings were used to make final revisions to the report before it was presented to the Assistant Executive Director. Each program director indicated new and useful information gleaned from the report. For example, the Volunteer program director was able to verify hunches about who volunteered and where volunteers were most likely to be drawn from. The Medical Program was alerted to a changing trend in the number of elderly clients receiving service. The Community Outreach Program could document a rapid growth in new registrants to the program. The Sexual Assault Program found they were seeing more clients per staff member/volunteer, and that the number of victims of incest being seen were increasing each year. The examples of findings given here are a mere handful. A more detailed summary of the findings is given in Appendix II (pages 1 to 5). In terms of the practicum, this was a highly rewarding phase of the work, involving dissemination of information to those most likely to use it.

PHASE 6: Definition of Process for the Use of the Report by Health Centre Management

Posavac and Carey (1980) cite a common complaint among evaluators: "They never read the report! Those who did read it did nothing about the recommendations!" (p.271). Once the completion of the report itself was in sight, it was necessary to begin planning for its effective use within the agency. The responsibility for this had been assigned to the Assistant Executive Director with the advice and assistance of the student and advisor. This was done so that the report

would be introduced into the natural process of decision-making within the organization and hopefully would be used as an internal source of information by agency management. Two meetings with the Assistant Executive Director were held to discuss and finalize a process for the review of the report by the agency. The steps in the process were:

1. Program coordinators distributed a summary of the report to program staff. The full report was made available in the coordinator's office for further reading by interested staff and volunteers.

2. Program coordinators discussed the report at program and volunteer meetings. Both the Assistant Executive Director and student were available to attend these meetings at the request of the Program coordinators. We had some suggested questions or issues which were raised to focus the discussion:

a) Begin by examining the report itself. What does it confirm? Does it provide unexpected information? Have there been any changes between then and now? Can these changes be demonstrated or are they hunches?

b) Examine specific program issues such as access/ type of contact/ nature of the program/ population served. Note any information which is not provided but which would be helpful in a planning exercise.

c) What evidence does the report provide that program objectives are being met? Is there anything to suggest that program objectives are not being met? What are the current priorities? How have they changes? Is there evidence of priority shifts in the past?

d) Consider the possibility of 1 to 3 year plans for program development that would move the program closer to the goals.

3. Following discussion at the program level, program coordinators provided a summary of the discussion(s) to Management Committee.
4. Management Committee discussed the program and management perceptions and outlined areas for further action.

In addition to this process, the report was presented to the Board of Directors by the Assistant Executive Director with the student to answer any questions which may arise. Hopefully, these steps increased the effectiveness of the health centre policy and planning by both board and staff members by providing a statistical reference which could be consulted freely.

EVALUATION

The practicum was a valuable source of experience in developing several professional skills. In each of the phases described above a challenging new task provided the opportunity to extend existing knowledge and to explore new possibilities.

The literature review touched briefly upon significant aspects of automated management information systems and data applications in the human services. The enormous changes in computer technology in the past five years were evident as the practicum progressed and awareness of alternatives to the agency/university main frame liaison increased. Micro-computing literature served to re-define some program specifications and possibilities previously unavailable to managers.

The two main areas of skill development were 1) retrieval and analysis of data from a large data base and 2) presentation of the data in report form for management and policy makers. As noted above, the actual experience of data analysis was limiting only in the sense that the acquisition of increased levels of statistical sophistication was sacrificed to the alternate lesson of how to provide good "baseball statistics". In other words, it is important to know the limits of the data and to make the most of what is available. After confronting the problems of selecting and describing program and client characteristics for five separate programs and client groups, it became evident that the data would not support greater statistical sophistication. Simple descriptive statistics are a solid beginning and can offer at least some information to a wide range of users.

Working with the community health centre management provided new insight into the practical limitations to information processing in a health centre. It was also an effective demonstration of the often cited problem of the underuse of an MIS as a management resource. The completion of the report for the agency served to confirm the need for readily accessible program overview data.

A final evaluation exercise includes some observations derived from a fifty-item "Utilization Enhancement Checklist" (Brown and Braskamp, 1980) which was self-administered for the practicum experience (Appendix I). It was chosen because it was written for program evaluation consultations and, therefore, deemed adaptable. The

checklist is divided into five parts: 1) determining the evaluator's role; 2) understanding the organizational context; 3) planning the evaluation; 4) conducting the evaluation; and 5) communicating the evaluative information. The five parts are further subdivided into fifty items with ten in each part. A rough scoring system is suggested by the authors which awards two points for each item for which there is a positive response. Each of these sections are summarized separately in relation to the practicum. The light-hearted score interpretations range from a warning not to expect much to happen as a result of your dust-gathering report, to a happy caution to be careful or "you may be so effective that someone may have you earmarked to be an administrator, even though you have no desire to be one!" The results of this self evaluation were encouraging.

Determining the Evaluator's Role

The first few points in the checklist deal with the evaluator's personal commitment and congruence with the program's goals and values. These are important considerations at the outset since lack of congruence over goals and values would undermine the evaluation. In the case of Klinik, this was not a problem, particularly since the role of student was the predominant one where the of choice of a practicum area was voluntarily made and therefore assumed to be of special interest of the student. This also served to limit the expectations of Klinik as to the results of the study. The exploratory nature of the exercise was emphasized so that unrealistic expectations would not develop and the freedom to advance with the data was maximized. The role combined

those of data explorer, reporter, consultant and student.

Elements of the philosophical orientation of the community health centre influenced the working role not only in relation to the information system but also the student relationship. For example, the health centre's egalitarianism, strong community bond and limited physical space helped to define the role as that of a consultant rather than as a co-worker. The student's technical skills for the task were confirmed by the student's advisor and the development of credibility and trust was established over time with progressive contacts. In addition, a collegial relationship grew out of informal exchanges of information and spontaneous lunches with program management and staff often occurring on interview days. Out of the ten points listed under this heading, all were answered positively for a score of 20.

Understanding the Organizational Context

Previous discussion has covered several orientation points included in this section of the checklist. However, a number of items should be emphasized here. As thorough an understanding of the organizational chart and key decision-makers as possible was gained through a study of documentation and a two day orientation, including personal interviews with each program director. Clearly, without direct involvement in service provision, it was not possible to "know" the agency. Subsequent contacts were made directly with individuals when further information was necessary. Notification of important management meeting or Board meeting deadlines were communicated by

the Assistant Executive Director when she needed to be supplied with progress updates and the interim and final reports. This did not present major difficulties, although there were some deadlines shifts.

Specification of decisions and policies arising from the final report are difficult. Since the project was initiated from outside the health centre, some question as to the level of commitment to the practicum activity could be raised. No payment for the service was required on the part of the health centre, so that anything gained from the report was perhaps accorded less serious attention than might otherwise have been the case. Conversely, an investment of time and some expense was made by the agency to initiate the project once it was officially accepted by the Board of Directors and Management Committee. An analysis of previous evaluations in the same setting to determine the effects of the evaluation on the setting was not done. However, it is interesting to note that another student program evaluation had been undertaken slightly earlier in a single program in the health centre and it was regarded informally by program staff and management as a helpful experience. In any event, the process for reviewing the findings in the report are continuing. The score in this section was approximately 14 points out of 20.

Planning the Program Review

This particular section of the checklist is the least applicable to the practicum experience since it deals directly with program evaluation activities, which include evaluation design and data collection. The

practicum focus was on the data base which had already been designed and created. Design activities centred on the production of a final report based on data which has already been collected. In this way it could be considered a program review, in that it was an attempt to describe and present the analysed contents of an automated information system, which was in turn intended to monitor program clients and services. It was not an attempt to describe the program, but rather to describe the contents of the Klinik Information system.

Some pertinent questions are raised in the checklist around the political implications of various findings and likely sources of resistance to positive or negative results. As this was not an attempt to positively or negatively assess programs but rather to report the available statistics describing them, the emphases in these points are altered slightly from the checklist authors' original intentions. A rigid adherence to the data precluded preoccupation with internal and external agency politics with the exception of strategies around the structure and presentation of the final report. Information was not intentionally suppressed, but rather an effort was made to include all programs, so that something concrete from the Klinik Information System could be provided and selected inter-program comparisons could be made such as number of clients.

Conversations with program management frequently compared the old with the planned "new system" in an attempt to identify information which was found to be useful and should be retained in the new system so that records would be consistent with the old information system. Key encounter variables were identified and the need for client registration

information was emphasized wherever possible in these conversations.

It was evident once the draft of the report was circulated and a presentation was made to the Board of Directors, that this information was needed. It presented each distinct program as part of a larger, whole agency because of the consistency of client descriptions across programs. It was the first time many of the program directors had seen comparisons of their new clients for each year. Changes over time were also available, thus leading to considerations for future plans. Only half of the items on the scale received a positive response for a score of 10 out of 20.

Conducting the Review

The review of the data was conducted independently to a large extent to minimize direct involvement with the health centre and maximize experience with a large data base. For these reasons, contacts with program directors and the Assistant Executive Director were intensive for brief periods during the practicum. Earlier contacts concentrated upon tracing the flow of recording forms through the agency and into the automated system. In essence this was a problem-solving task requiring the involvement of several key personnel. Later contacts centred around the sharing of preliminary results prior to the preparation of the final draft of the report. A score of 16 out of 20 points was obtained in this section.

Communicating the Evaluative Information

The final section of the checklist discusses the dissemination of information through a variety of techniques and media. Here is the text of a useful report. A written report is not enough on its own. It requires presentation and interpretation. Periodic informal reports were made to the Assistant Executive Director who in turn reported to policy and management decision-makers. Different reports were not written for different audiences as the authors of the checklist suggest. Had there been a broader audience identified, it might have been necessary to consider this option. An executive summary was written with the members of the Board of Directors in mind. The more detailed program descriptions were intended for the management and program practitioners, who were more familiar with the terminology used to describe the programs. The final report appears to be quite long. Without a summary, it would no doubt be intimidating to readers. However, the purpose was to provide a reference source which is vastly more accessible to non-computer users than the data files from which it originated. A detailed table of contents was included to facilitate this purpose. For this section, a score of 10 points out of 20 was awarded although presentation involvements are continuing and the potential is there to enhance the utility of the report further.

The grand total for the self-application of the "Utilization Enhancement Checklist" was 70 points out of 100. This score indicates that not only was the practicum an exercise in learning, it produced an enduring report for the health centre's use.

Summary

A review of the literature revealed that, too often, inadequate attention has been given to the data applications and reporting stages in the design and implementation of MIS's. As a result, many well designed human service MIS's are not well maintained or accessed once they are actively in place within an agency. The first section of this paper attempted to identify factors associated with this problem, and to highlight literature directed toward practical solutions.

The second section described an examination of a community health centre MIS and an attempt to utilize that data. Documentation of reliability of data in the administrative and research oriented data base disclosed a deteriorating system which had fallen into disuse. The process of checking for data reliability, and for preparing an MIS report for the agency was outlined and discussed.

In the third and final section of this report, a self-evaluation exercise was completed and scored. The intent of the exercise was to discover the strengths and weakness of the interactions between the student and the agency and to provide a rough estimate of the likelihood that the agency would make use of the final report prepared by the student (Appendix II). The results of this evaluation show that considerable effort was taken to address the goals of both the agency and the student. In the CHC, a level of success was achieved despite the numerous problems encountered.

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APPENDIX I
UTILIZATION ENHANCEMENT CHECKLIST
BY
R. BROWN AND L. BRASKAMP

UTILIZATION ENHANCEMENT CHECKLIST¹

Directions: There are fifty items listed below which focus on self-analysis, understanding the organizational context, planning and evaluation, the evaluation process, and communication. You may wish to rephrase some of the items to fit your particular situation or to add items. The checklist can serve as a guideline as you conduct an evaluation or as a self-examination after you complete an evaluation. To serve these multiple purposes, all items are written in the present tense.

A. Determining the Evaluator's Role

1. Assess level of personal congruence with the program's general goals and consider withdrawing if the incongruity may result in unnecessary conflicts.
2. Determine extent of personal commitment to the importance of conducting an evaluation of this program.
3. Analyze degree to which personal values and opinions about the program are publicly advocated by the evaluator.
4. Determine appropriate share of the responsibility for utilization.
5. Specify activities related to an educational role as well as a data-gathering, information-providing role.
6. Make sure that consulting skills are sufficient to meet the demands and complexities of the evaluation for the program.
7. Ensure that sufficient technical skills, time resources, and personnel are available to conduct a utilization-focused evaluation.
8. Establish congruence between personal role perception (data-gatherer, consultant, expert, recommender, change agent) and audience expectations.
9. Determine willingness to spend time with program staff in activities that are not directly related to the evaluation (for instance, informal lunches).
10. Establish a sense of credibility and trust with the program director, staff, and other audiences.

1 From Brown, R., & Braskamp, L. Summary: Common themes and a checklist. In L. Braskamp & R. Brown (Eds.), Utilization of evaluative information. San Francisco: Jossey-Bass, 1980.

B. Understanding the Organizational Context

1. Obtain and study the organizational chart.
2. Identify the names of key people within and outside the organization.
3. Identify the decision makers and potential users of evaluation information within and outside the organization.
4. Understand the policy-making process of the organization.
5. Determine which decisions and policies are made as a result of the evaluation.
6. Know when decisions are made.
7. Determine which staff and other users should be consulted as the evaluation is planned and conducted.
8. Determine whether the sponsor of the evaluation is committed to the evaluation activity and uses evaluative information.
9. Determine the information sources and channels within the organization.
10. Trace the path and impact of previous evaluations in the same setting and determine how this affects this evaluation.

C. Planning the Evaluation

1. Make sure there is clear understanding of the evaluation role (that is, formative or summative).
2. Set up specific sessions in which the evaluation plan and its implementations are discussed with key persons.
3. Assess the implications of decisions based on the evaluation that affect personnel.
4. Assess the political implications of various evaluation findings.
5. Determine the likely sources of resistance to positive evaluation results.
6. Determine the likely sources of resistance to negative evaluation results.
7. Determine the freedom to provide evaluative information to various audiences.

8. Determine strategies for dealing with potential conflict and tension between program director/staff and evaluator.
9. Design an evaluation plan that will have technical credibility and provide needed information.
10. Establish a mutual problem-solving approach with the program personnel and decision makers.

D. Conducting the Evaluation

1. Make sure that everyone understands the purpose of the evaluation.
2. Involve key personnel in determining the purposes, issues, and general evaluation strategies.
3. Involve representatives of potentially affected groups in making decisions about instrumentation and data sources.
4. Be accessible to program staff during the evaluation to learn of and share perspectives from which each is interpreting the information.
5. Collect data from multiple sources.
6. Make sure the data collection instruments and procedures are understandable and relevant.
7. Have informal as well as formal meetings with key persons.
8. Maintain a mutual problem-solving relationship with staff and administrators throughout the evaluation.
9. Collect information needed, but only that.
10. Adapt the evaluation plan to meet changing information needs.

E. Communicating the Evaluative Information

1. Make periodic informal reports or presentations.
2. Ask program staff, especially those most affected, to assist in interpreting the findings.
3. Communicate major findings when available and considered appropriate; do not wait for the formal report deadlines.

4. Share rough drafts or preliminary thoughts with key persons before making a final presentation.
5. Write different reports for different audiences.
6. Make presentations understandable and easy to follow.
7. Link presentation to key issues and decisions.
8. Make sure that all audiences receive the evaluative information in sufficient time prior to key decision-making events.
9. Keep written reports brief.
10. Use several media (slides, charts) when making formal presentations.

Score Interpretation. Here are some rough guidelines for interpreting the results of your analysis. Allow two points for each question answered positively.

- | | |
|------------|--|
| 25 or less | Don't expect much to happen as a result of your efforts. Most likely your information will be ignored or gather dust on a shelf somewhere. |
| 26 -50 | You may be called back later to do another evaluation, but don't count on it. Perhaps you might get a publication from your efforts, but the world won't change. |
| 51-75 | Somebody may actually do something different as a result of the evaluation, especially if it reinforces what they were already thinking. |
| 76-100 | Be careful! You may be so effective that someone may have you earmarked to be an administrator, even though you have no desire to be one. |