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# Using Individual Patients' Needs for Nursing Human Resources Planning

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## **Key Implications for Decision Makers**

- Effective human resource (HR) planning using a patient needs approach requires input from stakeholder groups including patients and their families.
- The key needs to be considered in HR planning for patients with End Stage Renal Disease are symptoms, disease effects on daily life activities, and the number of other health problems.
- It is not possible to implement a patient needs-based model for HR planning in Atlantic Canada because patient and HR information systems are inadequate, and there is insufficient evidence regarding the impact of nursing on patient need.
- HR planning based on patient needs requires information systems that encompass the full health care continuum (acute, ambulatory, long-term, home care).
- There is need to build linkable information systems across the Atlantic region.
- To facilitate inter-provincial, multi-site studies, there is a need for new approaches to the ethics approval processes (e.g., reciprocal agreements that recognize approval from other sites and provinces).
- Multi-sector research partnerships require (a) financial support dedicated to building and maintaining collaborative relationships, and (b) flexible time lines to accommodate unexpected contextual changes in the health care system or government.

## **Executive Summary**

Traditional Human Resource Planning (HR planning) strategies have provided less than satisfactory and only temporary relief to the nursing resource pressures within the health care system. The crisis-management approach has done little to promote an effective, efficient and stable workforce. This study, involving 24 investigators and 23 sites, examined ways to develop a patient needs-based approach to HR planning and used End Stage Renal Disease (ESRD) as the example.

### **Patient Needs-Based HR Planning Is Not Possible**

No matter how we looked at the findings, it was clear that patient needs-based HR planning is not feasible in Atlantic Canada. Further, there was no evidence that a patient needs-based approach is a priority within the HR planning sector. The evidence was irrefutable: patient and HR information systems are inadequate, and there is no evidence from nursing intervention trials that nursing can have a significant impact on the identified unmet patient needs.

### **The Range of ESRD Patient Needs is Extensive**

Our focus group findings showed that, over the course of their illness, people living with End Stage Renal Disease experience a very broad range of unmet personal health and health system needs. However, stakeholder groups in different sectors (patients, care providers, policy makers) failed to agree on which needs should be included in HR

planning. It became clear that effective human resource (HR) planning using a patient needs approach requires input from stakeholder groups including patients and their families.

### **Individual Patient and Family Unmet Needs at One Point in Time are Relatively Low**

Our findings showed that when we assessed 134 patients, approximately 7% of the ESRD population in Atlantic Canada, the level of unmet need at that time was quite low (ranging from 0% to 30%). However, some individuals had a high level of need in specific areas. The most important ESRD patient needs to consider in needs-based HR planning are the number and severity of symptoms, the disease-effects on daily living, and the number of other health problems. The questions of whether, and in what ways nursing could have an impact on these needs could not be answered. Other than our consultations with ESRD experts, we had no firm evidence to indicate that nursing can reduce, delay or prevent any or all of these patient problems. We also have no evidence about the level of nursing skill or skill-mix, or the time commitment needed to effectively influence these patient needs.

### **Related Information Systems are Inadequate**

The patient database inventory revealed that only the acute care sector in each of the Atlantic Provinces has centralized information systems. However, these information systems vary across sites and are not linked. Further, standardized information is limited to that dictated by the Canadian Institutes of Health Information and includes only in-

patient and day surgery data despite the change in health care delivery from acute care to other sectors (ambulatory, long-term, home care).

Likewise, the HR database inventory indicated that all sectors (acute, ambulatory, long-term, home care) maintain separate HR databases regarding nursing staff. HR information is not standardized or linked to patient databases.

### **Multi-Sector Research Requires Attention**

The multi-sectoral nature of the investigative team and the large number of sites for data collection raised many issues that require attention. Our experience suggested that in order to facilitate inter-provincial, multi-site studies, reciprocal agreements must recognize ethics approval across sites (service provider agencies, universities, governments) and among provinces. Furthermore, our experience suggested that multi-sector partnerships require (a) financial support dedicated to building and maintaining collaborative relationships, and (b) flexible time lines to accommodate unexpected contextual changes in the health care system or government.

## **Context**

In 1999, the Atlantic Consortium for Research Utilization in Nursing was founded to create a venue for nurse administrators, researchers, and policy makers to discuss ways of doing and using research in nursing services. These stakeholders expressed urgent concerns about nursing Human Resource planning (HR planning) in Atlantic Canada. Members cited budget constraints, competing interests, and a crisis management approach as deterrents to an effective, efficient and stable nursing workforce. This study explored a comprehensive, systematic, informed, client-centred approach to HR planning as a way to address these concerns.

### ***Study Goal***

To develop and test a population health needs approach to establish, monitor, and predict nursing service requirements for patients with a particular health condition and use End-Stage Renal Disease (ESRD) as an example. The study attempted to explore the relationship among the health needs of one population, patients' use of nursing services, and their health outcomes. A needs-based approach to HR planning could provide policy makers with the means to develop strategies to meet the needs of the particular population, in this case ESRD, and to respond to changing population needs over time. For purposes of this study we defined "need" as whatever the respondent said was a need.

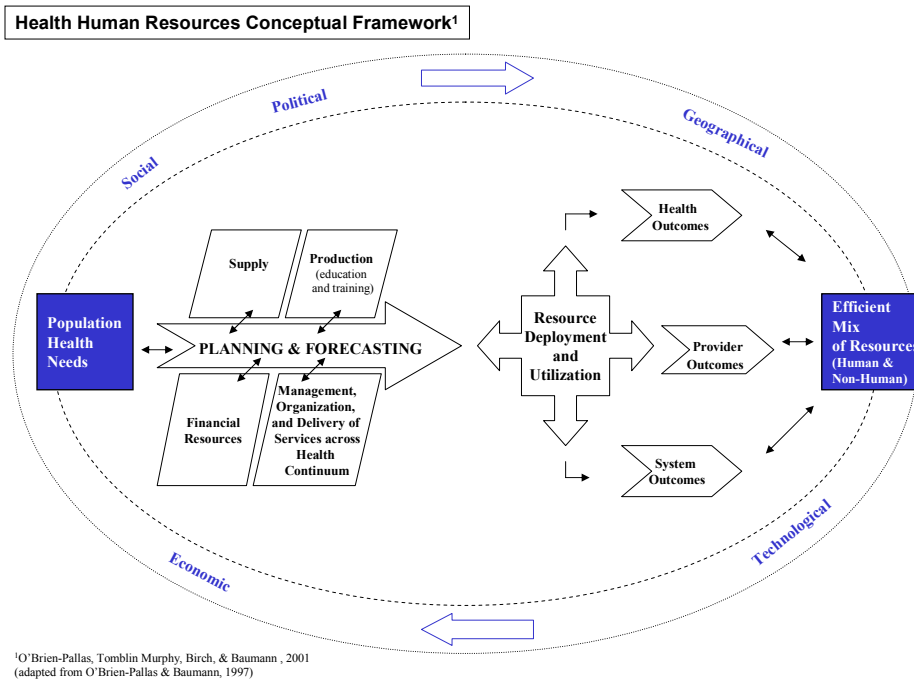
### ***Study Objectives***

- Develop a needs-based model (NBM) for nursing HR planning for one health condition
- Involve relevant stakeholders to decide on information and data requirements for a NBM for nursing HR planning.
- Inventory and evaluate gaps in information and data resources in Atlantic Canada
- Determine nursing resource requirements for ESRD using a NBM.
- Build partnerships among stakeholder groups, enhance awareness about and foster a collaborative approach to HR planning.

Predicting nursing service requirements, at the policy or practice level, is a complex and costly procedure that has traditionally ignored crucial evidence-based factors and processes. Without evidence-based HR planning, the likelihood of securing an adequate number of nurses and deploying them effectively and efficiently is small. The use of a comprehensive needs-based model for HR planning, supported by information systems and infrastructure, could improve our planning processes.

This study brought together, for the first time, Atlantic Canadian stakeholders with particular interests in health HR planning (managers, policy-makers, researchers, educators, clinicians and consumers). We tested the relevance of NBM and attempted to implement the model. Following consultation beyond the research team, we selected ESRD as a disease model for this approach to HR planning for several reasons. The number of people receiving treatment for ESRD is growing rapidly in Canada<sup>i</sup>. Rising treatment costs and rising nursing care requirements in any care setting have substantial implications for the Canadian health care system. Despite these implications and despite research evidence that many ESRD patients have a compromised quality of life<sup>ii, iii</sup>, the types and levels of their met or unmet needs have not been well described. The literature suggests the need for the development, testing and use of a dynamic NBM that accounts for needs and how each factor may influence other factors.

## Theoretical Framework:



This study is informed by, and tests elements of a conceptual framework developed by O'Brien-Pallas, Tomblin Murphy, Birch and Baumann<sup>iv</sup> [Fig. 1] This framework is designed to include essential elements of HR planning in a way that captures the dynamic interplay among factors that have previously been conceptualized in isolation of one another. The framework provides a guide to decision-making that takes account of current circumstances (e.g., supply of workers) as well as those factors that need to be accounted for in making predictions about future requirements (e.g. fiscal resources, changes in worker education and training). This open-system framework includes factors that have not always been part of the planning process (e.g. social, political, geographic, economic, and technological). Central to the framework is the recognition that health human resources must be matched as closely as possible to the health needs of the population.

## **Highlighting Framework Elements Most Relevant to This Study<sup>v, vi, vii</sup>**

### ***Population health need:***

The multiple characteristics of individuals in the population that create requirements for health services. Addressing the health needs of the population provides the motive, context, and justification for HR planning practices. In this study we targeted individual patient needs.

### ***Supply:***

The actual number, type, and geographic distribution of regulated and unregulated providers (e.g. Registered Nurse, unit assistant). Supply is variable and is related to production elements and factors such as recruitment/retention, licensing, regulation and scope of practice. In this study, we targeted numbers and types of nursing providers (Registered Nurse, Practice Nurse, technician etc.) of care to patients with ESRD.

### ***Health, provider and system outcomes:***

Indicators selected to monitor the effectiveness and quality of health human resource practices (e.g. measuring the effect on population health, provider health, job satisfaction, etc., and system costs and efficiencies). In this study, we targeted individual health outcomes including level of disease burden and health status.

### ***Efficient mix of human and non-human resources (e.g. fiscal resources, physical plant, space, supplies, equipment and technology):***

The number and type of necessary resources to achieve the best population, provider, and system outcomes.

### ***Context*** (represented in the outer broad band of the framework):

Factors outside the health care system that influence population health, the health system and the HR planning process.

## **Implications**

This study identified the personal health and health system needs of ESRD patients and the adequacy of information systems for determining the HR implications for nursing.

The findings led to the following implications:

### ***Articulating Patient Need***

- The key needs to be considered in HR planning for patients with ESRD are symptoms, disease effects on daily life activities, and other health problems. These personal health needs had the most effect on patient health status.
- Needs-Based HR Planning requires input from a range of stakeholder groups including patients and their families. The findings from these stakeholder groups demonstrated a wide divergence from those of policy-makers, clinicians and senior decision-makers.

### ***Information Systems***

- There is an urgent need to build standardized, linked patient and HR information systems and for provinces to support regional needs-based planning. The findings showed little evidence of such systems and preliminary interest in inter-provincial collaboration in this area.
- Meaningful patient-needs based HR planning requires information systems to encompass all health care delivery settings. The findings showed no evidence of such a system outside the acute care sector or any indication that it is an immediate priority, despite the shift in health care-delivery to the ambulatory, long-term and home care sectors. This finding constitutes a major obstacle to evidence-based HR planning.

### ***Needs-Based HR Planning***

- It is not feasible to implement a patient needs-based model for HR planning in Atlantic Canada because patient and HR information systems are inadequate, and there is insufficient evidence regarding the impact of nursing on patient need. Further,

there is no evidence that a patient needs-based approach is viewed as a priority within the HR planning sector.

### ***Process Issues – Collaborative Multi-provincial Research***

- Our experience suggests that, to facilitate inter-provincial, multi-site studies we need reciprocal agreements that recognize ethics approval across sites, such as service provider agencies, universities, governments, and among provinces.
- Our experience suggests that multi-sector research partnerships require funding practices that assure (a) financial support dedicated to building and maintaining collaborative relationships, and (b) flexible time lines to accommodate unexpected contextual changes in the health care system or government.

### **Approach**

#### ***Defining A Needs-Based HR Planning Model***

The Needs-Based HR planning model (NBM) used in this study builds on the utilization-based model approach. The utilization-based model of planning relies on estimates of the demand for health care providers and selected demographic characteristics, and uses these to project demographic estimates and demand for health providers. Our NBM estimates future HR planning requirements based on population health needs. It is our premise that the current distribution of health care workers and services is not optimal for addressing population health needs, and that these resources must be redistributed if health needs are to be met. Ideally, our NBM: (a) identifies principle factors influencing the need for nurses, (b) estimates how the level of each factor will change and (c) forecasts the number of nurses needed for the future. This approach requires accessible databases of information about the levels of patient needs (in this study, patients with ESRD) and a formula for translating measurements of need into nursing-resource requirements.

To create a NBM, we first identified a number of key factors (population demographics, population health status, treatment options, patient attributes, nursing work patterns) and associated information requirements affecting the demand for nurses based on earlier work<sup>viii</sup>. We discussed our model (Appendix A) with the members of the Advisory Panel who are experts in HR planning, HR policy, and information systems.

### ***Determining Needs for Needs-Based Modeling***

We took two approaches to determine which data might be most meaningful to monitor for needs-based HR planning around ESRD. We asked various stakeholders about what needs should be considered in doing the planning, and we assessed the current level of need of individual patients across the Atlantic Provinces.

### **Multi-Sectoral Stakeholders' Perceptions.**

We held 34 focus groups with 47 patients, 26 family members, 55 clinicians (nurses, physicians, nutritionists, etc.), 41 clinical decision makers (chiefs of nephrology, chiefs of nursing, nursing managers), and 28 policy makers from the four provincial departments with responsibility for health care (Appendix B). The groups were held in either of the official languages. The patients were predominantly women (57%), urban dwelling (59%) and ranged in age from 22 to 87 years (average = 57). Their treatments included pre-dialysis monitoring, haemo- or peritoneal dialysis, and/or one or more transplants. The family member participants were predominantly female (65%), and rural dwelling (75%).

The questions (Appendix C) varied somewhat for each stakeholder group but all participants understood that the purpose of the groups was to determine the needs and factors that should be considered for HR planning. We coded the transcripts of the groups by the types of personal health need or health-system need discussed by participants.

### **Individual Patient Assessment.**

At a full day workshop, the full research team decided that the primary focus for individual patient assessments should be the individual health needs, with a secondary emphasis on the health system needs that had emerged in the focus groups. Our 30-minute telephone assessment tool consisted of the Kidney Disease Quality of Life (KDQOL™-36<sup>ix</sup>), with the addition of a few questions developed for this study and a few questions from instruments currently in use for assessing health care system performance or the health of the Canadian population (Appendix D). We selected the tools and individual items only after several rounds of discussion with the full research team. We scored a need conservatively as being unmet only for responses at the lowest end or below the mid-point of the scale.

The sampling plan was designed to assess approximately 200 patients (representing 10% of the ESRD population in Atlantic Canada) stratified by provincial population, distribution of official language and by disease stage. Due to unforeseen recruiting challenges in two provinces, the stratification was unsuccessful (Appendix E). One hundred and thirty four people (approximately 19% of those approached) accepted our mailed invitation to participate in the telephone assessment interview. The majority of the respondents were males, over 60 years of age, and had some post-secondary education.

### ***Determining the Nursing Resources Required to Meet Identified ESRD Needs.***

To specify the generic NBM for ESRD, we identified the information requirements for each factor: population demographics, population health status, treatment options, patient attributes, nursing work patterns. Information for ESRD population demographics and ESRD population health status (ESRD prevalence, co-morbidities) was obtained from case registries and government reports. Information regarding patient attributes (unmet needs – personal health or health system related) was taken from our data analysis of individual ESRD patient assessments. We consulted clinical experts in ESRD care to determine the information requirements around treatment options, such as anticipated changes in treatment modalities or service delivery models over the next five years.

Finally, we requested information regarding nursing work patterns (number of nursing hours/skill-mix allocated to each treatment modality by patient and the current distribution of nursing personnel in terms of full-time/part-time/casual). This process was intended to provide the underpinnings for the creation of scenarios for HR planning for ESRD.

### ***Conducting an Inventory of Related Information Systems***

We conducted an inventory of all relevant information systems used in acute, ambulatory, long-term, and home care. We documented the available types of ESRD- and HR-related data sources in Atlantic Canada and examined the capacity to match requirements for nursing time to patient need. We held three teleconference focus groups that included up to four information systems specialists per site from the acute and ambulatory care sectors. A separate inventory was conducted by telephone or email with information specialists in the home and long-term care sectors of each province. Some questions were adapted from instruments on hospital records (Appendix F). We focused on the types of data that are collected, plans for site data/system change, and the feasibility/cost of adjustments. We also consulted, via two teleconferences, senior information system policy-makers at the provincial government level regarding any plans for change in health care information systems, perceived strengths and limitations, and intentions for partnered inter-provincial work.

### ***Seeking Ethical Approval***

Despite the fact that all 23 sites involved in this four-province, multi-phase study used the Tri-Council guidelines for ethical approval, only two sites had reciprocal agreements and every site required different information and format. This required separate applications for three different phases to a host of review boards (range 6 – 20 per project phase) in different sectors (government, service provider agencies and universities) and in two languages. Although no review resulted in a substantive change, the process at each phase took as long as 10 months.

### ***Enhancing Collaboration and Capacity Building***

We used a number of strategies to build partnerships and research capacity among participant stakeholder groups on the research team (policy makers, senior decision makers, clinicians, researchers, educators). The strategies varied by stakeholder group and decision points:

- Policy-makers and senior decision makers selected the target health condition (ESRD) to demonstrate the NBM approach to HR planning used in the study.
- The full team met monthly, via teleconference, to make decisions about the project design and implementation.
- Face-to-face workshops were held at critical junctures including the launch of the project and at three other key decision points.
- Sub-groups worked intensively on particular aspects such as human resource planning and modeling, data collection and analysis, aspects of collaboration, and the development of intellectual property guidelines.
- An Advisory Panel (HR planning experts) provided consultation at critical points.
- ESRD clinical experts and government policy advisors attended the final Think Tank to validate the focus group and patient-need analyses, and to identify anticipated changes in ESRD treatment and service delivery models.
- Four undergraduate and graduate nursing students assisted with literature reviews, patient assessments and more detailed analyses.
- Reflections – Team members were asked to submit written structured ‘reflections’ three times during the project. This enabled us to track: (1) The development of individual research capacity in HR planning, and (2) Team building among members and perceptions of collaboration. We adjusted our approaches based on the feedback. The last set of reflections included a collaboration activity checklist. This activity enabled us to celebrate successful team building and identify opportunities for improvement.

### ***Dissemination Plans***

- We established guidelines for data ownership, authorship, and a plan for publications.
- The project has been reported at conferences including renal nursing and academic conferences. Abstracts have been submitted to two other international conferences.
- The website ([www.acrun.ionline.ca](http://www.acrun.ionline.ca)) displays the project team, objectives, and presentations. Future contents will include brief summaries of the results.
- We met with members of the Advisory Committee, Expert Panel and key government and clinical decision maker stakeholders to review study findings, and discuss implications and possibilities for further analyses.
- Key messages about the data inventory and the patients' needs will be summarized and circulated to study participants and relevant stakeholders.

### **Results**

The study results present the types and range of patients' needs from 34 focus groups, level of individual need from an assessment of 134 patients, and an inventory of information systems. We discuss implications for HR planning and a description of the collaboration experience.

#### ***Needs: The Picture Over Time with ESRD (Summary of focus group discussions)***

The focus group data suggested that, over the course of the time people live with a chronic illness such as ESRD, there are many types of needs that relate to personal health and the health care system. The participants indicated a very high level of unmet health needs in some areas. They described many issues of care that were inadequately addressed at some point in the course of the disease and that should be included in human resource planning. All groups discussed specific patient, family caregiver and system needs. Taken together, the participants raised issues that addressed each of the components in the O'Brien-Pallas, et al.<sup>iv</sup> HR planning framework. Participants in groups in all four provinces identified the same types of needs. The stakeholder groups in different sectors, however, diverged in their views of which needs should be included in planning (Appendix G).

- **Policy makers** focused on the need for planning, guidelines and standards, and meeting the needs of the general population. They concentrated on ‘the big picture’ and included issues of wellness promotion and the determinants of health.
- **Clinical decision makers** were highly aware of the realities of chronic illness for both care workers and patients and the challenges within the health care system. Their key concerns were staffing, skill mix, scope of practice and planning.
- **Clinicians**, the pivot point of the health system, considered the daily realities of ESRD for patients and their families and the policies and procedures needed to support care. They focused on staffing issues and identified several key needs that, if met, could improve the quality of life for patients and families and enhance the health system functioning. They argued for more adequate communication between levels in the health care system.
- **Patients and family members** were most concerned about quality of life issues (e.g. their symptoms), standards of care, treatment modalities, and available services. Patients described their symptoms and the ways in which the disease interfered with their lives. They also described beliefs that certain treatment modalities were ‘pushed’. One participant stated:  
 ‘Then later on when I had the experience with it [peritoneal dialysis] and all, I came to the conclusion that it is probably pushed because it is cheaper. It is really ... that is the bottom line.’

Patients and families spoke about lack of coordination and how services could be better managed. Some recommended case management and nurse practitioners. They expressed concern about the wide range of knowledge that nursing staff ‘should have’. One key area that emerged was knowledge about palliation and grief:

But the nurses have to, I think, they should have an understanding of palliative care. ... of geriatrics. ... they should know that if ... in the past 20 weeks there have been 13 patients who have died on dialysis on my shift, that it may influence me. It may also influence them. How does that impact them in their jobs and how does that impact us as patients there? You know, how does that impact your wife as she sees 13 people die as to how she wonders what is going to happen to her

husband and when. And that's not addressed. And if the nurses had a bit more time . . . , perhaps on some level that could be addressed.

### ***Needs: Current Level of Unmet Need (Summary of questionnaire data)***

The individual assessment through the 30-minute telephone interview indicated that the numbers of people with unmet needs at a given point in time is quite low. The types of needs were consistent with those described in the focus groups but, at the particular point in time, there were few areas for which many people had significant problems. However, a few patients did have high levels of unmet needs at the time of the assessment. The average scores for the 134 patients were somewhat higher than, but within one standard deviation of the published norms for the assessment tool (Appendix H).

### ***Levels of Need Related to Personal Health***

#### **Health Status.**

The SF 12 component of the KDQOL<sup>TM</sup>-36<sup>ix</sup> (the 12 item Short Form of a health status survey) served as the measure of Health Status. A small majority of respondents (53%) reported that their health status was only fair or poor. Many reported activity limitations (82%), and accomplishing less than they would have liked during the past four weeks (78%). While 41% of those assessed experienced a lack of energy, smaller proportions reported that their health interfered with social activities or that they had depressive feelings.

#### **Disease Burden.**

We assessed disease burden using the 'disease burden scale' on the KDQOL<sup>TM</sup>-36<sup>ix</sup>. Just over half of the respondents reported both that their kidney disease interfered too much in their lives and that they spent too much time dealing with their disease.

### **Symptoms.**

The most frequently reported symptoms were “feeling washed out/drained”, and having dry or itchy skin. Between 20% and 26% of respondents were “very much or extremely bothered” by these symptoms.

### **Effects on Daily Life.**

The most frequently reported effects on daily living related to the ability to travel and to their sex-life. Thirty-five percent were “very much or extremely bothered” by their inability to travel and 33% by the effects of the disease on their sex life. Between 20% and 30% were bothered by fluid restrictions, and their ability to work around the house.

### **Co-morbidities.**

The most prevalent concurrent health problems were cardiovascular (67%), visual (41.8%), mobility (39.4%), diabetes (26.8%) and depression (20.3%).

### ***Levels of Need Related to Health System Themes***

Respondents reported a high level of satisfaction with health services and rated the quality of care from or skills of nursing staff as at least good. More than 25% reported that family members had not been encouraged to take part in decision-making. Almost all respondents used prescription medication and 50% used seven or more medications.

### ***Unmet Needs***

While some patients indicated high levels of unmet needs around some issues, fairly low number of patients provided negative responses to the questionnaire items. We concluded that, overall, the level of unmet need of participants was low. Assistance with daily activities, dealing with the effects of their disease on their daily life and symptom relief arose as the primary areas of unmet needs, with between 20% and 30% of the respondents reporting problems in these areas. Satisfaction with health care was high. Previous studies<sup>x, xi</sup> with people living with ESRD have also found major issues related to impact of disease on activities, daily life and symptoms. This is the first study to describe

the rate of these unmet needs. The quality of life results are similar to the reported norms using the same tool for populations with renal disease despite the fact that one-third of the respondents were not yet on dialysis treatment. Lower scores on health related quality of life in renal patients are predictive of hospitalization and death independent of other factors<sup>iii</sup>. Our findings, including the variation in numbers of people with unmet needs, support the need to consider individual patient needs in HR planning.

### ***Relationships Between Needs and Patient Outcomes***

Guided by the by O'Brien-Pallas et al. framework<sup>iv</sup> we focused further analysis on two measures of health outcome – “health status” and “disease burden”. We did four separate statistical analyses (using regression analysis) to test the relationship between the patients’ level of need and health outcomes. The first three regression analyses examined separately the impact of level of need related to personal health factors, health system factors, and socio-demographic factors. The fourth analysis included only the significant factors from the previous models. Only the personal health factors accounted for important changes in health outcomes.

The effects of personal health factors (symptoms, effects on daily life and the number of co-morbidities experienced by the respondents) accounted for 45% and 47% respectively of the variation in disease burden and health status. Age was included in the analysis to control for this important factor. For disease burden, only “effects on daily life” arose as a significant predictive factor. This pattern changed in the analysis on health status. In this case, all of the factors emerged as significant predictors of the respondents’ health status, as measured by the SF12 scale.

**In summary**, the unmet needs within the ESRD population were not high. Only 0% to 30% had an unmet need in a given area. The primary predictors of both disease burden and health status were personal health needs (i.e. number and severity of symptoms, effects on daily-living and the number of co-morbidities). This suggests that any impact that the health system can have upon health status or disease burden must be expressed through these variables. Improved outcomes among this group of persons with ESRD

may be achieved by interventions to address these unmet needs. These individual needs can be assessed using the KDQOL™-36<sup>ix</sup>.

### ***Inventory of Related Information Systems***

The database inventory revealed fundamental limitations in the infrastructure, patient need and HR data sources throughout Atlantic Canada. In terms of infrastructure, centralized information systems are limited to the acute care sector. The type of systems vary across sites, and systems are not linked either intra- or inter-provincially.

Despite the fact that ESRD care is delivered largely on an ambulatory basis, **official patient databases** are limited to hospitalized or day-surgery patients. Further, other than that mandated by the Canadian Institute of Health Information (CIHI), data collection is determined according to an internal agenda only (e.g., service provider objectives, research interests, special initiatives) and may not be stored on a computerized database, or even on the patient record. Social service may independently track patient finances. Clinicians may have independent databases. In addition, while the acute care patient databases have capacity to capture ESRD-specific information, the only data captured is that dictated by the Canadian Organ Replacement Registry. Even patient complexity information is limited to severity measures, and no site is using such information for HR planning. Patient care information related to areas of ESRD management, such as ESRD education programs, if collected at all, is generally available only in paper format and often is not on the patient record. Further, while patient satisfaction surveys (e.g., about nursing care, participation in decision-making) are administered throughout the acute care sector and in some ambulatory care sites, the format is not standardized, often not computerized or linked to other databases, and not on a standard timeline.

In terms of **HR-related data sources**, all sectors (acute, ambulatory, long-term, home care) maintain separate information systems regarding nursing staff. The information includes staff numbers, skill mix (RN, LPN, technician, etc.), and location (unit, service and agency) but is not linked to patient or other databases. HR information is not standardized and rarely discriminates (e.g. between levels of education). Few sites

employ a standard workload measurement system to monitor staff allocation of time (e.g., patient teaching, counselling) and none links the workload information to patient databases. Hence, HR planning using patient needs is impossible.

Participants from all sites identified the **need for system restructuring** but noted challenges to making such advancement. These included the need for: (a) a comprehensive, integrated vision to address multiple planning needs (e.g., patient care, research, HR planning); (b) sufficient resources, leadership/coordination, and collaboration among all key stakeholders (policy-makers, senior decision-makers, clinicians, researchers, educators); and (c) political will. Senior information system policy officials noted that the most realistic changes for the foreseeable future include the possibility of establishing a national nursing minimum data set for HR (currently being considered by CIHI) and establishing an electronic patient record. They cautioned that most provinces have no immediate, or even long-term, plans to link patient and HR databases or to extend the patient record beyond in-patient services. However, one province has initiated an information system for community-based care using a case management approach in which patient and provider data can be linked. In addition, the Atlantic provinces have recognized the need for regional planning and are doing an Atlantic HR planning project around education.

### ***Implications for HR Planning***

We concluded that the most important patient needs to consider in needs-based HR planning were the number and severity of symptoms, the ESRD-effects on daily living, and the number of co-morbidities. We concluded that the needs with the most impact on health are the most 'legitimate' to be included in needs-based planning. The data and most of our consultations indicated that, in theory, nursing could have a significant impact on these needs and that some interventions would require advanced knowledge and problem solving capacities. We identified three major obstacles that prevented us from creating a needs-based model for HR planning:

- 1) We lack published evidence that nursing can impact these needs, that nursing is the most effective provider, or about how much nursing time and expertise

would be required to meet these needs. It would be unreasonable to forecast nursing resources without such information.

- 2) The information systems infrastructure is inadequate. Patient and HR data are limited and information systems are not linked. We were unable to establish, with precision, specific detail regarding the staffing for care of those with ESRD in Atlantic Canada. Such detail represents baseline information and is necessary for HR planning.
- 3) We were unable to test scenarios. These scenarios would include different contexts and ‘what if’ situations (e.g. changes in treatment modalities, patient attributes, nurse work patterns) and test them against base projections (the standard/current situation against which the impact of other factors can be gauged). Client needs would be translated into required nursing hours according to different scenarios that consider, for example, changes in disease prevalence, or treatment modalities. In theory, scenarios could be developed to examine potential changes in any variable included in the model. The better informed the scenario, the more accurate the forecast. In spite of being able to determine the type and level of current patient need (the Patient Attributes factor of the NBM) using a sample of people with ESRD, the database inventory showed that much of the information necessary for the other NBM factors was either not available, or not readily accessible. Forecasting based largely on estimates and the HR calculations would be meaningless.

Nevertheless, we did identify some scenarios that could be considered for HR forecasting using the NBM when sufficient data are available. ESRD experts agreed that the predictions regarding ESRD prevalence (population health status factor in the NBM) for Atlantic Canada seemed accurate and that no new treatment modalities (treatment options factor) were likely. However, they also suggested that a scenario should consider the HR impact of providing dialysis on a more frequent but shorter timeframe (change in treatment options factor). This change, currently being tested in at least one site, could require increased demand on nurse time but yield improved patient health and reduced admissions. Experts suggested that another scenario could consider the HR impact of case management (nursing work patterns factor). This approach to care was

recommended by patient, family, clinician and senior decision-maker stakeholder focus groups.

**In summary**, while needs-based HR planning has garnered interest in HR circles, it is clear that the current health care system in Atlantic Canada lacks the infrastructure to make it feasible using individual patient needs.

### *Enhancing Collaboration and Capacity*

The analysis of the reflections surveys, completed at three time periods, showed that members perceived that, over time, we came together as a group and gradually built knowledge, a sense of trust, and an understanding of collaboration. When analyzed by stakeholder group, findings showed that good progress was made toward building partnerships among groups, and enhancing awareness about and fostering a collaborative approach to human resource planning. Specifically, stakeholder groups built partnerships and enhanced awareness by learning new skills and sharing knowledge with other groups. [I HAD] OPPORTUNITY TO DEVELOP RESEARCH AND KNOWLEDGE TRANSFER SKILLS (SENIOR DECISION-MAKER)

I EXPECTED TO BE CONSULTED FOR ADVICE ABOUT ISSUES...[ABOUT] HOW BEST THE RESEARCH PROJECT COULD NAVIGATE THE SHOALS OF BUREAUCRACY (POLICY MAKER)

I HAVE DEVELOPED A REAL APPRECIATION FOR HOW MUCH HEALTH SERVICE INFORMATION...REMAINS ON PAPER AND NOT ON COMPUTER...[AND AN APPRECIATION] FOR THE [AMOUNT] OF DECISION MAKING THAT [ACTUALLY] OCCUR[S] GIVEN THE VERY REAL LACK OF INFORMATION AVAILABLE. (RESEARCHER)

MY GREATEST SOURCE OF SATISFACTION IS THE NETWORKING THAT OCCURRED (CLINICIAN)

All groups in this study viewed fostering a collaborative approach among stakeholders a challenge. This was not a surprising finding, given that collaboration is the highest form of partnership<sup>xii</sup>. Partners make a formal, sustained commitment to accomplish a shared,

clearly defined mission. Collaboration requires a change in thinking, with participants developing the ability to see the “big picture”, and that personal, systemic or environmental barriers be overcome. The stakeholder groups in this study showed similar types of difficulty working outside the confines of their own roles.

*MY WORRY IS THAT SOME MEMBERS SEEM TO FEEL QUITE DISTANT FROM THE PROJECT STILL AND DO NOT SEE HOW IT RELATES TO THEM OR HOW THEY CAN BE INVOLVED (RESEARCHER).*

I FELT THAT PERHAPS PEOPLE DID NOT RECOGNIZE THE CONTRIBUTIONS I COULD MAKE IN TERMS OF UNDERSTANDING THE [ESRD] POPULATION (CLINICIAN)

MY GREATEST SOURCE OF FRUSTRATION IS THE LEVEL OF COMMITMENT OF SOME OF THE PARTICIPANTS. (CLINICIAN)

While collaboration continued to challenge us throughout the study, most members learned valuable lessons in the process.

We often felt like we were stumbling...[which] necessitated seeking direction which was there for us .... As a group we tolerated uncertainty” (clinician)

We should have laid better groundwork to enable us to connect with policy-makers. (clinician)

We still need to learn how to ensure that all perspectives are identified and addressed as it is very easy for the researcher perspective to dominate. (researcher)

Surprises: individuals from a variety of backgrounds learned to come together as equals. (senior decision maker)

The team is rich in varied knowledge and expertise, which I respect and rely on. (policy maker)

Finally, all stakeholder groups agreed that we had accomplished most of the essential elements for successful collaboration<sup>xiii</sup> by creating: a vision, fairly clear goals, an identifiable membership, clear roles and responsibilities, communication/information and reporting/evaluation plans, and a strategy. Stakeholder perspectives varied in only two areas. In contrast with other stakeholder groups, the clinicians and researchers argued that group norms (group rules) and future plans had not been established.

**In summary**, the reflection surveys noted the discomfort and uncertainty experienced by all stakeholder groups as they were forced to work together in non-traditional ways. At the same time, the surveys also highlighted the progress made toward collaboration, lessons learned, and benefits of inter-sectoral partnerships.

### **Further Research**

There are gaps in knowledge that need to be filled before research can determine whether the patient perspective improves nursing HR planning effectiveness. We need to know:

- Are co-morbidities, symptoms and disease effects on daily living activities susceptible to intervention? Can they be reduced, prevented, or delayed?
- Which patient needs can nursing most effectively address?
- In what way and to what extent does nursing have an impact on patient needs?
- What level of nursing skill (or skill-mix), and time commitment, provide the most effective impact on patient needs?

We also discovered that inadequate information systems prevented any testing of a NB approach to HR planning. Therefore, we need to:

- Design an alternate study method for testing the application of a patient needs approach to nursing HR planning. This study could create a linked patient and nursing database that documents the level of patient need (using the patient assessment instrument from this study) and the level, type of provider, and time involved in delivering nursing care to a sample of ESRD patients.

While the need to improve the efficiency of ethics approval in multi-site studies is important, it is also crucial to understand the implications of such changes. Therefore, we need to determine:

- What are the impacts of reciprocal agreements for ethical approval on the effectiveness, efficiency and stakeholder acceptability in multi-site studies.

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