A REVIEW

OF ACTIVITY RECORDING SYSTEMS

IN

COMMUNITY HEALTH NURSING

by

PHILIP TERENCE KRETZMAR

B.A., The University of Cape Town, 1973
B.Sc., The University of Cape Town, 1975

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Department of HEALTH CARE & EPIDEMIOLOGY

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

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ABSTRACT

The purpose of this study is to evaluate the role of activity data in the management of community health nursing services.

The study begins by examining what community health nurses do. Particular attention is given to the management structure in community health nursing. The kinds of information that individuals at different levels in the organization of community health nursing require, are investigated. One of these kinds of information is activity data. Thus, the role that activity data can play for those at each organizational level is explored. Various factors that can influence the usefulness of activity data are examined.

The conceptual and functional features of six provincial and one federal activity recording system are analyzed. This is followed by a more detailed study of a particular system, the Alberta Community Nursing Activities Recording System.

In reviewing the systems analyzed, the study finds that a common model for activity recording systems cannot be derived. Objectives are found to be so vaguely defined that the evaluation of an activity recording system is forced to rely largely on the subjective feelings of the systems users. Having examined some perceived alternatives to current systems, it is felt that a thorough revision of presently operating systems should be undertaken.

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INTRODUCTION

Community health nurses throughout the country record their activities on forms specially developed for this purpose. The purpose of this study is to evaluate the role of these activity data in the management of community health nursing services.

There are activity recording systems in every province. Community health nurses spend a considerable amount of their time and energy recording the required information. Numerous claims have been made about the many uses of activity data, which are viewed as an important element of the information needs in community health nursing management. They are regarded as helpful in planning, evaluation, costing services, determining staffing, and in other managerial activities. Recording systems have also been computerized, which has led to activity data becoming an entrenched item in the information system used by nursing management.

But - do these data play a useful role? Are the claims about the importance of activity data really justified? There is a need to examine the validity of these claims. This need is especially pressing in the light of the potential for the computerization of these data systems, and the possible proliferation of unnecessary information.

This study will focus on two aspects of acitivity

data. These are:

1. the need for activity data, and

2. the usefulness of activity data.

To gain an understanding of the context within
which these data are relevant, the study commences
(chapter 1) by looking at what community health nurses
do. As activity data are used at the managerial level,
special attention is given to the management structure
in community health nursing.

Each level within an organization requires parti-
cular types of information. In chapter 2 the study ex-
amines the information needs of those at the different
organizational levels of community health nursing. One
of the kinds of information needed is activity data.
The study explores the role that activity data can play
at each organizational level. It also assesses the pot-
ential contribution of activity data in the decision
making process.

Having established the need for activity data, in
chapter 3 the study examines the stages of data trans-
mission. There are various factors at these stages which
will influence the utility of activity data. These
factors need to be taken into consideration in assessing
the functioning of an activity recording system. They can
act as a guideline for a system's evaluation.

In chapter 4, the features of six provincial and one

federal activity recording systems are analyzed. This analysis involves a review of the functional and conceptual features of the systems.

Having obtained an overview of recording systems across the country, an in-depth study is done, in <u>chapter 5,</u> of the Alberta Community Nursing Activities Recording System.

In conclusion, in <u>chapter 6</u>, the study addresses itself to some of the major issues that have been raised. These are:

1. is there a <u>common systems model</u>?
2. the <u>evaluation</u> of activity recording systems,
3. <u>alternatives</u> to regular activity recording, and
4. <u>computerization</u>.

CHAPTER 1

1.1 What is community health nursing?

Community health nursing is seen as professional
nursing aimed at serving people in their usual environ-
ment of home, school or work, through organized commun-
ity effort (Canadian Public Health Association, 1966;
1977).

The objectives of community health nursing are:

1. To promote health and prevent disease;

2. To provide nursing care for the non-hospita-
    lized sick and disabled,

3. To effect continuity of care,

4. To contribute to various educational programs,
    and

5. To be involved in relevant research.

(Canadian Public Health Association, 1966; 1977).

In addition to individual clinically-oriented care,
community health nursing focuses on group health problems
within a population as a means of determining the direc-
tion of clinical care services (Williams, 1977). This
approach enables the providers of care to establish
priorities, and to identify the needs of the population
being served. It thus also enables co-operation with
other disciplines in the community.

The community health nurse is a generalist function-
ing as a member of a multi-disciplinary team. To

fill this role in a dynamic health care environment,
the nurses believe that their educational preparation
and the services that they provide need to be frequently
reassessed, and adjusted where necessary.

1.2 What community health nurses do

The discussion in this section is based upon the
Canadian Public Health Association (1966, 1977) descrip-
tion of nurses' activities.

The community health nurse provides service direct-
ly to individuals, families and special groups. The
nature of her work requires her to exercise judgement
and to make decisions without close supervision. As a
member of nursing and interdisciplinary teams, she has
flexibility of role that enables her to switch from team
leader to team member, depending upon the demands of the
situation. Of all community health workers, the community
health nurse will have the closest and most frequent con-
tacts with other disciplines and workers of allied agen-
cies. Within the team structure, the nurse occupies a
pivotal, and often unique position. She can act as a
channel through which other needed services are acquired,
due to her understanding of the situation, and knowledge
of the availability of relevant services. Although
primarily concerned with direct care contact functions,
she also has some administrative, supervisory and

counselling responsibilities.

The supervisor of community health nursing occupies the key interpretive role between the director and service nursing personnel. She is responsible to the director for planning and directing the activities of nursing and auxiliary staff in a specified area. She is also responsible for staff development.

The director of community health nursing is a member of the administrative team of the organization. Inherent in the position of director is decision making authority in relation to the entire range of nursing services under her direction. She is responsible for the functioning of the staff and programs under her direction to a chief administrator as designated by the organization. The director participates in policy planning, and in determining the short and long range plans for the community health nursing services of the organization. She interprets community health nursing activities to other adminstrative personnel and the policy making board of the organization, and to community agencies. Conversely, she helps the nursing staff to see their roles and functions in relation to other community agencies.

The nurse consultant is an expert, by reason of education or experience, either in the general field of community health nursing, or in a specific area. Her primary purpose is to promote the quality and development

of the agencies nursing program. Her position in the administrative hierarchy of the organization will depend upon the specific organizational structure.

The distribution of community health nurses by position and by province for 1975 is shown in Table 1.1 (p. 8).

Table 1.2 (p. 9) shows the distribution of community health nurses by position for 1969, 1970, 1971 and 1975. In 1975, 2.2 per cent were directors or assistant directors (122), 7.9 per cent were supervisors or assistant supervisors (446), and 1.6 per cent (90) were consultants.

The distribution of community health nurses by academic qualifications for 1975 is shown in Figure 1.1 (p. 10). Between 1970 and 1975 there was a reduction in the percentage of registered nurses with public health certificates from 45.7 per cent to 36.2 per cent. There was an increase in the percentage of registered nurses with a baccalaureate degree, major public health, from 14.6 per cent to 19.8 per cent. There was also an increase in registered nurses with a baccalaureate degree only, from 2.8 per cent in 1970 to 7.2 per cent in 1975. The other categories showed little change between 1970 and 1975.

Table 1.1

Distribution of Community Health Nurses reported by position and by Province

1975

	Canada	Nfld	PEI	NS	NB	QUE.	ONT.	MAN.	SASK	ALTA	BC	YUKON
POSITION												
Director	78	1	1	3	1	6	42	4	4	11	5	-
Asst. Director (service)......	39	4	-	1	1	6	16	2	2	4	2	1
Asst. Director (education)....	5	-	-	-	1	-	1	1	-	1	1	-
Consultant (generalized)	28	-	-	-	-	-	7	9	4	3	4	1
Consultant (specialized)	62	-	-	-	-	-	55	2	-	3	1	1
Supervisor	290	8	4	8	6	26	111	14	14	52	37	10
Asst. Supervisor	156	1	-	3	13	9	42	11	23	1	51	2
Staff Nurse (Public Health) ..	3,828	71	24	162	60	402	1,561	278	183	384	597	106
Staff Nurse (RN)..............	1,160	33	4	2	29	503	298	90	42	49	95	15
TOTAL	5,646	118	33	179	111	952	2,133	411	272	508	793	136

Table 1.2

Distribution of Community Health Nurses reported by position, 1969, 1970, 1971 and 1975.

Position	1969	1970	1971	1975
Staff nurses	3,744	4,533	4,647	4,988
Supervisors/Assistant Supervisors	389	501	548	446
Consultants	40	46	48	90
Directors/Assistant Directors	80	109	123	122
Total	4,253	5,189	5,366	5,646

Source: Statics Canada.   Annual Salaries of Public Health Nurses.   Ottawa: Statistics Canada, 1970, 1971, 1975.

Figure 1.1

Distribution of Public Health Nurses
by Academic Qualification, 1975
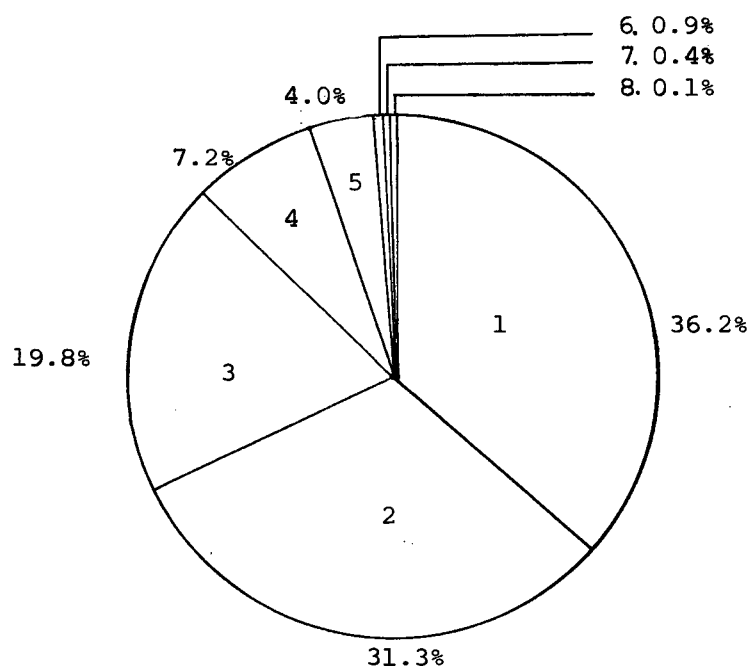
1 Registered nurse with public health certificate

2 Registered nurse only

3 R.N. with bacc. major public health

4 R.N. with bacc. only

5 R.N. with bacc. with public health certificate

6 R.N. with master's degree, major public health

7 R.N. with master's degree, with public health certificate

8 R.N. with master's degree only

Source: Statistics Canada, Annual Salaries of Public
         Health Nurses. Ottawa: Information Canada,
         1975

1.3 The management structure in community health

nursing

To facilitate an understanding of the role of the
nurse in the management of community health services, the
structure of a typical community health agency is out-
lined in Figure 1.2. (p. 12). (This structure may vary
somewhat from province to province).

The size of the community served, and the range of
services provided will determine more exactly the staff-
ing of the agency. The degree of authority given to
nursing superviors varies according to their background
and experience, and especially the management style of
the medical officer of health, or director of the agency.
In smaller health units, the director may be a community
health nurse.

It is often suggested that the authority structure
in community nursing services is much less rigidly ap-
plied than in hospital nursing services (Clark, 1977).
The community health nurse functions far more in the
role of independent professional practitioner than as
a "physician's assistant." She has a much greater
degree of autonomy compared with the hospital nurse.
A major reason for this is the physical isolation of
the community nurse, i.e. her separation from the point
of central control. This isolation, and their relative
independence (Bristow, 1976), are seen as factors that

Figure 1.2   Community Health Agency Structure
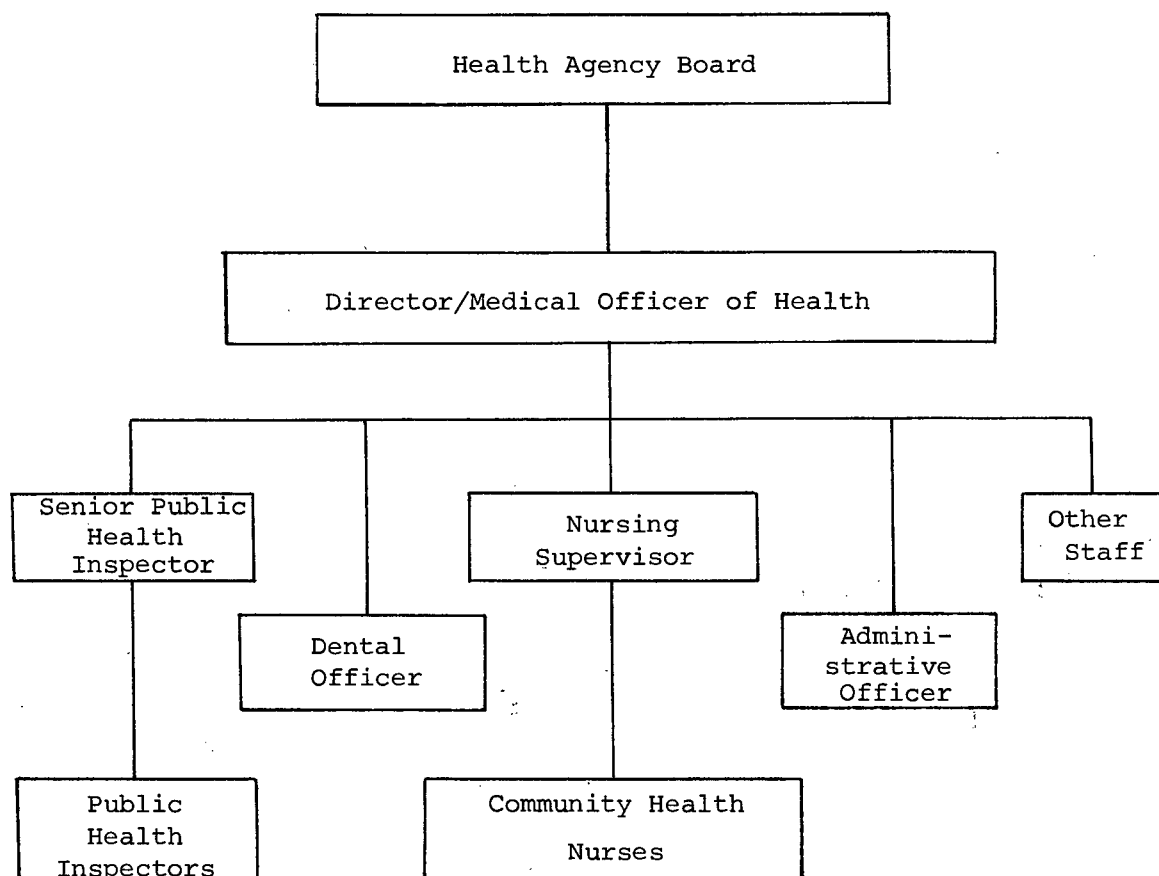
considerably reduce the potential for conflict between management personnel and nurses acting as autonomous professionals (Clark, 1977).

Community health nurses involved in management find themselves facing some common problems (Stevens, 1975; 1976). As managers, they are faced with the conflict between professional and administrative roles. In their professional role they are concerned with providing the optimum quality of care, while in their administrative capacity they are concerned with functioning economically and efficiently. Ultimately, they have to balance the goals and resources of the programs they are managing.

The nurse as executive often faces the problem of being in a position of inequitable power compared with many of those around her (Stevens, 1975). There are well known social and historical reasons for this. These relate to the traditional role of women in society, and the perception of the nurse as the physician's handmaiden. Much of the changes that need to be made in this respect are psychological.

Nurses in managerial positions need to be aware of and sensitive to the informal lines of communication in an organization. "The philosophy and direction of an organization originate in informal power groups, rather than in discussions at formal meetings. Formal meetings

tend to crystallize and authorize thoughts and plans that are generated in the informal structure" (Stevens, 1975. p. 88). While nurses may occupy positions with authority vested in them, and attend all the official meetings, Stevens feels that they are often on the outside of the informal power structure. Where this is the case, nurses need to be conscious of it, and work to overcome it.

In their capacity as managers, community health nurses require information different from that they require as clinical practitioners. The kinds of information, and in particular, activity data, required at different levels in the organization of community nursing services, will now be considered.

CHAPTER 2

2.1 Information characteristics for different organizational levels.

In assessing the information needs of any individual in an organization, it is important to know the types of functions they are performing, and the nature of the decisions they face. These functions and decisions will affect the type of information they require.

Antony (in Lucas, Clowes and Kaplan, 1974) distinguished between three levels of decision making activities in an organization: decision activities related to

1. operational control,

2. management control, and

3. strategic planning.

Strategic planning, or policy formation, involves the process of determining organizational objectives, and the means for achieving them. At this level, a major concern of the planner or policy maker is the relationship between the organization and its environment. Other organizations, their objectives, and how they go about trying to accomplish them are key variables and processes to be taken into account.

Those in positions of management control pursue the objectives set in strategic planning through a process of

resource allocation, and the monitoring of resource utilization.

Operational control refers to the process of ensuring that specific tasks are effectively and efficiently carried out.

The three categories, or levels of operation outlined above, form a continuum; the distinction between decision categories, or levels, is not clear-cut. The nature of the information required for the different types of decisions may differ widely, as can be seen in Table 2.1 (p. 17).

Adopting the traditional view of the agency as a pyramid, the realtionship between the structure of a community health agency and its information flows is illustrated in Figure 2.1. (p. 18).

Table 2.1

The Antony Framework and Information Characteristics

Normative Information Characteristics for

Operational Control Decisions	Management Control Decisions	Strategic Planning Decisions
1. Very detailed data	Moderately detailed data.	Aggregate data
2. Related to a specific task.	Related to achievement of organization's objectives.	Relates to establishing broad policies.
3. Frequently reported	Regularly reported	Infrequently reported
4. Historical data	Historical and predictive data.	Predictive data
5. Internally generated	Mostly internally generated.	Externally generated
6. Very accurate	Accurate within decision bounds.	Accurate in magnitude only
7. Repetitive	Exception reporting	Unique to problem under consideration.
8. Narrow scope	Specific and general in scope	Wide scope
9. Current, up to date	Mostly medium term	Older, showing previous periods

Sources: a. Lucas, Henry C., Clowes, Kenneth W., and Kaplan, Robert B. "Framework for Information Systems," INFOR Vol. 12, No. 3, October 1974., and
          b. Keen, Peter G.W., and Scott Morton, Michael S. Decision Support Systems. An Organizational Perspective. Reading, Mass.: Addison - Wesley, 1978.

Figure 2.1

Community Health Agency Pyramid Structure for Management
Information System
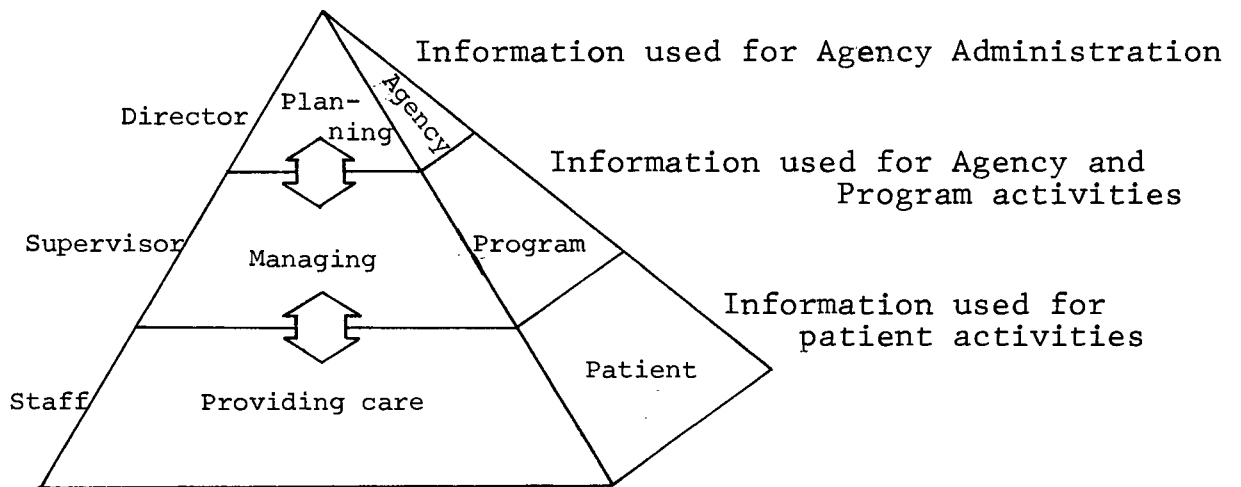
The activity fundamental to all the different
levels of the organization, and to the functioning of
any organization, is that of <u>decision making</u>. To under-
stand how and at what stages information may be useful,
it is necessary to understand the decision making
process.

A vital contribution towards a taxonomy of decisions,
and to our understanding of decision making, has been the
work of Simon on human problem solving (Simon, 1960.)
Simon distinguishes between two types of decisions -
programmed and non-programmed.

"Decisions are programmed to the extent that they
are repetitive and routine, to the extent that a definite
procedure has been worked out for hhandling them ...
Decisions are non-programmed to the extent that they are
novel, unstructured and consequential." (Simon, 1960.
p. 5).

In the case of a programmed, or structured decision,
a specific procedure can be applied to reach a decision
each time the situation arises. This cannot be done in
the case of non-programmed, or unstructured, decisions.
In such cases, there is no specified way of dealing with
the problem, as it may not have arisen before, or it may
be so complex or elusive as to warrant special treatment.
Few decisions are totally programmed (structured) or

totally non-programmed (unstructured); rather, these are
polar types for a continuum of decision making activity.

Simon breaks problem solving down into three
phases:

1. intelligence,

2. design and

3. choice.

Intelligence consists of surveying the environment
for conditions that call for action. Design involves
"inventing, developing and analyzing possible courses of
action," (Simon, 1960. p. 2), while choice is the activi-
ty of selecting a particular action from the set of al-
ternatives developed. A fully structured problem is one
in which all three phases are structured, while unstruc-
tured problems are those in which all three phases are
unstructured. Where only one or two of the phases is
structured, the problem in its entirety is semi-structured.
Considerable work yet remains to be done on an adequate
definition of "structure", so that the precise meaning
conveyed by it can be clearly understood. Over time
decision techniques do not remain static, and the develop-
ment of new techniques will tend to add further structure
to decision making.

Gorry and Scott-Morton have combined the approaches
of Antony and Simon to provide a framework which shows
that the nature of decisions to be made, or problems to

be resolved, will vary within each level of operation, along the structured to unstructured continuum.

Before considering the functions performed by community health nursing directors and supervisors, information flows in community health organizations will be examined. This will include a look at what is meant by activity recording.

2.2 Information flows in an organization

Information provides the means, in quantitative or descriptive terms, of measuring and describing the functioning and performance of a system.

The basic relationship between systems elements and information channels in complex social structures, such as health service organizations, is illustrated in Figure 2.2 (p. 22). From this diagram it can be seen that information provides a means of measuring the difference between the objectives, or desired achievements, of a system, and the actual results or output obtained. The information flows and decision making network in an organization may be viewed as the continuous linking mechanism governing its resource flows.

A community health agency forms the processing component of the subsystem of the overall health system within which it operates. The inputs and outputs of this system are the same people in the community. It is the objective of the agency that their health status be

Figure 2.2

Information Flows in a System

perceived
alternatives

priorities,
pressures,
incentives,
biases

financial
constraints

Objectives
(Desired
achievements)

Decision
Making
Process

Resources

Decision
Transformation
Process

Outputs

Information about
output
(Perceived
 achievements)

Key

Information flows

Material (service) flows

Processes
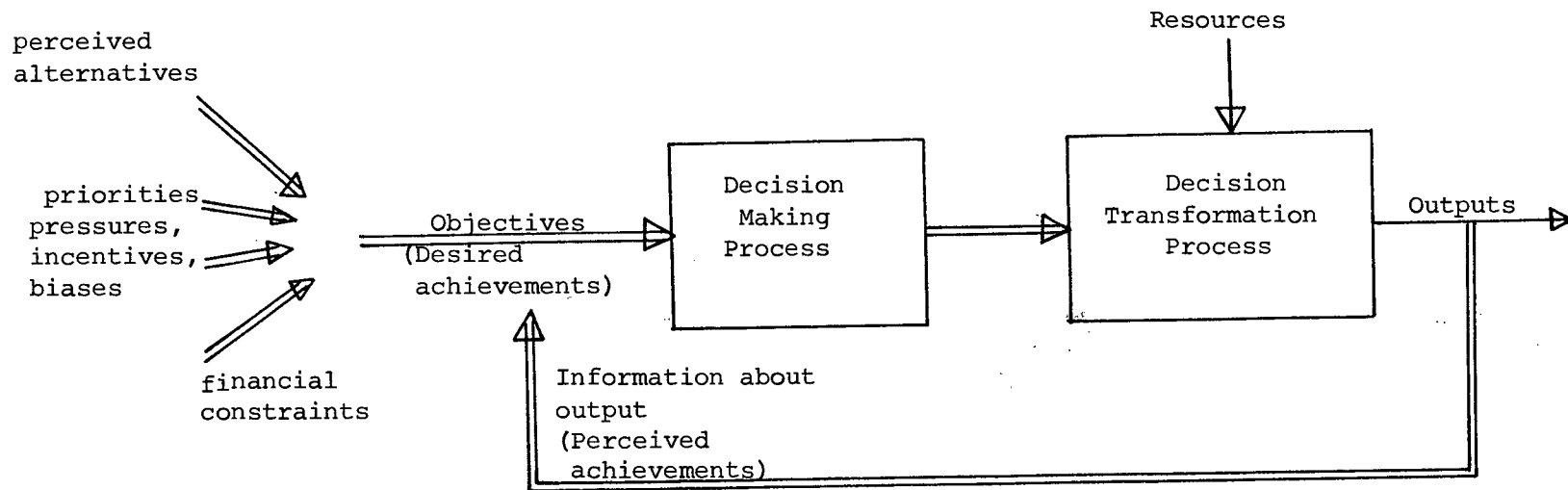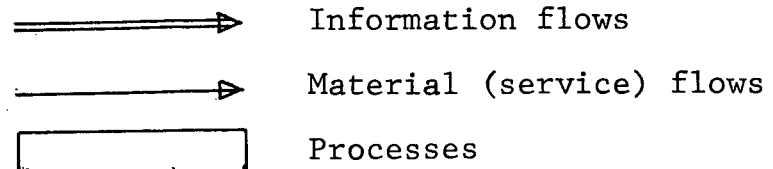
altered by their interaction with the agency and its personnel. To perform effectively in pursuit of its objective, the agency needs certain types of information. These are illustrated in Figure 2.3 (p. 24), which shows the health agency as the processing unit in a community health system.

From Figure 2.3, the three major types of information the agency is concerned with are:

1. data about the demographic features of the
    community, and its social environment,

2. data about its own activities, gathered by
    the agency, as part of their own assessment of
    how well they are doing in pursuit of their
    objectives, and

3. feedback from people affected by agency activities.

Ultimately, it is the third type of information, related to the outcome of agency efforts, which is most important in determining the agencies overall effectiveness.

Activity recording data is a component of agency generated information that the agency can use in its self-evaluation process. We now examine exactly what is meant by activity recording and activity data.

Figure 2.3

Information flows of a Health Agency
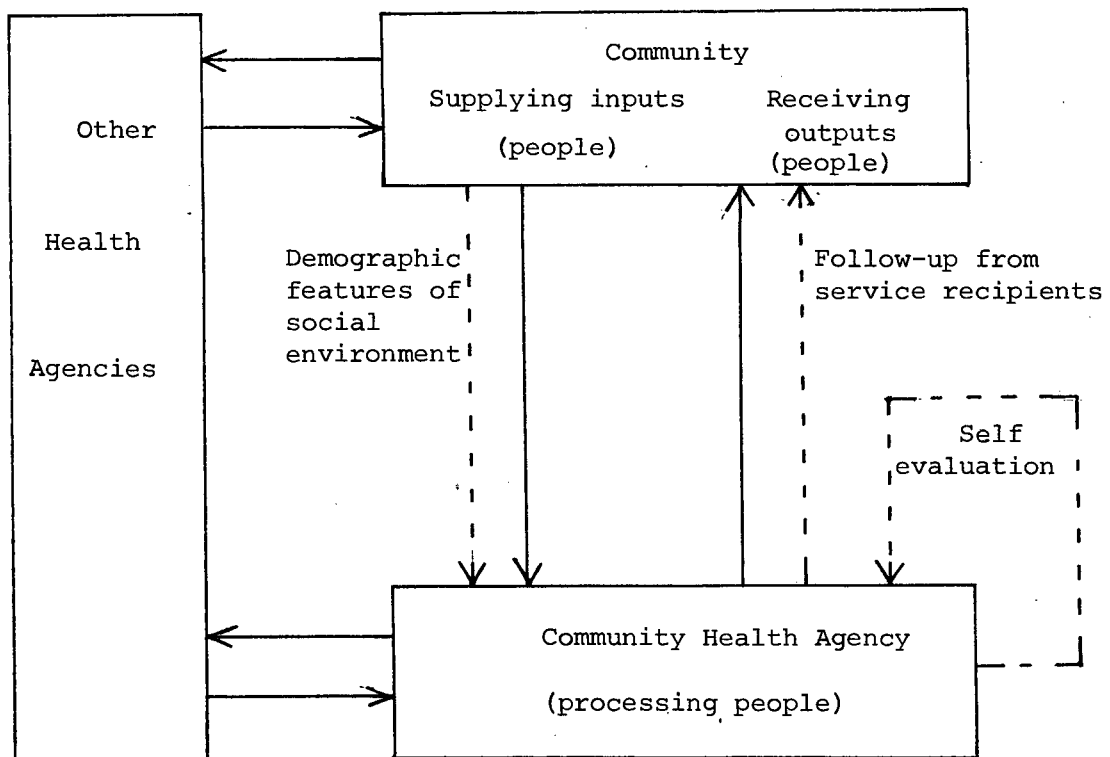
Source: Adapted from Segal, JoAn S. "Interfaces between
Health Agencies and the Library Profession," in
National League for Nursing, State of the Art in
Management Information Systems for Public Health/
Community Health Agencies. Report of the Confer-
ence. New York: National League for Nursing
Publication number 21-1637. 1976. p. 23.

2.3 What is activity recording?

Activity recording is the practice of noting the activities one is involved in, during the course of time spent at work, or in work related activities.

Activity recording and reporting can be quantitative or qualitative in nature. In the way it is used in this study, activity recording refers strictly to the activities of the service providers. It does not encompass data concerning the recipients of service.

With quantitative recording, statistics are compiled to measure the amount of services provided and the extent of services consumed, as indicated by numbers served. The amount of nursing time utilized may also be noted. This kind of recording is done by the service provider, as she is the most appropriate person to do so.

Descriptive or narrative reporting on activities can serve to interpret or clarify the measurements in the statistical report. Such reporting can be done by service providers, as well as by their supervisors.

Standard definitions for the basic units of nursing service are necessary to enable a uniform understanding of the meaning of the measurements performed. Standard definitions for non-nursing services, e.g. clerical work or continuing education may also be necessary, depending upon the scope of the activity recording. The kind of

statistical material recorded ought to reflect the operation of the agency within the framework of its policies and programs. Agencies will vary in the amount of detail and refinement they require in their statistical reporting. The content and frequency of activity recording and reporting will depend on the desires of the particular agency.

Within the last two decades in North America, and particularly during the 1970's, there has been a considerable growth in activity recording systems for community health agencies, and in the refinement of these systems (National League for Nursing, 1974 (a); 1975; 1976; 1978). The advent of advanced data processing technology has lent impetus to this development, and the number of computerized systems throughout the continent is growing rapidly. In the U.S.A., the focus of computerization has been to automate the clerical functions related to the financial operations of the agency. This has not been the case in Canada, where agencies provide services which do not have to be paid for directly by the service recipients. Billing for services is thus not a major concern of these agencies.

Inevitably, the scope and content of activity recording over time for community health nurses will show variation in accordance with the changing scope and focus of community health nursing service.

An example of an activity recording system can be
seen in section 5.6.

2.4 Functions performed by nurses at different levels
in the organization

Many claims have been made about the need for activi-
ty data, and the ways in which these data can be used
(Freeman, 1970; National League for Nursing, 1974(a); 1976;
1978). These include claims that such data are useful
in the activities of planning, evaluation, determining
costs or the cost-effectiveness of services, determining
staffing levels, measuring productivity, comparing
service statistics, education and various others.

The above activities are not distinctly separate
processes. Indeed, they are most often very closely re-
lated. They form different elements of the continuous in-
teractive process of providing community health services.
Planning is probably the most pervasive activity of all,
and is part of all activities that deal with the future.
Evaluation, either explicit or implicit, is an inherent
part of any planning process. Considerations, such as
costs, and efficiency and effectiveness, enter into al-
most all activities related to providing community health
nursing service.

In the same way, the activities performed at any one

level in the organization are not distinct from similar
activities performed at other levels. For example,
evaluation at any one level is integrally related to
evaluation at the other two levels.

2.4.1 Operational Control

At the operational level, community health nurses
provide direct care and other health services to indivi-
duals and families in the community. By keeping a count
of the various activities they are involved in, they
form the primary source of activity recording data.

What use could nurses themselves have of this data
they collect about their own activities? At the opera-
tional level, the nurse is primarily concerned with data
concerning the recipients of the service she is providing.
Activity data are generally intended for use at a manager-
ial and strategic planning level, and not at the operation-
al level itself.

Activity data can provide the nurses with an inventory
of what they have been doing. It could help them in plan-
ning their daily activities. If they are able to see
reports of the activities of other nurses, they can com-
pare their activities with what others are doing. This
would enable them to gain a perspective of their role in
comparison with others in the organization.

2.4.2 Management Control

At the level of management control is the supervisor,
and assistant or associate supervisor. Supervisors at a
managerial control level are responsible for seeing that
strategic planning and policy decisions are effectively
and efficiently translated into action. The function of
management control are not separate and distinct from the
strategic planning process performed at a higher level.
Neither are these functions separate and distinct from
each other; they are closely interrelated.

Organizing is the process, often hierarchical in
nature, of reducing large quantities of information into
structures that can be handled and dealt with conveniently.
This involves decision making, as it involves selecting
among perceived alternatives. The management of nursing
services involves the determination of what must be done
by the group, and the individuals who comprise the group,
to accomplish stated goals. "The managerial role requires
an ability to visualize and project an integrated pattern
of action. Organizing is intimately concerned with people
in a formal structuring of work roles." (Douglas, 1977. p.
69).

Delegation is a key managerial function. The mana-
gerial role calls for a delegator with the experience,
knowledge and ability to implement the operations over
which she has control. Prudent delegation of responsibility

to the appropriate personnel is the means whereby a manager is able to maximize the productivity of her available resources. Volante (1974) views the following steps as important for effective delegation:

1. defining the task to be done,

2. relaying the definition of the task,

3. establishing controls and checkpoints to ensure feedback, and

4. establishing a dialogue with those performing the delegated tasks.

Organizing and delegating inherently involve planning. They require devising projections of how efficient and effective alternative allocations of resources would be, and then choosing and implementing the perceived best alternative.

Managers need to know the abilities and preferences of their staff resources to organize and delegate effectively. They also need to monitor their staff in the performance of their duties. Activity data provide an inventory of the activities performed by each nurse. As such, they act as indicators of the capacities of the nurses. These data add to the manager's knowledge about the activitites of her personnel. But there is much other information which the supervisor requires. She needs to know the qualifications and preferences of her staff, the quality and outcomes of services provided, and the opinions

of service recipients. Activity data are thus only one element of the many information requirements of supervisors.involved in organizing and delegating work.

One of the most important and complex managerial functions is to determine a staffing pattern that will utilize available staff resources to maximum effect. There are many factors to be considered. These may vary in importance, according to the characteristics of the community. These factors include the size of the population, its age distribution, birth rates, morbidity and mortality rates, and health beliefs and practices in the community. Probably the best single measure of personnel required are the actual needs of the patients and families in the community. (Roberts, 1963). Professional factors, such as qualifications and job specifications, and service factors, such as nursing standards and personnel policies, also need to be taken into consideration.

Staffing is a complex issue. "The large amount of time spent in staffing is due in part to manpower problems, such as shortages and personnel preferences, but is also greatly due to the lack of conceptualization of the totality of the program, failure to recognize significant variables, and the lack of intellectual skills required in the construction of the total program." (Aydelotte, 1974. p. 4). From the literature, it is evident that determining staffing involves relying heavily on experience and

familiarity with the field. It is by no means a structured or scientific decision making process. "A variety of models are available for use, but there is no consistent strategy." (Aydelotte, 1974. p. 5.) Increasing the amount of information available will not necessarily simplify the problem. For any particular situation, the appropriate model needs to be developed, understood and skillfully applied.

A part of determining staffing is using nurse-to-population ratios. These ratios are related to workloads based on the average amount of service an individual nurse can provide. Accounts of daily activities are seen as "necessary for estimating the amount and type of services given, and for determining the average amount of service one nurse can provide in a day or other period of time." (Roberts, 1963. p. 38.). Activity data can be used to calculate simple arithmetical means of services provided, and thus form an element of the information requirements in staffing. However, these data can be seen to be merely a small part of all the information that is needed.

Supervisors are the key personnel in performing evaluation. It falls primarily to those in positions of management control to devise, implement and monitor the evaluation process. Data to be used in evaluation may be gathered by nurses at the operational level, while final

judgement and possibly intepretation may be made at a
strategic level.

The range of information needed to perform an eval-
uation will vary according to the scope of the evaluation
to be done. To provide a perspective on the role of
activity data, the range of information needed in evalua-
tion will be discussed in more detail.

Wolf (in National League for Nursing, 1976) describes
six classes of information that are necessary to evaluate
any program comprehensively. These encompass

1. the initial status of those to be helped,

2. the status of those individuals after some period
    of treatment, or service provision,

3. the objectives of the program,

4. the extent to which the intended program was in
    fact carried out,

5. the costs involved, and

6. any supplemental information

Supplemental information refers to the views, opinions and
impressions of those associated with the program. They
should complement the more objective measurement of pre-
determined variables, and add a dimension to the perspec-
tive and understanding of the evaluator.

Any evaluation inherently involves the judgement of
the evaluator or evaluation team. Those performing an
evaluation ought not to delude themselves into thinking

that they are engaged in a purely scientific process, "or
that information necessarily leads to certain conclusions
and implications for policy and practice... Evaluation
and planning activities always involve judgements."
(Wolf, in National League for Nursing, 1976, p. 36).

Activity data provide an element of information under
4.(above), that can be used in program evaluation. They
act as an inventory of the type and quantity of services
provided. However, it is evident that many different
classes of information are necessary in any evaluation
process. While activity data can be used in evaluation,
they are only one element of many contributing to the final
judgement or judgements made.

Activity data act as an indirect measure of the pro-
ductivity of the nursing staff. Real productivity can not
be shown by these statistics alone. Actual productivity
derives from the knowledge, skill and motivation applied by
the individuals on the staff. To a large extent, "it is
on the leadership group that the motivation of staff and
the consequent degree of productivity depends." (Aydelotte,
1974. p. 6)./

If the time spent in activities is noted, a costing
of nursing services can be obtained from activity data.
But these data give no measure of the effectiveness, or
benefit, of the services costed. Other measures are
needed to evaluate benefit or effectiveness. There are

considerable difficulties in this respect. Effectiveness in the field of preventive services and health promotion is hard to calculate. (Shapiro, 1977; Kristein, 1977).

The claim is sometimes made that activity data can help in assessing the quality of care. To assess quality of care, data concerning the process and outcome of care provided are required. These data elements need to be linked clearly to those to whom care was given. Activity recording collects data on the activities of the service, provider. It does not record process, or outcome. As process and outcome measuress are essential in any true determination of quality of care, it is evident that activity data are of minimal help in assessing quality of care.

Supervisors are also responsible for staff development. Continuing education plays a vital role in enabling nurses to keep abreast of the latest developments, and equipping them to meet their challenging role in the community. Such education needs to be directed towards areas where community health nursing is becoming involved, and training is required, or needs to be refreshed.

Data obtained from activity recording can provide useful indicators of areas where such education is necessary. For example, a sharp increase in cases of child abuse counselling over a particular period may indicate that courses dealing with child abuse are required. A sharp increase in work-related accident visits may indicate that

nurses require further instruction in occupational health.
Continuing education decisions need to take into account
a variety of information. These include the interests,
education and prior training of staff nurses, planned new
programs and changes in priorities. Activity data are thus
only one of a number of data items to be considered.

Activity data can be used to obtain baseline data for
particular activites, and to observe trend data over time.
Baseline data, by itself, is of limited usefulness. It
merely indicates a volume of work done. It becomes mean-
ingful when compared with other data, to obtain trend data
or data comparisons. The value of such trend data or com-
parative data will depend upon their interpretation within
the context of the situation. Comparisons provide little
insight into or understanding of a situation, unless exam-
ined in connection with specific queries, objectives or
related variables. In obtaining comparative data, it is
most helpful to establish clear objectives beforehand, so
that the appropriate data can be gathered.

2.4.3 Strategic planning

At the strategic planning or policy formation level,
is the director of community health nursing.

In budget applications at a strategic planning and
policy formation level, directors need to have information
concerning the activities of their community health nurses.

In budgeting, and developing plans and strategies for their organization, they also have to take into account information presented by other senior health service managers or officials.

Strategic planning differs from planning at other levels in the organization. The scope and depth of analysis is broader, while the range of variables involved may also be broader, and less well-defined. The long term time perspective involved means that there will be a potentially greater number of interactions between variables to be considered.

One of the normative characteristics of information at a strategic planning level (Table 2.1), is that predictive data is required. Activity data are essentially historical data. These historical data may provide greater insights into the relationships between systems variables than would have been possible without them. While historical data are useful as a basis for generating predictive data, they cannot serve as a substitute for predictive data.

Evaluation forms a fundamental element of the strategic planning process. Once a plan has been devised and implemented, it needs to be continually monitored to ensure that it is progressing as intended. The evaluation process involves the collection, analysis and interpretation of information.

The process of evaluation has already been described in section 2.4.2. Directors do not need to be closely

involved in this process. They can consult with those actually carrying out the evaluation. But they need to be aware of the results found and judgements indicated, as the final judgement in this process often rests in their hands.

Determining staffing levels and deciding upon the appropriate staff is as complex a problem at this level as at the managerial control level. While the scope of this activity at a strategic planning level will be considerably broader, similar factors need to be taken into account.

Activity data can be used at a strategic planning level to plan and compile the educational programs for community health nurses. Such data will only be helpful if they are available to and taken into account by those controlling the relevant educational programs.

One of the major reasons for gathering activity data is to provide agency boards or governing bodies with an outline of the activities of community health nurses. These data are a means of communicating what services were provided, i.e. the quantity and nature of the work the nurses have been doing.

This reporting back to policy boards or governing bodies is seen as a way of making nurses more accountable for their actions. As activity data do not refer to processess or outcomes of services provided, they can only be

used to hold nurses accountable for the type and amount
of work done. Activity data present an account of how
nursing time was utilized, and not on the productivity
of nurses actions. Further data on processes and outcomes
need to be gathered to provide a more comprehensive per-
spective on accountability. Unless the members of boards
or governing bodies are well versed in the planning and
evaluation process, there may be a tendency to let activity
data act as a substitute for more meaningful measures of
nurses' productivity.

2.5 Activity data and decision-making

How do activity data contribute to the decision making
process at the strategic planning level?

As directors deal with highly aggregated data, only
glaring ommissions or excesses are likely to receive
attention. Examples of these would be no occupational
health programs in a highly industrialized region, or too
many prenatal classes in a sparsely populated region with
a predominantly elderly population. However, such conditions
are likely to be noted and dealt with before being noticed
specifically in activity statistics. Activity data would
appear to make little contribution at the stage of looking
for conditions requiring action.

Activity data may have some impact at the design stage.
The capacities of service providers, and the demand or

preferences of consumers, may be inferred from the data.
Although activity data are historical, they can act as a
basis for the predictive data that needs to be generated
in developing different alternatives.

Choice will depend on the feasibility and attractive-
ness of all the alternatives developed. Activity data will
have no impact on choices made in strategic planning.

Thus, the contribution made by activity data in
decision making at the strategic planning level is limited.
Their primary impact is at the design stage.

At the management control level, the parameters of the
framework within which intelligence may be exercised are
more clearly and closely defined. Supervisors at this level
function within established policy guidelines and con-
straints, and with given resources.

At the intelligence stage, activity data may help in
the delegation function, or in determining staffing patterns.
The data show what functions nurses are performing. When
nurses are inappropriately employed, this may be noted from
the data. These data provide a more accurate indication to
the managers of what nurses are doing than a verbal report
may provide. Supervisors may note that their prenatal
expert is involved in too much geriatric work, or that a
geriatric nurse is doing too many prenatal group sessions.
Activity data do not provide a scientific means of indicat-
ing when action is required. Supervisors will have to

exercise their own individual judgement on the activity statistics.

In the design phase, activity data give supervisors an idea of the work that their staff are doing. These data may act as a basis for projecting alternative work- loads or work assignments. At this stage, it is again evident that objective data cannot replace normative judge- ment.

As at the strategic planning level, activity data have no real contribution to make in the normative choice phase.

In summary, we have seen that these data are of no use at the choice stage. They may be useful in the intel- ligence phase at the management control level, while at the design phase they provide supervisors and directors with an historical account of nurses' activities.

2.6 The role of activity data

"Data, as it is regarded in planning, is something like a thermometer; it will tell you the level of a particular phenomenon, but, as with a clinical thermometer, if something is to be done with the data, then there must be a diagnosis which requires much more insight." (Bergwall, Reeves and Woodside, 1974. p. 158). Planners and management cannot rely solely on objective data. Insight and understanding, and a number of different kinds of information are also

required.

Activity data show the type and quantity of services provided and utilized in particular areas of need. They can show changes in patterns of service provision or utilization. They may indicate service priorities or changes in priorities. Still, many other kinds of information are required.

For example, in planning, the demographic features of the population are a vital element of the objective data required. These features include the population size, age distribution, sex ratio, population density, economic status and the level of health education. Data on the health status of the population are also necessary.

There are two approaches that may be used in planning. Firstly, the epidemiological needs of the population can be indentified and priorized. Proceeding from this ordered set of needs, plans could then be developed to use available resources in the most effective way to respond to the needs identified. A second approach would be to base the development of a plan on the available resources, and the historically demonstrated capacities of such resources. This approach is more static and conservative than the former. In actuality, any planning process will involve a combination of the two approaches. But, a difference in accent or approach will lead to potentially different outcomes, due to the different perspectives involved. Attaching undue weight and

importance to activity data may bias the perspectives of those using the data and thus the overall planning process. Relying overly on activity data may lead to planning that is resource based, and not population based.

There are many questions to be answered in evaluation. These questions relate to service priorities, the quality of services provided, and the outcomes observed. It is also desirable to know whether services were provided to and used by those in need of them.

Some of this additional information, e.g. the identity of service recipients, could be obtained by more detailed recording systems. This additional information provides a more comprehensive picture of the situation, but does so at the expense of simplicity. Even if additional information could be recorded simply, the presentation and interpretation of the data gathered would be more complex. Additional information will not in itself ensure improvement in the decision making process. Improvement will depend upon how such information is analyzed and interpreted.

Activity data are one element of many in the decision making processes of community health nursing directors and supervisors. By themselves, they are of limited usefulness. However, used in combination with the other types of information discussed in this chapter, activity data are helpful in some of the activities of supervisors and directors.

CHAPTER 3

3.1 The dynamics of data transmission

There are numerous factors affecting activity data
in its flow through an organization. These factors need to
be considered and dealt with during the development and
implementation of an activity recording system. This
chapter examines these factors at three stages of the data
transmission process. These stages, illustrated in Figure
3.1 (p.45), are:

1. data acquisition,

2. data communication, and

3. data interpretation.

3.2 Data acquisition

There are certain features of activity data which
affect the quality of decisions based on these data. The
following important aspects of data acquisition are con-
sidered in this section:

1. accuracy,

2. reliability,

3. validity, and

4. cost.

Figure 3.1

The Stages of Data Transmission

| Data gathering | → | Communication of data | → | Interpretation of data |
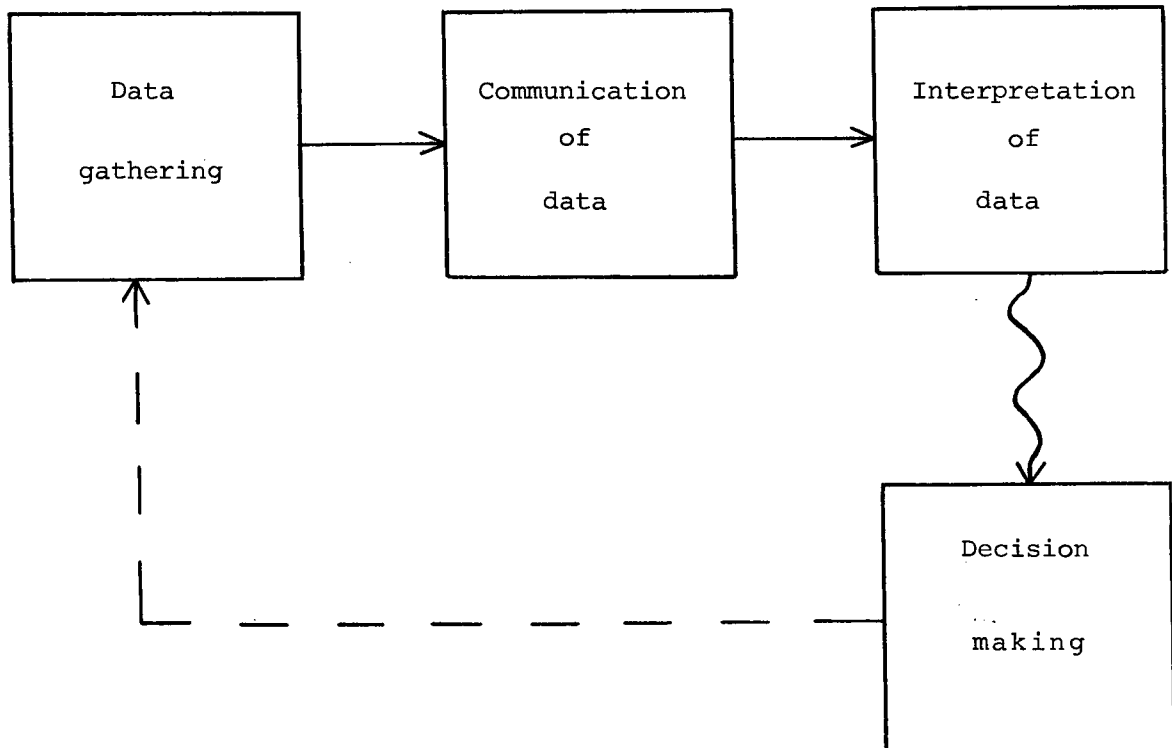
3.2.1 Accuracy

Accuracy is the degree of exactness with which an instrument measures the activities it records. The desired degree of accuracy will depend upon the purpose or purposes for which the data are needed. That is, it will depend on what is to be done with the measurements (Runkel and McGrath, 1972).

Where an instrument is not accurate enough, more items of a similar kind and quality may be added to increase the probability of accurate measurement. (Kerlinger, 1973). An example of this may be seen in the subject codes of the activity recording system in Alberta. (Table 5.1, p. 104). Subject codes 29, 30, 31 and 32 (smoking, nutrition, exercise/fitness and obesity) could be grouped under a single subject heading, lifestyle. Breaking lifestyle into the areas listed enables greater accuracy in measuring activities.

3.2.2 Reliability

"Reliability can be defined as the relative absence of errors of measurement in a measuring instrument" (Kerlinger, 1973. p. 443). Measurement error can be in the form of either a systematic bias or random errors.

One element of reliability is the extent to which measurements are repeatable. This aspect is the ability of an instrument to produce the same or similar results for

repeated applications of the instrument. There are two kinds of reliability related to repeated applications; intra-observer reliability, and inter-observer reliability. Intra-observer reliability denotes the ability of the instrument to record the same results when a nurse does the same or similar type of work repeatedly. Inter-observer reliability is the ability of the instrument to record the same results for the same type of work done by different nurses.

Differences in measures between observers may be due to differences in understanding, differences in interpreting events, memory lapse or decay, or sloppy measurement. Nurses perform a wide variety of activities. Some are specific and clearly defined. These include immunizations, prenatal classes and screenings. But some activities cannot be succinctly described within the available categories of an activity recording system. For example, a nurse may meet with a pregnant woman to discuss family planning. But the discussion may include topics like nutrition, first aid, poisons, smoking or other health services in the community. In recording this case, the nurse needs to exercise her personal judgement, taking into account her knowledge of the categories of the instrument.

There are different ways in which the reliability of a measuring instrument may be improved. (Kerlinger, 1973). These amount to an attempt to reduce the degree of error

in measurement. This can be done by:

1. stating the items of the measuring instrument
    unambiguously. Ambiguity enables error variance
    to increase, because individuals are able to
    interpret the data differently.
2. stating the instructions clearly. While ambig-
    uous instructions increase the error variance,
    clear and standard instructions tend to reduce
    errors of measurement.

These two steps are closely related. While items or
categories need to be clearly stated and explained, ex-
plicit instructions are needed as to how items should be
recorded. The clarity and explicitness of instructions
for the systems reviewed in Chapter 4 varies considerably,
The system in Alberta (Chapter 5), contains detailed and
explicit instructions. Each nurse is provided with a 71
page instruction manual containing instructions on how to
complete the nurses report forms. This includes 8 pages
explaining the subject coding.

Following the above two steps can improve the reliabi-
lity of the instrument and thus the quality of data measure-
ment. But one of the major factors affecting reliability is
the conscientiousness with which the nurses complete their
activity reports. Once the recording instrument has been re-
fined and the instructions clarified, recording daily acti-
vities is a relatively straightforward task. It requires

a few minutes every day for nurses to keep a log of their activities, and to then transpose these details onto the recording form according to the relevant categories.

However, those who have worked with these systems will bear witness to the problem of getting nurses to record their activities correctly. Some nurses carefully log and record their activities as accurately as they can. Others record their activities casually, sometimes clearly overstating or understating the amount of work they are doing. They may make a rough approximation of the work they have done, paying little attention to the accuracy of their recording.

While it may not be possible to entirely eliminate inaccurate recording, there are ways of improving the quality of data recording.

Firstly, the importance of correctly completing their activity reports can be stressed to nurses. This may raise their level of conscientiousness and thereby improve the standard of recording.

Possibly, the most effective way of improving reliability is some form of data check or control. The nurses' recording can be checked and direct feedback provided. In this way, unintentional errors or bias could be corrected. Nurses' awareness of the accuracy of their recording is likely to rise as they realize that their input is being checked. They are likely to apply themselves more

studiously to their recording. For example, data checks
have been implemented in some of the health units in
Alberta. Consultants in the provincial government feel
that these checks have proved effective in improving the
reliability of recording in those health units.

How can the reliability of activity data be estimated?
This is extremely difficult to effect in practice, in any
absolute terms. There are ways in which an estimate can
be obtained, although these are not altogether satisfactory.
The most direct method is for trained observers to compare
their own recording of the nurses' activities with the
recording of the nurses themselves. Error bounds for the
data can be established. These error bounds can be applied
to the decisions based on these data. However, experimental
arrangements such as observation, are likely to induce re-
active effects. (Campbell and Stanley, 1963). The experi-
mental conditions are likely to induce the nurses to record
their activities as accurately as possible, if they know
the reason for the observation. Even if they didn't, their
awareness of their activities would be raised, and this
would probably lead to improved recording. The only
(obviously unfeasible) way in which nurses could be ob-
served without affecting their recording, would be through
totally "invisible" observers.

Nurses could be given a list of complex activities,
and asked to record the activities as if they were in a

real work situation. This experiment removes them from the pressures of their real work setting. It is thus likely to produce greater inter-observer reliability than would similar activities if encountered by the nurses in their actual work environment.

One of the most practical estimates of reliability are the subjective opinions of supervisors. They have an idea of what their nurses are doing, and they have access to the activity data recorded. While their opinions may be lacking in quantitative precision, their subjective opinions may be the most accurate measures of reliability that can be obtained.

The accuracy of recording and the reliability of measurement will affect the quality of data recorded, and thus the quality of decisions based on these data. The quality of decision making can be improved by improving the quality of the data.

3.2.3 Validity

According to Kerlinger (1973), there are different types of validity. The kind of validity relevant to this discussion of activity recording, is content validity.

The content validity of an instrument refers to the adequacy with which a specified domain of content is sampled. (Nunnally, 1967). In content validation, one tries to ascertain whether the substance or content of the

measure is representative of the content of the property being sampled.

Activity recording instruments measure the type and quantity of activities performed by nurses. They do not measure the content of the activities themselves. Thus, an activity recording instrument can provide potentially valid measures of the type of activities nurses are involved in. It cannot act as a valid measure of the activities themselves.

Objectives provide guidelines to the use of data collected, and thus to the types of data required. The content of an activity recording instrument reflects what information is relevant in terms of the objectives of the recording system. Clearly stated objectives will specify the domain of data to be sampled, while vaguely defined objectives may leave the data domain to be sampled undetermined. When objectives are vaguely defined, the content of the instrument will reflect the judgement of the instrument's designers as to what information is relevant in terms of the unclearly stated objectives. In such cases, the relevance, content and volume of data to be collected may be difficult to establish. Thus, clearly defined objectives are important in determining the content of an instrument, and in testing for content validation. In the absence of clearly stated objectives, testing for content validation becomes a highly subjective process. (The issue of systems

objectives is discussed in more detail in section 4.4.1).

3.2.4 Costs

Activity data provides an organization with an image
of its activities. The more detailed the image, the great-
er the costs involved in obtaining it. (Emery, 1971). The
more abbreviated the image, the greater the costs (in non-
monetary terms) of information foregone.

Recording can be costly in terms of time and nurse
effort. The cost in materials is unlikely to be high.
But as the detail recorded increases, so does the time and
effort required in recording. Nurses are not specifically
trained to perform clerical type work, and may do so re-
luctantly.

The more data that are collected, the more data there
are to be presented. More data may mean a loss in simpli-
city in data presentation. This is a cost to be considered
in increasing the volume of data collected.

In designing any system, all the costs involved need
to be taken into account. (Emery, 1971). The trade-off
between simplicity and gathering more data, and between
different levels of aggregation and detail, are among the
costs that need to be considered.

3.3 Data communication

Nurses at all levels within community health nursing

are interdependent in their work activities. To effect such interdependence they need to communicate and utilize messages. In fact, the managerial and planning functions only become operationalized through communicative activity (Steers, 1977). This section will examine some of the major features of data communication that affect the communication of activity data.

3.3.1 Factors affecting data flow

Possibly the most important factor influencing the transmission of data is the status hierarchy of the organization. (Havelock, 1971). The formal structure of an organization will to a large degree determine the distribution of data to those within and outside of the organization. (Gibson, Ivancevich and Donnelly, 1976). These channels, downward, upward and horizontal, will affect the dissemination of activity data throughout an organization.

The geographical or physical distance between organization members and between groups is also seen as a determinant of information exchange. (Havelock, 1971). This is particularly relevant in community health nursing, where nurses often cover large distances, and may work in relative isolation. There is also generally a physical separation between different organizational levels. Physical separation is often a function of the status hierarchy, with the lowest level staff the most remote geographically.

One way of fostering communication is to routinely convene groups of organization members to discuss relevant items. Activity data provide common measures that can act as a basis for such discussions.

"Leadership behaviour serves both as a stimulus and a model for much behaviour in the organization, and for that reason it is a major determinant of internal barriers to knowledge dissemination and utilization." (Havelock, 1971. p. 6-26). Leadership behaviour sets a tone which pervades throughout the organization. The director of a health agency in community health will have a powerful effect on the style of operation of the supervisor or supervisors in the agency. The director may also affect the flow and utilization of activity data.

Activity data could be used to hold nurses accountable for the way they use their time at work. These data are thus sometimes regarded as confidential, as in Alberta (see section 5.5.3). Individuals are sometimes hesitant to share information. They feel it may reflect negatively on themselves or the functioning of their group within the organization (Havelock, 1971). These feelings may impede the flow of activity data between units in the organization, and between the organization and its environment.

3.3.2 Frequency of reporting

Data can be collected and reported either regulary,

irregularly, or not at all. There are inherent assumptions in any particular frequency of data collection. If data are regularly collected, this implies that the activities covered by the data need to be constantly monitored, or that data need to be available for constant monitoring or checking. Intermittent data collection implies that the activities covered by the data collection do not need constant monitoring. In this case, only irregular checking is required. Not collecting any data about certain activities implies that the data are not necessary to monitor these activities. It may also mean that the data, even if acquired, will have minimal or no impact on the decision processes related to these activities.

It may thus be inferred that those nursing activities regularly recorded and reported are regarded as requiring constant monitoring. Or, there may also be a perceived need for such data to be available for monitoring, in case it is required.

3.3.3. The volume of data reporting

"Information systems have gained ready acceptance in the innocent cloak of being the first and necessary step in the direction of rational planning. But herein lies one of the most serious dangers of information systems .... Insensitivity to or a lack of knowledge about the substantive issues are often washed out of sight in the deluge of

detail enthusiastically captured". (Hoss, 1971. p. B663).

In 1967, Ackhoff stated his belief that the most important deficiency from which managers suffered was not a lack of relevant information, but an overabundance of irrelevant information. This statement came during a stage of great enthusiasm and technological development in the field of management information systems. Ackhoff's claims generated a good deal of controversy. Yet his suggestion that managers suffer from an information overload has generally remained unchallenged. (Rappaport, in Davis and Everest, eds., 1976).

Whether or not data are necessary depends upon the impact or potential impact they have on actions and decisions. There is an assumption inherent in the decision to collect any particular data item throughout an activity recording system. This assumption is that such data are relevant within the context of some universal decision making model for directors and supervisors. Such a universal model is an ideal that does not exist, as there are many inter-individual differences affecting decision making.

This does not mean that such a universal model is of no value. As discussed earlier (section 3.2.4), any system must make trade-offs in determining what information to collect. It must also make trade-offs in considering how often to collect information. In terms of convenience in

collecting data, it may be much easier to collect more
than is essentially necessary in terms of each individual's
decision making processes. It then becomes the task of
the user to apply his or her filtration or condensation
processes to what data are available. Inevitably, this
will cause problems, as ... "indeed there is probably a
critical information content, which, if exceeded, is like-
ly to lead to a deterioration of the usefulness of the
summary to the manager". (Ashford, 1975. p.22).

The relevance of information, and thus the frequency
and volume of data reporting, is a function of the deci-
sion making process. Until the decision making process is
clearly understood, there is no logical means of determining
relevance, and thus the appropriate volume of data report-
ing. At present, it would be unreasonable to claim that a
clearly understood model of decision making exists for
community health nursing supervisors and directors. Deci-
sion making in this area may be akin to what Pirsig (1974)
sees as quality in writing. It is something that can clear-
ly be seen to exist. But, like quality, it is beyond
logical and comprehensive analysis.

If decision making may be seen to exist, ought it not
to be describable, at least in terms of the minimum
essential information required to make a systematic decision?
The problem here is adequately defining what is meant by
"systematic". Is a decision systematic because some

essential minimum data set was available to the decision maker (in which case systematic is tautologically described)? Or is decision making systematic due to the structured nature of the intelligence, design and choice stages? Simon (section 2.1) feels that there are few decisions or problems which are totally structured. Newell and Simon claim that ... "a few, and only a few, gross characteristics of the human information processing system are invariant over task and problem solver". (Newell and Simon, 1972. p. 788.).

The issue of "systematic" decision making is indeed complex. The basic organizational features and universal structural characteristics in the decision making process for supervisors and directors need to be identified. An analysis of these features is beyond the scope of this study. Until this is done, it is not possible to establish a minimum essential data set for decision making by these individuals.

Before the relevance of data can be established, a more comprehensive understanding of the decision making processes of supervisors and directors is required. In the absence of a comprehensive model, it is still possible to determine some of its elements. These elements may be identified through a careful study of the data elements gathered by activity recording systems across Canada. This is done in Chapter 4.

3.4 The interpretation of data

Even if all the relevant information for decision making was collected, there is no assurance that it would be appropriately used by decision makers. Newell and Simon (section 3.3.3) feel that there are only a few ways in which individuals' information processing systems are the same, or the same for different problems.

Decision making strategies are influenced not only by the decision problem and the decision environment, but also by the characteristics of the decision maker. Characteristics such as intellectual ability, education, attitudes, cultural background and especially cognitive style will affect decision making.

Individuals gather information through a perceptual process by which the mind organizes the various stimuli it encounters. What each individual perceives as information is the result of a complex coding process.

McKenney and Keen (1974) distinguish two dimensions along which individuals differ: information gathering and information evaluation (Figure 3.2. p. 61). In gathering information, preceptive thinkers apply concepts to filter data, while receptive thinkers are more sensitive to the data stimulus itself. In evaluating information, individuals differ in their sequence of analysis of the data available to them.

Bariff and Lusk (1977) applied cognitive style assessment in the design phase of a "nursing evaluation

Figure 3.2

Model of Cognitive Style
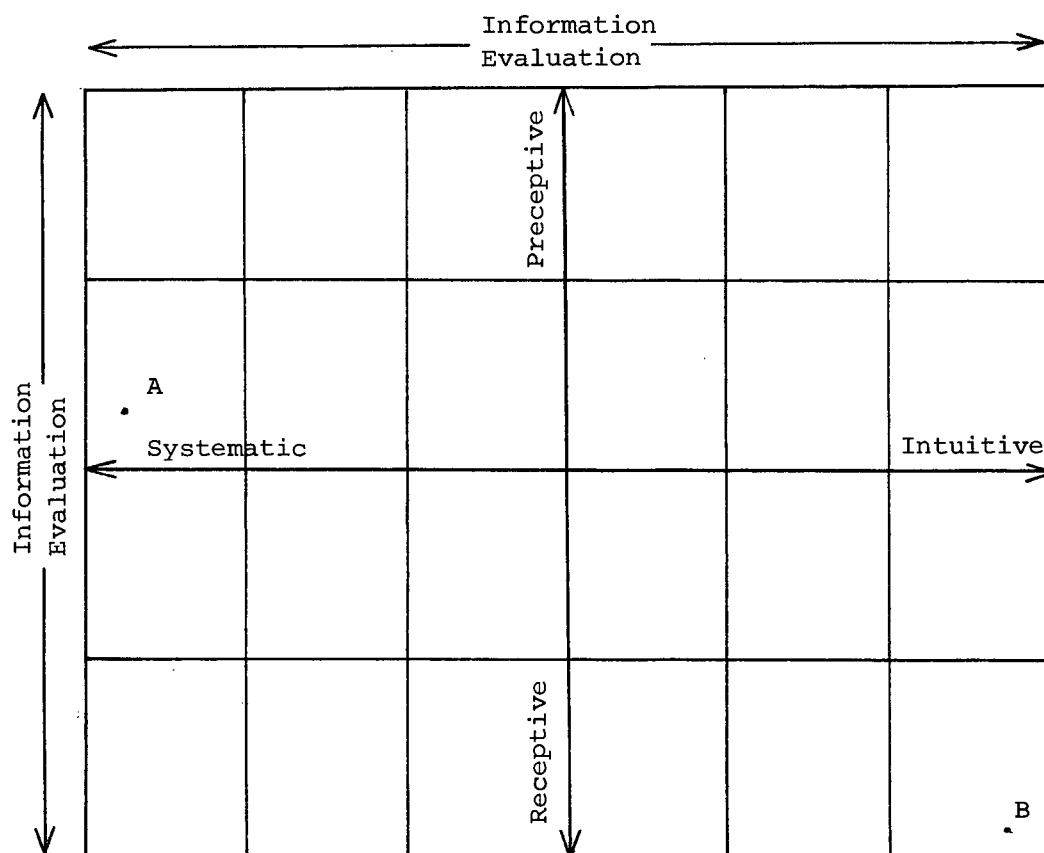
Note: Each point on the grid will describe a particular
cognitive style. For example, 'A' will describe an
individual who is slightly preceptive in information
gathering, and highly systematic in information.
evaluation. 'B' indicates someone who is highly re-
ceptive in information gathering, and highly in-
tuitive in information evaluation.

information system", for a community nursing service in a large metropolitan USA city. The findings of their study were instructive in developing reporting formats for data that had been gathered.

The individuals identified as constituting the decision making network of the organization were tested for cognitive style. All were found to be low in cognitive complexity. Cognitive complexity involves the processes of:

1 differentiation - the number of dimensions
extracted from the data,

2. integration - the complexity of the rules for
combining structured data, and

3. articulation - the fineness of discrimination.
This finding does not mean that users cannot or do not perform effectively. It merely provides a guideline for the designer or developer of user reports as to how such reports ought to be structured.

Their findings led to a disaggregation of the former type of report structure, and a consequent increase in the number of reports. There was also an increase in the frequency of selected reports, from quarterly to monthly. The designers claim "a pressing need to identify the specific dimensions of reports which are relevant to the various classes of users." (Bariff and Lusk, 1977. p. 827.).

Bariff and Lusk's findings on cognitive style are probably very applicable to community nursing reporting

systems in Canada. The use of cognitive styles in inform-
ation system design and use is an area that has been until
recently neglected. (Benbasat and Taylor, 1978). Much
further study is required to clarify the relationships
involved.

CHAPTER 4

4.1 Activity recording systems in Canada

This chapter contains an analysis of activity record-
ing systems for community health nurses in six provinces
across Canada. The federal government system for occupa-
tional health nurses is also reviewed. The purpose of
the analysis is to obtain an overview of current Canadian
practices.

Detailed information on the different systems was
required to perform this analysis. Accordingly, a letter
was sent in August 1978, to all the provincial directors of
public/community health nursing (except for Alberta), and
to Health and Welfare Canada. After briefly outlining the
topic of the proposed study, the letter requested informa-
tion on:

1. the reporting or recording system for public/
    community health nursing activities in the
    province,

2. the objectives of the system,

3. the process of development of the system,

4. the output generated by the system, and

5. how the output of the system is used.

Replies with information were received from British
Columbia, New Brunswick, Manitoba and Ontario. Informa-
tion from Alberta had already been made available. In
October, 1978, a follow-up letter was sent to those

provinces which had not responded. Information was received from Prince Edward Island. The Medical Services Branch of Health and Welfare Canada supplied information on the system used by community health nurses working in occupational health. Newfoundland, Nova Scotia, Saskatchewan and Quebec did not supply information.

The following framework is applied to analyze the available information:

1. the functional features of the systems were examined. These features include:

    a. services recorded,

    b. non-client contact activities,

    c. data re service recipients,

    d. duration of services recorded, and

    e. place of service recorded.

2. The conceptual and operational features of each system are listed. The stated objectives of the systems are examined.

3. The special features of the available systems are discussed.

4.2. Functional features of activity recording systems

The functional features of the systems available for this study are summarized in Table 4.1 (pp. 68-72). This table is based on information made available by the federal and provincial governments. The information provided is listed below.

Alberta

All forms and documented material relating to this system were made available for this study.

British Columbia

1. Monthly Report of Selected Statitics (Nursing).

2. Summary of Monthly Statistical Report (Nursing).

3. Home Care Program - Patient Summary.

4. Discussion of P.H. 56 (Monthly Report).

5. Computer Programming of Home ·Care Statistics.

Manitoba

1. Regional Public Health Nursing Statistics. Selected Reasons for Service.

2. Selected Reasons for Service from Regional Summary Sheet (3 pages).

3. Revised Public Health Nursing Services Statistical Systems.

New Brunswick

1. Daily Service Record.

2. Statistical Record (2 pages).

3. Code for Service Record.

4. Guide to Daily Service Record.

Ontario

   1.   Community Health Resources.   Report of weekly
activities.

   2.   Monthly Summary.

   3.   C.H.A.R.I.S.   Nursing acitivity sybsystem.

   4.   The Community Health Resources Report of Weekly
activity.

   5.   Community Health Activity Resources Information
System (C.H.A.R.I.S.)   Clerical Procedures.

Prince Edward

   1.   Daily Report.

   2.   Immunization Statistics.

   3.   Monthly and Annual Statistical Summary.
        Public Health Nursing.

Health and Welfare Canada

   1.   Health Unit Statistical Report (A).

   2.   Health Unit Statistical Report (T).

   3.   Performance Measurement System.   Public Service
Health Facility.

Table 4.1

Functional Features of Recording Systems

1. Services recorded

	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Immunizations	a	x	x	b	b	a	
Rubella	x	c	x			x	
Smallpox	c	x	c			c	
Polio	x					x	
Polio (Salk)	c					c	
Polio (Sabin)	c		c			c	
Diphtheria	c					c	
Tetanus	c					c	
Typhoid	c						
Quad	c					c	
Measles	x		x				
Cholera	x		x				
Influenza	x		x				
DPT		x	c				
DT		x	c				
Mumps			x				
Triad						x	
Biad						x	
MMR						x	
Pertusis	x						
Schick	x						
Rabies	x						
Typhus	x						
Immune Serum Globulin	d		x				
Plague	x						
Other		x	x				

Key on page 72

	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Services in schools		d	b	x	e	d	
Conference with staff		d				d	
Conference with students		x					
Inspections						d	
Counselling						x	
No. referred by teacher						x	
Recommended for exclusion						d	
Defects corrected						d	
Screening	d	f	d		d	f	
Vision	x	f	x			f	
Hearing	x	f	x			f	
Communicable Disease	x	f					
Developmental	x		x				
Tuberculin			x			x	
Schick			x				
P.K.U.			x				
Pediculosis			x			x	
Other			x				
Groups/classes	d	d	d	x	d		
Expectant parent/prenatal	x	d	x	x	x	x	
Child Health Conference		d	b	d	b	d	
Clinics	b,d	x	d	x		d	
Family planning	x	x	x				
Geriatric		x	x				
Chest						x	
Other			x	x		d	
Communicable disease	d	d	x		x	d	
VD	x	x			g	d	
TB	x	x				x	
Mental Health/illness	x	d	x		x		

Key on Page 72

	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Home Care	a	a	d	x	x		
Home assessment/ reassessment	x	x	d		x		
General							
Expectant parent/ prenatal	x	d	x	x	x	x	
Postnatal	x	x	x		x	x	
New infant	x	x	x		x		
Health promotion		x	d		x		
Chronic disease	x	x					
Lifestyle	d				g		
Safety/occupation health	x						
Drugs/alcohol	x				x		
Public relations	x				d,g		
Followup	x	x					
Handicapped/ Special Services	x						
Child Abuse	x						
Poison Control	x						
Retirement	x						
Social Services	x						
Treatment	d						
First Aid	x						
General Health	x						
Infant & preschool assessment		d					
Infectious hepatitis		x					
Episodic care		x					
Mental retardation		x					
Child care			x				
Adult care			x				
Growth & development			g				
Public health				x			

Key on page 72

General (cont.)	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Nursing care				x			
Nursing home programs				x			
Preschool class				x			
Geriatric care					x		
Medical					x		
Surgical					x		
Conception/ contraception					x		
Parent education	x				g		
Registration of pre-school children					g		
Non-communicable disease						x	
Local options	x				x		

2. Non-client contact activities

	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Meetings		d		x		d	
Liasons		d			x		x
Hospital liason				x	x		
Inservice education		x	x	x	x	x	x
Team/case conference		x		x	x	x	
Supervision/training others	x				x		x
Daycare centres			x				
Community agency				x	x		
Nurse attachment					x		
Mass media					x		
Service activities				x			
Office management				x	d	x	x
Clerical	x				x		

Key on page 72

2. Non client contact activities (cont.)

	Alta.	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Travel	x			x			x
Mileage noted				x	x		
Home visiting					e	e	
Number of homes visited	x	x			x		
Telephone contacts		x			e		
Absence from work				d	d		

3. Data re service recipients

	Alta.	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
Age	x	h	h	x	h	h	
Sex		h		x			x
Name				x		x	x

4. Duration of services recorded

	x			x	h	x	x

5. Place of service recorded

	h			x	f	f	

Key

a. Separate form
b. Single line entry
c. Shows reinforcing series
d. More detailed breakdown given
e. Time allocation noted
f. Recorded under school activities
g. Group activities/classes only
h. For some activities

4.2.1 Federal government system

As the federal government system is for the activities of nurses performing a specialist function, these services are listed separately. The Health Unit Statistical Report groups the activities of nurses as follows:

1. health assessment,
2. counselling,
3. treatment,
4. referrals - disposals,
5. health education and liason,
6. office management.

4.3. Functional features: discussion

4.3.1 Services recorded

From Table 4.1 it is evident that there are many under-lying similarities in the services recorded by the provincial recording systems. Services recorded in at least four provinces are:

1. immunizations,
2. school health services,
3. screenings,
4. groups/classes,
5. child health conferences,
6. clinics,
7. communicable disease,

8. mental health/illness,

9. home care,

10. prenatal/postnatal,

11. new infant.

Home care may be presented as a separate program with its own information system, as in B.C. and Alberta.

The community health nursing programs in the different provinces have their own particular emphases. Yet from Table 4.1 it can be seen that the majority of activities in which nurses are involved are common to all provinces.

4.3.2 Non-client contact activities

There are differences between the provinces in the terminology applied to non client contact activities. These activities are generally measured in terms of the time spent on them.

These data convey no information at all about client contact nursing activities. They do provide a perspective of the distribution of nurses' activities or of nursing time, over the full spectrum of activities in which they are involved.

4.3.3 Data re service recipients

Service recipients may be noted according to their:

1. name,

2. sex, and/or

3. age.

1. Name of recipient(s)

Recording the name of individual contacts is the clearest way of identifying service recipients. But this information is "lost" in the aggregation of data. At the managerial or strategic planning level, knowing the names of service recipients has no particular advantages over a simpler identification process.

2. Sex

Recording the sex of service recipients may be appropriate for the occupational health activities of federal government nurses. Knowing the sex of recipients of provincial nursing services is useful in cases of occupational health, and in recording attendances at prenatal and family planning classes. Knowing the sex ratio of attendance at these classes could enable more appropriate preparation and presentation of material.

3. Age groupings

The age groupings used in the provinces vary, although there appears to be an underlying set of age spans. These are:

1. infant: 0 - 1 year (up to 364 days),

2. preschool: 1 - 5 years,

3. school: 6 - 18 years,

4. adult: 19 - 64 years,

5. geriatric: 65 + years.

Generally, there are a greater number of age spans,
while some provinces use age groupings that cut across these
spans. Manitoba has a number of overlapping age categories
which vary according to the nature of the population being
served. The age groups are set to identify service recip-
ients as clearly as desired.

Age groupings are the most common way of identifying
target groups or populations by whom services are received.
The finer the distinction between age categories, the more
clearly the identity of service recipients is distinguished.
This finer distinction between age categories enables a
closer comparison to be made between the needs of a target
population, and the type and quantity of services provided
to that population.

4.3.4 Duration of services recorded

"Distinction should be made between data which are re-
gularly summarized and reported and data obtained by a
special study or survey. For example, an agency may need
detailed information on the distribution of total nursing
time for assessing emphases, for work measurement, and for
cost analysis. A sample time study will provide a good
estimate. It is usually not necessary or advisable to
collect such information on a continuous basis" (National
League for Nursing, 1962. p. 6.). Only B.C. and Manitoba

do not record any data about time spent in activities.

Nurses may take different amounts of time to perform the same function. Or, they may spend the same amount of time in an activity, and perform differently. Variations in time spent in activities may be due to the nurses' qualifications, the resources available, the characteristics of service recipients and/or other factors.

Supervisors and directors require a sound knowledge of the amount of time needed for different activities in determining staffing levels and staffing patterns. They also need to know how much time nurses are actually spending in their various activities. Knowledge about the average times required for particular activities is acquired through experience in the community health nursing field. An understanding of variations from average work times develops inherently with experience in the field.

Time spent in activities is an indicator of the overall distribution of nursing time. It is not an indication of process, outcome or effectiveness. Due to variations in these factors, time spent is not an accurate indicator of efficiency.

Due to technological developments and changes in procedures, education and emphasis, the time spent in different activities will vary over time. The time spent in performing a particular activity is very unlikely to vary much in the short or medium term. Directors and supervisors need to

be aware of any changes that do occur. For their purposes,
only intermittent recording of nursing time is required. The
regular and comprehensive recording of time spent in activit-
ies is thus an unnecessary feature of activity recording
systems.

4.3.5. Place of service recorded

Many activities, by their very nature, e.g. school
services, take place in a particular location, e.g. school,
the office or at home. The place where services are provided
is generally not recorded, and may thus be inferred not to
be relevant.

4.4. Discussion of systems objectives

Although the wording of the objectives and intended
uses of the systems varied, there were some common objectives.
These can be seen in Table 4.2 (p. 79).

Objectives can be stated in different ways. For the
purposes of measurement, objectives need to be operationally
defined. Measurement is involved in the process of evaluating
whether or not objectives have been met. If objectives can-
not be unambiguously translated into operational terms, they
cannot be measured. Whether or not objectives are being met
then becomes altogether a matter of subjective judgement.
Judgements on a system's performance in meeting its objectives
may differ according to individuals' perspectives on activity

Table 4.2

Objectives

	Alta	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
1. To provide data which can be used as a basis for requesting funding for services.	x	x	x				
2. To provide data to assist in determining staffing patterns/case loads.	x	x				x	
3. To provide data to assist in program planning	x			x		x	
4. To compile statistics for selected nursing services by a uniform method		x			x	x	
5. To provide uses with data for companies		x			x		
6. To provide data to assist in program evaluation		x					
7. To provide data for annual reports or in response to special requests re services			x	x	x		
8. To provide data for evaluating effort			x				
9. To provide data to measure the extent of programs				x	x		
10. To provide data to assist in determining the cost/cost-effectiveness of programs				x	x		
11. To measure and describe the output of the nursing service				x			
12. To analyze statistics collected by province, region and health unit/department					x		
13. To provide consultants with data to monitor activities					x		
14. To provide a basis for decision making in community health nursing activities					x		
15. To provide data to assist in management							x
16. To provide data for an operational performance measurement system							x

recording.

Objective 2 in Table 4.2 does not clarify how activity
data are to be used in determining staffing. The discussion
of determining staffing in section 2.4.2 outlined the complex
nature of this task. Family needs was identified as the major
factor required in determining staffing. More than any other
factor, the need prevalence of a population will determine
the services and staffing required.

Activity data are an inventory of services provided. They
are not an indicator of what was needed, how needs were met,
what services were insufficient, or which were excessive.
These judgements require more comprehensive information. In-
formation is needed about the population to be served, the
services being provided, and the characteristics of service
providers. Activity data may be used in determining staffing,
but this will depend upon how much and what other data are
available. It will also depend on the staffing methodologies
being used, and how they are applied. Unless these factors
are made explicit, there is no clear way of determining
whether objective 2 is being met.

Objective 3 is stated in similarly vague and nonoperational
terms. Unless the process of program planning is more expli-
citly described, there is no way of measuring whether or not
objective 3 is being met.

Requesting funding for services requires predictive data
about services to be provided. Projected services may be

based on historical data from activity recording. Requests for funding need to be based on projected services, and not on the historical data used to obtain these projections. Objective 1 is thus stated in an inappropriate and non-operational manner.

On the other hand, objectives 4 and 5 are stated in such terms that their achievement can be measured. However, whether or not objectives are achieved does not relate to whether or not the system's output will be useful. For example, the system may satisfy objective 5, and provide data for use in comparisons. But no guidelines are given as to how or what kinds of comparisons are to be made. Objectives such as 4, 5 or 13, are stated in such simple terms as to be of no value in determining the usefulness of the data gathered by the system.

An example of an objective that can be operationally measured is objective 16 in Table 4.2. The operational performance measurement system used by the federal government is clearly outlined in the Health and Welfare Canada publication, Performance Measurement System. This system identifies the data that are required. Objective 16 thus provides the model of an objective which relates to a clearly defined process, which in turn determines exactly what data are required.

To act as realistic guidelines to the use of the data, objectives need to be clearly and operationally defined. Only once this is done is it feasible to determine if the

data being gathered are adequate to perform the functions for which they are intended. Most of the objectives in Table 4.2 are stated in such broad and nonoperational terms, that it is not possible to even investigate if the data being gathered are adequate in terms of these objectives. In the case of some objectives, adequate data may be gathered to meet the objectives. But these objectives are stated in such vague terms that the usefulness of the gathered data remains questionable.

4.4.1 Operational features

Table 4.3 (p. 83) contains operational features of systems that are of interest. It shows the regularity with which:

1. forms are completed, and
2. reports are compiled.

It distinguishes between:
3. manual and computer systems, and shows the
4. units (areas) by which data are compiled.

4.5 Special features

There are differences and variations between the systems examined. Other than the computerization of the Alberta and Ontario systems, there are only two features that appear to be unique. These are:

Table 4.3

Operational Features of Systems

	Alta.	B.C.	Man.	N.B.	Ont.	PEI	Fd.Gvt.
1. Forms completed:							
daily				x		x	x
weekly	x		x		x		
monthly		x					
2. Reports compiled:							
Weekly				x			x
monthly		x	x	x	x	x	x
year-to-date				x			
other	x					x	
3. Manual tabulation		x	x	x		x	
Computerized	x				x		
4. Data compiled:							
by office/health unit	x	x	x	x	x		
by region			x	x			x
by province	x		x				x

Note: Table 4.3 was compiled from data submitted.   There may be certain omissions in the table, e.g. data compiled by region, as certain operational features may not have been explicity dealt with in available information.

1. the method of recording type of service and
   service recipients in Manitoba, and

2. the federal government method of calculating
   performance measurement indicators.

4.5.1 Manitoba

For each subject grouping, the most appropriate age
spans are used to clearly identify the service recipients.
This system contains the largest number of age spans. It is
also the only system with these overlapping age categories.

Individual contacts are recorded according to whether
the contact was of a health promotion or direct nursing
care nature. This system is the only one to distinguish in
this way between health promotion and direct nursing care.

4.5.2 The federal government performance measurement
system

The description of the system given in this section is
based on the Health and Welfare Canada document, Performance
Measurement System.

Investment time is viewed as resource utilization in
the production of an accomplishment. Although each accomp-
lishment will not have the same investment time, it is felt
that an average investment time per accomplishment can be

determined. This factor is considered the weighting factor
in determining the monthly weighted workload.

Performance measurment indicators can be calculated for
efficiency, effectiveness and percentage investment. Effic-
iency indicators measure the ratio of accomplishment produced
to the investment time consumed in their production.

e.g. Operational efficiency = $\frac{\text{total weighted workload}}{\text{total investment}}$

Effectiveness relates to how well one is achieving set goals.

e.g. Operational effectiveness = $\frac{\text{accomplishments}}{\text{objectives}}$

This ratio obviously cannot be calculated in the absence of
quantifiable objectives.

Percentage investment indicators can be calculated for
major sections of occupational health nursing. These indica-
tors permit management to determine the levels of investment
for each of the areas concerned. Investment allocation great-
er than or less than a predetermined variance range can indi-
cate that some management decision is required. It is stated
that these indicators give a tangible figure to what in the
past has been an intangible gut feeling.

The logic inherent in the above statement needs to be
explored.

The description of the performance measurement system
implies that determining a variance range for percentage

investment indicators makes the management process more
rational, or scientific. This is not so. A variance range
does put concrete bounds around some calculated average.
But a variance range can only be determined from intuition,
knowledge from experience, or what is referred to as intang-
ible gut feeling. There is no scientific method of setting
such variance ranges without the express judgement of the in-
dividual setting the range. In setting limits, the individ-
ual must apply his or her understanding of the situation, and
act as a diagnostician.

Similarly, efficiency and effectiveness indicators may
provide measures relating to service provision, but individ-
ual judgement is inherently involved in interpreting these
measures. It is fallacious to assume that any degree of
intricate or elaborate calculation can eliminate the essent-
ially judgemental nature of the interpretation of activity
statistics.

4.6 Summary of activity recording systems reviewed

The objectives, operational aspects and selected feat-
ures of activity recording systems across Canada have been
reviewed.

As outlined in Chapter 2, the need for these systems is
to provide data at the management and strategic planning
levels. Thus, the intent of such systems is to gather data
to meet these needs. The objectives may be seen as a more

concrete expression of the intent of these systems.

Generally, the objectives of the systems are vaguely and nonoperationally defined. They cannot be translated into measurable terms. This being the case, it is not feasible to assess if these objectives are being met, or even whether the data being gathered are appropriate. It is essential that objectives be expressed in terms that are operationally definable to measure whether or not objectives are being met, or if appropriate data are being gathered.

The need for data on time spent in particular activities, and the time distribution of nurses, was discussed. It was argued that the regular recording of time spent in activities was unnecessary.

The outputs and workings of the federal government system were examined. Whatever calculations are performed with the data, it is evident that there are no substitutes for the individual judgement of the person who must finally interpret and work with these data.

CHAPTER 5

5.1   Case study of the Alberta community nursing activites recording system (ACNARS).

In addition to the overview of the systems presented
in Chaper 4, it is illustrative and informative to examine
a specific system in greater detail.   An in-depth study
helps to provide a more comprehensive insight into the issues
that have been discussed.   In this Chapter, the Alberta
Community Nursing Activities Recording System (A.C.N.A.R.S.)
will be examined in detail.   The discussion is based on all
available system's documentation, official government of
Alberta publications, and my   personal observations during
May to August, 1978.

5.2   The organization of community health services in Alberta

There are twenty-nine geographical areas in Alberta with
responsibility for community health.   These areas are known
as Local Boards of Health in Calgary and Edmonton, and as
Health Units in the remaining twenty-seven jurisdictions.

Each one of these health agencies is autonomous, being
responsible to a local board made up of representatives of
the communities within its jurisdiction.   Board members are
appointed from the elected representatives on municipal
councils.   Until 1973, health agencies received eighty per-
cent of their funding from the provincial government and

twenty per cent from the municipal governments in their area. After March 1973, the provincial government assumed total funding of the health agencies.

This funding mechanism gives rise to an anomalous situation. Health agency officials are responsible to a local board for program direction and emphasis. The health agency board must in turn justify that program direction and emphasis to the provincial government in order to obtain funds.

The consultants employed by Local Health Services in the Department of Social Services and Community Health, have a responsibility to give advice that, if followed, ought to result in the effective and efficient spending of public funds. However, because of the autonomy of the local health agencies, the consultants have no authority to enforce their advice.

The relationship described is outlined in Figure 5.1. (p. 90).

5.3 Organization of Health Agencies

Figure 5.2 (p. 91) outlines the organization of a typical health agency.

Most health agencies are directed by a medical officer of health, who is directly responsible to the health agency board. In a few agencies, nurses have been appointed as directors. Reporting to the director are a nursing supervisor, senior public health inspector, dental officers, and an administrative officer. Some health agencies have other

Figure 5.1

The Organization of Communicty Health

Services in Alberta
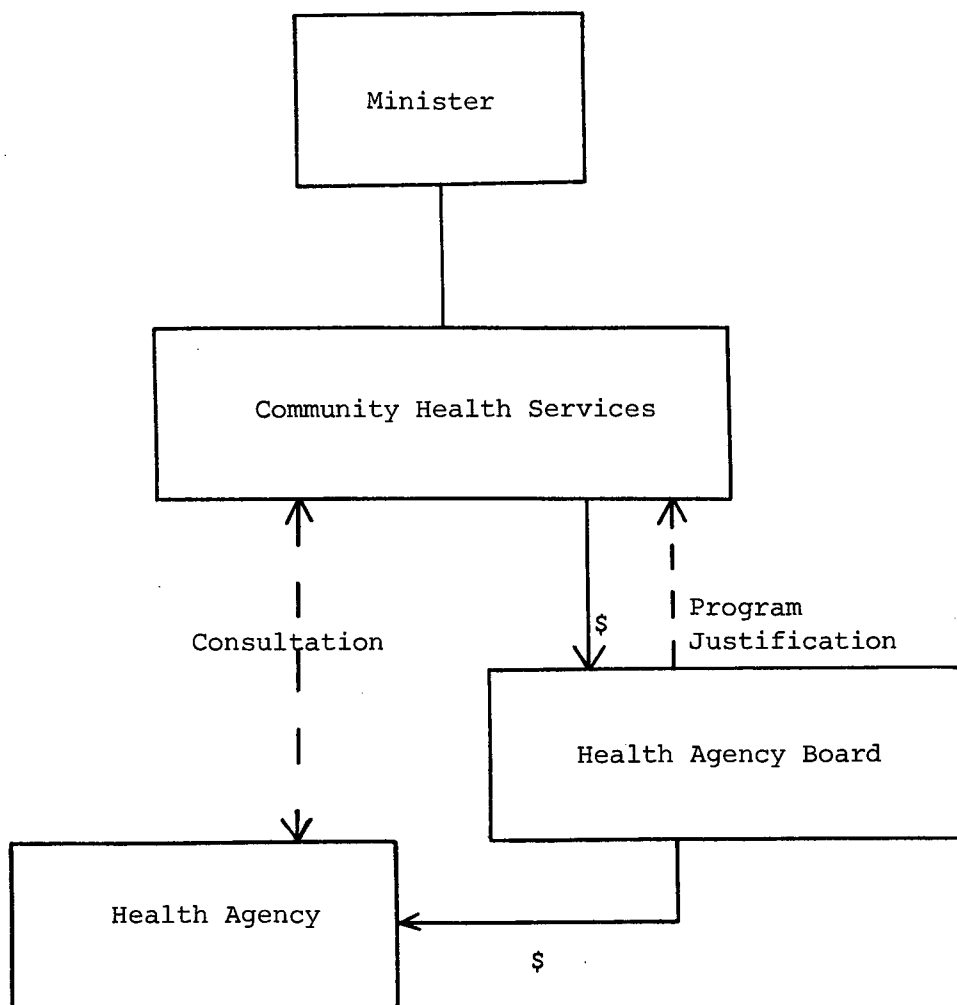
Figure 5.2

The Organization of a Typical Health Agency
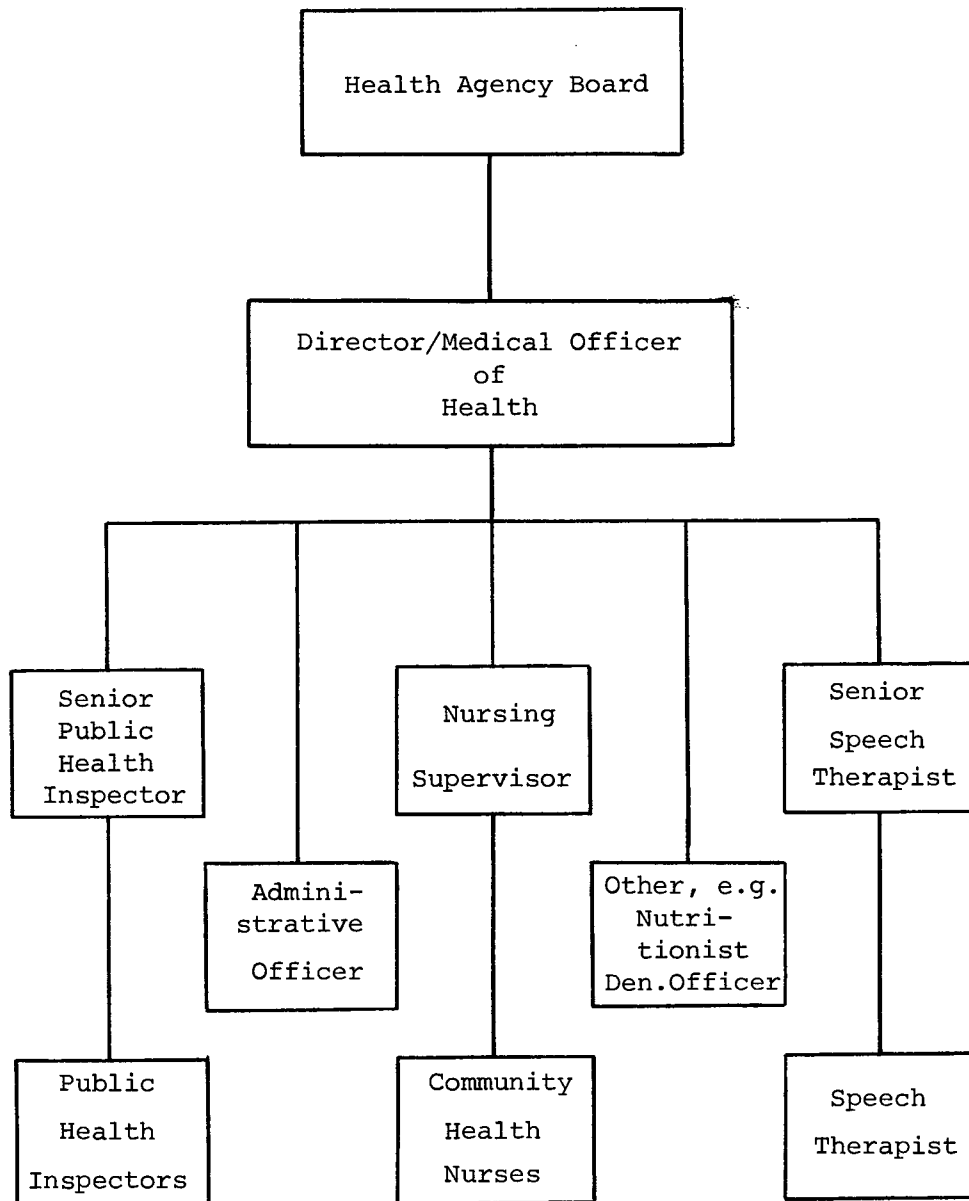
professionals such as speech pathologists, nutritionists and
health educators.

The nursing supervisor is in turn responsible for one
or more staff nurses who may be located in several sub-offices.
The degree of independence in decision making given to the
nursing supervisor will vary, according to her background
and experience, and the management style of the director of
the agency. Thus, the nursing supervisor in a given health
agency may have complete discretion as to how to manage the
nursing program, or only limited authority.

5.4 Community health nursing in Alberta

The community health nurse is probably the most visible
employee of the health agency. The major nursing programs,
common to all local health agencies, fall into the areas of:

1. maternal and child health,

2. school health, and

3. communicable disease control.

Other areas of involvement for nurses are family life
education, family planning clinics, nutrition and general
fitness, the registry of handicapped children and mental
health. In keeping with a philosophy of prevention, nurses
are becoming more involved in providing services to senior
citizens. The Home Care program was implemented throughout
the province in 1978 (it had been operating in some agencies
before this time). In this program, the local health agency

co-ordinates a program of direct nursing care in the home, according to treatment prescribed by a physician.

All community health nurses are members of the provincial nursing association, which licenses them to practice. There is a Society of Community Health Nurses. This society acts as a spokesman for the nurses, arranges for continuing education, reacts to documents and developments in the health care field, and prepares positions and briefs on behalf of community health nurses. Similarly, there is a Society of Community Health Nursing Supervisors.

Each provincial consultant in community health nursing has responsibility for consulting to a number of health units in a given geographical area. Each consultant is a specialist in at least one particular field, such as maternal-child care, pre-school or geriatric care. The consultants also represent the interests of community health nursing to nursing educators, professional groups, other government departments, other provinces and special groups which may be charged with developing province-wide standards of care.

5.5 Background to the introduction of A.C.N.A.R.S.

5.5.1 The need for A.C.N.A.R.S.

Prior to A.C.N.A.R.S., nurses were using the Public Health Nurses' Report form to record their daily activities. The stated purposes of the report provide an insight into

the intent of this form. The <u>purposes</u> were:

1. to provide a record of public health nursing
   services and to give a basis for compiling
   totals of service by area,

2. to provide for a valid appraisal of the
   program and to assist in planning,

3. to provide factual information which may
   then be used when reporting to local Boards
   of Health, and

4. to provide information to the supervisor which
   will assist her to guide and evaluate each nurse.

One of the features of the form was that additional informa-
tion could be recorded under a section called Remarks.

It is evident that the report was intended to gather
data that could be used primarily in managerial control.
To a lesser extent, the data could also be used in strategic
planning and policy formation. Reporting was not standard-
ized throughout the province, and data were not gathered by
the Department for the province as a whole.

The report was intended as a record of direct services
to the community. It was not intended as a record of how
nurses had spent their time each day. Some health units
felt that the form was adequate, but there was generally
strong feeling that the report was inadequate to meet its in-
tended purposes. It was unpopular in many agencies, and had
been discontinued in at least one health unit. Complaints

about the form were directed at its complexity, the wide
variety of interpretations possible for different items, and
the time needed to complete the form on a monthly basis. The
form was also inflexible as to what services could or could
not be reported.

The health unit nursing records committee was entrusted
with reviewing record-keeping mechanisms in use, working to-
wards the standardization of records, and identifying the
type and amount of information that should be reported to
local health services for management purposes. The nurses
report form for public health nurses fell within their juris-
diction.

During the summer of 1976, the nursing records committee
completed a review of all provincial nursing records for
community health nurses. According to the committee, the
input from health units and the city boards of health indi-
cated clearly that the nurses report form was in need of
major revision. The members of the committee felt that a
new approach was necessary. They perceived a need for a
more precise tool for gathering nursing program statistics.
At that time (1976), the development of an information
system for local health services was under discussion in the
Department. A new reporting format was seen to fall within
the scope of this development.

5.5.2 Planning and development of A.C.N.A.R.S.

The need for a new approach having been identified,
three members of the nursing records committee visited
Toronto in January, 1977, to learn about the Ontario nursing
activities system. The Ontario system was regarded as one
which could be used as a model for the system in Alberta.

The nursing records committee resolved in February,
1977, that a computerized nursing activities reporting
system based on the Ontario model be developed and intro-
duced as soon as possible. A report on the visit to Ontario
identified the issues that would have to be dealt with. The
report also noted the uses of the system, potential problems
that might be encountered, and a broad time frame for the
development, testing and implementation of the system. The
proposal for the envisaged system was to be circulated to
various field personnel. It was hoped that their feedback
would be an important input in the development and modifica-
tion of the system.

During the first half of 1977, new report forms were
developed by the committee. Although the Ontario system
was initially used as a model, some of the features of the
new form were quite different from the Ontario model.

The intent of the system was to provide data that could
be used in managerial control and strategic planning. While
there are broad statements of intent, there does not appear
to be any documented evidence of clearly stated and detailed
objectives for the system. There was no documented evidence

containing guidelines of how the data gathered could be used
to achieve the purposes for which the system was intended.

The form was developed in a format that would allow for
the computerization of the data gathered. Computerization
was considered to be time saving, and thus cost saving. There
is no evidence that this assumption was tested, or that any
type of substantive cost-benefit analysis was performed. It
was also felt that the computer reports that could be
produced would make the reporting system a more powerful
tool.

At the same time as forms were being developed, a
detailed instruction manual, covering the use of the system,
was drawn up. This involved deciding upon subject categories,
defining these subject categories, and describing in detail
how the forms were to be completed. This process dealt im-
plicitly with the problems of accuracy, reliability and
validity. At no time do these issues appear to have been
specifically mentioned or explicitly dealt with.

Regional meetings were held throughout the province in
June, 1977, for medical officers of health, and for supervi-
sors and directors of community health nursing. This was to
familiarize them with the proposed forms, and obtain their
feedback. The first field testing of the new form and
instruction manual was done in the Wetoka Health Unit and
Edmonton during September, 1977. The difficulties and
concerns encountered were noted, and modifications were made

to the form and the recording manual. The second series of
field trials, in November, 1977, took place in Edmonton and
in 5 health units. Field testing was preceded by one day's
intensive in-service education for the participating field
staff. After the second series of field trials, further
revisions were incorporated.

5.5.3 Implementation of A.C.N.A.R.S.

In those health units where field testing had not been
held, a one day intensive workshop was held for all nurses
in the unit. This was followed by one to two weeks practice
in completing the forms. A.C.N.A.R.S. was introduced in all
health units, and both city local boards of health, from the
first week of January, 1978.

The three month period, January to March, 1978, was for-
seen as a debugging period, during which errors would have to
be corrected. A high error rate was expected, although ex-
pectations were not expressed in quantitative terms. During
the first month of full operation, 114 errors were listed on
the computer report. Thereafter, the number of errors de-
clined considerably, to a monthly average of less than 20,
after March, 1978.

Initially, monthly, quarterly and annual computer reports
were produced and circulated. Each health unit and city
board of health received a copy of their own statistics.
Copies of the data for all health agencies are kept by Local

Health Services. The statistics of each health unit are re-
garded as confidential. This confidentiality of informa-
tion was an express condition by some health units for their
involvement in the reporting system. If the data were con-
fidential, health units would not be subject to potentially
unfavourable comparisons with other units. Local Health
Services also receive a copy of province wide totals.

After the first six months of operation, the nursing
records committee decided to discontinue the monthly reports.
This was done in response to requests by field personnel,
who felt that they were being swamped by a mass of data too
large for them to handle.

During April, 1978, a workshop was held for directors
of local health agencies, and directors and supervisors of
community health nursing. This workshop covered the inter-
pretation and utilization of computer reports, especially
those from A.C.N.A.R.S.

5.6 The nurses report forms: 1 and 2

5.6.1 Form no. 1

The nurses weekly activities report (Figure 5.3, p. 103)
consists of five sections.

In the first section, on identification, the year, week
and sheet number are noted. This section is also used to
identify:

- the agency,

- the office/sub-office,

- the nurses function,

- her classification (educational preparation), and

- individual identification.

Section 2 records time allocation by program; the time recorded is actually noted according to the age group of service recipients. There are 6 age groups. Time spent in travel, selected local options, clerical work and training others is also recorded. Time data are the only new data gathered; the other sections are all adaptations of information previously gathered. The number of home visits is recorded.

Section 3 records data on group activities:

- the age code of the group,

- number of persons in the group,

- the subject, and

- the time spent (including preparation time) in the group activity.

In section 4, individual contacts, either in person or by phone, are recorded according to the subject dealt with, and the age of the individual contacted.

In the fifth section, screenings, assessments and treatments are recorded according to:

- age group,

- the number within the age group screened, assessed or tested, and

- the number of those screened for whom further
   action is required.

The age and subject coded for the different sections
are shown on the reverse of the report form (Table 5.1,
p. 104).

5.6.2 Form no. 2

The second form, which has 4 sections, is for clinic
attendance, tuberculosis control, and immunization (Figure
5.4 p. 105).

The first section, as in form no. 1, if for identifica-
tion. There is additional room to identify the clinic.

The second section records clinic attendance by:

- age,

- persons immunized,

- persons not immunized,

- those 'new', and

- total attendance for a.m., p.m. or evening.

Recording in the last 2 categories is optional.

In section 3, for tuberculosis control, mantoux screen-
ing is recorded

   - by grade,

   - by age,

   - by number tested, and

   - the number of positive reactors, for both no BCG
      and previous BCG.

BCG records note the age and number vaccinated.

Section 4 records the following data on immunizations:

- the age of persons immunized,

- the immunizing agent, and

- the number of doses administered.

Schick testing and immune serum globulin are also recorded in this section.

5.6.3 The output: forms 1 and 2

Once the data have been computer coded, a variety of reports can be produced for each section. Data can be aggregated, or disaggregated, according to the categories by which they have been collected. For example, data gathered in section 3 of form no. 1 can be used to produce reports showing the number of persons attending group activities and time in group activities:

1. by office, age, and subject,

2. by age and subject,

3. by subject,

4. by office, function, age and subject,

5. for each individual nurse.

Similar reports can be produced for each section; an example of the reports produced is shown in Figure 5.5 (p. 106).

Similarly, the data gathered by form no. 2 can be aggregated or disaggregated according to the categories by which the data are collected. A variety of reports can be produced for each of the sections of this form. (These reports were

Figure 5.3

S.S.C.H. 140

Alberta
SOCIAL SERVICES
AND COMMUNITY HEALTH

NURSES WEEKLY ACTIVITIES REPORT

I. ___ | 1 | 0 | ___ 19

YEAR WEEK SHEET I.D. No.

II.

TIME ALLOCATION BY PROGRAM	Mon.	Tues.	Wed.	Thurs.	Fri.	Office Use Only 21 22
Infant						
Early Preschool						
Late Preschool						
School						
Adult						
Geriatric						
Travel						
Local Option 1						
2						
Clerical						
Training Others						
No. of Homes Visited						

44

III. **GROUP ACTIVITIES**

Age 21	No. of Persons	Subject	Hours 27

21   27

IV. **INDIVIDUAL CONTACTS**

Age 21	Subject 23	Age 21	Subject 23

V. **SCREENINGS, ASSESSMENTS, TREATMENTS**

Age	No. of Persons	24	29	34	39	43
21						

Table 5.1

-5-

CODING

CODE I - AGE: (TARGET POPULATION)

A Infant (to 1 year)

B Early Preschool (1 year to 4.5 years)

C Late Preschool (4.5 years to Grade 1)

D Grades 1 - 6

E Grades 7 - 9

F Grades 10 - 12

G Special Education

H Adult (General)

I Adult (Occupational Health)

J Geriatric (65 - 74)

K Geriatric (75 +)

L Mixed Ages

CODE III - SCREENING, ASSESSMENT AND TREATMENT TYPES

A Audio

B Blood Pressure

C Communicable Disease

D Developmental

H Health Assessment

P Parasites

S Speech

V Vision

E Bath

F Catheterization

G Dressing

J Enema

K Foot Care

L Hemoglobin

M Irrigation

N Oral Medication

R Parenteral Medication

T Suture Removal

U Therapeutic Exercise

W Urinalysis

Y Local Option

Z Local Option

CODE II - SUBJECT

10 Prenatal

11 Neonatal

12 Postnatal

13 Well Child

14 Parenting

15 Observation (at risk)

16 Handicapped/Special Services

17 Child Abuse

18 Poison Control

19 Family Planning

20 Family Life Education

21 Unwanted Pregnancy

22 Communicable Disease

23 TB

24 VD

25 Chronic Disease

26 Mental Illness

27 Mental Health

28 Alcohol/Drugs

29 Smoking

30 Nutrition

31 Exercise/Fitness

32 Obesity

33 Safety

34 Retirement

35 Other Lifestyle

36 Social Services

37 Home Care Assessments

38 Home Care Reassessments

39 Treatment

40 First Aid

41 Followup

42 General Health

43 Public Information/Consumer Information

44-50 Local Options

(JAN./78)

Figure 5.4

Form No. 2

S.S.C.H. 140B II

FORM No. 2

	CLINIC ATTENDANCE		
AGE	persons immunised	persons not immunized	new
infant 0 - 1 yr.			
from 1 yr. to 2 yr.			
other early preschool			
late preschool			
school age			
adult			
geriatric			

11, 12, 13, 14, 15, 16, 17

TOTAL		
A.M.	P.M.	EVEN.

10

YEAR WEEK SHEET I.D. No.   2,0   CLINIC

20

TUBERCULOSIS CONTROL SCREENING (MANTOUX)

III

AGE	No. tested	No. pos. reactors			AGE CODE*	no. tested	no. pos. reactors			AGE	no. vaccinated
		no BCG	had BCG				no BCG	had BCG			
grade 1											
grade 5											
grade 9											
grade 12											

20, 21, 22, 23

* use age code, nursing activities report form

IMMUNIZATION   CODE: DOSES GIVEN = 1st, 2nd, 3rd   REINFORCING = R

IV

AGE	QUAD				PERTUSSIS				SCHICK	DIPHTHERIA				TETANUS				POLIO (SALK)			
	1st	2nd	3rd	R	1st	2nd	3rd	R		1st	2nd	3rd	R	1st	2nd	3rd	R	1st	2nd	3rd	R
infant 0 to 1 yr.																					
from 1 yr. to 2 yr.																					
other preschool																					
school age																					
adult																					
geriatric																					

31, 32, 33 ... 41, 42, 43, 51, 52, 53 ... 61, 62, 63, 64, 65, 66

IMMUNIZATION

AGE	POLIO (SABIN)			RUBELLA one dose	MEASLES one dose	INFLU-ENZA	SMALLPOX		TYPHOID				RABIES — PRE EXPOSURE				CHOLERA doses	TYPHUS doses	PLAGUE doses	IMMUNE SERUM GLOBULIN		
	1st	2nd	R				prim	reinfor.	1st	2nd	3rd	R	1st	2nd	3rd	R				outbreak control	travellers	other
infant 0 to 1 yr.																						
from 1 yr. to 2 yr.																						
other preschool																						
school age																						
adult																						
geriatric																						

67, 68, 69, 70, 71, 72 ... 73, 74, 75, 76, 77, 78 ... 80, 81, 82, 83, 84, 85

MAY 04, 1978   PAGE 75
        COMMUNITY NURSING ACTIVITIES SYSTEM   5A
          NO. OF SERVICES AND REFERRALS FROM SECTION V
           BY OFFICE, AGE AND SUBJECT   FOUR WEEKLY
                                  WEEK 05-08
  #17   04

SUBJECT	SEEN	REFERRED
INFANT		
DEVELOPMENTAL SCRN	7	1
HEALTH ASSESSMENT	13	
VISION SCREENING	2	
	22	1
LATE PRESCHOOL		
AUDIO SCREENING	50	9
DEVELOPMENTAL SCRN	20	
HEALTH ASSESSMENT	13	
SPEECH SCREENING	2	
VISION SCREENING	56	24
	141	33
GRADES 1 - 6		
AUDIO SCREENING	45	4
DEVELOPMENTAL SCRN	6	1
PARASITES SCREENING	2	3
VISION SCREENING	53	8
	106	16
GRADES 7 - 9		
AUDIO SCREENING	1	1
VISION SCREENING	15	4
	16	5
ADULT (GENERAL)		
AUDIO SCREENING	13	1
BLOOD PRESSURE SCRN	4	
	17	1
GERIA (65-74)		
BLOOD PRESSURE SCRN	18	
	18	
GERIA (75 +)		
BLOOD PRESSURE SCRN	7	
PARENTERAL MEDIC	1	
	8	
	328	56
	1,402	221

MAY 04, 1978   PAGE 76
        COMMUNITY NURSING ACTIVITIES SYSTEM   5A
          NO. OF SERVICES AND REFERRALS FROM SECTION V
           BY OFFICE, AGE AND SUBJECT   FOUR WEEKLY
                                  WEEK 05-08
  #18   01

SUBJECT	SEEN	REFERRED
INFANT		
BLOOD PRESSURE SCRN	1	
DRESSING	2	
HEALTH ASSESSMENT	11	5
	14	5
EARLY PRESCHOOL		
COMM DISEASE SCRN	2	1
HEALTH ASSESSMENT	5	2
HEMOGLOBIN	1	
	8	3
LATE PRESCHOOL		
AUDIO SCREENING	3	2
DEVELOPMENTAL SCRN	3	
HEALTH ASSESSMENT	3	2
SPEECH SCREENING	1	
VISION SCREENING	3	1
	13	5
GRADES 1 - 6		
AUDIO SCREENING	107	20
COMM DISEASE SCRN	1	
DRESSING	1	
HEALTH ASSESSMENT	22	4
ORAL MEDICATION	1	
PARENTERAL MEDIC	1	
	133	24
GRADES 7 - 9		
AUDIO SCREENING	1	1
BLOOD PRESSURE SCRN	10	
HEALTH ASSESSMENT	3	1
	14	2
ADULT (GENERAL)		
BLOOD PRESSURE SCRN	8	
DRESSING	1	
HEALTH ASSESSMENT	13	7
HEMOGLOBIN	3	
ORAL MEDICATION	4	2
PARENTERAL MEDIC	4	
URINALYSIS	2	2
	34	11
ADULT (OCC H)		
AUDIO SCREENING	1	
	1	
GERIA (65-74)		
HEALTH ASSESSMENT	1	1
	1	1
GERIA (75 +)		
BLOOD PRESSURE SCRN	2	
URINALYSIS	1	
	221	51

Figure 5.5   Report from Form No. 1

not available at the time of this study).

5.7 A.C.N.A.R.S. Form no. 1

5.7.1 Section 1

Due to the way nurses are identified, data can be produced according to the different features of the identifier. Data can be reported by:

- agency,

- office/sub-office,

- function,

- classification, or

- individual.

5.7.2. Section 2. Time allocation by program

Upon the introduction of A.C.N.A.R.S., this section was regarded as a particularly novel feature. It was felt that the data from this section would be of great use to supervisors and directors.

This section appears to be inappropriately named. Time allocation is actually recorded according to the age of population served, and some other non-client contact activities. Time allocation by program is only measured where programs are clearly directed at those within the particular age categories used in this section. If any program is aimed at

a population that bridges the age spans used, this section cannot measure time allocation by program. If a number of programs are directed at any of the defined populations, then this section is unable to measure the time allocated to individual programs. Instead, in such cases, it measures the time allocated to a number of programs.

Time allocation by age of population served may be an interesting feature, but it is not a particularly helpful quantitative indicator of service delivered. As pointed out in section 4.3.4, activities may vary in the time they require, and nurses may vary in the time they require to perform activities. Time spent on different age groups may bear no real relationship to services performed, outcomes obtained, and the effectiveness or even efficiency of nurses. One may postulate some positive correlation between time spent and effectiveness, but the true relationship is presently well beyond calculation.

This section does provide a neat reporting format. But the relationship between the data reported and processes, outcomes and programs is so indeterminate, that the data are of very little use.

5.7.3. Sections 3 and 4. Group activities and individual contacts.

These sections provide data very similar to data produced by the other systems examined.

5.7.4. Section 5. Screenings, assessments and treatments

This section also notes where further action is required. Much of the data in this section is gathered by other systems. Yet this section provides a compact means of recording the above activity types within the same section.

As reports from form no. 2 were not available at the time of this study, this form is not reviewed.

5.8. General discussion on A.C.N.A.R.S.

5.8.1 Objectives

The need for a new recording form and a new approach was identified in summer, 1976. (section 5.5.1). Yet, no clear and detailed objectives appear to have been stated as guidelines to what data the form should collect, or how the data may be used.

A report following the visit to Ontario in January, 1977, stated the uses of the system as:

A. Local level

        1. program planning and monitoring,

        2. staff allocation, monitoring ratios,

        3. budgeting,

        4. inservice planning based on program needs,

        5. reporting to boards on services, functions,

            staff utilization,

        6. utilization of services.

B. Department level

1. budget allocation,

2. define inservice and educational needs related to programs,

3. program needs,

4. research data and planning,

5. consultant information,

6. reporting to government on services and functions,

7. data to promote changes in university/college programs to meet service and professional needs,

8. data to stimulate professional associations (standards, conferences, research).

The output of the system could be used as a tool in most of the above activities. Yet activity data are only one element among the many needed for the above process. Many other relevant information sources are required. The report did not define how the above processes were to be performed, or the nature of the information required.

The need for clearly defined objectives was noted in a memorandum on the development proposal for a health unit program information system. The memorandum was sent during May, 1976, by a consultant in Local Health Services. It stated that ... "if the objectives of each program are not defined we can hardly deal with a management information system, but rather should conceptualize at the level of descriptive analysis."

5.8.2 Assumptions

Information on activity recording was requested and received (with one exception) from all the other provinces. It was decided to develop the forms using the system in Ontario as a model. In the report on the visit to Ontario, the applicability of the Ontario system to the Albertan situation was seen to depend upon both local and provincial health authorities agreeing with two assumptions. These were that:

1. it is necessary for management purposes at both the provincial and local levels to routinely collect, tabulate and report comparable statistics on the nursing services provided by each Alberta local health authority.

2. it is not feasible to produce these statistics on nursing services at a sufficient level of detail to meet management needs through a traditional manual reporting system (even if standardized across the province), and therefore some computerized reporting system is necessary.

These two assumptions are fundamental to the system as it was developed. Even though there was some wariness in certain quarters about the introduction of a computerized system, these assumptions do not appear to have been seriously evaluated at any stage.

Routine collection, tabulation and reporting of nursing

statistics had been carried out in Alberta and the other provinces for many years. As pointed out in section 3.3.2, the routine reporting of nursing activities implies that these activities require constant monitoring.

The transition to a computerized system was a major innovation, and a substantial change in operating procedures. The rationale for a computerized system was that it would be time saving, and more cost efficient in the long run. As pointed out in section 5.5.2, these claims do not appear to have been analyzed during the development of the system. Neither does the feasibility of a computerized as opposed to a manual tabulation system appear to have been investigated. A computerized system involves time and costs during its development, planning and implementation stages. It also has a greater need for data control clerical staff time. In the light of these factors, the cost argument needs to be carefully evaluated in introducing a computerized system.

5.8.3. Acceptance of the system

One of the major problems identified in introducing the new system was that of obtaining acceptance for it from field and managerial staff at the local level. This was based upon the advice of those familiar with the system in Ontario; field support for the system was crucial. This would involve overcoming a negative attitude towards computer systems based on two less than successful systems introduced for other programs.

A very real effort was made to involve field staff in the development process as much as possible. This was also done to allay fears that the time record would be used as a supervisory tool. The positive potential of the system was strongly emphasized. The savings in local staff time presently spent calculating statistics, was stressed.

The process of system development produced two effects.

Firstly, it sought and managed to obtain the support of field personnel. This was due in large part to the highly interactive nature of the development process. This interaction gave field workers the feeling that their input was regarded as valuable. It also raised the general level of awareness concerning activity recording.

The second effect was, despite some skepticism, to create high expectations of the potential of the system. This was an almost inevitable reaction to the enthusiasm and interaction generated. By constantly stressing the potential of the system, the belief was created that the system would be very helpful to supervisors and directors in a number of vital tasks. It may have been that, with the mystical power of a computerized system somewhat obscuring the issues, some managerial staff were led to expect more from the system than what it was in fact capable of delivering.

Enthusiasm in developing a system is a positive asset. But it must be kept in mind that, unless the enthusiasm and expectations can be shown to be warranted, disillusionment and negative feelings may result.

5.8.4 Recording data

The instruction manual for the nurses report form was extensively detailed to enable the <u>recording</u> of activities to be as <u>accurate</u> as possible. The issues of <u>reliability</u> and <u>validity</u> do not appear to have been dealt with explicitly. Yet the extensive detail of the instructions serve to increase the potential reliability and validity of the instrument (the nurses report form). The intensive one day acclimitization workshops were intended to familiarize nurses with the form. The one to two weeks practice with the form was intended to develop and improve their recording ability.

As noted in section 5.5.3, errors decreased sharply in number after the first month of operation of A.C.N.A.R.S. It was found that feedback to nurses with indications of incorrect recording increased their awareness of their recording, as well as improving their accuracy. This feedback can be provided through some kind of data check in the local health agency, before forms are forwarded to Local Health Services.

5.8.5. Communication of data

As pointed out in section 3.3.1, the <u>status hierarchy</u> of an organization will be possibly the major factor affecting the flow of data through it. A feature of the data flow process is the rule that all correspondence to health unit personnel from Local Health Services must be directed

via the director of the agency. This can give the director the power that certain data may potentially contain. The director thus has some influence and control over the flow of activity data between Community Health Services and his or her nursing supervisor.

The degree of communication, both within and between health units, is likely to be a function of the leadership style of the director (see Section 3.3.1). The nurse supervisor and her style of operation will be fundamentally affected by the style of the director. The amount of comparison of program statistics, and programs and services themselves, which is actually affected between health units, depends a great deal on the director's leadership style.

It was agreed that the input from all health units, and the resulting output, was to be regarded as confidential. This was done to allay fears that other health units would obtain data that might reflect negatively on the health unit concerned. The initiative for comparing data thus rests with the health units themselves.

The cognitive style of supervisors and directors was taken into account in developing output formulas for the data gathered. The format of data reports was developed by the nursing records committee, which was composed predominantly of nursing supervisors. Input was also obtained from other field personnel.

5.8.6 Usefulness of systems data

During the summer of 1978, I undertook an
evaluation of the A.C.N.A.R.S. system in compiling guide-
lines to the use of the data produced by the system. This
work included a series of field visits, to both city boards
of health, and to three health units. Discussions were held
with medical officers of health, supervisors and directors
of community health nursing, nursing consultants and members
of the nursing records committee.

Many straightforward ways in which the data could be
used were identified. For example, if objectives are set
for a program, in terms of the quantity of service to be
provided, A.C.N.A.R.S. provides the means for measuring
whether or not objectives have been met. A.C.N.A.R.S.
provides data that can be studied for trends in patterns
of service provision. The data can give an indication of
changes in emphases, priorities or service utilization. The
data may act as an indirect indicator of demand for certain
services.

Comparisons of data from A.C.N.A.R.S. can only reveal
indicators of trends. They can in no way indicate what type
of actions or decisions are necessary. Appropriate action
can only be undertaken once a total perspective of a situa-
tion has been obtained.

As indicated by Bergwall, Reeves and Woodside (section
2.6), one cannot interpret accurately measured activities

without an understanding of their context. Accurate measurements of activities are not in themselves a basis for action, without an overall understanding of the situation. On the other hand, an understanding of the situation may be a sufficient basis for action, without any accurate measurements of activities. While A.C.N.A.R.S. can provide accurate measurements of activities to complement an understanding of a situation, it can in no way provide the understanding that is so necessary in the overall diagnostic process.

It is perhaps because of raised expectations in this regard that I found a certain degree of frustration among those involved with the system and its output. While not altogether negative, many of those I spoke to were skeptical of the usefulness of the system. They were elusive when asked for concrete examples of how the data was being used, or could be used. There was generally very positive feeling on the usefulness of data in reporting back to boards. But, at all levels, people indicated they were unable to find much use for the data, other than to report to boards or other agencies, and to provide a quantitative inventory of nursing work performed.

Within Community Health Services, it was felt that A.C.N.A.R.S. provided valuable baseline data on a province-wide basis, which had not been available beforehand. It was also strongly felt that A.C.N.A.R.S. acts as an awareness raising mechanism, by making nurses more aware of the

activities they are performing. In this way too, it acts
as an educational tool. While this is true, it is difficult
to say to what extent it is so.

When being used in analyzing services provided, the
data are more useful if seen in the context of clearly
stated and operationally defined objectives. In any further
development of A.C.N.A.R.S., it would appear to be vital that
objectives be clearly and operationally defined. If this is
not done, the process of development may lack direction.
This could lead to a "cart-before-the-horse" type of situation.
In this case, after well-intentioned and good looking refine-
ments are made, the users may be hard pressed to find
specific ways in which the data obtained can be used.

CHAPTER 6

6.1 General discussion

In the previous chapters, most aspects of activity recording systems have been discussed in detail. In particular, the general examination of activity recording systems was the topic of chapter 4, while an in-depth analysis of a particular system was made in chapter 5. In this final chapter, a few outstanding issues will be considered to round out our discussion of Canadian activity recording systems.

Firstly, I look at the issue of whether a common model could be derived from the systems examined in chapter 4. Secondly, I shall examine the general and all important problem of activity recording systems evaluation. Thirdly, I will consider alternative methods of obtaining the information that is presently gathered through activity recording. Finally, a summary of the findings of this work will be made.

6.2 A common model

The concept of a common model assumes that activity recording systems have essential and identifiable commonalities in objectives, organization, and operation. If such commonalities do exist, a model system could form the basis of community health nursing activity recording in all provinces. Furthermore, such a model could also provide a standard for the evaluation of existing systems.

In chapter 4, provincial and federal activity record-
ing systems were examined in detail. Based upon this analysis,
can a model Canadian system be derived?

At first glance, the possibilities look promising.
Referring to Table 4.1 we can see that the majority of activi-
ties on which data are collected are common to all systems.
These activities fall into the basic categories given in
Table 6.1 (p.121).

However, closer analysis of the information in chapter
4 shows that, despite similarities, differences between
systems are substantial. In particular, systems objectives
are in all cases vaguely defined. Thus, the data items col-
lected, the methods of data collection, the organization used
to obtain the data and the utilization of the information
collected are substantially different from one activity record-
ing system to another. These differences make each system
unique to such an extent that a meaningful common model can-
not be derived.

6.3 Evaluation

The objective of evaluation is to examine how well a
system is doing what it is supposed to do. With activity re-
cording systems, there are two quite different aspects to be
considered. The first is the performance of the recording
system itself, and the second is the impact of the data
produced by the system.

Table 6.1

Basic Categories for Activity Recording

1. Immunizations.

2. School health services.

3. Screenings.

4. Groups and/or classes.

5. Child health conferences.

6. Maternal care (prenatal.
                   (postnatal.

7. Infant care.

8. Clinics.

9. Meetings/liasons.

10. Communicable diseases.

11. Mental health/illness.

12. Health promotion.

13. Home assessments/reassessments.

14. Family planning.

15. Total home visits.

The explicit calculation of the costs of the recording system is also an important consideration. The main elements of these costs would be: nursing time spent in recording, costs of supplies, data processing expenditures and the administrative overhead. The performance and impact should be weighted against costs, to derive a measure of the cost-effectiveness of a system.

6.3.1 Systems performance

When evaluating the performance of an activity recording system, one wants to know whether the system is collecting the appropriate data, as well as the quality of data collected.

For every recording system, one should be able to specify a minimum essential data set, consisting of those data items which are necessary for the system to fulfill its objectives. For the systems studied in chapter 4, this presents a difficult problem. As was shown then, systems objectives are generally so vaguely defined that it is not possible to derive from them a minimum essential data set. Thus, evaluators may have to form their own judgements on the adequacy of data collected, or rely on the subjective opinion of supervisors and directors.

Data quality is affected by the accuracy and reliability of data recording. These factors were discussed in sections 3.2.2 and 3.2.3. As indicated then, it may not be possible to estimate accuracy and reliability in absolute terms. An

assessment of these factors may thus have to be based on the judgement of those most closely involved with the system. These would include directors, supervisors and the nurses themselves.

6.3.2 The impact of activity data

The impact of data supplied by activity recording systems is the real effect that these data have on the decision making processes of supervisors and directors. There are a number of factors influencing this effectiveness. They were reviewed in sections 3.3 and 3.4. These factors all need to be explicitly considered in any evaluation process.

The evaluators try to establish, by whatever means are available, whether the impact of the data is significant. From systems objectives, one ought to be able to derive performance parameters, which could be measured to assess the impact of the data. However, objectives are generally so vaguely defined that performance parameters cannot be obtained from these statements. Thus, it is extremely difficult to measure whether systems objectives are indeed being fulfilled.

There is another, more fundamental problem. It is extremely difficult to identify the causal connections between activity data and the outcome of decision making processes. These processes are so unstructured and undefined, that the effect of activity data on them cannot be measured in objective terms. Therefore, no objective measures or performance

parameters for the impact of activity data can be specified.

Thus, it becomes necessary to ask the users of the data themselves how helpful they find the data produced by activity recording. The answers they give are their perceptions of the impact of such data. They must be carefully cross-examined, to substantiate their claims or disclaimers. In this way, the evaluators are able to obtain the most accurate perspective of how useful the data truly are to those for whom it is primarily intended.

6.4   Alternatives

I have indicated that no common model can be derived from those studied. I have also shown the difficulty in trying to objectively evaluate the performance of a system, and the impact of activity data. At this stage, it is imperative to consider some alternatives to regular activity recording.

6.4.1   No activity recording

The first, and most obvious alternative, is to abandon activity recording. What are the implications of not collecting any activity data?

In the absence of a clear understanding of the decision making processes of directors and supervisors, it is difficult to establish the effect of having to do without activity data. The intuitive knowledge that supervisors and directors have

of the activities of their nurses would not be affected
much. However, the more refined measure that activity data
give to this knowledge would be lost.

Activity data are particularly helpful in communications
between health service providers. Communications between
community health nurses and others involved in health care
provision is vital, for each party to convey to the other an
understanding of what they are doing. Such communication is
fundamental to the rational organization and operation of
health care services. Furthermore, it increases in importance
as the scope of community health nursing programs grow, and
the complexity of the organizational environment increases.

Activity data provide quantitative means of communica-
tion that can be adequately understood by all parties. No
other data could fill this role in quite the same way. Thus,
due to the communication needs between the various parts of
the health care system, some activity data are indeed
necessary.

6.4.2 Special studies

Special studies may be designed and structured to collect
whatever particular data are required. For example, they may
collect data on nurses' qualifications, interests and
opinions, data on the content of nursing activities, or inform-
ation on the outcome of services provided.

Special studies have their limitations. "It is very im-
portant to recognize that .... special studies are really

sample surveys and therefore subject to the caution that their results are only _estimates_ of the true values". (National League for Nursing, 1977, p. 23). Particular attention must be given to the survey design and the time when the study is done, to ensure that the sample obtained is representative of the real situation.

Special studies require staff orientation to the method of the study. Familiarizing nurses with the instrument to be used is time consuming. Accuracy and reliability may also be problems in short term sampling, due to nurses' lack of familiarity and experience with the forms involved. Using trained outsiders would overcome this problem, but would be prohibitively costly. All these factors need to be considered when weighing the relative cost and benefit factors of such studies.

The representativeness of a study will depend, among other things, on the _predictive validity_ of the study method. Predictive validity could be tested by simultaneously performing activity recording and special studies, and comparing the results. If their predictive validity is high enough, special studies could be used for reporting purposes, and could possibly replace the more traditional and established activity statistics from activity recording.

If special studies have well defined objectives, and are appropriately designed to fulfill these objectives, they are potentially a more flexible tool than regular activity

recording systems. Under these conditions, they may be a viable and appealing alternative to regular recording systems.

6.4.3 Computerization

There seems to be a tendency, in the literature and in practice, to assume that computerization of existing systems will resolve their current problems and inadequacies. In this sense, computerization is regarded as a qualitatively different development, giving rise to an alternative to present practices.

A computerized system is much more powerful than a manual system, in terms of the quantity and variety of output it can produce. It is most useful as a means of reducing or avoiding tedious manual manipulations of data. However, while computerization is most advantageous in these respects, it is not a substantially different means of collecting activity data. In essence, manual and computerized activity recording systems function in much the same way.

The key to obtaining data that will have an impact on decision making lies in the process of systems development. Initially, one needs to establish clearly what it is one wants to do. Clearly defined objectives will act as an indicator of the type and amount of data to be collected. Computerization does not do away with the need to carefully follow the above procedure.

The importance of data on decision making is a function of the decision making processes of supervisors and directors, and not of the quantity and variety of data produced. While computerization of activity data may affect the quantity and variety of reports produced, it will not directly affect the decision making processes of data users.

6.5 Conclusions

This study has focused on two aspects of activity data collection. These are

1. the _need_ for activity data, and

2. the _usefulness_ of these data.

As shown in section 2.4, there is a need for activity data. However, these data play a limited role in the functions performed by directors and supervisors. Many other kinds of information are also required. In most cases, these other types of information are of greater importance than activity data. The only function where activity data appear to be of primary importance is that of reporting nursing activities to boards, government officials and other health care workers.

As it is evident from the discussion of section 4.4.1, many of the systems' objectives are stated in vague and non-operational terms. Therefore, the data that need to be collected could not be identified. It was thus not possible to verify whether the data being collected were appropriate

or adequate to enable the systems to fulfill their objectives. Unless objectives are operationally defined, they do not act as definite data collection guidelines. Attention must be given to the process of defining objectives clearly.

Poorly defined objectives may be a reflection of the unstructured nature of the decision making processes in community health nursing management. If the ways in which activity data are to be used are not clearly established, then refining the features and functioning of the recording system may have little effect on the usefulness of the system. A more thorough understanding of the decision making processes of directors and supervisors is required to identify where and how the data may be used.

Special studies can collect a broader range of data than regular activity recording systems. Therefore these studies are a potentially more flexible and useful tool than such present activity recording systems, if they can be shown to have a satisfactory predictive validity. If special studies are cheaper than recording systems, they are a more cost-efficient way of obtaining activity data. It is thus recommended that the predictive validity and costs of special studies be further investigated.

The analysis presented in this work implies that a thorough revision of presently operating activity recording systems is necessary. The relevance and potential usefulness of presently gathered data need to be reassessed. I believe

that such a review would lead to changes in some of the current practices. An example is that of noting the duration of activities. In the context of the discussion in section 4.3.4, this feature ought to be discontinued.

Even more drastic action may be warranted in some cases. For example, the activity recording system used by the Vancouver Health Department was recently discontinued. This particular action would seem to be in line with some of the indications of this study, that much of the time and energy spent on activity recording is not worthwhile.

In summary, this examination of the fundamental concepts and functioning of activity recording indicates a reassessment of the commitment to activity recording systems in community health nursing is needed. It is believed that such reassessment will lead to major changes in the collection and use of activity data.

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