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Barriers and Solutions to Implementation Strategies to Improve Health Human Resource Models in Canada

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This is a work in progress.

All comments and suggestions are wholeheartedly welcome.

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1. Introduction

The Canadian landscape of health human resource needs and strategies is changing. Changes are occurring at a faster rate at the grass roots micro-level, while macro-level upgrades to HHR strategies are lagging behind. This results in a non-systematic ad hoc approach leaving room for much improvement.

The general trend in HHR strategies is a move away from the traditional medical provider centered model of health care delivery, to a interdisciplinary collaborative patient centered model. Across the country, providers attempt to collaborate in delivery of care and administrators try to manage these attempts. This paper describes various types of microlevel innovative HHR strategies currently used in Canada, the shortcomings of the health care system to which they respond, and the challenges to their implementation. Recommendations are made with respect to changes in at the broader policy, regulation, and education level, as required to enable mainstreaming of HHR innovations.

2. Health Human Resource Challenges

The Canadian health care system faces a variety of challenges with respect to human resource allocation. These can be defined in terms of five spheres: practitioners, services, education, policy, and information.

Challenges with respect to practitioners have been identified as follows. There is a general shortage of health care practitioners in Canada, especially well documented is a shortage of medical physicians. The shortage is more severe in rural and remote areas of the country, where recruitment and retention difficulties are profound. Shortages result in unreasonably high workloads for physicians, and access difficulties for patients, as manifested in long waiting times. At the same time, health care providers other than medical doctors are not being utilized to full scope of practice.

Service provision has been criticized in terms of timeliness, focus, and appropriateness. Waiting times for health care services are high partially due to physician shortages, and partially due to service delivery being inadequately planned. Focus in delivery is on short

term acute care, as opposed to preventive care, or chronic care. Service provision often does not correspond to community needs. Furthermore, services are provided in segregation, are dominated by the traditional medical model, with insufficient possibility for interdisciplinary team work.

Lack of interdisciplinary collaboration begins at the level of health care education, giving providers little insight into other health professions. Health care education is a contributor to what has been termed “silo culture” of future service delivery, where, again, the traditional medical model dominates. In addition, health care education is geographically not sufficiently accessible to students from remote and rural areas, contributing to shortages in those regions.

At the policy level, planning in the area of health human resources lacks rigorous structure. Several difficulties have been identified. Health planning and promotion are not based on population needs, nor grounded in evidence based analysis. It is felt that often policy decision making is dominated by politics rather than evidence. There is pressure to create national models, despite the difficulties created by regional differences and legislative barriers. Concepts cited as principles to be adhered to, such as accountability, sustainability, productivity, are not clearly defined, nor measured.

The lack of data measurement and availability is a key challenge in the sphere of information, and fuels the difficulty of evidence based planning. Macro level records re. physicians, services, patients, are collected in a non-systematic manner. There is also a lack of financial analysis. At the micro level, patient records do not follow the patient, contributing to the difficulty of delivering care in a holistic multidisciplinary manner.

Available data, however scarce, supports the notion of physician shortages, and regional imbalances in physician supply and access to services. During the 1990's, the supply of physicians declined by roughly 5%, as reported by CIHI (2002). This has been attributed to large numbers of doctors retiring with not enough young doctors entering the workforce. Increased time requirements in post graduate training, medical school enrolment cuts, and decreased number of foreign trained physicians immigrating into Canada prevented replenishment of physician supply. In addition, a higher number physicians are women, who have been reported to work fewer hours.

Physician shortages are particularly severe in rural and remote areas. The Royal College of Physicians and Surgeons reports that, while 30% of the Canadian population live in rural and remote areas of the country, only 17% of physicians do. The shortage of doctors in 2003 was estimated at 3000, leaving existing rural physicians with heavy workloads (average of 49 hours per week). This is confirmed by the Society of Rural Physicians in Canada, who predicts that the number of rural physicians is expected to decline by 30%, from 5531 in 1998, to 4529 in 2021 (0.71 physician to population ratio to 0.53 between those two years). Table 1 below shows the imbalance in geographical distribution of General and Family Practitioners, as well as specialists in the province of Ontario in 1998. As can be seen, variation in physician availability by population size is substantial – the problem is serious.

Table 1 Physician to population ratios by population size in Ontario, 1998		
Population	GP/FPs per 10,000	Specialists per 10,000
1,000 or less	4.18	0.30
1,001 – 2,500	5.14	0.68
2,501 – 5,000	5.70	0.78
5,001 – 7,500	6.50	1.13
7,501 – 10,000	5.10	1.27
10,001 – 25,000	7.67	3.55
25,001 – 50,000	7.11	5.39
50,001 – 100,000	8.86	9.00
100,001 – 250,000	7.89	7.20
250,000 or more	10.77	15.95
All Ontario	8.62	9.13
Source:		

Not surprisingly, Canadians report difficulties with accessing health care on a timely basis. The following table shows the percentage of Canadians who reported having difficulties accessing immediate care for minor health problems in 2002. The cross provincial comparison reveals, that access is not equally distributed between regions, where some provinces have had much higher success securing access to health care than others. Referring back to table 1 above, the problem is even more exaggerated through uneven geographic distribution of physicians within provinces.

Table 2 Percentage of population with difficulties accessing immediate care for minor health problems in 2002.	
Canada	14.8
Newfoundland	20.0
Prince Edward Island	18.1
Nova Scotia	12.7
New Brunswick	14.1
Quebec	18.4
Ontario	14.8
Manitoba	15.6
Saskatchewan	10.0
Alberta	10.7
British Columbia	12.4
Source: Statistics Canada website	

3. Methodology

The paper was written using several methodological approaches – an extensive literature review, a series of telephone interviews with key informants in the system, as well as direct observation of workshops/ focus groups during a working conference.

The literature review was undertaken as a background study. It surveyed academic and grey literature using database and web-based searches. The goal was to synthesize information on innovative Health Human Resource (HHR) strategies as are currently being used in response to health care system challenges outlined above. The literature review was followed up with an environmental scan. Key health care system informants in all Canadian jurisdictions were interviewed by telephone or in person. Additional information was collected on innovative HHR strategies.

The conference was organized by the School of Public Administration at Dalhousie University, and funded by Health Canada. The goal of the conference, as captured in its title “Mainstreaming Health Human Resource Innovations”, was to produce a set of national guidelines for the implementation of HHR strategies across Canada. The design of the conference was in itself innovative, in the sense that participants were all required to share experiences and collaborate on providing recommendations. Participants were

divided into working/ focus groups. Within their group, each participant presented an innovation in HHR deployment at the policy, administrative, or field level, in which they were involved. This provided a starting point for a two day discussion. At the end of each day, participants created a group presentation to be given to the entire conference on the following morning. The first presentation synthesized HHR strategies in terms of challenges they respond to, critical success factors, and barriers to implementation. The second presentation focused on overcoming identified barriers, and mainstreaming HHR innovations across Canadian regions.

An observer was allocated to each group, who tracked progress and information shared. Notes from observation, output created by conference participants, as well as the background report based on literature review and interviews, served as data sources for the production of this paper.

4. Health Human Resource Strategies

HHR strategies currently used in Canada can be classified into two broad categories, micro-level strategies, and macro-level strategies. Micro-strategies are those that take place on a project by project basis, generally in direct response to a concrete need of the community. Planning of health human resources falls within the practitioner, service, or information sphere, but rarely addresses issues of policy or education. There is no communication between micro-level strategies, nor a systemic approach to their design, implementation, and evaluation. Macro-level strategies occur at the broader policy level, generally in response to a need as identified at the aggregate population level. Macro-strategies take a more systematic approach to re-design of health human resource planning, done in any of the five spheres.

Micro-strategies currently used in Canada can be divided into four categories:

- Re-definition of roles of health care professionals
- Enabling service provision to full scope of practice
- Interdisciplinary collaboration
- Creation of supporting technology and information systems

Macro-strategies can be divided into two categories:

- Changes in education approaches
- Changes in policy and/ or regulation

4.1. Re-definition of roles of health care professionals

The main idea is that a role traditionally taken by one type of health care provider is assigned to a different type of health care provider. In many respects, strategies outlined here overlap with the second category of enabling provision of care to full scope of practice. The difference, at least in theory, is that a re-definition of roles upsets the established order of scope of practice issues, given more scope to specific providers, sometimes in specific situations. In response to shortages of physicians across the country, and more pronounced shortages in rural and remote areas, there is a tendency toward shifting health service responsibilities traditionally carried out by physicians onto other types of health care providers. This approach has also been used to un-burden health care providers other than physicians, such as for instance nurses.

A popular approach is to increase the use of the nursing profession within the hospital setting. Several strategies have been identified, including increases in the scope of advanced practice nurses in hospitals, or the use of nurses in emergency rooms by various regional health authorities. Nurses are given additional roles of testing, some diagnostic privileges in terms of test interpretation.

Example 1

A good example is the introduction of the position of Physician Assistants (PAs) in rural, remote, and urban with severe physician shortages. A PA is a health care professional who is licensed to practice medicine under the supervision of a licensed physician. The model is used extensively in the US. It has been adopted in Canada through the Canadian Forces, where a 24 month training program is offered through CFMSS in Borden, Ontario. PAs can obtain licensure also in Manitoba. Their scope of practice is defined by agreement with the supervising physician, on a case by case basis. Physician shortages are reduced, as training is shorter than traditional medical training, and more manpower is available in any given location.

Example 2

A second example is the Retaining and Valuing of Experienced Nurses as advocated by the Canadian Federation of Nurses Union. The approach capitalizes on nurses in mid-career, and their abilities to mentor and train nurses, who are just entering the profession. Two goals are to be achieved, one is the retention of nurses in their early 40s, an age at which many decide to leave the profession, and the second is to increase the learning curve of newly trained nurses in the practical setting. The approach has been implemented at Capital Health in Edmonton, St. Boniface Hospital in Winnipeg, Ottawa Hospital in Ontario, and is being negotiated as a province wide approach in B.C. Additional examples are provided in the appendix.

4.2. Enabling service provision to full scope of practice

Similar to the first category, the enabling of service providers to practice to full scope of practice focuses on the assignment of roles to various health care professionals. The difference is that in this category, scopes of practice are not being re-defined, but rather re-emphasized. Existing roles of health care professionals that have not been carried out in the past are put back on the job description.

Example 1

The CARE model in the Durham region of Ontario focuses on Clinical care, Administration leadership, Research, and Education. It is a collaborative effort on the part of individual institutions and professional/ regulatory bodies, and the University of Ontario Institute of Technology. As such, it can also be cited as an example of interdisciplinary collaboration. One of the effects of health care professional working together is an increase in their understanding of and appreciation for each other's scopes of practice. Success of the CARE project has been reported with respect to patient flow, patient family satisfaction, length of stay, comprehensive documentation, and the palliative care audit process.

Example 2

Another example is the increased use of hospitalists within hospital settings. Hospitalists are licensed family physicians, or general physicians, who work as primary care providers within hospitals. They are often remunerated on salary basis. Their scope of

practice is similar to that of an FP/GP working in private clinics, however, the definition of their role within the hospital is an innovation to health human resources strategies.

4.3. Interdisciplinary Collaboration

Nearly all innovative health human resource strategies discussed in the literature or at the Dalhousie School of Public Administration – Health Canada conference involve some degree of interdisciplinary collaboration. As implied in the name, interdisciplinary collaboration is based on the working together of several types of health care professionals. It has been defined by one of the conference groups as a positive relationship between two or more health care professions to assist the client and their family with health decisions. This form of health care delivery is focused on patient needs, patient health outcomes, and care continuity. The starting point for decisions with respect to who is to provide which form of care are the care requirements of the patient or community, as opposed to the abilities and scopes of any one particular provider. Interdisciplinary collaboration requires knowledge of each other's scopes of practice, as well as support from patients, families, and the general public. Within collaborative practice, a re-definition of scopes of practice is often necessary.

While micro-strategies to interdisciplinary collaborative delivery of health care services are the trend across Canada, a true shift in paradigm in the system as a whole requires top down intervention and planning. Collaborative thinking needs to feed through the education system, as well as become a conscious part of policy making and regulation.

Numerous examples of micro-strategic approaches to interdisciplinary collaboration were presented at the conference. Two are described in detail, for a complete list of presented projects that fall under this category, consult the appendix.

Example 1

The Multidisciplinary hypertension education and management session in Wolfville, Nova Scotia, brings together physicians, nurse practitioners, kinesiologists, dieticians, physiotherapists, and psychologists to provide an education and exercise program for

patients in an attempt to help patients understand and control their hypertension. A clear program was developed, outlining responsibilities of each provider, session schedules for patients, and a system to track outcomes.

Example 2

The Primary Care Collaborative Project in New Brunswick is supported by an agreement between the Department of Health and Wellness and the New Brunswick Medical Society. Goals of the project are to increase access for patients without a family physician, and to decrease waiting times for existing patients. Access is increased through collaboration of family physicians with nurses and nurse practitioners in the provision of primary care services.

Example 3

The Multidisciplinary collaborative maternity care project MCP2 is supported by professional associations of all types of providers who focus on maternity care, including obstetric and neonatal nurses, other nurses, midwives, family physicians, gynaecologists and obstetricians, and rural physicians. The project is broad in scope in that it sets out to provide guidelines for collaboration, recommendations for national standards, scope of practice definitions, all of which will lead to increased collaboration between providers, and increased information sharing. Jurisdictions have the option of committing to support this project in their own region.

4.4. Supporting technology and information systems

A commonly cited barrier to mainstreaming of innovations, policy planning, and system wide restructuring of health human resources is the lack of supporting technology and information systems. Supporting technology ranges from availability of office computers, on-line billing systems, telephone support, to the use of telehealth and telemedicine. Gaps in information exist in all areas of health care, from standardized patient records, the health care workforce statistics, to population health data. Technology is needed to connect sites of health care delivery, especially rural and remote sites, as well as to allow for multidisciplinary patient centered care. Information is required for system wide planning, and the tracking of progress.

Telehealth and telemedicine are increasingly coming to use across Canada. The technology allows primary physicians in geographically distant areas to connect with a wider community of health care providers and assistants. A primary physician, physician assistant, or nurse practitioner located at a remote site is able to, for instance, pass on electronic test results to a specialist for interpretation. A patient is thereby given access to a specialist that would otherwise be less accessible. In addition, telehealth and telemedicine provides the opportunity for keeping electronic patient records that can follow the patient throughout the course of care. Patient records can thus be tracked vertically across various professions when care is multidisciplinary, horizontally between levels of care, from primary to secondary to tertiary, as well as geographically from one location to another.

Patient tracking as described above requires, in addition to technology, a standardized recording system understandable to all health care professionals involved in care. Achievement of this goal appears distant given the current state of patient record information. Patient health data are also crucial in research at the micro and macro levels. Data on patient health issues and health outcomes are lacking for the purposes of evaluation of various approaches to health service delivery and related issues physician remuneration methods. Similarly, policy research and design are in dire need of more aggregate level population health data.

Example 1

The Health professionals registration database in Prince Edward Island attempts to provide a standardized approach to data collection across the province's health care system. Goals are to develop longitudinal HHR data, allowing for support in long term HHR planning, HHR training strategies, and HHR recruitment and retention strategies. The system integrates membership data of professional organizations of a variety of health care providers.

Example 2

The Telehealth applications in head and neck oncology rehab project in Manitoba provides rural and remote physicians with the chance to connect with specialists, giving patients increased care continuity at lower opportunity costs. Electronic images of patient conditions are transmitted from primary care clinics in rural and remote areas to

larger urban centers, where they are evaluated by oncologists. Primary physicians gain confidence in the care they provide, and patients need not travel to obtain the same quality of care. Technical support on site is required.

4.5. Education

Conference participants in all groups seemed to come to consensus on the need to change current health care education practices. The current traditional model was criticized as being profession centered, creating a “silo culture”, dominated by the medical model of health care. Health care professionals in training learn very little about their colleagues’ scopes of practice, skills, and capabilities. Not surprisingly, upon entering the workforce, resistance exists to collaboration with other health professions. This resistance is perhaps most pronounced within the medical profession.

In addition, current curricula in health education were cited as being profession centered, rather than being aimed at patient or community needs. Professionals learn to begin the patient – provider encounter with what they can do for patients, followed by the identification of where their skills can be applied to their client. A more desirable approach would be to begin with the identification of patient needs, followed by a matching of appropriate care and care providers to fill those needs.

Thirdly, current delivery of education is not accessible to many potential students in the health professions. Education is delivered primarily in urban centers, requiring students to leave behind their communities, and carry the high costs of living, not to mention costs of education, for extended periods of time. Persons from rural and remote areas, who have a high potential for returning to their homes upon completion of education, view the geographical distance as an obstacle.

Innovative HHR education strategies include the introduction of courses with focus on other health professions into standard curricula, the shift of focus from provider to patient centered care delivery, as well as education delivery systems away from traditional academic institutions. Increased geographical access to education is achieved through outpost stations in, for instance, nurse training, as well as distance learning.

Example 1

The Nursing Education via streaming video is a Manitoba project that attempts to reduce the nursing shortage in rural and remote areas of the province. It is supported by Manitoba RHA's, the West Region Tribal Council Health Department, and two community colleges. The video course is delivered to students who have completed four courses at the university level. Preparation and delivery of the course is cited to be a challenge, yet formative evaluation results indicate satisfaction by students. This project is a good example of bringing education to students, as opposed to bringing students to education.

Example 2

The Health Canada Interprofessional Education for Collaborative Patient-centered Care program was created in response to the 2005 Health Council report outlining the crucial need for interprofessional education and collaborative practice. Goals of the project include the increase of providers trained in collaborative patient centered practice, and to increase the number of educators prepared to teach from an interprofessional, collaborative, patient centered perspective. 11 pilot projects across the country have been funded, and 9 more are selected for further funding.

4.6. Policy, planning and regulation

Increases in and maximization of scopes of practice, in addition to being hindered by lack of education about other health professions, are also hampered though restrictive legislation, and lack of understanding by the public. Legislation defining scopes of practice limits the opportunities to substitute, and to provide interdisciplinary collaborative care. The re-defining of roles of health professionals needs to start with changes in regulation and legislation.

Policy changes to support micro-level HHR innovations, and to address existing challenges within the Canadian health care system are few and far between. Generally, they are packaged as initiatives or strategies addressing specific population needs. Again, availability of information is a crucial pre-requisite for policy changes.

Example 1

The Canadian Collaborative Mental Health Initiative is supported by 12 professional organization of a variety of health care providers, including family physicians, nurses, dieticians, occupational therapists, pharmacists, and social workers. The goal of the initiative is to strengthen the relationships and improve collaboration between health care providers, patients, families, and communities. Mental health services can be delivered out of community health centers, primary physicians' offices, schools, and even individuals' homes. Care takes place close to home and is designed according to preferences of patients, and skills of provider – thereby improving access to care, and responsiveness to need. Care is often preventive in nature, reducing future burden to patients and the system.

Example 2

The Aboriginal Health Human Resource Initiative requires support from five National Aboriginal Organizations, three levels of government, health care associations, and educational institutions. This initiative is comprised of a national framework, a governance structure, and a 2-3 year strategic plan. It's goal is to improve the health status of Aboriginal people, which is below Canadian average, though improved access to health care. Desired outputs of the initiative include adapted curricula, access programs, laddering programs, and centers of excellence, all of this are to support main goal of increasing the supply of para-professional health care providers (midwives, CHRs, etc.)

5. Barriers to implementation

Many of the barriers to implementation of innovative HHR strategies have been addressed in previous sections. These include information systems, education, and regulatory issues. In addition, several other factors were identified as barriers by conference participants, including leadership issues, organizational structures, role of physicians as gatekeepers, political decision making, communication between policy and delivery of care, and funding issues.

The lack of common client data stands in the way of collaborative interdisciplinary care delivery. Patients cannot be tracked horizontally between levels of care, vertically between various types of health care providers, nor geographically between institutions.

Standardized patient record along with supporting technology making records accessible to providers are crucial to a system wide implementation of multidisciplinary models of care.

Information deficiencies also bear down on ability to plan at the policy/ regulatory level. Transporting of micro strategies between geographical locations is not supported by solid evidence of success or failure. Data are not collected, and systematic evaluation studies not carried out. Planning in education is not backed by evidence of changing curricula having a positive influence on multidisciplinary care delivery. Lack of workforce data make impossible system wide planning with respect to health human resource needs. Cited as one of the reasons for current physician shortages was the trend during the 1990's to decrease medical school admissions and immigration of foreign trained physicians. While this may be seen as poor planning, lack of reliable information about the physician workforce and it's growth rates is to blame.

Current education practices, as described, do not support interdisciplinary collaborative care delivery. Health professionals are trained to work in a profession centered environment, creating a "silo culture" that is difficult to break once established. Providers are not willing to collaborate for reasons of turf protection, tradition, prestige, and lack of understanding of other professions. Current education does not create cultural awareness with respect to other forms of health care delivery, or patient and community health needs in a cultural context.

Though physician acceptance of transformative change is crucial to the progress and rate of change, groups identified that all professions and their educational and association advocates required considerable adjustment to structures, mindsets, collaborative competencies, and opportunity, rather than threat identification, before the cultural values supporting optimal HHR deployment were present in the health care environment. Current organizational structures, as well as union contracts, were seen from not supportive of change, to being a clear obstacle to change.

One of the main barriers to the implementation of innovative HHR practices was the definite lack of leadership and management in this area. Micro-level strategies are often spearheaded by health care professionals themselves, who, aside from being already

overburdened with patient care, have little training in administrative and management responsibilities. Filling the roles of administrator is neither within their scope of practice, nor generally within their interest. Most all conference groups felt that better leadership in HHR innovations is necessary. The desire for change management was expressed, including solid planning, implementation, and monitoring. Often the term leadership was used to describe a group or person championing an idea or innovation through a change process to implementation, able to communicate a vision, and to lead by example. Often leadership included the abilities to be inclusionary, to work across sectors – health, education, labour – recognize windows of opportunity, and market change politically at the organization and political level.

Planning of HHR strategies as exists is deficient in that it is often short term in vision, and politically based. Political decision making is fuelled by public perception. Multidisciplinary collaboration, interprofessional substitution, expanded scopes of practice, and shared care models are not supported by the public. Patients perceive the traditional medical model as superior to other forms of health care delivery, and often feel that quality of care is compromised through collaboration or substitution. Inflexibility of public perception is rooted in, among other factors, the message sent by medical professionals that other types of health care are sub-standard. Primary physicians can easily influence perceptions of patients through their role as gatekeepers of the health care system. Policy makers are resistant to creating policies that are not perceived favourably by the public.

Planning at the policy level is further restricted by the fragmentation of government. While the Canada Health Act spans across provinces, requiring transferability of health care across provincial borders, regulation, legislation and resource allocation in the health care sector are provincial responsibilities. Community needs vary between and within provinces, as do organizational structures, and cultures. A national strategy to HHR deployment is difficult given this reality.

Two additional challenges with respect to the relationship between policy makers and innovators in HHR were identified. Funding for innovative micro level strategies is generally delivered as a lump sum grant. It is transitional, which raises the question of sustainability of funding and hence projects. Furthermore, lines of communication

between top down policy makes and front line health care providers are noisy, fraught with breakdown, and in need of streamlining.

6. Pathways to implementation of HHR strategies

The current Canadian situation in innovating HHR strategies does not have a coherent structure. HHR innovations are sporadic, projects are established on a rather ad hoc basis, generally in response to a gap in service provision or other community need. The bottom up approach is advocated by some as being responsive to population and community needs, hence more efficient in improving health of communities. While there is a place for the bottom up procedure, it does not facilitate transportability of projects to other sites across the country. There is little information sharing in terms of best practices, evidence of success, enabling conditions, and critical success factors to understand what makes HHR innovations successful. Pieces of a puzzle are laid out across the landscape, all crucial to complete a whole picture, yet lacking the connections and linkages. Improvements to the health care landscape are possible in all five spheres as identified in the first section, policy, information, education, practitioners, and services.

There is a definite need for a systematic approach to HHR innovation in Canada. Innovations examined in this paper respond to many challenges the health care system is currently faced with. HHR innovations ease the problem of shortages of health care professionals throughout the system, waiting times for services, geographical imbalances in service provision, as well as imbalances in specialty mix. Microstrategies in HHR seem to fill specific gaps at the local level, although clear reliable evidence in support of their success is not available. Macrostrategies are few and far between, despite the dire need for top down policy and regulatory changes, as well as changes in the educational system.

An important theme emerging from literature and the conference is the issue of restrictive legislation as a barrier to system wide implementation of HHR microstrategies. Legislation does not clearly define scopes of practice and their overlap. It is seen as inflexible and outdated, supporting the traditional silo culture in health service delivery. Change in legislation is not responsive to current HHR practices at the local level, often

standing in the way of multidisciplinary collaboration. Conference groups proposed that legislative changes should be spearheaded by an interdisciplinary review committee, who would be charged with examination of barriers created through legislation. Critical to it's success is the building of stakeholder support through the creation of alliances throughout the academic, professional, and administrative world. Increased involvement of unions, professional associations, provincial governments, and the public pave the path to legislative changes.

Changes in legislation require a clear specification of scopes of practice for all health care professionals, and the ways in which they serve as complements or substitutes for each other. Patient centered holistic is best achieved through a multidisciplinary team of providers, whose services complement each other. Substitution of health care providers can be a good strategy to relieve shortages of services in specific areas.

Methods proposed to more clearly define scopes of practice have two stages, the first is data collection, and the second is the defining process. Data on the skills, competencies and roles of health care professionals can be collected by deconstructing the care and work process through process mapping and/ or job shadowing. Process mapping can take a patient focus, where the patients journey through the health care system is tracked. Job shadowing takes a provider focus, where tasks performed by provider and the time required are tracked. All to be supplemented with information on health conditions, diagnoses, therapies selected, reasons for selection, and health outcomes.

The second contribution of top down policy is to address the issue of project sustainability. Lack of reliable sustainable funding was identified as a major barrier to implementation of HHR strategies. Funding is generally allocated as a lump sum grant, and is by nature transitional. Future financial planning for HHR innovations is hampered. A commitment from policy to provide sustainable funding earmarked to HHR innovations is called for.

The third area where top down policy, as well as education can make an important contribution is the identified need to better leadership in HHR innovations. As discussed, HHR innovations are implemented on an ad hoc basis, and often spearheaded by health care professionals who take an administrative role, in which they have neither training

nor interest. Conference participants identified the need for improved leadership and change management as one of top priority. Policy can improve leadership through identifying champions in change, and profiling them to the system, through creating accountability frameworks, and standardizing a project charter requirement for microstrategies, and, of course, ensuring sustained funding. Education can contribute through the creation of tools for management and leadership, and providing training.

Both education and policy have a great role to play in the overall paradigm shift critical to any HHR innovation. The predominant paradigm follows the traditional medical model, in which care is provider centered, generally the provider is a medical physician, who may or may not delegate some responsibility to auxiliary health care professionals. This culture of health service delivery is not conducive to interdisciplinary collaboration and team work. Shifting the paradigm toward patient centered health care delivery supported through multidisciplinary cooperation must begin with the education of health care providers on their roles, and the roles of other professionals. It was suggested that education modules can provide certification in collaborative PHC delivery. Translating the new paradigm into public perspective can be achieved through both education by providers, as well as public awareness initiatives at the policy level.

Changes in education curricula and delivery are imperative in addressing shortages of health care providers. Delivery of education in academic centers alienates potential students, especially those from rural and remote areas, who are not willing to leave their communities for a number of years of training. Changing delivery from bringing students to education, to bringing education to students is a viable solution. Educating new health care professionals, at least in part of their training, on site in remote and rural communities achieves two goals. First, enrolments in health care professions and hence the overall number of health care providers is increased, and second, the recruitment and retention of health care providers into rural and remote communities is strengthened. Retention in geographically remote areas can further be improved with opportunities for continuing education by distance, a strategy which needs to be supported with appropriate technology.

Macrolevel changes in policy, legislation, and education are key enablers and prerequisites to comprehensive and systematic improvements in health care delivery at the

microlevel. Results of the literature review and conference indicate that the desired microlevel model of health care delivery has the following characteristics: patient centered holistic care, responsive to patient or community needs, interdisciplinary and collaborative. On the supply side, providers of services must receive appropriate education, and appropriate management and leadership during practice. On the demand side, patients must move away from equating quality of care with the traditional medical model. Clear identification of goals of the system, and roles of HHR, as well as solid communication of these between stakeholders are requisite.

7. Conclusions

Current innovations in HHR strategies in Canada respond to challenges with which the health care system is fraught. Problems facing the system include shortages of medical physicians, geographical imbalances in their distribution, and uneven distributions in specialty mixes. Shortages and imbalances result in high workloads for physicians, long waiting times for patients, lack of access to specific types of health care, and a dissonance between patient/ community needs and care provided. At the same time, other types of health care providers are not being used to their full scope of practice, which is often not clearly defined nor communicated to others. The domination of the traditional medical model in the health care system stands in the way of interdisciplinary collaboration and patient centered care delivery.

At the system level, current HHR planning is unstructured, often short term in nature, and rarely based on solid evidence. The latter is exaggerated by lack of available data and information, and lack of technology supportive of information tracking.

Innovative HHR strategies have been classified into micro-level and macro-level strategies. Microstrategies include the re-definition of roles of health care professionals, the enabling of health care professionals to work to their full scope of practice, interdisciplinary collaboration, and creation of supporting technology and information systems. Clearly linkages exist between all four types of microstrategies, and many set out to achieve more than one of these goals. Macrostrategies, of which there are considerably fewer, include changes in the education system of health care professionals, and changes in broader policy and regulation.

Several common barriers to implementation of innovative HHR strategies have been identified, many of which correspond to the general problems perceived to plague the health care system. Barriers include the lack of leadership and change management, information deficiencies at the macrolevel allowing for strategic planning, information deficiencies at the micro level, allowing for scope of practice definitions, and evidenced of strategies' successes or failures, the silo culture of health care delivery, further supported by current education and public perception, and the lack of communication between front line health care providers and policy makers at the top.

A set of recommendations can be extracted given information gathered in the literature and at the working conference. Recommendations are presented in order of importance, in the sense that some changes need to be launched so as to enable other recommended changes. The general solution to many of the shortcomings of the current system is a shift toward interdisciplinary collaborative patient centered care delivery. The goal can be achieved through pursuing several supporting objectives.

Recommendation 1

Innovations in health human resource strategies can benefit from a systemic, comprehensive , planned approach to implementation to replace the current ad hoc approach. Planning must be supported with reliable data and information systems, as well as supporting technology

Recommendation 2

Regulation and legislation defining roles of health care providers is in need of re-formulation to account for the changing landscape of health care delivery. Changes must facilitate interdisciplinary collaboration between health care providers, and a patient centered approach to health care.

Recommendation 3

Scopes of practice of various types of health care professionals need to be clearly defined. The extent to which they overlap, and compliment each other must be taken into account.

Recommendation 4

To ensure project sustainability, funders must commit to long term funding of HHR innovations at both the micro and macro levels.

Recommendation 5

Leadership and change management training is required, with specific focus on health service delivery in collaborative patient centered settings.

Recommendation 6

Education curricula must be changed to incorporate information on scope of practice and interdisciplinary collaboration issues of all health care providers in the system.

Recommendation 7

Education delivery should shift away from the traditional approach of bringing students to education, and toward an innovative approach of bringing education to students.

Recommendation 8

The public must be re-educated in order to shift perception away from the traditional medical model of health care delivery. Public perception can be influenced by providers themselves, as well as by policy makers at broader level.