Health Workforce Planning
Abstract Submissions

Making the Right Decisions in a Complex World

Presenter: Dr. Graham Willis, Centre for Workforce Intelligence

Background:
We know that the future is complex and uncertain. Workforce planners spend much time thinking about how they can forecast future workforce demand and supply. Supply is easier to model, and stock and flow modelling can be used to estimate the flow into the workforce from training, attrition and migration in and out, and retirements. Yet the first problem here is that all these factors depend on human behaviour. Will students choose to train in a particular profession? Will they complete their training and work in the profession? And if they do, will they stay, and when will they retire?

Workforce demand is, as we know, much more difficult. What will be the future health needs of the population? Will people take any notice of public health advice? Will technology transform the way that services are delivered? And how will the workforce be organised and work together?

The Centre for Workforce Intelligence has grappled with these problems. The National Health Service in the UK is large (over 1.7 million people) and has a budget of over £109 billion. Understanding the future workforce requirements is critical.

Our approach is based on not trying to forecast the future, but producing a range of plausible, challenging and yet consistent futures. These are used to test prospective workforce options. Some options may work well across all these futures; we would then say that they are robust against future uncertainty. Others may work badly and we would reject them. There may be an option that works really well against all futures bar one; we would then have to decide if this option was worth taking because of it’s performance, assuming that the troublesome future was not likely to occur. If we took this option, we would certainly need to scan for the signs of the problem future so we could mitigate against it.

There are four aspects to our approach:

1) Horizon scanning to understand the system and what drives future behaviour
2) Scenario generate to explore the future and generate challenging scenarios
3) Workforce modelling to simulate different futures and what they may look like
4) Policy analysis to make robust decisions and decide which option works best.
Critical to this is the ability to generate consistent scenarios that can be quantified for modelling.

**Objectives:**
The objective is to be able to generate a set of plausible, challenging yet consistent futures to test prospective workforce policies. It is important to generate a sufficient number of scenarios to span the range of future uncertainty, but not so many that policy makers get confused. Quantifying these scenarios is critical, since many parameters are intrinsically uncertain, yet need to be defined to be able to model future supply and demand.

**Methods:**
The Centre for Workforce Development has developed a robust workforce modelling framework. There are four stages:

1) Horizon scanning to understand the system and what drives future behaviour. We use an online horizon scanning tool to collect ideas about the future from stakeholders. These are then analysed using systems thinking methods to determine what drives the future evolution of the workforce system.

2) Scenario generate to explore the future and generate challenging scenarios. We use a workshop-based approach to scenario generation. However, instead of generating scenarios based on two axes or dimensions of uncertainty, we use a nested approach to explore a wider range of futures. The resulting scenarios are then tested for consistency using a form of cross-impact analysis. Scenarios which are the most consistent are then selected and quantified. Rather than trying to put unique values to key parameters, we use an elicitation method to generate a probability distribution from a group of experts. This allows us to use their expert knowledge in areas where hard data are sparse.

3) Workforce modelling to simulate the future and what the different futures look like. We use a tried and tested system dynamics modelling approach, using Vensim.

4) Policy analysis to make robust decisions and decide which option works best.

**Findings:**
Our approach has been tested across a range of health and social care professions, most recently for a strategic review of the pharmacy workforce. Here the analysis showed clearly that in all scenarios, supply was forecast to exceed demand, regardless of the pharmacist’s role in healthcare. Therefore, it is reasonable to conclude that there will be surplus supply of pharmacists in the future, and action will need to be taken.

The approach has proved popular with stakeholders, and there is an increasing realisation of the need to address the uncertainty of the future, and the difficulty of doing this.
Conclusion:
Scenarios are a key tool for health workforce planning and forecasting. The fundamental challenge is developing a small set of compelling scenarios that span the range of future uncertainty. Scenarios are a core part of the robust workforce modelling approach used by the Centre for Workforce Development. We have developed and tested an approach for ensuring that these scenarios are internally consistent, for quantifying them using a group of experts, and modelling these scenarios to project future workforce demand and supply.

Take Home Messages:
1) The future is uncertain and workforce planners have to take account of this.

2) We cannot accurately forecast the future - and if we think we can we will certainly fail.

3) Testing our plans against a range of plausible, challenging yet consistent futures enables us to select ones that are the most robust against future uncertainty.

An Integrated Approach for Health Workforce Planning for Surge Capacity: An Example Using Pandemic Influenza

Presenter: Dr. Gail Tomblin Murphy, WHO/PAHO Collaborating Centre on Health Workforce Planning & Research
Co-Authors: Birch, S; MacKenzie, A; Rigby, J; Purkis, ME; Langley, J; Stevenson, L; Cruickshank, C; et al

Background:
Health care planners, at both Provincial and Health Authority levels, are challenged to identify the full range/mix of health care providers that are available to provide the required services during times of a surge in demand, such as during a pandemic influenza. Meeting the needs of health care users, those in the system normally and those affected during a pandemic, requires consideration of various team compositions which optimizes the skills-set of each provider group. The goal of this project is to demonstrate an integrated approach to health human resources (HHR) planning for a potential surge in health care needs using the context of pandemic influenza so as to optimize the use of already limited health human resources (HHR) which must be stretched even further in surge conditions.

Objectives:
To demonstrate the application of a health systems planning approach to pandemic planning that integrates workforce and service planning across sectors and professions by allowing for the explicit and simultaneous consideration of best practice evidence, measures of population health needs, and health care competencies.
Methods:
An analytical framework was developed to integrate planning for health care services needed in a population with planning the health workforce required to provide those services. The framework was applied to the context of an influenza pandemic at the provincial (Nova Scotia) and health authority (Island Health) levels. Data were gathered from administrative sources, professional entry-level competencies, provider group consultations and interdisciplinary panels. The data were then analyzed using professions and then services as the unit of analysis to identify potential gaps between workforce supply and requirements. Decision-makers in both jurisdictions were engaged to discuss perceived strengths and limitations of the approach and its application.

Findings:
Analyses at the service and profession levels suggest that both jurisdictions have health workforces with sufficient training and numbers overall to provide most of the services that may be required by their populations under various potential pandemic scenarios. This is contingent, however, on the degree to which addressing other population health needs is deferred during the pandemic. Largest potential service gaps pertained to making diagnoses, providing a range of pharmacy services, and recommending appropriate in-home supports for patients. Some identified strengths of the approach identified by decision-makers were the explicit incorporation of measures of population health needs and its capacity accommodate a wide range of supply (team composition) and requirement scenarios. Its conceptual complexity relative to some other approaches was identified as a potential barrier to uptake.

Conclusion:
This approach offers a flexible tool to guide the alignment of scarce resources across sectors and professions as closely as possible with population health needs. The availability of such tools is particularly important during ‘surges’ in health care needs, such as pandemics.

Take Home Messages:
1) This integrated approach to health workforce planning utilizes a process that matches provider competencies to service requirements;

2) This integrated approach is a flexible tool with applications across sectors, conditions and population groups;

3) The availability of such tools is important for needs-based planning for health systems and health human resources.
Centering Women and Newborns in Health Human Resources (HHR) Planning: A Needs-Based Approach to Primary Maternity Health Care in Nova Scotia

**Presenter:** Ms. Annette Elliott Rose, Dalhousie University  
**Co-Authors:** Dr. Gail Tomblin Murphy

**Background:**
In the midst of a global health human resource (HHR) crisis and with increasing health needs, decision-makers are seeking new ways of designing health care in all clinical settings, including primary maternity health care. As stated in seminal reports on primary health care (PHC), initiatives to reform PHC delivery will improve the health of Canadians and sustain our health care system. Most of the planning for HHR in primary health care has typically been based on utilization patterns, supply of providers or costs. In an effort to address current HHR and health system challenges, needs-based HHR planning focuses on the patient’s health needs to estimate the health services required so that these can be translated into the required competencies and types of health care providers. To date, no study has used needs-based HHR planning specifically for maternal and newborn care in Canada.

**Objectives:**
The purpose of the presentation is to describe relevant literature, theory, design, results and policy, practice and planning implications of a sequential quantitative-qualitative mixed methods study aimed at identifying the primary maternity health care needs of women and newborns in Nova Scotia.

**Methods:**
Informed by established HHR frameworks, data from two data sources, the Canadian Community Health Survey (CCHS) (n=288; randomized stratified sampling) and the NS Atlee Perinatal Database (NSAPD) (n=17,824; entire 2009-10 population) were analyzed using multiple regression to determine the health needs of women and newborns based on various health needs indicators. Using purposeful sampling and poster and email recruitment, focus groups and interviews with women (n=22), health care providers (n=18) and health leaders (n=16) are being analyzed using an interpretive thematic analysis approach.

**Findings:**
Correlations between specific social determinants of health and maternal and newborn health needs were identified in the initial quantitative analysis completed prior to the qualitative data collection and used to inform discussions in the qualitative phase. Using multiple regression analysis, a number of factors associated with a broad definition of health were found to increase maternal and newborn health need. Preliminary qualitative analysis suggests that women, health leaders and providers identify a lack of patient-centredness in our current system influenced by issues of professionalization, power and
health care funding models. Additional themes identified suggest a need for interprofessional and full scope practice and a fundamental paradigm shift in how we understand and measure health and health needs to inform how we design health human resources and deliver health care.

**Conclusion:**
It is anticipated that integrated findings from this research will inform health human resources and primary maternity health care planning in Nova Scotia by identifying the health needs of women and newborns and in turn, inform different maternal and newborn care delivery models.

**Take Home Messages:**
1) Needs-based health human resources (HHR) planning is essential to estimate the health services required so that these can be translated into the required competencies, numbers and types of health care providers.

2) HHR planning requires a broad definition and full understanding of health in an effort to plan services adequately and improve experiences and outcomes.

3) Improvements in data access and quality are needed to fully capture health needs so that the multiple determinants that influence health are included in health system planning.

**Need, Supply and Demand Among Canada’s Mental Health Workforce**

**Presenter:** Dr. Lisa Votta-Bleeker, Canadian Psychological Association and Dr. Karen R. Cohen, Canadian Psychological Associations

**Background:**
In November 2013, the Canadian Psychological Association (CPA) hosted a Summit to address issues and opportunities related to need, supply and demand for the discipline and profession of psychology. The purpose of the 1.5 day Summit was threefold: 1) to hear from organizations within and outside of psychology about what we know about students, practitioners, scientists, trainers and faculty in psychology; 2) to identify the data needs and gaps that will enable the discipline and profession to better plan for its future and chart its contributions across Canada’s many sectors; and 3) to develop a strategic plan and its associated activities to fill data gaps and hone psychology’s capacity to contribute to the health and well-being of Canadians. Seventy-five persons from within psychology’s communities of science, education and practice, from government and non-government, and from other health disciplines participated in the Summit. This presentation will report on the Summit’s proceedings and next steps.
Objectives:
To identify data needs and gaps that psychology, and other health scientists and practitioners might need to consider when it comes to workforce planning.

To identify opportunities and partnerships that can help scientists and practitioners fill the data gaps necessary to workforce planning and, ultimately, to addressing the mental health needs of Canadians.

Methods:
The CPA Summit included the participation of scientist and practitioner leaders within the psychology profession as well representatives from the Canadian Institute of Health Information (CIHI), Statistics Canada, the Association of Canadian Psychology Regulatory Organizations, the Canadian Council of Professional Psychology Programs, the Canadian Association of Post-doctoral Scholars, Mitacs, the Mental Health Commission of Canada, Correctional Services Canada, the Department of National Defence and the Canadian Armed Forces, the Canadian Institute for Military and Veteran Health Research, and the College of Family Physicians of Canada. Collectively, presentations addressed what we know and what we need to know when considering our academic and practitioner resource.

Participants at the Summit were charged with brainstorming around three themes: How can we collect better data about our workforce? How can our workforce be better trained to meet the needs of stakeholders (e.g. governments and decision-makers, public agencies, patients)? How can our workforce make better contributions to science, practice and public policy?

Findings:
Data collected and archived by aggregators (e.g. CIHI, Statistics Canada) describes the demography of the profession but little about its practice and research profile. There is need for individual level data sets that can tell us a consistent story about a defined resource. Barriers to collecting systematic data sets are largely one of resource. Funding to collect and aggregate information about scientists has been discontinued in recent years (e.g. Survey of Earned Doctorates). There is a gap between projected positions needing to be filled by scientists and the number actually hired. Each year approximately 35% of PhDs in Canada cannot find full-time academic employment. Practitioner graduates who at one time may have gone on to careers in public practice increasingly work in private practice – making their services considerably less accessible to Canadians because services provided outside of public institutions are not covered by public health insurance plans. We may not in fact be training scientists or practitioners for jobs or careers that exist. We identified barriers and enablers to recruitment and retention of health scientists and practitioners – these are not always remunerative and often involve conditions of work (e.g. scope of practice and alignment of role and expertise). We identified areas for needed training for psychologists and other health professionals (e.g. applied methodologies, knowledge translation, program evaluation, public policy, alternate career paths, interdisciplinary research and practice). Finally, we identified the next steps that CPA as a professional association can take on behalf of its membership to address the data gaps in partnership with other stakeholders.
**Conclusion:**

**We need better data:** there is a great need to systematically collect information about our health scientist and practitioner resources upon which successful health workforce planning must rely.

**We need better training:** we need to better align training objectives and goals to career realities and train our workforce with the skills and expertise that respond to the health needs of communities.

**We need to make better contributions:** we need to do a better job in science and practice both addressing the health related problems that stakeholders, communities, and policy makers present, and highlighting the unique skills psychologists have to address them.

**Take Home Messages:**

1) We need to work with partners and stakeholders to address the resource challenges that stand in the way of data collection about our health scientist and practitioner resource.

2) We need to support partnerships among agencies that train our resource and those that employ them to ensure that we have a health scientist and practitioner resource that is positioned to meet the needs of the communities in which they live and work.

**Health Workforce Planning: How Policy Can Impact Career Transitions of New Graduate Nurses**

**Presenter:** Mrs. Crea-Arsenio, McMaster University  
**Co-Authors:** Andrea Baumann, Mabel Hunsberger, Paul Rizk, Camille Kolotylo.

**Background:**
An early study of employment patterns demonstrated a significant rise in part-time and casual employment in the Ontario nursing workforce. The Nursing Graduate Guarantee, a public policy initiative, was introduced by the provincial government to stimulate full-time employment. The Nursing Graduate Guarantee (NGG), launched in 2007, is a comprehensive government initiative designed to support every new Ontario nursing graduate in obtaining full time employment immediately upon graduation. The NGG was introduced in response to a series of events that affected the employment of new graduates. In the early 2000’s, casualization of the nursing workforce and imminent nursing retirements threatened the stability of the nursing workforce providing a stimulus for action by the profession and the government. To facilitate this process an employment portal was created for employers to post jobs for new graduate nurses and funding provided to hire them into full-time temporary positions for 6 months.
**Objectives:**
We need to work with partners and stakeholders to address the resource challenges that stand in the way of data collection about our health scientist and practitioner resource. We need to support partnerships among agencies that train our resource and those that employ them to ensure that we have a health scientist and practitioner resource that is positioned to meet the needs of the communities in which they live and work.

**Methods:**
The Policy Impact on Nurse Employment (PINE) survey was developed to assess the impact of the NGG on nurse employment and retention over a six year period. It includes demographic data, employment data, retrospective career transition data, and retention data. The survey was emailed to new graduate nurses who graduated between 2007 and 2012.

Comparative analysis of full-time employment and retention rates for NGG new graduate nurse participants and non-participants was used to determine the association between NGG participation and employment outcomes from 2007 to 2012.

**Findings:**
We need to work with partners and stakeholders to address the resource challenges that stand in the way of data collection about our health scientist and practitioner resource. We need to support partnerships among agencies that train our resource and those that employ them to ensure that we have a health scientist and practitioner resource that is positioned to meet the needs of the communities in which they live and work.

**Conclusion:**
The impact of the NGG is broader than increasing the number of new graduates in full-time positions. The recruitment of new graduates into full-time positions offsets the threat of looming shortages resulting from predicted retirements. Integration of new graduate nurses into permanent full-time employment contributes to workforce stability and capacity building within the healthcare system.

**Take Home Messages:**
1) Government investments can impact the employment of nurses provincially.

2) Workforce planning should involve the successful integration of new graduate nurses.

3) Workforce integration of new graduate nurses ensures nurses remain in the profession and the province.