INFORMATION NEEDED TO SUPPORT
HEALTH HUMAN RESOURCES MANAGEMENT

HHRU 92:1

FEBRUARY 1992
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Prepared for The National Task Force on Health Information
October 22, 1991

HHRU 92:1R
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February 1992
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I. **INTRODUCTION**

The supply, distribution, quality, deployment, organization and utilization of health human resources are of interest to multiple stakeholders, and interest in policy research and planning in this area is particularly strong in all jurisdictions. The purpose of health human resources activity is to identify and achieve the optimal number, mix, and distribution of personnel, at a cost society is able to afford. Due to inter-provincial migration, policies in one jurisdiction seriously affect the situation in other jurisdictions. Most problem areas require national coordination of proposed solutions.

The management of health human resources includes three information-based functions: monitoring and evaluation, planning, and policy research. Understanding successful retention strategies, anticipating change in supply and requirements, and measuring workload, turnover, or attrition all require sufficiently developed databases in these areas of interest. Planning activities include making appropriate use of resources, identifying current and future net requirements and developing new service delivery options. All of these activities presume the availability of accurate and consistent information. Efforts in policy development to increase productivity, or improve retention, among other concerns, are seriously hampered by the absence of reliable databases.
II. KEY ISSUES IN HEALTH HUMAN RESOURCES MANAGEMENT

Understanding the key issues in the management of health human resources provides a clearer perspective of its information requirements. Structural factors, such as system organization and financing, physical resources, professional governance and regulation, and training/supply policy have an impact upon health human resources. Similarly, service delivery issues, such as organizational structure, management style, workplace conditions, also influence the net requirements for health human resources. Planning issues such as ability to adjust supply in order to meet forecast demand will also influence net requirements, especially in the short-term. Planning undertaken separately for each profession, rather than starting from future services and moving up through skills and competencies required to provide such services, will fail to challenge the somewhat artificial boundaries between the groups, and will not provide the most appropriate and cost-effective way of delivering services in a jurisdiction.

III. CURRENT SITUATION

Some information is currently available in two forms: printed reports and computer-based files. Included in this is information related to education and training programs, supply, utilization, licensure/certification/registration, and immigration. The proliferation of stake-holders at both the national and provincial levels has contributed to the variety and diversity of health human resources information and produced an assortment of data sources. Licensing bodies, professional associations, provincial pay agencies,
immigration authorities, and special surveys, comprise some of the main sources. Consequently, many gaps exist in the information base that is currently available because it has not been developed specifically for planning and research purposes. The absence of a rational, comprehensive human resources planning framework has meant that information requirements for such activities at the national or provincial level have not been articulated and defined.

IV. RECOMMENDATIONS

- That National Health Information Council endorse the Federal/Provincial effort to continue the National Physician Database into Phases II and III and promote access to it through the publication of regular reports or through other means.

- That the Canadian Nurses Association and Statistics Canada collaboration on the national registry for RNs examine and document the major limitations of these data with the intent to improve the quality of these.

- That Health and Welfare Canada, in collaboration with the provinces and the national professional and/or regulatory bodies, conduct a systematic review of data currently published in "Health Personnel in Canada."

- That the National Health Information Council support the enhancement of the workload measurement system.

- That federal and provincial governments collaborate with the regulatory bodies for nursing occupations to develop nurse supply and nursing service requirements models based on common definitions of data elements and a common model.

- That federal and provincial governments establish regular communication channels with national and provincial licensing/registering bodies for other health personnel.

- That Health and Welfare Canada and Employment and Immigration Canada collaborate on the sharing of immigration data.
That provincial governments require human resource impact statements from all agencies that submit regular or special (operating and capital) funding requests to the government.

That the use of scrambled unique identifiers be promoted among the federal and provincial agencies officially responsible for data development and dissemination.
INFORMATION NEEDED TO SUPPORT
HEALTH HUMAN RESOURCES MANAGEMENT

I. INTRODUCTION

The supply, distribution, quality, deployment, organization and utilization of health human resources are of interest to multiple stake-holders: governments, regulatory bodies, professional associations, unions, training institutions and educational authorities, service providers, self-help groups, and the public. In short, interest in policy research and planning in this area is particularly strong in all jurisdictions. It is, therefore, paradoxical that information requirements for health human resources management have been erroneously associated with simply counting supply or, at best, estimating requirements based on some arbitrary population:personnel ratio. The paradox is that, for more than two decades, research in health human resources has been severely hampered by the limitations imposed by the absence of reliable data. The ensuing introductory discussion will provide an overview of the breadth as well as depth of information requirements in this field.

1. Health Human Resources and Service Delivery

In a general climate of economic restraint, cost-effective delivery of and equitable access to health services has become the primary focus of health services research. As a service industry, by far the largest component of health care costs are labour costs. While the specific statistics vary by jurisdiction and/or by year, health human resources
expenditures are never below 60 percent and may, sometimes, be as high as 80 percent of total operating costs. Research efforts, however, to understand the relationship between supply and demand and to examine causes of accelerated costs have been severely limited by the availability of reliable data for longitudinal analysis. More recently, a national workshop on priorities in health human resources research (Attachment 1), prepared a consensus statement which identified three broad key areas where the research evidence was weakest. Weakness was found first, in the assessment of population health needs by undertaking demographic analyses, epidemiological surveys, and effectiveness research to assess changing technological and clinical capabilities. The second area of priority identified exploratory research in the efficient deployment of health human resources to meet the health needs of the population, including the investigation of barriers which impede progress towards that goal. Finally, the workshop identified the examination of policy implementation strategies and the study of the subsequent political/socioeconomic implications of such strategies to be of primary importance. The workshop chose to emphasize the desirability of establishing human resource requirements based on the health needs of the population as opposed to the more usual way of using a utilization-based definition of service requirements.

The needs-based approach, called the epidemiological approach, draws on such techniques to assess the prevalence of diseases and the burden of illness in the target population. Where it becomes useful to human resources research is in considering the appropriateness of care in managing those conditions. Then, health deficits can be
converted to health care service or task requirements. Alternative mixes of inputs (human and non-human) can be identified to meet these task requirements including those in prevention and health promotion. Human resource requirements set against currently available skills would determine net requirements. Such research design - while conceptually clear and feasible - is, in practice, unlikely to be undertaken due to current data limitations.

2. **Purpose of Health Human Resources Management**

The purpose of all health human resources activity is to identify and achieve the optimal number, mix, and distribution of personnel, at a cost society is able to afford. Briefly stated, it is not simply establishing the required number of physicians, or nurses, or pharmacists, or technologists, etc.; it is establishing the numbers in each of these and other groups, given the most cost-effective and appropriate mix of required personnel and their equitable geographic distribution based on varying service needs.

Current health human resource management activities are often fragmented - given the number of stake-holders - and specific human resource planning initiatives have often been hampered by inadequate data and questionable methodologies. It should be noted that the training and employment of health personnel are within provincial jurisdiction and activities undertaken at the national level are in support of policies developed at the provincial level. However, due to inter-provincial migration, policies
in one jurisdiction seriously affect the situation in other jurisdictions. Most problem areas require careful coordination of national solutions.

3. **Health Human Resources Management**

The management of health human resources, in its broadest sense, entails various activities that can be assisted and/or enhanced by the availability of relevant information. More specifically, the three information-based functions of human resources management are: monitoring and evaluation, planning, and policy research.

Monitoring of relevant information - designed to document particular or general workforce trends or to identify specific issues - can serve several purposes. For example, systematic monitoring of socio-demographic and employment characteristics of human resources in an institution would develop personnel profiles within the agency which would contribute to management’s understanding of successful retention strategies. Or, to better anticipate regional shifts in supply and/or requirements, monitoring information in each/both of these areas would prove very useful. As well, systematic monitoring of deployment patterns of health personnel would provide accurate estimates of workload, turnover, attrition, and recruitment.

Health human resource planning activities entail the examination of current supply and requirements to identify imbalances, as well as the examination of future supply and requirements. In addition, such activities involve making appropriate use of resources - including the assessment of professional legislation and of training and
skills - to meet service needs. Finally, planning also entails developing new service delivery options to meet future service requirements. All of these activities presume the availability of accurate and consistent information.

Research to increase our understanding of factors affecting supply and requirements such as productivity, retention, case-mix, etc., to improve forecasting models and to evaluate the impact of clinical, operations, or public policies at various levels, requires reliable databases; otherwise, efforts of policy development become seriously hampered.

In summary, this brief introductory discussion of health human resources management vis à vis health care and population health, and the role of information in assisting and enhancing such activities, provides a succinct overview of the breadth and depth of information required for such purposes.

II. KEY ISSUES IN HEALTH HUMAN RESOURCES MANAGEMENT

To gain a better appreciation of the specific information needs of this sector, a more detailed discussion of key issues in the management of health human resources provides a clearer perspective. This discussion is not intended to be an exhaustive inventory of all issues; it will deal only with the main concerns that are not specific to one profession or another. Concrete examples that may be profession-specific will be used to elaborate the discussion.
1. **Structural Factors That Have Impact Upon Health Human Resources**

A number of structural factors, some not immediately related to human resources, have major implications for the management of health human resources. The most important among these is system organization and financing. A delivery system based on institutional care, public funding of such care and fee-for-service remuneration for medical services has specific human resource implications that warrant careful examination. The recent emphasis on healthy public policies and the consequent shift to community-based care will also have major implications for human resource planners.

Reliable and accurate information on system organization and financing, as well as personnel mix and deployment, is required to evaluate the impact of organization and funding on service and human resource requirements.

Rational public policy in these areas should be based on informed judgements on how structure relates to process and how it influences output. For example, in light of the evidence regarding the efficiency of alternative financing of medical services - HMOs or CHOs versus fee-for-service - what will be the physician resource requirements in a jurisdiction partially (or totally) funded in this way? Or, if a policy that shifts delivery of hospital care to the community is implemented, what kind of training will be required for nurses providing community-based acute nursing care? In addition, physical resources such as health care technology will have impact on the requirements for human resources; for example, the impact of lithotripsy on the demand for surgeons. In sum, while health human resource requirements do not
determine system structure and financing policies - the latter are often grounded in federal and provincial legislation and are very difficult to revise - these policies have serious implications for the efficient delivery of services and hence for determining the optimal number and mix of personnel, and the training of such personnel.

Another important structural factor with human resource implications is professional governance and regulation. Such statutory legislation is enacted primarily to protect the public interest; however, it is often used to promote professional self-interest and protect "turf" through exclusive scope of practice clauses. Furthermore, where such scope does not exist, entry-to-practice and credentialling requirements often act to further protect professional interests. Important questions on service and the cost impact of professional legislation can be addressed prior to the enactment of new provincial legislation, since such statutes are not uniform throughout the country. For example, it would be interesting to investigate whether those provinces that have extended exclusive scope of practice for some health professionals have achieved better health outcomes for their citizens, and therefore are providing better services; cost implications can also be determined from such analyses. The province considering such legislation can, therefore, learn from the experiences of other jurisdictions and make an informed decision. In addition, the supply of health personnel in one jurisdiction is dependent not only on the existence of health professions legislation (with or without exclusive scope of practice) in that province but also on the existence of such legislation in the other provinces.
A third important structural factor that has impact in a number of different ways on net human resource requirements is training and supply policy. Domestic production policies, usually developed by the training sector and in response to its own needs (but sometimes in conjunction with professional associations) generally have national implications, given the free movement of workers between provinces. From a narrower local perspective, a better alignment of training and service sector policies could prove to be useful, especially where recurring personnel imbalances exist. For example, there appears to be some overlap in the scopes of practice of dentists and dental hygienists in the area of scaling and cleaning teeth. With an appropriate division of labour, professionals with higher entry-to-practice requirements could provide only the technically more complex services, commensurate with their higher level of preparation. Coordination between the sectors would ensure the production of an appropriate number of each type of practitioner, as determined by population health needs, and, therefore, would result in the most cost-effective mix of personnel.

2. Service Delivery Issues That Have Impact Upon Health Human Resources

A number of service delivery issues have serious implications for human resources management and, therefore, present another area of information requirements. In particular, the institutional sector, where the vast majority of health personnel are currently employed, organizational structures vary appreciably: from the traditional with
an administrator at the helm to the corporate or to the matrix organization. The evolving structures influence the size of the workforce and the quality of care, as well as costs.

Along with organization structure, agency-specific management practices have human resource implications. The availability, comprehensiveness, and use of MIS, for example, in support of the personal style of top-level managers may result in very different workplace conditions and costs. Recruitment, retention, turnover, and attrition are directly affected by management practices, including the monitoring of such trends for the purposes of improving human resources planning activities. Such activities also entail management decisions regarding the use of substitute, auxiliary, or supportive personnel which are always governed by employer policies circumscribed only by restrictions imposed by professional legislation.

Workplace conditions appear to coalesce into variable combinations of the above-mentioned factors, which culminate in the creation of an agency (or hospital) culture that may be perceived to be supportive or hostile to certain staff. Registered nurses, for example, have perceived the market to be particularly hostile in recent years, and their negotiators have demanded improved conditions, along with better wages, as part of the collective bargaining process. Traditional health human resource planning is concerned with the scope of workforce shortages and factors contributing to that phenomenon. Until these factors are identified, development of appropriate strategies is difficult to undertake. A key question for human resource planners, then, is: What
factors are contributing to workforce shortages? Service delivery issues that result in the inefficient use of human resources can play a major role in explaining shortage situations. Accurate information collected systematically could provide more definite answers to this question.


The literature in this field highlights several problems which are manifested in different forms across professional groups and jurisdictions; the absence of reliable information pertaining to human resource planning contributes to those problems. So far, very slow progress has been made towards a more systematic approach for estimating human resource requirements. Difficulties in demand forecasting arise from many factors; those arising from changes in delivery patterns (system organization) and service goals (service delivery) were previously discussed. In addition, difficulties arising from the lack of objective workload-based method of estimating demand, especially problematic for some professional groups, contributes to the complexity of the task. Whereas in the past professional judgement was a commonly accepted methodology, it is no longer used except by the professions themselves when promoting their own point of view.

Difficulties in supply forecasting arise from the inability to test or verify underlying assumptions regarding the current workforce, such as career histories, turnover rates, inactivity ratios, part-time and casual employment, etc. But even more elementary
problems of defining a professional group in order to count their numbers often present
great difficulties for planners. The information sources supporting supply forecasting
should be as broad and flexible as possible so that assumptions such as "a nurse is a
nurse is a nurse" - preposterous and unfounded - are not taken as given. For example,
the number of available nurses is reduced when the number employed is taken into
account; a further decrease in number is likely when considering numbers employed in
permanent positions, and even further when the number of full-time nurses is taken
into consideration. Measurement problems in supply arise mainly from multiple sources
of data and different dates of record (from the same source).

Problems in adjusting supply to meet forecast demand are difficult to address
without the creation of a comprehensive planning database jointly developed and
available to both the education and health sectors. Often, there is considerable lag
time needed to make such adjustments and the proactive approach is the only solution
to that problem. Finally, from a broader perspective, a failure to integrate human
resources planning with strategic planning (service and financial planning) continues to
be a problem. Planning undertaken separately for each profession, rather than starting
from future services and moving up through skills and competencies required to provide
such services, will fail to challenge the somewhat artificial boundaries between the
groups, and will not provide the most appropriate and cost-effective way of delivering
services in a jurisdiction. In order to be comprehensive and innovative in planning and
policy development, certain information conditions have to be met - both regarding quantity and quality of data.

The National Health Information Council has recently developed a Template for Health Information which provides a comprehensive conceptual framework for the study of factors associated with health and well-being. It also puts in perspective the inter-relationships of human resources to health care and to wellness; the discussion in the introductory section of this report describes the most important among these and identifies specific data requirements. It should be noted that these inter-relationships are not unidirectional, and that health human resources, in turn, have an impact upon various aspects of service delivery, such as quality of care and access.

III. CURRENT SITUATION

While information requirements for the human resources sector are complex and, ideally, should be approached from a perspective that yields a comprehensive, dynamic database, certain workforce-related components of such data already exist in one or another format at various jurisdictional levels. The availability, quality and comprehensiveness of data on population health and health status measures, and on service organization and capital inputs (including physical resources such as buildings and technology) have presumably been the subject of other Project Team reports. The discussion here is limited to information pertaining to the health workforce.
1. Information Currently Available

Information is currently available in two forms: printed reports and computer-based files. It is difficult to claim that any list of reports or files pertaining to health human resources can be comprehensive, given the proliferation of stake-holders at both the national and provincial levels in this field. A preliminary listing of the main ones will provide a sense of the variety and diversity of such information. Most of the printed reports come from special projects, while some are generated for administrative purposes and a few are made available on an on-going basis, at equal time intervals. Computer-based information is, generally, more systematically collected. Included in this is information related to:

Education/Training Programs

- National data (Statistics Canada) on educational enrolment and output by occupational group.

- Provincial reports (from B.C., Alberta, Ontario, and Saskatchewan) on educational enrolment and output for health occupations.

- Provincial data (all provinces) on enrolment and output for 30 occupations reported in "Health Personnel in Canada" (Health and Welfare Canada).

- Inter-provincial comparative data on undergraduate medical students (Association of Canadian Medical Colleges).

- Inter-provincial comparative data on post-graduate medical students (Canadian Post-M.D. Education Registry).

- Listing of educational programs, entrance requirements, length of training, and qualifications awarded in the "Annual Directory of the Canadian Hospital Association" (Canadian Hospital Association).
Supply

- Census data by occupational group.

- National Graduates Survey - Census-based data (Employment and Immigration Canada), by field of study, by occupation and by age. Special abstracts are possible.

- National data for RNs from provincial licensing bodies (Canadian Nurses Association and Statistics Canada) provides information on numbers, socio-demographic characteristics and employment.

- Data on physicians (Southam Medical Database) containing a listing of physicians by location, year and place of graduation, and specialty. Annual statistical tables are published by Health and Welfare Canada.

- The Canadian Medical Association developed its Physician Resources Database from a Masterfile of Canadian physicians and on survey data obtained every four years. Data on demographic characteristics are linked to data on practice patterns.

- The 1984 report "Physician Manpower in Canada, 1980-2000" submitted by the Federal/Provincial Advisory Committee on Health Human Resources, contained data on supply and requirements by major specialty groups.

- The first of a three phase project to establish a comprehensive national database on physicians is now near completion (National Physician Database). Data on fee-for-service physicians include socio-demographic characteristics of physicians and patients and physician activity patterns by specialty. This covers about 80 percent of physicians in Canada. Phase II will include data on fee-payments by other public agencies (e.g. Workers' Compensation, etc.), as well as information on non-fee payments (e.g. salaried, sessional fees, contracts, etc.). Phase III will include information on non-clinical activities of physicians (e.g. academic, administrative, etc.).

- Data on supply and requirements for Physiotherapists, Occupational Therapists and Audiologists|Speech-Language Pathologists were published in the "Federal/Provincial Report on Rehabilitation Personnel", 1988, submitted to the Conference of Deputy Ministers of Health.

- Annual publication of "Health Personnel in Canada" provides year-end statistics by occupation (30 groups) and by province covering a 10-year period.
Utilization

- National Physician Database contains information on fee payments; practice patterns and productivity measures can be obtained from these data.

- Data on hospital-based personnel from the Annual Return of Health Care Facilities - Hospitals (Statistics Canada). Include (for other than medicine) numbers employed, full-time-equivalents, paid hours, and workload.

- Employer surveys of filled and vacant permanent positions in the health sector (Alberta, Saskatchewan, annually) and of difficult-to-fill vacant permanent positions (B.C., quarterly; periodically in Ontario).

- "Job Futures 1990" contains labour market information and career opportunities to 1995 (Employment and Immigration Canada).

Licensure/Certification/Registration


Immigration

- Periodic publications on occupational entry requirements, qualifications required for registration/certification/licensure by province or territory (Employment and Immigration Canada).

- Information provided to the provinces on the annual number of landed immigrants by immigrant class, intended field of health occupation and by province (Employment and Immigration Canada). Data on temporary employment authorization can be obtained upon request.

- Information provided to the Federal/Provincial Advisory Committee on Health Human Resources on "designated occupations" to manage the flow of health care workers from abroad (Employment and Immigration Canada).

The variety of provincial information currently available and the multiple sources from which these data are drawn present a major drawback to any type of collaborative planning or research effort. Even within the same jurisdiction, information on training and education, if available, may not be compatible with information on supply or labour force behaviour. A key problem, even when all these data are collected at the individual level, is the absence of unique identifiers that could link the data collected by various efforts and so provide a more comprehensive information base. For example, with unique identifiers it is relatively easy (the computer technology is available) to link information from regulatory bodies to those of special surveys and census surveys. A national system of issuing unique identifiers could provide specific human resources information, including inter-provincial migration, as well as population health and service utilization information, at relatively low cost.
2. **Sources of Information**

While specific sources of information for the above-mentioned items have been already identified, there are other sources which could, potentially, provide relevant data. Following is a list of generic sources which includes those specifically named.

**Licensing Bodies**

For groups requiring a licence to practice a profession. Such data sources will exclude personnel with relevant training but not licensed.

**Professional Associations and Societies**

For groups requiring mandatory registration. These data provide information on those who choose to be registered at a point in time and thus exclude potential workforce not employed in the field and possibly some employed in the field with other titles who are not registered. For groups without mandatory registration but who have exclusive use of title, numbers can be ascertained with the relevant professional body, but it cannot be known how many are practising without registration. For groups without either mandatory registration or exclusive use of title, membership data are all that is available. These data will likely exclude some personnel employed in the field with the relevant titles.
Provincial Pay Agencies

For groups paid directly by provincial pay agencies; beyond physicians, there is considerable inter-provincial variability. This source will exclude personnel paid by other means.

Federal Taxation Data

For those who are self-employed professionals. It cannot provide any detail on specialty or area of work, such as pediatric oncologists or obstetric nurses, for example, nor will it include those health professionals who are employed in a related field, e.g. academic physicians or nurse educators.

Employment and Immigration

For new entrants from abroad, by self-reported profession. Information on socio-demographic characteristics, training and qualifications are available, but have not, traditionally, been made routinely available to health human resource planners (provincial authorities).

Surveys and Other Special Purpose Data

Provincial sources include special surveys of consumers of services, of sub-populations, of employers, and surveys of personnel. The data are subject to all the methodological limitations of surveys. Special purpose data such as the Southam
Medical Database and the National Physician Database are also subject to limitations; the degree of methodological rigour will determine their "robustness".

3. Gaps Existing in Current Information

Once again, an exhaustive list of gaps that exist in the information currently available cannot be presented without an exhaustive list of all available information. Nevertheless, it is useful to discuss a few general problems of existing data.

- Census data by occupational group provide point-in-time estimates (snapshots). The data can be used to establish the socio-demographic profile of an occupational group but do not lend themselves to longitudinal analyses. For example, percent change over time may be calculated from these data, but attrition rates from a profession cannot be estimated nor can average annual rates of change, making the usefulness of census data very limited.

- National data on nurses covers only registered nurses; data on total registered nursing assistants/licensed practical nurses, aides, orderlies, etc. in all service settings are unavailable. A broader perspective towards planning is required to even begin to address shortage problems. Without information on other nursing categories, it is impossible to examine alternative staffing possibilities (such as team nursing) and their impact on service delivery.

- Absence of national data for groups other than RNs and Physicians; provincial databases may exist but, depending on professional legislation, may not be comparable. Licensure, certification, and registration procedures by definition yield different qualities and quantities of information. Where inter-provincial variation exists in the legislation, data comparability will be greatly reduced.

- Most provincial data on health human resources are limited to head counts. Details about specialty, employment, labour force activity, etc., if available, are self-reported and subject to serious limitations. Without adequate resources to test and verify data quality to prepare these for research purposes, even simple descriptive statistics will be impossible to obtain.
Employment data are available only in a few provinces from special surveys and are not amenable to inter-provincial comparisons. Since there is no coordination or collaboration between provinces in this area, individual efforts do not yield collective returns.

Hospital-based workload data lack specificity in some professions; some data for others are altogether non-existent. Consistent basic reporting requirements to facilitate determination of case load management guidelines could provide important information for assessing quality of care. The inconsistency of provincial reporting requirements at present does not allow the generation of useful workload measures.

Since the system is hospital-based, the existing information is mainly for the institutional sector. Very limited administrative information exists on community-based services, mainly because of its funding, one method that does not require detailed accountability. The almost total lack of information on service requirements in the public health sector and, consequently, on its human resources requirements, has created a large knowledge gap in this area.

No systematic information exists about health professionals practising in the private sector (who are being paid by other than public funds). The size of this sector varies by province; therefore, inter-provincial comparisons could prove useful from a policy perspective. Special surveys, systematically administered, could yield useful information.

In summary, these gaps exist in the current information base because such information generally exists primarily for administrative purposes, i.e. for licensing one professional or paying another, and not specifically for planning or research purposes. The absence of a rational, comprehensive human resources planning framework has meant that information requirements for such activities at the national or provincial level have not been articulated and defined. At the international level, WHO had described in 1971, and in some detail, data requirements for the development of studies in health human resources (Attachment 2). Preliminary discussions regarding the
feasibility of developing a comprehensive nurse planning database in B.C. are underway. The Health Human Resources Unit has developed a preliminary model of such a database. The following list describes the components of such a database, and could serve as an example for a prototype.

**Information Components for a Model for Nurse Planning Database**

- unique identifier
- Social Insurance Number
- name
- home street address
- work street address
- city of home
- city of work
- postal code of home
- postal code of work
- registration number
- unit of work (ward number)
- structure of work (patient care system)
- position
- education - when, where, how much
- gender
- age
- marital status
- children
- registration status
- registration history
- employment status
- regular (full, part); casual (full, on-call)
- union affiliation
- work schedule
- hours worked
- wages per individual
- length of employment
- seniority
- job description
- statutory provisions
- licensing standards - foreign; provincial; national
- contractual provisions
- benefits - pensions
- personnel records (start date, end date, transfers)
- - exit interviews
- employer policies re: leave (education, personal)
- child care, orientation, hiring preferences, nurse:patient ratios
- employing facility - structure, number of beds, hospital role, status, dft vacancies
- UIC statistics - provincial, national
- college and university training programs
- - enrolments, attrition, enrolment demographics, curricula, training costs - to student; to educator
- - wage rates for other selected professions
- enrolments for other selected professional training programs
- - attrition from other selected professional training programs
- - costs of other selected training
- provincial population demographics
- inter-provincial migration
- utilization data
- patient acuity measures
- disability data from Worker's Comp and UIC
- hospital and educational accreditation standards
- economic indicators - provincial
- - prime rate
- - inflation rate
- - GDP
- - unemployment rate
- - productivity indicators
- - taxation data (aggregate)
- - physician supply
IV. RECOMMENDATIONS

In general, data currently used for health human resources planning and research activities are secondary data, compiled and developed from administrative information. Very rarely may primary data be available through surveys of special sub-populations (e.g. specific occupational groups or, employers of such groups). Thus, recommendations regarding human resource information requirements are based on possible action to improve and build on what already exists.

1. To Improve Existing Databases

- That National Health Information Council endorse the Federal/Provincial effort to continue the National Physician Database into Phases II and III and to complete the information package on physicians (specific data comparability recommendations are contained in the report of the Project Team on the Comparability of Health Services Information) and promote access to it for the various stake-holder groups through the publication of regular reports or through other means.

- That the Canadian Nurses Association and Statistics Canada collaboration on the national registry for RNs examine and document the major limitations of these data with the intent to improve the quality of these by: a) changing the date of record to provide a more complete picture of the year, b) investing more resources to the data verification and clean-up aspects of such data development, and c) making this information available to a broader user-group and through machine-readable media.

- That Health and Welfare Canada, in collaboration with the provinces and the national professional and/or regulatory bodies, conduct a systematic review of data currently published in "Health Personnel in Canada" to enhance its accuracy and completeness and to reconcile it with data from provincial sources.
· That the National Health Information Council support the enhancement of the workload measurement system through the implementation of the Management Information Systems guidelines.

2. To Develop New Databases

· That federal and provincial governments collaborate with the regulatory bodies for nursing occupations to develop nurse supply and nursing service requirements models based on common definitions of data elements and a common model. The RN supply model developed by B.C. could serve as a prototype.

· That federal and provincial governments establish regular communication channels with national and provincial licensing-registering bodies for other health personnel in order to promote the systematic development of cooperative health human resource databases that fully describe supply.

· That Health and Welfare Canada and Employment and Immigration Canada collaborate on the sharing of immigration data (sufficiently disaggregated to be useful to health planners), including socio-demographic characteristics of migrant populations.

· That provincial governments require human resource impact statements from all agencies that submit regular or special (operating and capital) funding requests to the government. The role of the federal government would be one of national coordination of the criteria to be included in such statements and of national dissemination of the research evidence.

3. To Coordinate/Link All Databases

While the issue of inter-provincial coordination has been addressed in another report (Project Team on Data Comparability), the concern here is the long-term goal of linking databases to make the most efficient use of the resources invested in creating/developing multiple data sets by different stake-holders.
That the use of scrambled unique identifiers be promoted among the federal and provincial agencies officially responsible for data development and dissemination, in order to obtain a comprehensive administrative database comprised of individual components that are complementary to one another and could be supplemented by periodic and regular survey data such as Census surveys or health status surveys of sub-populations.
ATTACHMENT 1

EXECUTIVE SUMMARY FROM THE WORKSHOP ON PRIORITIES ON HEALTH HUMAN RESOURCES RESEARCH
EXECUTIVE SUMMARY

This workshop, funded by the National Health Research Development Program (NHRDP), was held on September 27 and 28, 1989 at the University of British Columbia in Vancouver. It was attended by 27 academic and government representatives from the federal, provincial/territorial levels. A discussion paper on the issues and activities in health human resources, prepared by Lourdes Flor of Health and Welfare Canada, served as background material for workshop participants. Two papers were presented: 1) Overview of problem areas by David Pascoe (Manitoba), and 2) Current status of health human resources research by Marc-André Fournier (University of Montreal) prior to two workshops.

Workshop 1, entitled Prioritization of Problems, included the following topics for group discussion:

Shortages

This group found that the issue was not one of shortages or surpluses but one of appropriate mix of manpower and barriers to changing the current mix. While shortage situations can be 'real' or simply a redistribution problem, the issue to consider is what combination of skills/personnel and delivery models will provide for the needs of the population.

Surpluses

This group developed a conceptual framework for health human resources planning. They concluded that population health needs should define the mix of manpower rather than professional assertion of need. In essence, to switch the onus of proof of need to the providers.

Retention and Deployment

This group concluded that the definition of need was complex; problems centering on recruitment and retention were related but the latter was more acute. Also, distribution and management strategy/politics could be addressed through a better mix and more efficient utilization of personnel.
Workshop 2, entitled Identification of Research Gaps, included the following topics for group discussion:

**Program Evaluation**

This group identified that there are research opportunities in distribution/redistribution incentive programs with a focus on process evaluation, and alternative designs to the randomized control trial (RCT); examination of service needs (definition of skills and training required); focus on evaluations that are not program-specific but taken in the context of societal values (the village square vs the chi square).

**Planning/forecasting**

This group focused on different models that embodied regional, short-term and long-term planning. Use of current models was accepted if changes in technology, personnel mix, and service delivery mechanisms were incorporated as key variables. Simulation modeling was identified as a potentially useful tool.

**Organizational Design**

This group discussed the roles of government, educational institutions, professional associations and regulatory bodies, and the influence of public perception, employers and unions, in fostering or impeding health structural reorganization. They proposed that research should be aimed at documenting performance relative to legislated scope of practice, public accountability, and how effectively statutory acts represent the public interest. As well, alternate production possibilities should be a key consideration of future research.

Workshop 3, the Identification of Priority Research Areas, was preceded by brief comments on the purpose of health human resources planning by Dr. Armineé Kazanjian. The group in its entirety participated in the consensus development workshop, with Dr. Stephen Gray acting as facilitator. They defined the following priorities in health human resources research:

1. Assessment of population health needs by examination of demographic analyses, epidemiological surveys and effectiveness research (changing technological and clinical capabilities).

   Addressing population health needs from an efficiency perspective by research into alternate production and service delivery possibilities (both in an ideal situation and taking account of current scope of practice limitations), as well as an examination of the direct and indirect implications of surpluses/shortages.
2. Exploration of the optimal number and mix of providers to meet the health needs of the population.

Research related to development of policies to achieve efficient mixes by examining resource allocation decisions between competing service requirements; and by investigating political, legal, economic and social barriers which impede progress toward a more efficient deployment of human resources.

3. Examination of policy implementation strategies and the study of subsequent political/socioeconomic implications of such strategies.

Research into the fiscal and organizational modalities which promote a more efficient mix of health personnel through the analysis of the costs (both economic and political) of implementing specific public policies, as well as the cost of no policy intervention. Figure 2(a) illustrates the current health human resources situation while 2(b) indicates what the process should be.

Concluding Remarks

Academic researchers and policy analysts have indicated that national health insurance has been a missed opportunity to implement organizational change and to consider a more efficient use of health human resources. The Canada Health Act is a newer opportunity to apply lessons learned from these analyses. A stated commitment by the government to health promotion and a healthy public policy provides another opportunity to implement changes in the organization and financing of health care. So far, the focus of manpower policy has been cost control; given the current rate of diffusion of health care technology, quality of care and accessibility have become major areas of public concern, providing an additional avenue for policy formulation and the implementation of structural change.

In summary, three policy areas that impact health human resources planning are: professional governance and regulation, manpower supply policy, and delivery organization and financing. The crucial interrelationships between these three areas have not, heretofore, been fully investigated and warrant much closer attention. The participants to the Workshop concurred that research in these areas is not only important in understanding and explaining the current situation, but also central to the development of public policy levers with which governments can take responsible action. In fact, the deliberations of Workshop participants resonate very well with the particular health human resource areas of concern expressed by the NHRDP's Committee of Provincial and Territorial Representatives. The workshop setting facilitated the exchange of perspectives and provided the necessary detail for identifying specific gaps in research which can be bridged given the current state of the art.
Figure 2(a)
Current Health Human Resources Situation

Context of Political, Social, Economic Barriers/Opportunities

Population Health Needs

Programs/Services

Mix of Human & Non-Human Resources

Current Supply

Scope of Practice & Training

Organization Design

Workshop on Priorities in Health Human Resources Research
September 27 & 28, 1989
Vancouver, B.C.
Figure 2(b)
Framework For Establishing Research Priorities

Population Health Needs

Programs/Services

Efficient Mix of Human and Non-Human Resources

Context of Political, Social, Economic Barriers/Opportunities

Current Supply

Scope of Practice & Training

Organization Design

Workshop on Priorities in Health Human Resources Research
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ATTACHMENT 2

DATA REQUIREMENTS - WHO SCIENTIFIC GROUP ON THE DEVELOPMENT OF STUDIES IN HEALTH MANPOWER, 1971
DATA REQUIREMENTS

A WHO Scientific Group on the Development of Studies in Health Manpower recommended the development for manpower planners of a detailed list of the information required, perhaps supplemented by model questionnaires that had been satisfactorily field tested under varying conditions. As an initial effort in this regard, the Scientific Group included in its report\(^1\) a list of the major information categories it considered potentially relevant to manpower planning, discussing the special significance of, and the problems associated with, each category. These categories were more a checklist of items for possible inclusion in the data collection design than a mandatory list of minimum requirements, and indeed, depending on the planning approach and the specific problems to be studied, some are of little or no relevance. The report of the Scientific Group includes supplementary comments on the potential uses and limitations of these information categories, which are listed below.

(1) Demographic data

Present and projected population by age and sex, population density and distribution
Migration
Life expectancy
Present and projected birth and death rates

(2) Economic information

Patterns and tendencies regarding national, health sector, and personal income and expenditures
Cost of providing health services and of maintaining the different manpower categories
Cost-effect estimates for selected health programmes
Employment rates and distribution according to major occupational groupings
Health insurance benefits

(3) Health status and needs

Mortality and morbidity data according to major causes, age, sex, and geographical distribution
The extent to which the leading causes of death and illness result in a demand for health care and in disability
Environmental, nutritional, cultural, and other factors affecting health status

(4) Use of health care services by the population

Health services used (or "met" demand) according to number, types, quality, and effects
Characteristics of users, including their attitudes and knowledge regarding health services use and the health system that provides them
Approximate volume of services desired (and/or needed) that are not obtained, according to type of service
Characteristics of those who desire (and/or need) services
Reasons for not obtaining desired (and/or needed) services

(5) Health manpower supply

Data, by manpower category, on the number, activity status, sex, age and/or year of graduation, work, geographical location, and speciality qualifications of personnel

(6) The health system and health manpower utilization

Data on the number, size, characteristics, and distribution of health facilities, on their staffing patterns including job vacancies, and on their functional interrelationships
Data on the diverse aspects of health manpower productivity, functions in different settings, and institutional, organizational, and legal contexts within which health personnel are active.

(7) Health manpower training

Quantity and quality of applicants for training'
Enrolments by year of study'
Institutional objectives and orientation
Duration of study
Number and qualifications of teaching personnel
Actual and potential capacity of training institutions
Student attrition and repetition and their major causes
Data on past graduates and the revalidation of foreign-earned degrees
Training costs
Content and organization of curricula

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'In some cases it may be necessary to obtain a disaggregation of applicant and enrolment data according to such additional variables as sex, ethnic origin, linguistic group, and residence.
(8) Health manpower planning in the national context

Information about (a) planning bodies, professional organizations, educational and service institutions, and consumer and political groups interested in health manpower and health services; (b) non-health sector requirements for trained manpower; (c) the present government's policies, priorities, and time remaining in office; (d) long-range development plans and prospects; and (e) administrative capacities and constraints.