

Needs-Based Planning for Jamaica's Human Resources in Health

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WHO/PAHO Collaborating Centre in Workforce Planning and Research at
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Executive Summary

Background

Following the Toronto Call for Action, a partnership was developed between representatives of the Jamaica Ministry of Health and a research team from the WHO/PAHO Collaborating Centre in Workforce Planning and Research at Dalhousie University in Canada that aimed to build capacity for needs-based Human Resources for Health (HRH) planning in Jamaica while informing HRH planning in Canada through knowledge exchange between both countries. Supported by Jamaica's Ministry of Health (MOH) as well as Health Canada and the Pan-American Health Organization (PAHO), work on the project began in late 2007. The project is guided by a steering committee of key stakeholders in HRH from across Jamaica.

Objective

The purpose of the project is to enhance Jamaica's capacity for needs-based HRH planning by developing needs-based simulation modeling tools appropriate to the unique circumstances of Jamaica that bring together the best available information on its health workforce and population health needs.

Methods

Originally developed in Canada, the approach to creating these simulation modeling tools is being adapted to suit Jamaica's context under the steering committee's guidance. The models are intended to serve two purposes. They serve as planning tools, designed to simultaneously estimate the supply of and requirements for HRH and allow for the testing of policy interventions designed to influence these. They are also communication tools, allowing Jamaica's policy-makers and other stakeholders to visualize the relationships between the many dynamic factors that influence HRH requirements and supply, thereby enabling them to develop innovative solutions to HRH challenges. The overall purpose of the tools is to make health research more accessible to health policy makers, thereby better informing health policy for Jamaica.

The purpose of this approach is not to predict the future, but rather to integrate knowledge of different components of the health care system in order to improve understanding of how various factors affect the supply of and/or requirements for health care providers and identify policy levers for influencing them in Jamaica. In this way, the models are designed to enable policy makers to 'rehearse' potential policies by altering the value of various parameters in the model and examining the estimated effects of those changes on the supply of and

requirements for a given type of health care provider so as to determine the most effective and efficient ways to manage HRH under different future scenarios.

Results

Because the limited timelines and resources of the project meant that it would not be possible to develop simulation models for every health profession in Jamaica, ten were selected by the project steering committee based on the criteria of epidemiological trends, policy and planning needs, and the availability of data. These included pharmacists, midwives, public health nurses, public health inspectors, contact investigators, psychiatrists, dentists, pediatric cardiologists, radiologists, and anesthetists. It was also decided that the models would be tested specifically for public sector providers in Jamaica's South East Regional Health Authority (SERHA), the country's largest and most complex in terms of both health care needs and health care structures. As of this writing, sufficient data has been obtained to produce simulations for five of these professions—pharmacists, midwives, contact investigators, psychiatrists and dentists.

Following a teleconference (May, 2011) and an in-person meeting (July, 2011) between senior leadership in the Ministry of Health (including members of the project steering committee), the Dalhousie Team, and representatives from PAHO Washington and PAHO Jamaica, it was decided that work on the remaining professions would be suspended in order to focus attention on utilizing the needs-based tools to support Jamaica's work in meeting the Millennium Development Goals, specifically those related to maternal and infant mortality such as midwives.

Contact Investigators

The requirements for contact investigators will depend strongly on the incidence rate of HIV and other sexually transmitted infections—as these rates increase or decrease, the need for the services of contact investigators will increase or decrease accordingly. The need for CIs will also depend strongly on the workload expected of them; the more individuals they must seek out and contact, the more counselling and informations they are to provide, and so on, the more CIs will be needed. Based on the most recent incidence rates and workloads, additional CIs are needed to meet the needs of SERHA's population. This situation will worsen should infection rates increase¹, or if more CIs leave the workforce, for example, due to burnout. However, even modest increases in the existing CI workforce would help to offset the current shortage.

¹ Keeping HIV and other STI infection rates at a minimum is a priority of the Ministry of Health; see for example Jamaica Ministry of Health, 2010a; 2011a.

Dentists

To provide basic dental health care needs only—that is, without considering other areas of strong need for dental services such as cases of head trauma—to the population of SERHA, based on their current oral health status, would require the services of several hundred additional full time dentists. Given the very low levels of in-migration of dentists to Jamaica’s public sector workforce (the benefits of which have tended to be negated by losses from that workforce), even tripling current levels of in-migration of dentists will do little to improve the shortage. The establishment of a dentistry program at the University of Technology will be of some help, depending on the success in recruiting and retaining graduates of this program to the public service. However even if all graduates from the new program enter the public service, this addition will still leave a large gap, even though the impact of the shortage of dentists in Jamaica’s public sector is being substantially offset by persons obtaining dental care in the private sector. A comprehensive approach is necessary to eliminate the shortage of dentists; since a large increase in the supply of dentists is unlikely to be feasible in the short term, such an approach must instead focus on increasing the supply of *dental care*, making use of all available resources as efficiently as possible. At the same time, educational initiatives are necessary to improve the country’s oral health and reduce the need for dental services.

Midwives

Although Jamaica’s birth rate is falling slightly, and the supply of midwives is relatively stable, the existing supply does not appear adequate to have all pregnancies overseen by a midwife. Some analysis of the practices and roles of midwives practicing in hospital settings compared to those in the community, and the differing policies and incentive packages for each of these may be of value in exploring ways to facilitate midwives practicing across these settings to provide more comprehensive patient care, increase the productivity of midwives, and increase their level of practice participation. This may be particularly relevant given a potential cultural shift in mothers’ preferences for delivery in hospitals as opposed to community settings, and given that fewer than half of the trained midwives working for SERHA are practicing as midwives; others are working as specialist nurses, community nurses or nurse practitioners.

Increasing the level of participation of midwives in SERHA—that is, the proportion of trained midwives who are actually practicing midwifery—could significantly reduce the midwife shortage. Modest yearly increases in the productivity of midwives—achieved, for example, through additional human or non-human supports—would similarly reduce the shortage. If both of these improvements could be made together, they could be sufficient to eliminate the shortage of midwives in SERHA within a 15-year period.

Pharmacists

Jamaica faces a significant shortage of pharmacists, and the South East Region is no exception. Although pharmacists are trained and educated in Jamaica, very few of the country's pharmacy graduates work in the public sector. For this reason, even a large increase in the enrolment at UTech's pharmacy program is unlikely to eliminate the pharmacist shortage. In contrast to the relatively small impact of a large enrolment increase, simulation results suggest that increasing the portion of pharmacy graduates who enter the public sector workforce would dramatically reduce the shortage of pharmacists in SERHA. Such an improvement could be achieved through initiatives designed to enhance the appeal of the public sector, such as better working conditions, improved financial incentives, or opportunities for professional development. Alternatively, or perhaps in complement to such initiatives, could be making some amount of public sector service a condition of registration for pharmacists. Similarly, results suggest that increases in the productivity of pharmacists could potentially reduce the SERHA pharmacist shortage dramatically. Productivity improvements can be achieved through such means as investments in support staff such as pharmacist assistants or enhanced technology such as pre-packaging. Further, results suggest that if both of the above policy scenarios could be achieved together, then the shortage of pharmacists in SERHA would be reduced to the point that, within 15 years, the supply of pharmacists in the region would be sufficient to meet the needs of persons relying on public sector pharmacies without the use of 'sessions', or overtime work by pharmacists. Additional policies that could be considered include amending existing legal and regulatory frameworks to recognize and define the roles and standards of practice of pharmacy technicians, exploring options for training experienced pharmacy technicians as pharmacists, and exploring further private/public partnerships for the provision of pharmacy services, such as through the National Health Fund.

Psychiatrists

Like any profession, the requirements for psychiatrists are strongly dependent on the amount and type of service they are to provide to the population. Although currently there is little detailed data on the levels of service (e.g. the number and type of services they provide to persons of a given level of need) provided by public sector psychiatrists in Jamaica, the number of them currently practicing appears insufficient to provide even one consultation per year to persons with mental disabilities in the region. This gap increases as expected levels of service increase—that is, the more care psychiatrists are to provide, the more psychiatrists are required. Similar to the shortage of dentists, a comprehensive approach is required to address the shortage of psychiatrists. This approach should consider collaborative, intersectoral initiatives aimed at reducing the need for psychiatric care by improving the social determinants of health through, for example, employment/job search programs, drop-in centres, or other means of social support. At the same time, it will be important to review existing policies and

regulatory/legal frameworks to ensure they allow for the most efficient use possible of all available mental health human resources, including counsellors, mental health nurse practitioners, social workers and so on so that the few available psychiatrists can focus on the cases that require the most specialized care.

Summary of Findings

The data available to plan for Jamaica's human resources in health is limited. However the data that is available indicates that there are shortages of contact investigators, dentists, midwives, pharmacists and psychiatrists in the South East region, with the shortages of dentists, pharmacists and psychiatrists being particularly large.

Using the simulation models developed, a number of policy scenarios have been simulated to investigate their potential impacts on these shortages. Results from these simulations suggest that some of these policy scenarios may be sufficient, if implemented, to reduce or eliminate the shortages of these professionals. Results also suggest that comprehensive, multi-sectoral policy initiatives will be required to address the shortages for some professions. These scenarios are not intended to represent a specific direction for policy change; rather they are meant simply to illustrate the kinds of policies whose implications on HRH shortages can be tested using the suite of modeling tools developed for the Ministry of Health by the Jamaican steering committee and the Dalhousie team.

Emerging Priorities

In collecting, analyzing, synthesizing and discussing the data available on Jamaica's human resources in health with key stakeholders from across the country, several themes have developed that suggest focus areas for policy action to address shortages of HRH and improve the health of Jamaicans. These emerging priorities are as follows:

- 1. Further integrate planning for education and health aligned with shared priorities.**
- 2. Invest in primary health care education and service delivery focused on improving the social determinants of health**
- 3. Invest in public health education and environmental health to reduce the burden of disease and heighten preparedness.**
- 4. Improve working conditions for HRH to reduce migration/increase retention, increase recruitment and boost productivity.**
- 5. Explore options to make more efficient use of existing resources e.g. task shifting, flexible management/hiring policies or legislation.**
- 6. Invest in improving health information systems to improve planning, ongoing monitoring and evaluation.**

Background

Faced with limited resources and emerging health conditions, it is in the interest of policy makers in both Jamaica and Canada, as well as the populations they serve, to align the capacities of health care workforces with the needs of these populations. This challenging task is made easier when information on the health workforce and the population's health needs is readily available to policy makers.

Following the Toronto Call for Action (PAHO, 2005), a partnership was developed between representatives of the Jamaica Ministry of Health and a research team from the WHO/PAHO Collaborating Centre in Workforce Planning and Research at Dalhousie University in Canada that aimed, through exchanging knowledge and experiences, to build capacity for needs-based Human Resources for Health (HRH) planning in Jamaica while informing HRH planning in Canada through knowledge exchange between both countries. Supported by Jamaica's Ministry of Health as well as Health Canada and the Pan-American Health Organization (PAHO), work on the project began in late 2007. The project has been guided by a steering committee of key stakeholders in HRH from across Jamaica; members of the steering committee are listed in Appendix I.

Objective

The purpose of the project is to enhance Jamaica's capacity for needs-based HRH planning by developing needs-based simulation modeling tools appropriate to the unique circumstances of Jamaica that bring together the best available information on its health workforce and population health needs. The purpose of these tools is two-fold. They serve as planning tools, designed to simultaneously estimate the supply of and requirements for HRH and allow for the testing of policy interventions designed to influence these. They are also communication tools, allowing Jamaica's policy-makers and other stakeholders to visualize the relationships between the many dynamic factors that influence HRH requirements and supply, thereby promoting innovative solutions to HRH challenges. Overall, the tools are designed to make health research more accessible to health policy makers and thereby better inform health policy for Jamaica.

Methods

Jamaica's needs-based HRH planning project is being led by a steering committee made up of stakeholders representing federal ministries of health, education and finance, regional health authorities, universities and other institutions important to HRH planning in the country. A list of past and current members of the steering committee is provided in Appendix I. This steering

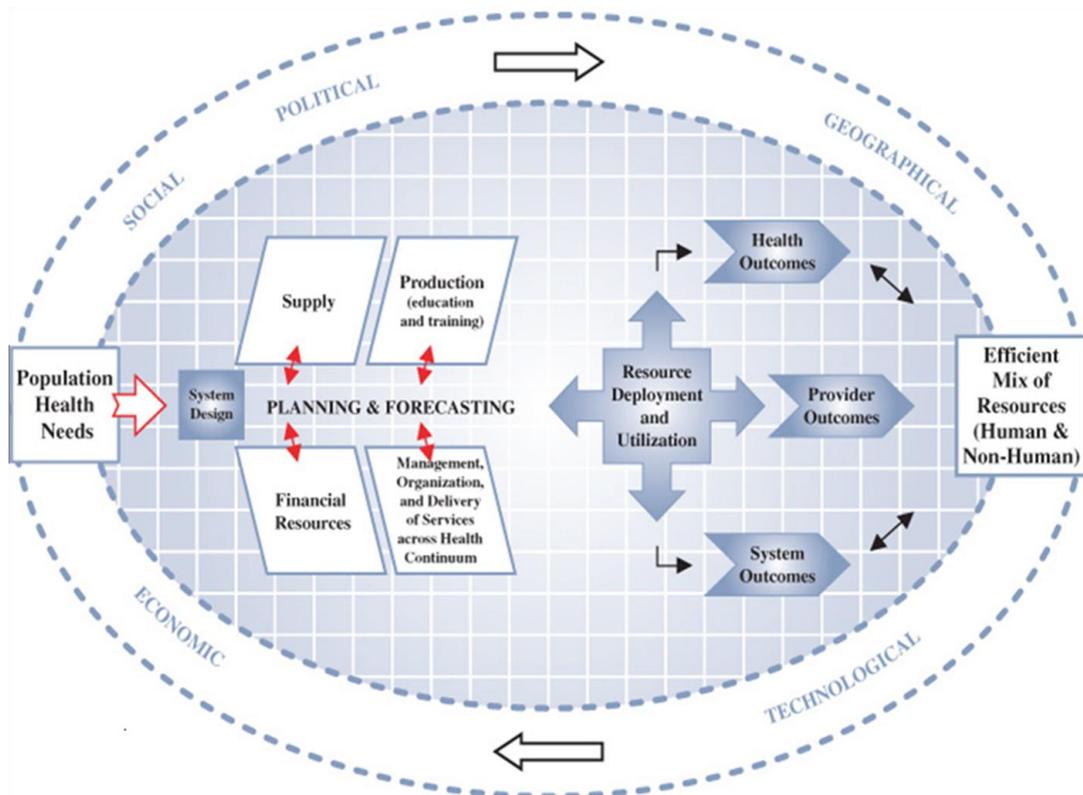
committee and the Dalhousie team have worked together to adapt a needs-based approach to HRH planning developed in Canada to the unique context of Jamaica.

Conceptual Framework

This approach is informed by a conceptual framework (shown in Figure 1) that has been adopted by Canada’s Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources (ACHDHR, 2005). This framework depicts the dynamic nature of the relationships among the many components of the health care system. In traditional approaches to planning, these components have been treated, often implicitly, as separate, independent and in many cases invariant over time.

The framework’s outer band indicates that Health Human Resources Planning (HHRP) should be performed in consideration of relevant social, political, geographical, technological and economic factors, including for example, the capacity of the jurisdiction to support health care and policy decisions about the methods of funding health care services.

Figure 1: Conceptual Framework for HRH Planning



O'Brien-Pallas & Tomblin Murphy, 2006
 Adapted from O'Brien-Pallas, Tomblin Murphy & Birch (2005), O'Brien-Pallas, Tomblin Murphy, Birch & Baumann (2001) and O'Brien-Pallas & Baumann (1997)

The framework's outer band highlights the need to consider the range of relevant social, political, geographical, technological and economic factors that influence population health and the health care system when performing HRH planning. Across all sectors of care (system design), HRH planning must work with the current practice pool of providers, noting that this supply is maintained by the production of new providers, and the flow of services from that supply is influenced by the level of financial resources applied and the management and organization (e.g., models) of service delivery. The flow of services from that supply of human resources will also be influenced by the deployment (e.g., the number of nurse hours made available per patient day) and utilization (e.g., the number of patient days of hospital care used) of these resources. These human resources, when supported by non-human resources (e.g., facilities and technology), yield patient, provider and system outcomes that are optimized when there is an efficient mix of human and non-human resources in the jurisdiction.

Analytical Framework

The conceptual framework provides the foundation for the analytical model upon which simulations can be based and recommendations generated. The analytical model (Birch et al., 2007) consists of two broad elements, provider supply and provider requirements.

The supply element of the analytical framework addresses the question, 'How many providers are available to deliver health care services to the population?' Supply can be seen as the 'outcome' of two broad determinants:

1. The **stock** of individuals, representing the number of providers in each age and sex group who are potentially available to provide health care services, and
2. The **flow** of provider time from the stock, influencing the quantity of service output (e.g., time spent in the production of services). This time depends on
 - a. the proportion of the current stock participating in the provision of health care (i.e., the **participation rate**), and
 - b. the quantity of time devoted to service provision of those who do participate in the provision of health care (i.e., the **activity rate**).

Participation and activity rates represent policy levers for HRH policy makers and, hence, alternative or complementary approaches for changing provider supply.

In addition to changes in the flow of provider time, the size of the stock changes over time due to new entrants to the stock (inflows of providers from other countries together with new graduates from within Jamaica) and those leaving the stock (outflows of providers to other

countries, changes of profession, retirements and deaths among providers). Also, because education and training (i.e. the production of new providers) are generally separated from the management and regulation of providers (the use of existing providers) in terms of policy responsibilities, provider supply can be seen as the combination of two components—training of new providers and management of existing providers.

The provider requirement element consists of four distinct components:

1. **Demography:** the number of people by age and gender group in the population.
2. **Epidemiology:** the rate of health and illness as well as risk factors for future illness across the population subgroups.
3. **Level of service:** the amount of health care services to be provided for individuals at different levels of illness or risk of illness.
4. **Productivity:** the amount of health care services a Full Time Equivalent (FTE) provider performs per unit time.

Because each of these components varies across age and gender groups in a population the analytical model operates at the level of each age-gender group and the provider requirements for each group are summed to provide an estimate of total provider requirements. Combining the first three components of the framework yields an estimate of the number of health care services required by a population, given its size, demographic mix, levels and distribution of health and illness, and levels of service. The fourth component (productivity) translates the number of services required into the number of health care providers required to perform them.

Simulation Models

Informed by both these conceptual and analytical frameworks, a simulation modeling approach was developed in Canada (Tomblin Murphy et al., 2009) to simultaneously estimate the supply of and requirements for HRH in Canada and calculate the difference ‘gap’ (i.e., shortage or surplus) for each year of the planning period. It has been the work of the Jamaican steering committee and its partners at Dalhousie University to adapt this approach to suit the context of Jamaica.

The purpose of the models used in this approach is not to predict the future, but rather to integrate knowledge of different components of the health care system in order to improve understanding of how various factors affect the supply of and/or requirements for health care providers and identify policy levers for influencing the supply of and requirements for HRH in Jamaica. In this way, the models are designed to enable Jamaica’s policy makers to ‘rehearse’

The models are each made up of four modules: training, supply, work and productivity, and needs. Although these modules are identified separately for the sake of clarity, there are strong relationships between them. For example, the ‘outputs’ of the training module will affect those of the ‘supply’ module as providers complete their education and training and enter the workforce.

The Supply Module

The purpose of the supply module is to estimate the future size of the supply of health care providers in SERHA based on the *existing* supply, the number of *new providers* entering that supply, and the number of *exits* from that supply over time.

The existing provider supply is the number of providers in the existing population that are potentially available to provide care to patients. This includes all those who are currently licensed to provide patient care in general, whether or not the individual is currently active in the delivery of health care services. This existing stock is specified by single year of age to allow for the ‘aging’ of this population.

Providers entering the existing stock are considered to be of two types— *new graduates* of local provider education and training programs, and providers beginning practice in the region who had previously been practicing elsewhere (or not at all). The latter phenomenon, termed *in-migration*, would include providers migrating from other jurisdictions (such as other regions of Jamaica or other countries).

Providers exit the available supply for a variety of reasons such as death, retirement, or relocation. Since the number and type of these exits vary by age, changes in particular reasons for exits can be simulated by adjusting exit rates at different ages. For example, adjusting exit rates over age 50 or 55 can be used to simulate alternative retirement scenarios.

The combination of flows in (new providers) and out (exits) of the existing supply of providers determine whether the supply grows or declines. In the short-term, the age distribution of this supply can exert a very powerful influence on its rate of growth or decline in size. For example, since rates of exit are larger at older ages (especially due to retirement), the total number of providers ‘lost’ will depend on the proportion of the supply in those age groups with the highest incidence of retirement.

The Training Module

Provider education and training programs represent an important source of additions to the supply of acute care providers in SERHA, and indeed to all of Jamaica. The training module focuses on estimating the flow of *new graduates* from these programs into the regional supply, which requires an understanding of the factors affecting that flow. The size of first-year enrolment, or number of *seats*, in an education/training program is just one of several determinants of the flow of new graduates. The flow of graduates will also depend on *program length* (i.e., the distribution of years to graduation among cohorts of students), the *attrition rate* of the program (i.e. the proportion of students who enrol in the program but do not graduate) and the rate of entry to the regional supply by new graduates. The latter rate is determined by *graduate out-migration*; that is, graduates of local programs that do not enter SERHA's supply of providers (but may instead, for example, begin practice in a different setting, region or country).

The Work and Productivity Module

The simulation models differentiate between the size of the provider stock (that is, a head count of licensed providers) and the contributions of those providers to the health care system. The capacity of the provider stock to meet requirements depends on both the number of providers and the hours of labour they provide. The work and productivity module therefore translates the size of the stock into the effective supply of full-time equivalent (FTE) providers given the level of participation and activity of those in the stock. It also translates the required number of services into the required number of FTE providers according to the rate at which an average provider can be reasonably expected to perform these services (i.e. *productivity*). In the case of pharmacists, for example, this was measured as the number of items a full-time pharmacist dispenses in a year.

Providers in the stock are characterized by different levels of *participation* and *activity*. For example, some are unemployed, others are employed but engaged exclusively in research, administration or education; these are deemed non-participants in direct patient care. Among those employed in care delivery (i.e., participants), the number of hours worked varies (e.g., part-time, full-time or more than full-time). Changes in the distribution of participation and activity of the providers in the stock provide important mechanisms for meeting health care requirements. Shifting providers from part-time to full-time activity levels, or adding over-time shifts (e.g. sessions) increases the number of FTEs providing care, other things equal. However, this may also negatively affect the productivity of providers or the rates at which they exit the system. For example, excessive overtime hours have been linked to lower productivity rates, or

burn-out resulting in higher rates of exit from the stock or providers (O'Brien-Pallas et al., 2005).

The work and productivity module considers the portion of the licensed supply of providers who practice patient care in SERHA (participation), the average number of hours worked by these providers (level of activity) and the average level of service delivery per hour of work (level of productivity) in translating the number of services required and licensed providers into, respectively, the number of FTE providers required and available.

The Needs Module

This module estimates the number of services required to meet the health needs of SERHA's population based on the first three components of the analytical framework (Birch et al., 2007): population, health need, and level of service. More specifically, these estimates are based on 1) the size and age/sex distribution of the population, 2) the distribution of health needs within that population, and 3) the number of services received by that population according to their level of need. Multiplying these three components yields the number of services required to meet the health needs of SERHA's population.

Data Sources

The accuracy of the simulations depends on the scenarios used about future levels of determinants and the quality of the data used to inform those scenarios. As in many countries, access to valid, reliable data for HHR planning in a timely manner continues to be a challenge for HRH planners and researchers in Jamaica. The Jamaican models developed have therefore been designed so that users can easily introduce new or better data as these become available.

The sources of data used in the simulations included in this report are summarized in Table 1. Cells with green fill indicate that the data referred to came from administrative records. Those in yellow indicate that administrative data was only partially available, or that proxies were used where administrative data was not available—for example, estimates from deans or registrars of education and training programs estimating attrition rates of those programs. Red cells indicate data which was not available and for which sensitivity analyses using a range of values can be conducted to demonstrate the effect of that factor on the HRH gap.

Table 1: Data Sources for Jamaica HRH Simulation Models

Module	Data Element	Contact Investigators Source	Dentists Source	Midwives Source	Pharmacists Source	Psychiatrists Source
Training	Seats	N/A	UTech ²	Nursing Council of Jamaica (NCJ)	UTech	UWI ³ Medical School
	Program Attrition	N/A			UTech	UWI Medical School
	Program Length	N/A	UTech	NCJ	UTech	UWI Medical School
	Graduate Out-Migration	N/A			UTech	
Supply	In-Migration	SERHA	MOH	SERHA	SERHA	SERHA
	Existing Provider Stock	SERHA	MOH	SERHA / UWI ERU	SERHA / UWI ERU	SERHA / UWI ERU
	Exit Rates	SERHA	MOH	SERHA	SERHA	SERHA
Work and Productivity	Participation Rate	SERHA	SERHA/JDA	SERHA	SERHA	SERHA
	Activity Rate	SERHA	SERHA	SERHA	SERHA	SERHA
	Productivity	Parishes	MOH	MOH	MOH	MOH
Needs	Population	STATIN ⁴	STATIN	STATIN	STATIN	STATIN
	Need	Parishes	MOH	MOH	MOH	MOH
	Level of Service	Parishes	MOH	MOH	MOH/NHF ⁵	

Key challenges in obtaining certain data elements are mainly linked to two limitations of Jamaica’s current health information systems—the lack of a unique identifier for health workers, and the lack of a unique identifier for persons using the health system. The absence of the latter means that it is very difficult to determine what services individuals receive according to their health needs (i.e. levels of service), while the former means it is difficult to establish what the current supply of health providers is, let alone to track flows of health care providers in and out of that supply.

The Ministry of Health has gathered all its available data on the incidence and prevalence of various health conditions in Jamaica. However, these data are too variable to extrapolate

² University of Technology

³ University of the West Indies, Mona Campus

⁴ Statistical Institute of Jamaica

⁵ National Health Fund

future trends in these conditions with any reliability. This variation is likely due in large part to the aforementioned limitation in the country’s health information systems. In addition, at present the ability to measure the prevalence of many conditions is limited to those which are directly responsible for hospital admissions, which may result in underestimates of prevalence, particularly of chronic conditions such as arthritis.

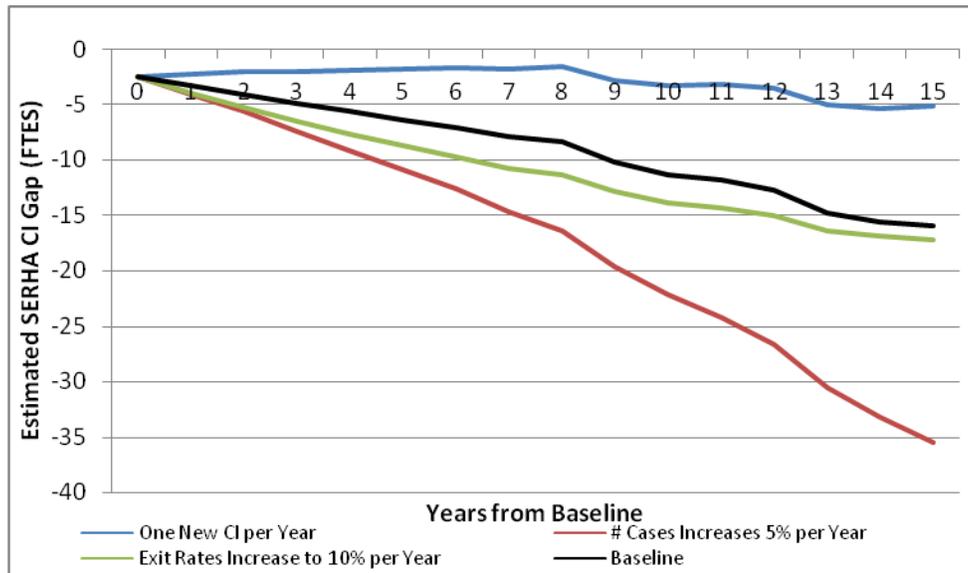
Results

For each of the five professions listed above—contact investigators, dentists, midwives, pharmacists, and psychiatrists—the gap between the number available and the number required in the South East Region is estimated under a various scenarios. The results for each of these professions are discussed separately.

Contact Investigators

The requirements for contact investigators will depend strongly on the incidence rate of HIV and other sexually transmitted infections—as these rates increase or decrease, the need for the services of contact investigators will increase or decrease accordingly. The need for CIs will also depend strongly on the workload expected of them; the more individuals they must seek out and contact, the more counselling and informations they are to provide, and so on, the more CIs will be needed. As shown in Figure 3, based on the most recent incidence rates and workloads, additional CIs are needed to meet the needs of SERHA’s population.

Figure 3: Simulated SERHA Contact Investigator Gap Under Various Policy Scenarios



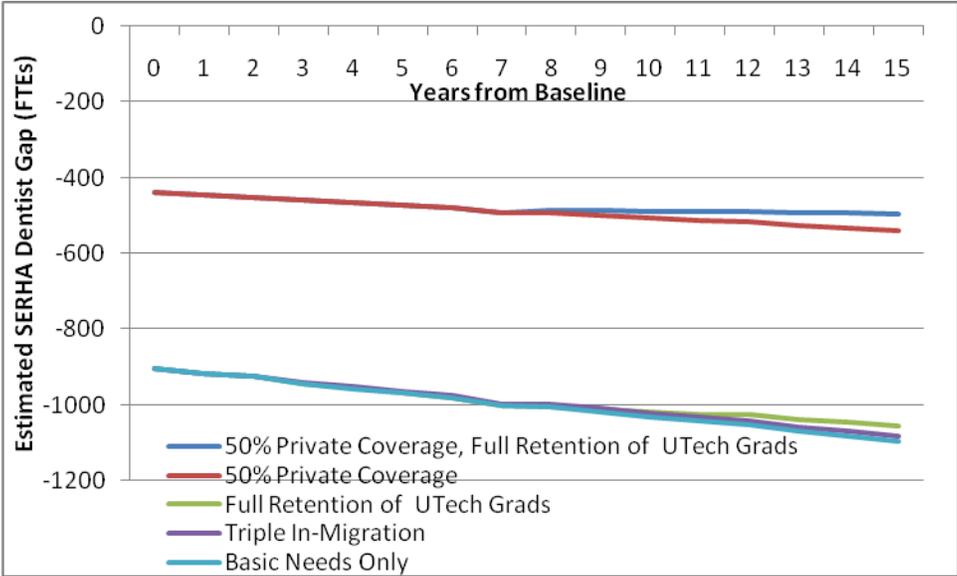
If current infection rates and workloads remain stable, the shortage of CIs in SERHA will continue to increase as the younger population grows and existing CIs leave the workforce. This situation would worsen should infection rates increase⁶, or if more CIs leave the workforce, for example, due to burnout. However, even modest increases in the existing CI workforce would help to offset the current shortage.

Dentists

The need for dental services in Jamaica extends beyond the provision of basic oral health care into other areas such as dental and maxillofacial surgery, in no small part due to the country’s ongoing challenge with motor vehicle collisions, violence, and other causes of trauma, many of which impact oral health. Oral health, in turn, impacts individuals’ overall health; those with poor oral health, for example, are less able to eat and thus at risk for numerous health problems related to poor nutrition.

As shown in Figure 4, to provide basic dental health care needs only—that is, without considering other needs for dental services such as cases of head trauma—to the population of SERHA, based on their current oral health status, would require approximately 900 additional full time dentists.

Figure 4: Simulated SERHA Dentist Gap Under Various Policy Scenarios



⁶ Keeping HIV and other STI infection rates at a minimum is a priority of the Ministry of Health; see for example Jamaica Ministry of Health, 2010a; 2011a.

Given the very low levels of in-migration of dentists to Jamaica's public sector workforce (which have tended to be negated by losses from that workforce), even tripling current levels of in-migration of dentists will do little to improve the shortage. The establishment of a dentistry program at the University of Technology will be of some help, depending on the success in recruiting and retaining graduates of this program to the public service; however even if all graduates from the new program enter the public service, this addition will still leave a large gap. The results depicted above also demonstrate that the requirement for dentists in the public sector is reduced by persons who receive dental care from the private sector.

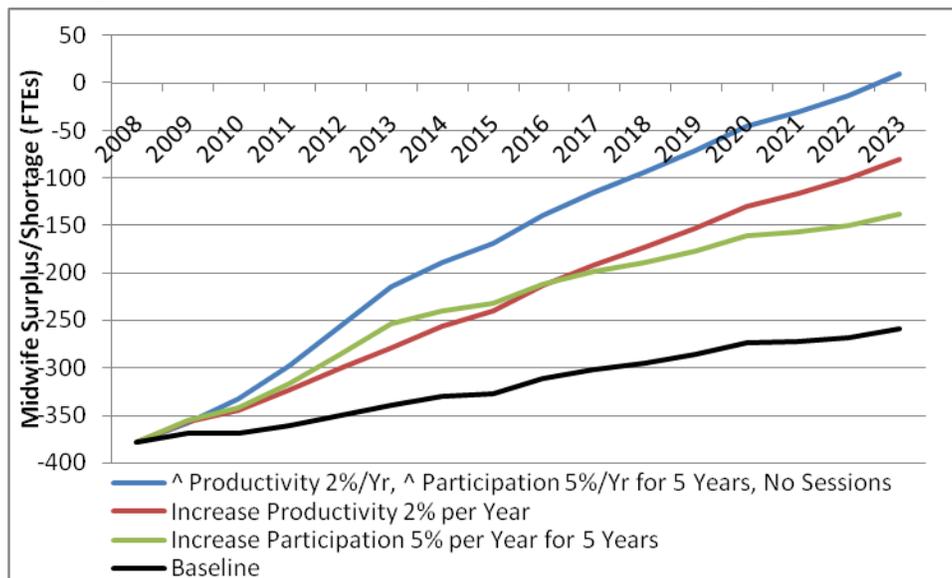
A comprehensive approach is necessary to eliminate the shortage of dentists; since a large increase in the supply of dentists is unlikely to be feasible in the short term, such an approach must instead focus on increasing the supply of *dental care*, making use of all available resources as efficiently as possible. Such an approach could include policies to allow more extensive use of dental hygienists, dental nurses, and other auxiliaries to provide necessary primary dental care services such as cleaning. This would reduce the need for dentists to perform these services and free them up to provide the more specialized kinds of care needed of them, such as maxillofacial and periodontal surgery. A focus on the most vulnerable populations⁷, at least in the initial stages, would help to ensure that those most in need of dental care receive it. The Ministry of Health could ensure that the community health aides and workers it trains have oral health education that they can pass on to the persons they work with in the communities, while partners in the Ministry of Education could help to integrate good oral health practices into primary education curriculum, arrange for the provision of better nutritional offerings in schools, and partner with dental health professionals to provide some low-cost, preventative procedures in schools. This kind of health education initiative would be in keeping with established priorities of the Ministry of Health (see for example Jamaica Ministry of Health, 2011b) Potential partners in the private sector, such as Colgate-Palmolive, could be engaged to provide supplies, educational materials, funding for training, and other supports. Such a comprehensive approach would simultaneously reduce the overwhelming need for dentists while making more efficient use of existing dental care resources and, ultimately, improving the health of Jamaicans.

⁷ That is, those who face the greatest risk to their health as a result of inadequate dental care, such as children aged 12-18, the elderly, persons with chronic diseases, physically or mentally challenged persons, and pregnant women.

Midwives

Although the need for midwifery services appears relatively stable—Jamaica’s fertility rate is falling slightly (STATIN, 2011)—as is the supply of midwives, the existing supply does not appear adequate to have all pregnancies overseen by a midwife (Figure 5). Further, it appears Jamaica’s relatively young population (the most populous age groups are those under 20) will more than offset the falling birthrate, result in a future increase in births—and thus an increase in the need for midwifery services.

Figure 5: Simulated Midwife Gap Under Various Policy Scenarios



Some analysis of the practices and roles of midwives practicing in hospital settings compared to those in the community, and the differing policies and incentive packages for each of these may be of value in exploring ways to facilitate midwives practicing across these settings to provide more comprehensive patient care, increase the productivity of midwives, and increase their level of practice participation. This may be particularly relevant given a potential cultural shift in mothers’ preferences for delivery in hospitals as opposed to community settings, and given that fewer than half of the trained midwives working for SERHA are practicing as midwives; others are working as specialist nurses, community nurses or nurse practitioners.

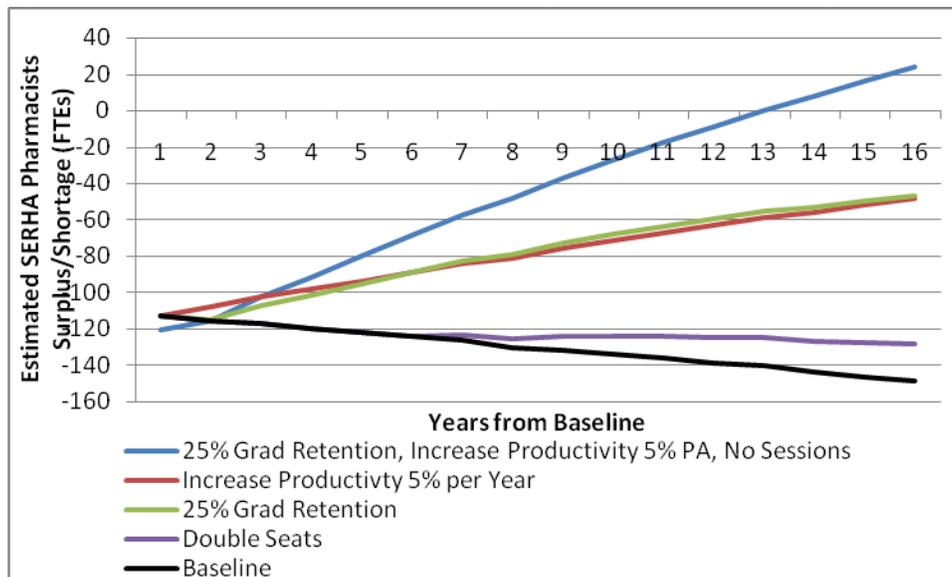
If the level of participation of midwives in SERHA—that is, the proportion of trained midwives who are actually practicing midwifery—is increased by 5% per year for 5 years, this would significantly reduce the midwife shortage. Modest yearly increases in the productivity of midwives—achieved, for example, through additional human or non-human supports—would

similarly reduce the shortage. If both of these improvements could be made together, they could be sufficient to eliminate the shortage of midwives in SERHA within a 15-year period.

Pharmacists

When faced with an HRH shortage, the first instinct of policy makers is often to identify an increase in education and training seats as the solution. However, there are several reasons why seat increases tend not to solve HRH shortages. First, there is a considerable delay between the implementation of a seat increase and the first ‘extra’ providers that result from it; in the case of Jamaica pharmacists, even doubling the number of seats at UTech’s pharmacy program produces no additional pharmacists for at least four years—the length of the program. Second, the number of additional graduates is initially small relative to the number of existing providers; it takes several years for these ‘extra’ providers to grow to add significantly to the existing supply. Third, not all of these additional seats will translate into additional providers for the jurisdiction—some students will not complete the program, some graduates will leave the jurisdiction, and some who stay will not work in the public sector. In the case of Jamaica pharmacists, only about 5-10% of the graduates of UTech’s pharmacy program enter the public sector workforce. Thus it is not surprising that even the dramatic 100% pharmacy seat increase simulated shows little impact on the shortage of pharmacists in SERHA (Figure 6).

Figure 6: Simulated SERHA Pharmacist Gap Under Various Policy Scenarios



In contrast to the relatively small impact of a large seat increase, simulation results suggest that increasing the portion of pharmacy grads who enter the public sector workforce to just 25% (so 75% would still be ‘lost’ to the private sector or other regions/countries) would dramatically

reduce the shortage of pharmacists in SERHA. Such an improvement could be achieved through initiatives designed to enhance the appeal of the public sector, such as better working conditions, improved financial incentives, opportunities for professional development, or making some amount of public sector service a condition of registration for pharmacists. Similarly, results suggest that increases in the productivity of pharmacists could potentially reduce the SERHA pharmacist shortage dramatically; a 5% annual increase would cut the shortage by approximately two thirds over 15 years. Productivity improvements can be achieved through such means as investments in support staff (such as pharmacist assistants) or enhanced equipment or technology such as pre-packaging.

Further, results suggest that if both of the above policy scenarios could be achieved together—that is, if 25% of pharmacy grads could be retained by the public sector AND the productivity of public sector pharmacists could be increased by 5% each year, then the shortage of pharmacists in SERHA would be reduced to the point that, within 15 years, the supply of pharmacists in the region would be sufficient to meet the needs of persons who rely on public sector pharmacies without the use of ‘sessions’, or overtime work by pharmacists. Additional policies that could be considered include amending existing legal and regulatory frameworks to recognize and define the roles and standards of practice of pharmacy technicians⁸, exploring options for training experienced pharmacy technicians as pharmacists, and exploring further private/public partnerships for the provision of pharmacy services, such as through the National Health Fund.

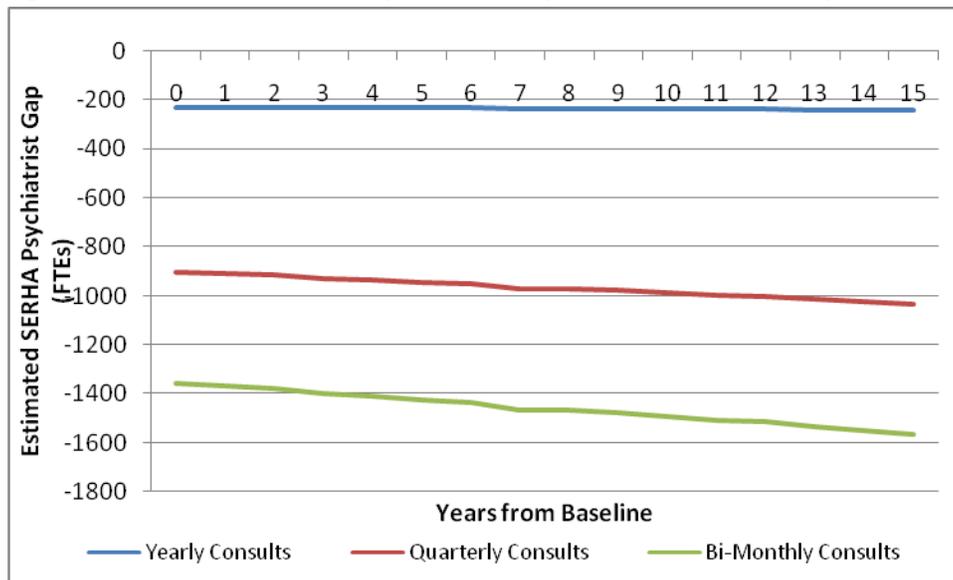
Psychiatrists

Like any profession, the requirements for psychiatrists are strongly dependent on the amount and type of service they are to provide to the population. Although currently there is little detailed data on the levels of service provided by public sector psychiatrists in SERHA (or Jamaica as a whole), the number of them currently practicing appears insufficient to provide even one consultation per year to persons with mental disabilities in the region (Figure 7).

This gap increases as expected levels of service increase—that is, the more care psychiatrists are expected to provide, the more psychiatrists are required, other things equal. Similar to the shortage of dentists, a comprehensive approach is required to address the shortage of psychiatrists. This approach should consider collaborative, intersectoral initiatives aimed at reducing the need for psychiatric care by improving the social determinants of health through, for example, employment/job search programs, drop-in centres, or other means of social support.

⁸ This option is already being considered by the Ministry—see Jamaica Ministry of Health, 2011c.

Figure 7: Simulated SERHA Psychiatrist Gap Under Various Policy Scenarios



These measures could be complemented by a comprehensive education campaign including targeted public awareness programs aimed at mental health promotion and removing stigma associated with mental illness, ensuring that community health aides and other workers have training in mental health education, and integrating mental health into primary school curricula along with good general, oral and sexual health practices⁹. At the same time, it will be important to review existing policies and regulatory/legal frameworks to ensure they allow for the most efficient use possible of all available mental health human resources, including counsellors, mental health nurse practitioners, social workers and so on so that the few available psychiatrists can focus on the cases that require the most specialized care. This kind of comprehensive approach will simultaneously reduce the need for psychiatric services, improve the mental health of Jamaicans, and ensure the most efficient use of the country’s mental health human resources.

Summary of Findings

The data available to plan for Jamaica’s human resources in health is limited. However the data that is available indicates that there are shortages of contact investigators, dentists, midwives, pharmacists and psychiatrists in the South East region, with the shortages of dentists, pharmacists and psychiatrists being particularly large.

⁹ As noted above, this kind of public education campaign would be aligned with established priorities of the Ministry of Health (e.g. Jamaica Ministry of Health, 2011b).

Using the simulation models developed, a number of policy scenarios have been simulated to investigate their potential impacts on these shortages. Results from these simulations suggest that some of these policy scenarios may be sufficient, if implemented, to reduce or eliminate the shortages of these professionals. These scenarios are not intended to represent a prescription for policy change; rather they are meant simply to illustrate the kinds of policies whose implications on HRH shortages can be tested using the suite of modeling tools developed for the Ministry of Health by the Jamaican steering committee and the Dalhousie team.

Emerging Priorities

In collecting, analyzing, synthesizing and discussing the data available on Jamaica's human resources in health with key stakeholders from across the country, several themes have developed that suggest focus areas for policy action to address shortages of HRH and improve the health of Jamaicans. These emerging priorities are as follows:

1. Further integrate planning for education and health aligned with shared priorities.

Ongoing dialog between stakeholders in education and health can help to ensure that the systems in place in Jamaica's education system are responsive to the health needs of its people, and that health system makes the most appropriate use of the health care professionals educated and trained in the education system. For example, there is great value in ensuring that various education and training programs for health care workers are aligned with the health needs of the Jamaican people.

2. Invest in primary health care education and service delivery focused on improving the social determinants of health. A comprehensive way of caring for patients that looks beyond specific health conditions and considers the many social and environmental factors that influence them is more meaningful for both patients and health care providers. It also serves as an important method of disease prevention.

3. Invest in public health education and environmental health to reduce the burden of disease and heighten preparedness. Treating members of the public once they become sick is only one role of Jamaica's health system; it is just as critical that it work with partners in the education sector, among others, to take measures to prevent persons from becoming sick in the first place. In addition to improving the health and quality of life of Jamaicans, this can also reduce the resource needs—and associated costs—of the system.

- 4. Improve working conditions for HRH to reduce migration/increase retention, increase recruitment and boost productivity.** Jamaica has made significant investments in educating and training highly qualified health care workers. Much of this investment is lost, however, because many of these persons do not want to work in Jamaica's public sector, or in the country at all. More is lost when those who remain become overworked, are injured on the job, or cannot be productive due to a lack of equipment or supplies. Investments in improved working conditions will help to simultaneously reduce migration, ease recruitment, and improve the productivity of Jamaica's health workers, resulting in a more efficient and effective system.
- 5. Explore options to make more efficient use of existing resources e.g. task shifting, flexible management/hiring policies or legislation.** When resources for health care are in especially short supply, it is all the more important that those charged with making use of them have the flexibility and authority to do so in the most efficient way possible. There is growing consensus that existing cadres and other policies related to Jamaica's HRH are not sufficiently responsive to the health needs of the people they are intended to serve. A review of these policies to ensure the most efficient possible use of Jamaica's HRH would benefit health workers and the Jamaican people as a whole.
- 6. Invest in improving health information systems to improve planning, ongoing monitoring and evaluation.** Resources to deliver health services in Jamaica are scarce, and resources to plan the delivery of those services even more scarce. However, the investment of some additional resources to support the cause of planning has the potential to improve the effectiveness of the resources allocated to service delivery, and thereby contribute to improving the health of Jamaica's population. Particular areas that would dramatically enhance Jamaica's ability to plan and monitor the effectiveness of its health system include the creation of a national unique identifier—such as a user card—for users of the health care system, and working with partners in the professional councils to create registries of the country's HRH.

Next Steps

Following a teleconference (May, 2011) and an in-person meeting (July, 2011) between senior leadership in the Ministry of Health (including members of the project steering committee), the Dalhousie Team, and representatives from PAHO Washington and PAHO Jamaica, it was decided that work on the remaining professions would be suspended in order to focus attention on utilizing the needs-based tools to support Jamaica's work in meeting the

Millennium Development Goals, specifically those related to maternal and infant mortality such as midwives.

In keeping with this aim, education sessions designed to train Ministry of Health staff in the operation of the simulation models are currently being planned in order to further facilitate their use in informing the Ministry's ongoing work to maintain and improve the health of Jamaicans.

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Appendix I: Jamaican Steering Committee Membership

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Claudette Walker (**Co-Chair**) – MOH

Charlene Collins (**Project Coordinator**)

Patricia Bullock – UTech

Mary Campbell – MOE

Sheila Campbell-Forrester – MOH

Brenda Cuthbert – JEF

Winston Davidson – UTech

Betsy Davis – MOE

Pauline Ellington – SERHA

Gloria Fenton-Rose – NERHA

Karene Francis – MOH

Carol Haase – MOF

Verona Hall – NERHA

Gail Hudson – MOH

Celia Huggan – WRHA

Valda Lawrence Campbell – SERHA

Taneisha Lewis – SERHA

Eva Lewis-Fuller – MOH

Nadine Johnson – UWI

Joy Little – NCU

Howard Lynch – MOH

Leila MacWhinney-Dehaney – MOH

Sharlene Marshall – SERHA

Irving McKenzie – MOH

Herma Meade – MOE

Rowena Palmer – MOH

Heather Reid-Jones – SERHA

Pauline Roberts – MOH

Sonia Smith – SRHA

Beulah Stevens – SERHA

Rudolph Stevens – SERHA

Dennis Townsend – MOF

Carvel Vaz – SERHA

Benjamin Waysome – WRHA

Pauline Weir – SERHA

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