BERMUDA HEALTH WORKFORCE, 2017

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Abbreviations

BHB—Bermuda Hospitals Board

BHeC- Bermuda Health Council

HRH—Human Resources for Health

MWI- Mid-Atlantic Wellness Institute

PAHO—Pan American Health Organization

OCMO- Office of the Chief Medical Officer (Ministry of Health)

OECD –Organization for Economic Cooperation and Development

WHO—World Health Organization

UHC—Universal Health Coverage

UKOT—United Kingdom Overseas Territory

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Foreword

Bermuda Health Workforce, 2017 is a situation analysis of the current health workforce in Bermuda. It contains a brief overview of the health system and the results of multi-disciplinary consultations with healthcare professionals. These occurred between spring 2016 and fall 2017. The consultations were facilitated by the Chief Medical Officer and advisors from the Pan American Health Organization. Multiple disciplines contributed to the situation analysis. It is acknowledged that the participants cannot fully represent each discipline's perspective, and that the professions represented here are not an exhaustive list of the many professionals and lay persons who deliver health services or support the health system in important ways.

For practical reasons, this analysis was limited to healthcare professions which play a predominant role in clinical service delivery on the island. It is acknowledged that subsequent consultations, including with consumers of healthcare services, the general public, will have to occur to fully describe Bermuda's health system and to address its needs. This document offers the background information for the health workforce strategic plan document, entitled *Human Resources for Health Strategic Plan, Bermuda 2018-2020*.

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1. Introduction and background

Rationale and objective for undertaking situation analysis of Human Resources for Health

The Global Strategy on Human Resource for Health: Workforce 2030 states that health workforce planning is necessary in order to "accelerate progress towards universal health coverage and the UN Sustainable Development Goals by ensuring equitable access to health workers within strengthened health systems". The overall goal is to "improve health, social and economic development outcomes by ensuring universal availability, accessibility, acceptability, coverage and quality of the health workforce through adequate investments to strengthen health systems, and the implementation of effective policies at national, regional and global levels". The Bermuda Health Strategy and the Health Action Plan 2014-2019 both include health workforce planning as a strategic priority for the health system. The Health Strategy alludes to assessing the island's human resources for health by noting the requirement to "meet long-term healthcare needs"1; and the Action Plan explicitly states this as an objective under Human Resource Development, Professionals, priority item 11. (1, 2)

The challenges facing Bermuda in the 21st Century are multiple and deep-rooted. As with the rest of the world, including developed countries, there are complex social, economic, political, cultural and environmental changes that are impacting every aspect of life. The health system, in particular, is being impacted by multiple factors. Population health, wellbeing and prosperity are being affected.

The health of Bermudians is impacted by all these factors in a variety of ways. One challenge to the health of Bermudians is the provision of appropriate human resources to address the specific health requirements of the 21st Century. Bermuda is hardly unique in its struggle to provide human resources for health; all countries face this ongoing challenge, and each must analyse its needs and identify pathways to addressing them. This is the objective of this document, to present the context for Bermuda's National Human Resources for Health Strategic Plan.

Methodology

Data were collected through key informant interviews, focus groups, meetings with a core group of stakeholders in health, a desk review of relevant literature (published and unpublished) and stakeholder workshops held in July and November 2016.

General Country profile

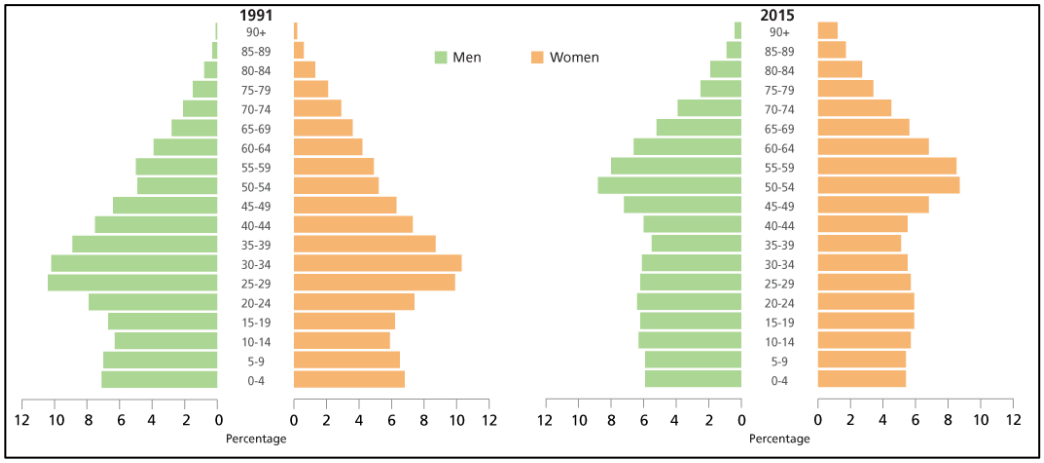
Bermuda is a small archipelago in the northern Atlantic Ocean made up of 7 main islands and an estimated 138 smaller ones. The inhabited land mass covers 21 square miles and is home to 65,059 people according to the 2010 Census (and 65, 187 estimated in 2014). Bermuda is governed through the Westminster model of parliamentary democracy. Its Parliament held its first session in 1620, making it the third-oldest continuous parliament in the world. The Government consists of a governor, deputy-governor, cabinet, and legislature. The legislature is made up of the House of Assembly and the Senate. The Bermuda government is the largest employer of citizens, ranging in jobs from industrial workers to policy analysts, legal experts and a multitude of professions, including health care providers who are employed in the public health sector within the Department of Health, Office of the Chief Medical Officer, Department of Corrections and Department of Education (3, 4).

Demographics

Racial makeup of the population was described in the 2010 Census as 54% Black and 46 % White and Other; 69 % were Bermudian born. Bermuda's projected population for 2016 is 61,695 with a male-to-female ratio of 91 males to 100 females (5). The Bermuda population increased 20.8% between 1991 and 2015; however, The Population Projection Report for 2010–2020 forecasts a 4% decline in population for the decade, the result of emigration which has exceeded natural increase through births and immigration every year. It is estimated that the median age will rise from 41 years in 2010 to 46 years in 2020.The proportion of seniors (65 years and older) will climb from 14% to 20% of the population and the old-age dependency ratio is projected to increase from 19 in 2010 to 30 by 2020. (6).

As life expectancy increases, more persons will reach retirement age, and a greater proportion of elderly dependents will need to be supported by the working population. Figure 1 shows the changes in the population structure between 1991 and 2015 (6).

Figure 1: Population structure, by age and sex, Bermuda, 1991 and 2015



Source: PAHO/WHO Health in the Americas 2016: Bermuda

In 2015, the crude birth rate was 9.4 births per 1,000 population and the total fertility rate was 1.45 children per woman. Fertility rates have been declining due to increased use of contraceptives, the increasing participation of women in the labour force, and changing lifestyle preferences. More women are delaying or forgoing having children as they pursue higher education and professional careers, and couples are also deciding to have fewer children due to changing economic conditions. Life expectancy at birth for 2016 is estimated at 81.29 years (77.51 for males and 85.13 for females). Bermuda's population aged 65 years and older increased by 29% from 6,722 in 2000 to 8,683 in 2010. The age group that recorded the largest growth, with an increase of 57%, was those aged 80 to 84 years (6).

The aging population and burden of non-communicable diseases will place more demands on the health care system and issues such as quality of life, access to health care, and health care costs will become increasingly critical (6).

The Economy

Bermuda has one of the world's highest per capita incomes, reported as US$ 96,018 per person in 2015. The GDP in current prices increased by 4% compared to 2013 and when adjusted for inflation, final estimates of GDP in constant prices increased by 0.6%. In 2015, after six years of contraction, the economy began to grow and is projected to further improve based on sustained growth in its main sectors: international business (which includes insurance and reinsurance), tourism, and construction. Bermuda has one of the largest reinsurance industries in the world and is compliant with global anti-

money laundering and anti-terrorist financing standards, and does not have banking secrecy laws (7, 8).

The median annual gross earnings for all job holders in Bermuda was $63,897 in 2014. For Bermudians, the median annual gross earnings was $59,357, non- Bermudian spouses of Bermudians it was $76,593 and for other non-Bermudian workers $85,016, according to the Labour Market Indicator report from the Department of Statistics. This ranks Bermuda among the highest per capita incomes in the world, with a Gross Domestic Product per capita of $91, 479 in 2014, representing $5.7 billion (6, 8,9).

These statistics notwithstanding, the island was dealt a destabilizing blow by the global economic recession of 2008 and has had a slow return to economic growth. In the years following the global recession, it is estimated that over 6700 guest workers/families left the island. During the same period, noticeable numbers of Bermudians emigrated in search of brighter economic conditions. This trend can be partly explained in the rising unemployment rate since the economic downturn moving from 6% in 2010 to 9% in 2014. In the past two years, since 2015, local economists note that there have been signs of economic recovery. However, as noted, a growing number of socioeconomically disadvantaged individuals have not yet benefitted (4, 13).

There is growing anecdotal and research evidence that the gap between the lowest and highest income earners is widening. Media reports of individuals caught in a cycle of poverty are commonplace. One local economic researcher estimates that 23% of the population lives in "poverty". Bermuda's high per capita income is skewed by a small segment of the population that is extremely wealthy (10). This is supported by information from the Bermuda Health Council.

2. Health Status and Health System of Bermuda

2.1 Health Status

Epidemiology and leading Health Challenges

Similar to other developed countries in the world, and particularly in the Caribbean region, non-communicable diseases form as a group the leading challenge for the health of the population. Health priorities over the past decade have remained fairly consistent, although the intensity of problems has increased. The 2014 population survey, STEPS to a Well Bermuda, conducted by the Office of the Chief Medical Officer, generated useful information. The impact of obesity, diabetes and chronic disease was notable: the 74.6% overweight and obesity rate, and the 55.8 % of individuals over age 45 with 3 or

more chronic disease risk factors were particularly notable. High rates of life-altering complications from chronic disease were documented in the Health in Review 2011, and in the updated version 2017 just completed. Health problems have become more burdensome on the economy and on the lives of citizens, as captured by information gathered from these studies (11, 12).

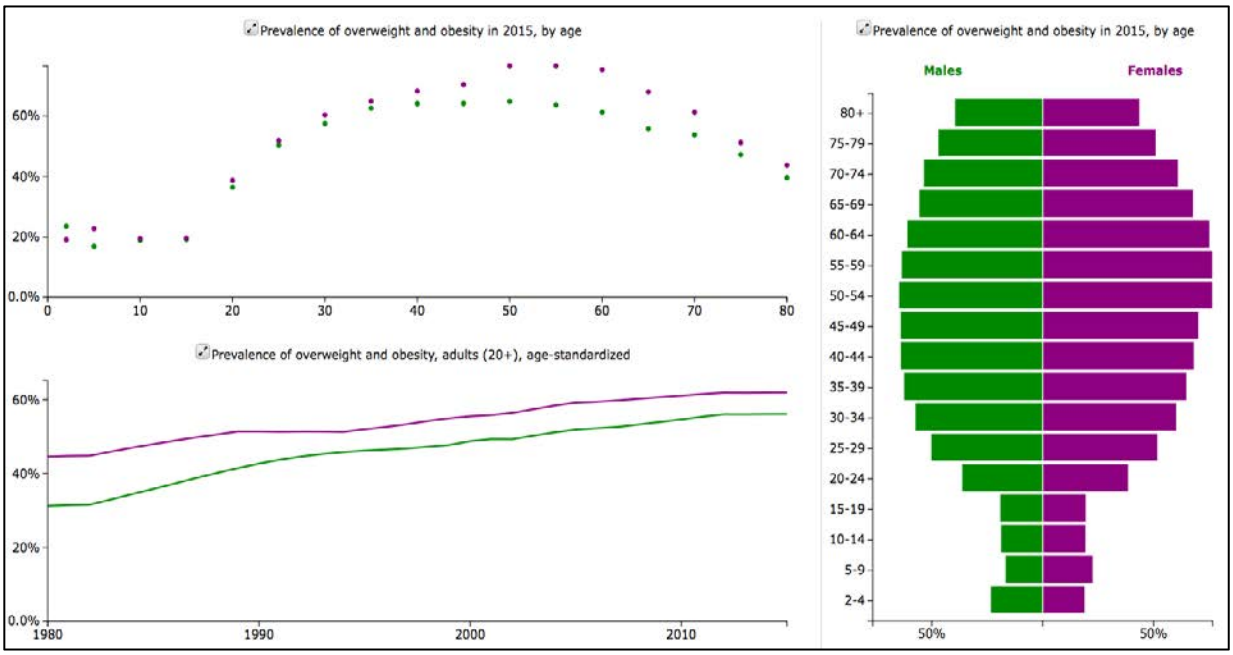
Morbidity

Chronic conditions constitute a major burden of disease in Bermuda. In 2004, the Department of Health conducted a national health priorities exercise. It was undertaken involving a wide range of relevant stakeholders, including government and private organizations. The Assessment Protocol for Excellence in Public Health (APEX) methodology was used and prioritization was based on mortality and data and statistics from the 2000 Census, 1999 Adult Wellness Survey and the 2001 Teen Wellness Survey. The health priorities exercise identified overweight and obesity, heart disease and stroke, respiratory diseases and diabetes as the five most impactful health conditions. Also recognized as priority health concerns were accidents and violent injuries, cancer, mental illness and substance abuse, among others (13).

In 2010, the six leading disabling conditions that affected the elderly were high blood pressure, impaired vision, arthritis, heart conditions, diabetes, and mobility difficulties. The 2000 and 2010 census data show that in the population 65+ age group hypertension increased from 26% to 45% and diabetes mellitus from 19 to 27% (14). Overweight and obesity are key risk factors for non-communicable diseases affecting the population of Bermuda. Figure 2 shows an almost 10% increase in the prevalence of overweight and obesity between 1980 and 2015 by sex and age.

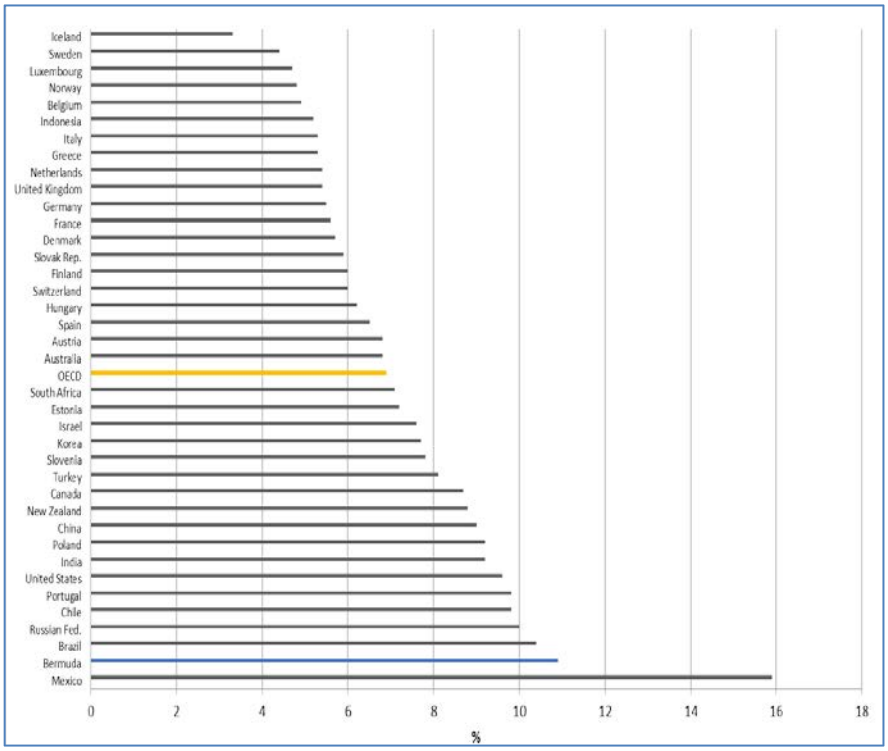
According to the results of the 2014 STEPS Survey, more than 95% of the population has at least one risk factor for a non-communicable disease. The survey indicated that the leading risk factors were: inadequate consumption of fruits and vegetables (82%), overweight and obesity (75%), and alcohol consumption (64%). Raised cholesterol (34%), high blood pressure (33%), and physical inactivity (27%) were also of concern. Tobacco use was reported by 14% of survey respondents. Injuries and poisoning were the leading causes of hospitalization (26.8%) followed by diseases of the respiratory system (12.6%) (6). Figure 3 demonstrates the outcome of the risk factors on the populations, with Bermuda showing the second highest prevalence of diabetes in comparisons to all other OECD countries in 2011.

Figure 2: Overweight and Obesity Patterns (BMI 25+) in Bermuda 2015



Source: Institute for Health Metrics and Evaluation (www.healthdata.org)

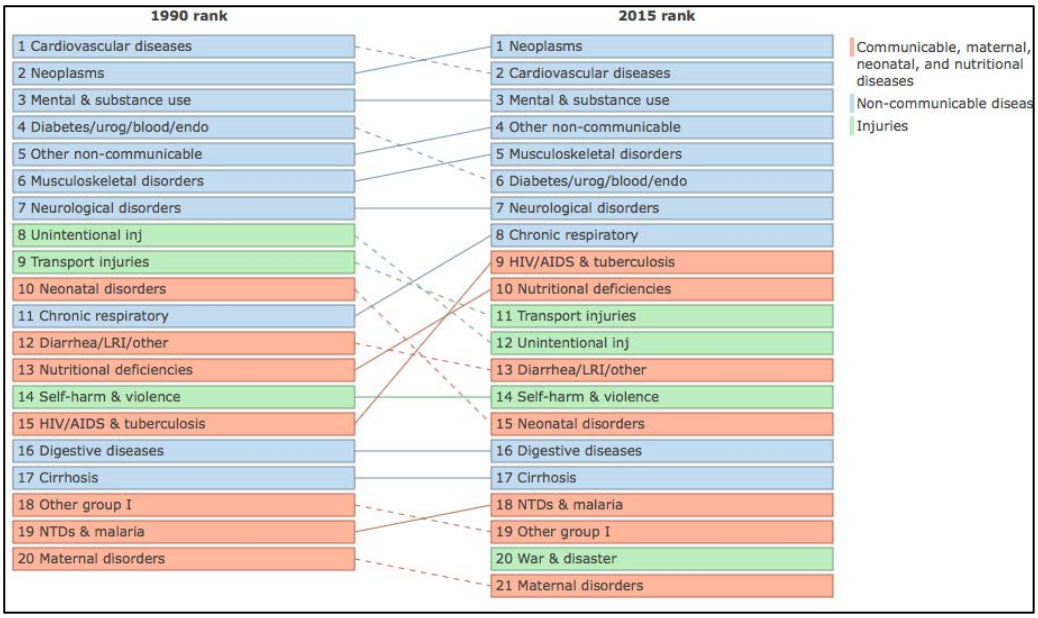
Figure 3: Prevalence of Diabetes, OECD Comparison, 2011
(or nearest prior year available)



Source: Health in Review 2017

Figure 4 shows the leading causes of disability-adjusted life year (DALY) in the population, which is a measure of overall disease burden, expressed as the number of years lost due to ill health, disability or early death. The three leading causes of DALYs have remained the same between 1990 and 2015, however the ranking has changed. During the period under review Neoplasms have shown an 8.88% change and now account for 16.46% of DALYs, while mental & substance use has changed by 29.32% to account for 11.2%, and cardiovascular diseases has shown -28.46% change to account for 15.26% of DALYs. Importantly although ranked 4th and 5th respectively, other non-communicable diseases showed a 35.46% change accounting for 10.03% of DALYs while musculoskeletal disorders changed by 68.05% to account for 9.2% of DALYs (15).

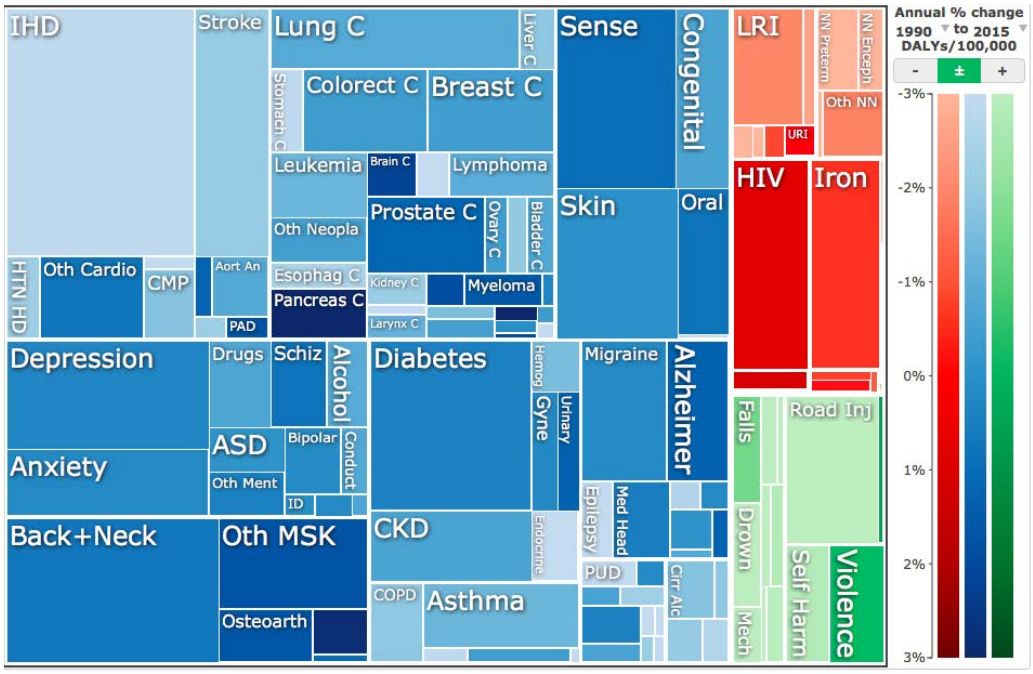
Figure 4: Disability Adjusted Life Years (DALYs) by Rank 1990 and 2015, both sexes, all ages,



Source: Institute for Health Metrics and Evaluation (www.healthdata.org)

Figure 5 shows in greater detail the burden of specific diseases within the three categories of communicable, non-communicable and injuries. Non-communicable diseases are the greatest problem with ischemic heart disease the greatest single burden accounting for 10.03% of DALYs; however, cancers (non-melanoma skin, pancreatic, thyroid and brain and nervous system) show the sharpest annual % increase between 1990 and 2015 ranging between 5.57% and 2.19%.

Figure 5: DALYs , both sexes, all ages 2015



Source: Institute for Health Metrics and Evaluation (www.healthdata.org)

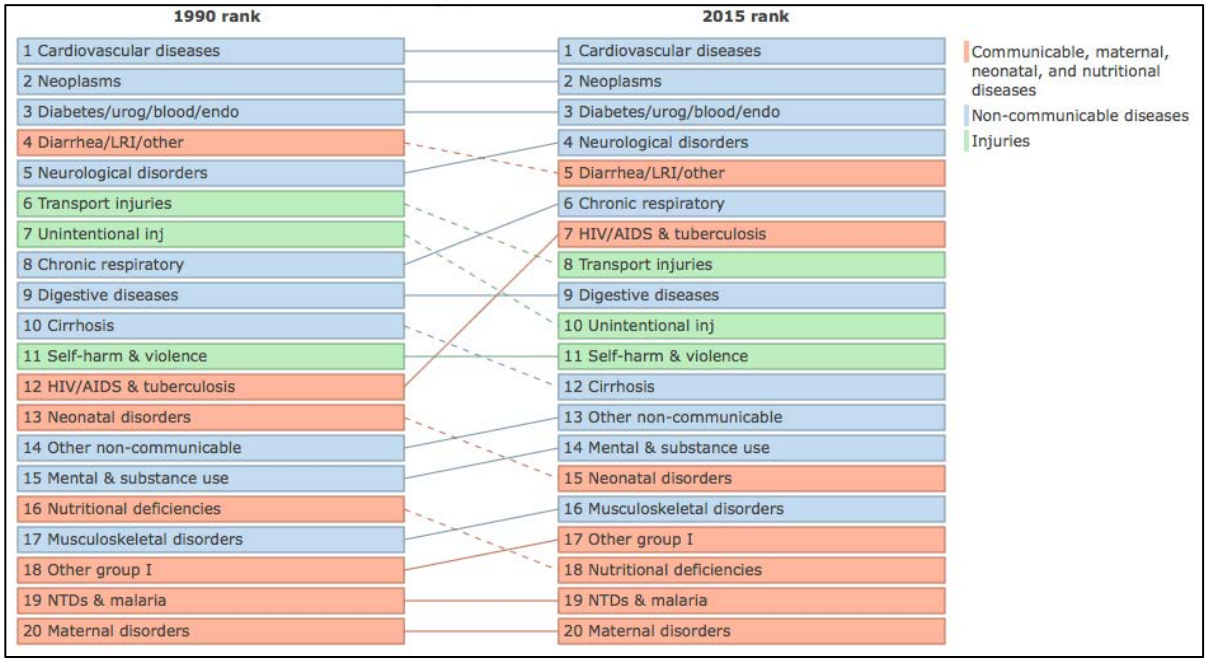
Mortality

The total number of deaths of residents recorded in 2015 was 466, resulting in a mortality rate of 663.86 per 100,000. In 2015, the infant mortality rate was 3.4 per 1,000 live births (two infant deaths); in 2014 one infant death was recorded. There were two stillbirths recorded in 2014 and three in 2013. Chronic diseases, including diseases of the circulatory system, cancer, diabetes, and diseases of the respiratory system accounted for approximately 80% of deaths in 2012 (6, 12).

Figure 6 shows the leading causes of death for both sexes across all ages and the ranking in 1990 and 2015. For the period under review, cardiovascular diseases have remained the leading causes of death accounting for 33.7% of all deaths, neoplasms account for 29.2% while diabetes has remained the third

leading cause accounting for 9.19% of deaths. Importantly, the percentage of deaths caused by cardiovascular diseases has reduced by 17.26% while the percentage of deaths caused by neoplasm has increased by 27.83% and deaths caused by diabetes has risen by 33.05% over the 25 years (15).

Figure 6: Causes of death by rank, 1990 and 2015, both sexes, all ages



Source: Institute for Health Metrics and Evaluation (www.healthdata.org)

Figure 7 shows the causes of death between 2006 and 2015 as a percentage of total deaths. Diseases of the circulatory system and neoplasm have consistently remained the two leading causes of death together accounted for 63.6% of all deaths in 2016 showing a marginal decrease of 0.3% from 2006. However diseases of the circularity system have decreased by 3.9% during the period. Diseases of the nervous system had the greatest increase of 5.4% while deaths attributable to endocrine, nutritional and metabolic disease have shown the second largest increase at 2.1%. These figures are consistent with an aging population with significant exposure to risk factors associated with the development of NCDs.

Figure 7: Causes of Death by percent of all deaths, both sexes, all ages, 2006-2015

Underlying Cause of Death	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Certain infectious and parasitic diseases (incl. HIV)	2.3%	2.1%	3.9%	5.8%	2.1%	2.4%	2.4%	2.4%	1.5%	2.7%
Neoplasms (Cancer)	23.7%	24.1%	26.5%	31.3%	28.8%	26.4%	30.3%	29.1%	31.2%	27.3%
Diseases of the blood and blood-forming organs	0.7%	0.7%	0.7%	0.2%	0.4%	0.0%	0.2%	1.5%	0.4%	1.0%
Endocrine, nutritional and metabolic diseases (incl. diabetes)	5.0%	6.0%	6.1%	4.4%	5.3%	8.9%	8.8%	7.1%	4.9%	7.1%
Mental and behavioural disorders (incl. dementia)	0.5%	0.2%	0.7%	1.8%	0.8%	2.7%	2.6%	4.1%	1.1%	0.8%
Diseases of the nervous system (incl. Alzhemiers)	3.6%	3.7%	4.6%	1.6%	4.6%	4.3%	4.1%	4.7%	8.9%	9.0%
Diseases of the circulatory system	40.2%	43.4%	31.3%	30.8%	28.4%	37.2%	35.1%	33.8%	38.0%	36.3%
Diseases of the respiratory system	3.8%	5.1%	8.0%	8.6%	11.8%	5.7%	6.4%	5.6%	4.4%	4.8%
Diseases of the digestive system	4.3%	2.3%	3.2%	4.9%	5.3%	2.2%	1.7%	3.0%	1.9%	1.9%
Diseases of the skin and subcutaneous tissue	0.7%	0.2%	0.5%	0.7%	0.4%	0.5%	0.5%	0.2%	0.0%	0.2%
Diseases of the musculoskeletal system and connective tissue	1.6%	0.2%	1.0%	0.2%	0.2%	0.5%	0.7%	0.4%	0.6%	0.8%
Diseases of the genitourinary system	2.5%	0.7%	2.2%	2.7%	3.2%	2.4%	1.4%	2.1%	2.1%	1.7%
Complications of pregnancy, childbirth and the puerperium	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Certain conditions originating in the perinatal period	1.6%	0.5%	1.2%	0.7%	0.4%	0.3%	0.7%	0.4%	0.2%	0.6%
Congenital malformations and chromosomals abnormalities	0.2%	0.5%	1.0%	0.2%	0.2%	0.0%	0.2%	0.6%	0.0%	0.0%
Ill-defined causes	2.7%	5.8%	3.4%	1.3%	1.5%	1.3%	1.0%	1.1%	0.0%	0.8%
External causes	6.5%	4.4%	5.8%	4.9%	6.5%	5.1%	3.8%	3.9%	4.9%	4.8%

Source: Health in Review (2017)

2. 2 Health System

The Ministry of Health is one of the country's current 11 Ministries and is comprised of the Department of Health, the Office of the Chief Medical Officer, the Health Insurance Department, Aging and Disabilities Services (ADS) and two Quasi-autonomous non-governmental organizations (QUANGOs), the Bermuda Hospitals Board (BHB) and the Bermuda Health Council (BHeC).

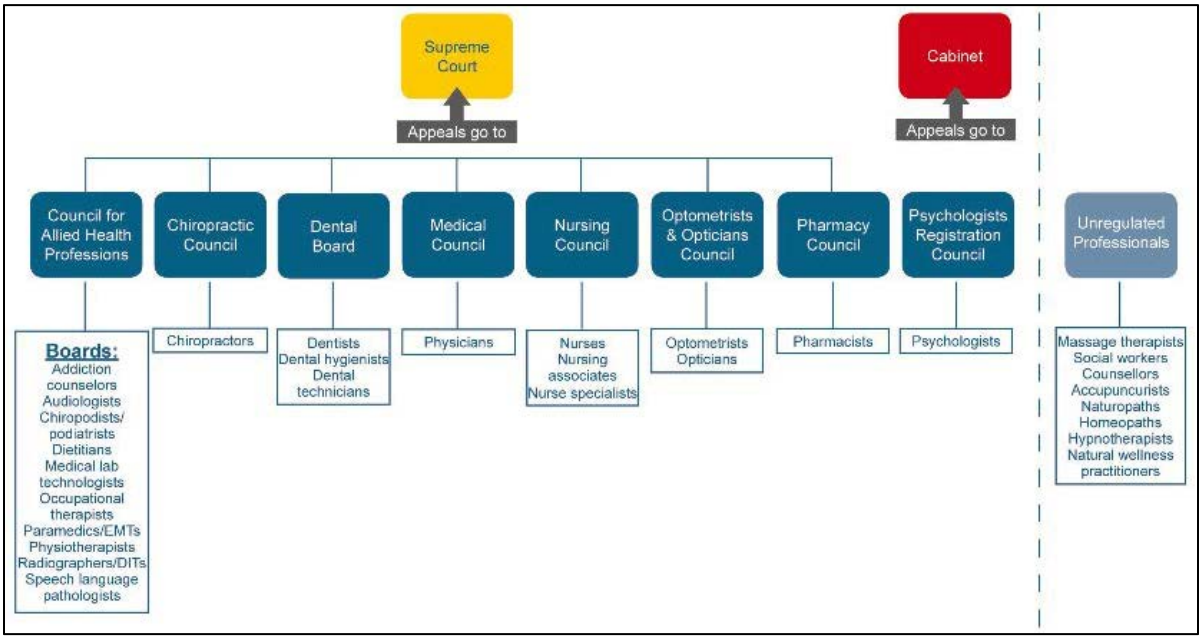
The Bermuda Health Council (BHeC) coordinates the regulation of the health system which includes licensing health insurers, regulating health service providers (businesses), and monitoring compliance by employers with the mandates of the Health Insurance Act 1970.

The Bermuda Hospitals Board (BHB) operates the island's two hospitals (King Edward VII Memorial Hospital (KEMH) and the Mid Atlantic Wellness Institute (MWI)), and the Lamb-Foggo Urgent Care Centre. Although all facilities receive resources from the Ministry of Health, they operate with significant autonomy from the Ministry of Health (4, 16).

Legislative and Regulatory Framework

The regulatory framework that governs the health system is established by the Public Health Act 1949, the Health Insurance Act 1970, the Bermuda Hospitals Board Act 1970, the Bermuda Health Council Act 2004 and a range of regulations in support of these acts, including regulations for health professionals. The regulatory framework is illustrated in Figure 8.

Figure 8: (2010) Regulatory Framework for Healthcare Professionals



Source: Health Systems Profile Bermuda 2009

Service Delivery

A mix of public and private providers delivers health services in Bermuda. However, public health service delivery is the predominant responsibility of the Department of Health. The Department is organized into six sections that provide public health programmes and services: community health, oral health, health promotion, environmental health, central government laboratory, and administration (4, 13).

Primary and Secondary Services

Primary health care in Bermuda is chiefly delivered by private physicians that are compensated on a fee for service basis. There is currently little data available on the scope, quantity, or quality of primary health care being delivered. Secondary care in Bermuda is provided by the island's two hospitals, the King Edward VII Memorial Hospital (KEMH) and The Mid Atlantic Wellness Institute (MWI). KEMH is a 360-bed hospital offering medium level care, including basic surgical specialties. In 2009, the hospital had a bed ratio of 5.58 beds per thousand inhabitants. MWI, the island's mental health hospital, had a total of 95 beds in 2007/08, giving it a bed ratio of 1.48 beds per thousand inhabitants. The inpatient acute care section (24 beds) had an occupancy rate of 77% in 2007/08, while the long-term and rehabilitation section (71 beds) had an occupancy rate of 83%. For services that are not available on-

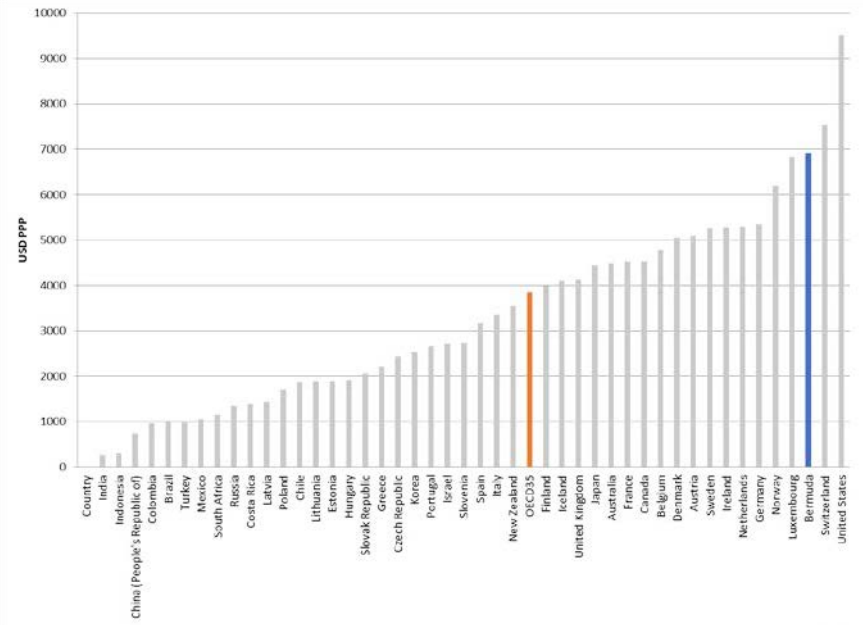
island, there are provisions for private or public coverage of those services overseas at international health centres (16). In 2016, the occupancy rates had changed significantly due to the increase in long-stay patients, sub-optimal levels of community nursing care beds for discharged patients, and chronic disease hospitalizations.

Health Financing

The health system in Bermuda is complex with health care delivery system for patient services funded by four main sources: public and private health insurance plans (62%), government subsidies and grants (28%), out-of-pocket payments (9%), and charitable donations (1%), (17). These sources provide coverage for two sets of benefits: the Standard Health Benefit (SHB) and Supplemental Benefits. All services not paid by a health insurer or Government subsidies are covered by out-of-pocket payments. Public sector expenditure is allocated partly to the Ministry of Health for the promotion of health and prevention of diseases, but mainly to the provision of clinical services delivered through patient subsidies, grants, and Standard Health Benefit (SHB) reimbursement at Bermuda's single hospital system (4, 13).

The 2016 National Health Accounts Report indicated that Bermuda spent 11.5% of its GDP on health care (US$ 6,915 per capita). The 2013 Household Expenditure Survey collected data on the levels and patterns of household expenditure and revealed that the average weekly household expenditure increased 18% above the 2004 level, reaching US$ 1,807 in 2013. The average household spent roughly US$ 10,300 a year on health care, and the average annual household income reached US$ 143,882 in 2015, above the $US 106,233 measured in 2004. Bermuda's most recent per capita health expenditure is nearly double the OECD average (of $6,915 vs $ 3,740 Purchasing Power Party) PPP adjusted as illustrated in Figure 9 (6, 17).

Figure 9: Health Expenditure per capita, OECD Comparison, 2015
(or nearest prior year available)



Source: Health in Review (2017)

The Health Disparities survey report released by the Bermuda Health Council in 2013 noted that households with a lower income spent a higher proportion of their total income on healthcare compared to higher income households, and one in four low-income households did not have health insurance coverage for all their household members, compared to 9% in middle to higher income households. Even more concerning, was the fact that lowest income households (annual income less than $60,000) were found to spend the highest proportion of their income on health expenses (insurance and health services), 20%, compared to the highest income group (annual income above $156,000) which spent only 3%. This health care burden would presumably have an impact on lower income earners' access to healthcare (18).

According to Bermuda's 2014 Household Expenditure Survey, an estimated 21% of households have household incomes of less than $35K per person, making minimal coverage health insurance unaffordable by the Health Council's definition.

3. Human Resources for Health

3.1 Relevant policies and plans

Policies and planning for Human Resources for Health (HRH) follow the overarching Bermuda policies and plans for health. There is no specific HRH policy or plan in place. As of 2014, the island's health system has been guided by the Bermuda National Health Strategy 2014-2019, which evolved, from an earlier document, the National Health Plan which was created in 2011 but never fully implemented due to a change in government.

The Bermuda Health Strategy utilized the wealth of expert insights and feedback from the consultative process of the prior plan to generate its three core values: quality, equity and sustainability. These core values drive the strategic priorities for health system reform which are preventing chronic, non-communicable diseases, building health system professional capacity and health system strengthening. There are 14 health sector goals to achieve the necessary reform to assure quality, equity and sustainability of the system.

For Bermuda, achieving a stable balance of the appropriate health care providers is a significant challenge given the small population size, limited land mass, relative geographic isolation and restricted opportunities for higher education and professional training. Individuals with the requisite education and training for the technical fields in health often find greater opportunities and personal and professional satisfaction overseas. Improving the government's ability to attract, recruit and retain such individuals is a secondary aim of health workforce planning.

3.2 Availability of Human Resources for Health

Table 1 details the number of health care workers in key areas as well as the percentage of Bermudian nationals working in each area. There is concern regarding the large number of guest workers and the implications for health workforce planning including costs and maintaining quality of service.

Table 1: Health Care workers required, and numbers in service by citizen status, Health Institutions of the Bermuda Hospital Board (BHB)

Status of Health professional positions, August 2016 (BHB health institutions)						
Profession	**Required Positions**	**BDA**	**Non BDA**	**% positions filled**	**% of non BDA**	**Minimum Education Required**
BHB Workforce	2229	1807	422	100%	19%	
Anaesthesiologist	11	8	4	>100%	36%	Board Certified in Anaesthesiology
Bio Medical Engineering	4	3	1	100%	25%	BSc Biomedical Engineering
Cardiologist	2	0	2	100	100%	Board Certified in Cardiology
Clinical Psychologist	6	5	2	>100%	33%	PhD Clinical Psychology
Dietician	6	2	4	100%	67%	BSc Dietetics
Emergency Physicians	17	2 1(PRC)	14	88%	82%	Board Certified in Emergency Medicine

Geriatrics	1	0	1	100%	100%	Board Certified in Geriatric Medicine
Hospitalist	8	0	6	100%	100%	Board Certified Physician
Imaging Technician - Cat Scan	5	4	1	100%	20%	Associate Degree Medical Imaging
Imaging Technician - Mammography	3	2	1	100	33%	Associate Degree Medical Imaging
Imaging Technician - MRI	5	3	2	100%	40%	Associate Degree Medical Imaging
Imaging Technician - Ultrasound	7	2	5	100%	71%	Associate Degree Medical Imaging
Imaging Technician - X-Ray	13	8	5	100%	38%	Associate Degree Medical Imaging
Medical Officer	5	0	5	100%	100%	Medical Degree (MD, MBBS or equivalent)
Medical Technologist	17	3	14	100%	82%	BSc Medical Technology or Clinical Lab. Science
Mental Health Nursing (RN)	44	7	37	100%	84%	BSc Nursing and Psychiatric Specialty
Community Psych Nurse	7	2	5	100%	71%	Mental Health Nurse

Nursing (RN)	329	69	260	100%	79%	Diploma or BSc Nursing
Oncology	1	0	1	100%	100%	Board Certified in Oncology Medicine
Pathology	4	2	2	100%	50%	Board Certified in Pathology
Pharmacy	11	4	7	100%	64%	Masters Clinical Pharmacy or PharmD
Physiotherapists	10	6	4	100%	40%	BSc Physiotherapy
Psychiatry	5	2	3	5%	60%	Board Certified in Psychiatric Medicine
Radiologist	4	2	2	100%	50%	Board Certified in Diagnostic Imaging Medicine
Surgical Officer	5	0	5	100%	100%	Medical Degree (MD, MBBS or equivalent)

Source: Bermuda Hospital Board, August 2016

The numbers of physicians per 1000 population in Bermuda compares favourably to the US, UK and Canada, at approximately 2.7 physicians per 1000 as seen in Figure 10. In terms of General Practitioners (GPs) Bermuda compares favourably with the UK and Canada, and noticeably exceeds the ratio of GPs to 1000 population in the US. Bermuda has 1 GP for every 1000 population while the US has 0.3 per 1000, the UK 0.8 and Canada 1.3 per 1000. The relationship is reversed in terms of other primary care physicians, paediatricians and obstetricians-gynaecologists (ob-gyns) with a ratio of over 15 ob-gyns per 1000 live births, which is over twice the ratio in Canada and approximately 50% more per 1000

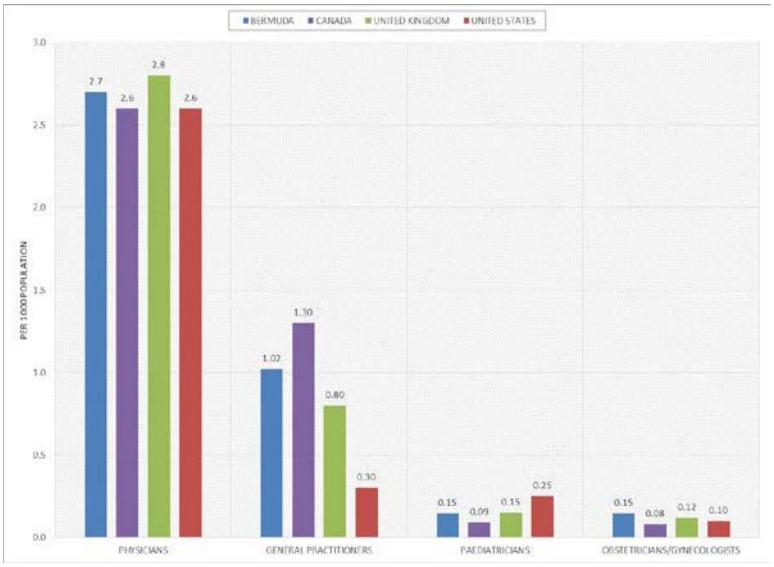
population than in the UK and US. The number of nurses per 1000 population is comparable to the UK but well below Canada and the US.

Data are not available on whether these physicians are working full or part-time and no analysis of the age of the physician workforce has been undertaken at this time. Both total work hours per week and stage of medical practice, early, mid-career or nearing retirement, should be explored further to facilitate more precise medical workforce planning.

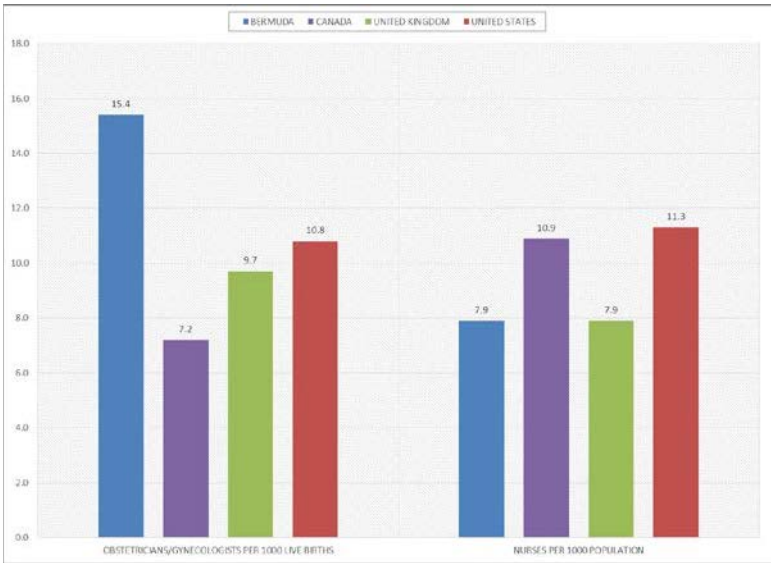
An important caveat in making cross-jurisdiction comparisons of human resource needs is that population health requirements are not identical across jurisdictions. Ratios of physicians per 1000 population do not reflect the unique needs of each population; some populations are less healthy, have more complex chronic disease or may have other features such as geographically inaccessible regions or socioeconomic factors which limit access to quality healthcare. These factors cannot be reflected in simple ratios and numerical comparisons.

Figure 10: Physicians [all] per 1000 population

(Bermuda data from OCMO Registrations Database)



Source: OECD Health Statistics (http://www.oecd.org/health/health-data.htm), Office of the Chief Medical Officer and Department of Statistics, Bermuda

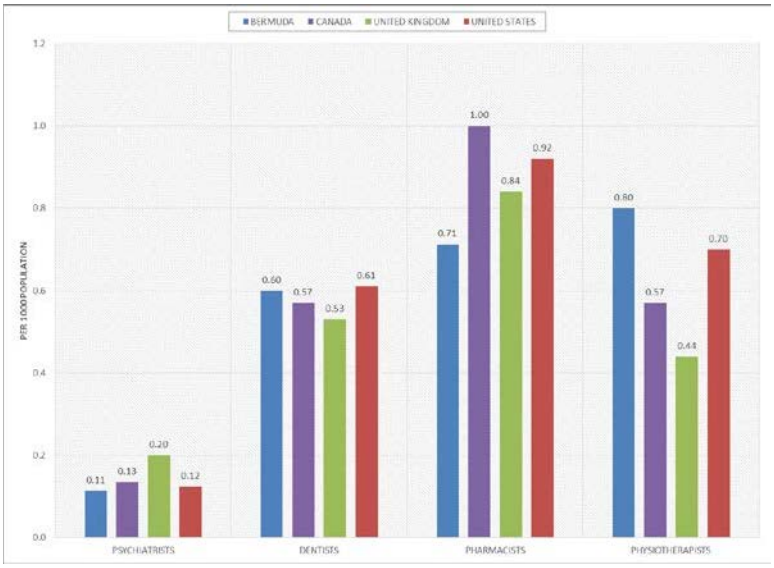


Source: OECD Health Statistics (http://www.oecd.org/health/health-data.htm), and Department of Statistics, Bermuda

Figure 11 shows the ratios of psychologists, dentists, pharmacists and physiotherapists per 1000 population in Bermuda are comparable to those in the other jurisdictions. All jurisdictions had between 0.5 and 0.6 dentists per 1000 population, between 0.7 and 0.9 pharmacists per 1000 population, and between 0.4 and 0.7 per 1000 physiotherapists.

Figure 11: Health professions per 1000 population

(Bermuda data from Employment Survey)



Source: OECD Health Statistics (http://www.oecd.org/health/health-data.htm) and Department of Statistics, Bermuda

3.3 Education, training and skills development for HRH personnel

Each healthcare profession is noted to have unique requirements for education, training and skills maintenance. Bermuda offers limited educational opportunities for health professional training and all students except for nursing must obtain education beyond the Associates degree off island or through distance education. The Bermuda College has Articulation Agreements with various universities to obtain Bachelor, and Master's Degrees in Nursing.

The Ministry of Education and Workforce Development oversee the education of approximately 6000 students from preschool to senior level 4, and operates 38 schools, including the two high schools and the Bermuda College. Most graduating students attending college abroad do so in the United States, Canada, the United Kingdom or the Caribbean (4, 13). The Cambridge International Curriculum (United Kingdom) is utilized throughout the years of public primary and secondary education. The secondary public education system in Bermuda aims to prepare students for higher education using the GCSE

(General Certificate of Secondary Education) and IGCSE (International General Certificate of Secondary Education) in the two public high schools. In 2016, the majority of students were successful in passing the core subjects as follows:

- 99% pass rate with grades A to G or 352 students achieving the English IGCSE;
- 56% pass rate or 337 students awarded the Mathematics ICGSE; and,
- 84% pass rate or 337 students successfully obtaining a Science IGCSE (19).

The math pass rate was notably lower than English and Science, mirroring the weak performance of Bermuda's students in mathematics at the elementary school level on the Cambridge International Examination Checkpoint at primary year 6 (19). The public high school graduation rate was 92% in the 2014/15 school year. High school graduation rate has historically been high in Bermuda, up to 98% in 2010. However, public education officials and test results have consistently noted the lack of proficiency in mathematics of Bermuda's graduates from the public high schools (20). This deficiency can be expected to have a negative impact on attainment of higher education in the sciences and health professions.

The International Baccalaureate (IB) diploma or Advance Placement (AP) studies and examinations are offered variably in 6 private high schools on the island. The Bermuda College offers post-secondary education up to the Associates degree level in most of its programs, and up to a Bachelor degree via distance learning in select programs such as education and nursing. These degrees are in conjunction with accredited US or Canadian colleges and universities.

For education in the health professions, including medicine, pharmacy and the allied health professions, education beyond Associate degree in Arts and Sciences must be obtained abroad. For high school students, adults or non-traditional students, the Bermuda College offers education, skills-upgrading and re-training courses leading to various vocational and professional certificates or diplomas. As of September 2017, some scholarship funds are being made available by the government to support this stream of education.

4. Results of the analysis of the Human Resources for Health situation by stakeholders

In November 2016 a stakeholders' meeting was held with over 40 participants representing the main professional categories as well as other key stakeholders from education, labour and training, and policy areas. In working groups the participants identified challenges and opportunities related to the Bermuda health workforce. The key points to highlight are presented in the chart below.

Challenges	Opportunities
Inadequate information systems for collecting and sharing relevant workforce data	Multi-sector advocacy for health information system to assist with health workforce planning; collaboration to increase formal and informal information sharing
Little to no funding for workforce planning and data collection, analysis and dissemination	Multiple sectors working together can advocate for appropriate funding to implement a health workforce plan.
Public Education system not sufficiently preparing students for healthcare careers; math preparation is particularly suboptimal.	Some students excel despite the less than competitive environments; create opportunities to support those students, even those not at the very top of their class.
Mentoring and supportive, supervision for newly trained Bermudians professionals is limited and informal.	By raising awareness, and enhancing communication, this challenge may be met by retiring healthcare professionals and those working part time.
Timely guidance and counselling needed for students considering healthcare careers; need information on educational entry requirements and professional registration requirements,	Collaboration between health professional statutory bodies, Education and Workforce Development can assure information is

including time, costs, and any special considerations	disseminated in a timely fashion (especially if information systems exist and databases shared).
Many key healthcare professions have low numbers of Bermudians and non-Bermudian retention can be difficult for a variety of reasons.	Opportunity to increase incentives for Bermudians returning to island to practice; ongoing career development for all workers
Inadequate exposure to healthcare professions in school years, limited information on healthcare careers and community's needs for professions	Collaborative efforts to inform students and promote healthcare careers should be increased: health fairs, career days etc.
Work and financial opportunities are not always competitive for new graduates in some healthcare professions.	Opportunities to identify important attractions and work benefits for new graduates and provide these as the economy allows
Immigration obstacles to Bermudians working overseas to obtain necessary experience or training in certain health professions (ie. Medicine and rehabilitation allied health specialties)	Advance information regarding these obstacles can inform Bermudian students and assure they begin an educational journey understanding the challenges ahead.
Professions working in silos limit effectiveness of health system collaboration.	Opportunities could be made for multi-disciplinary collaborations to work on mutual health concerns.
Health regulation is inadequate due to weak or non-existent legislation and few resources for monitoring and enforcement.	Recent publicity in this area has highlighted deficiencies and may prioritize legislative change, including reforming regulatory framework and providing adequate funding for oversight functions.

Immigration processes in Bermuda are lengthy and pose obstacles to timely recruitment and retention.	Closer collaboration between Immigration policy developers and the statutory professional bodies can overcome some of these challenges.

5. Conclusion

Bermuda is at an important stage of its Human Resources for Health planning. With significant ageing of the population in combination with the high prevalence of important risk factors for the development of non-communicable diseases, Bermuda like many countries in the Caribbean is dealing with serious health challenges. In order to meet the needs of the population in the middle and long term, resources must be invested in Human Resources for Health planning that has a wider focus to support health system reform and include a multi-disciplinary and intersectional approach that embraces private and public interest groups in the process. Human Resource for Health planning must be continuous and must evolve to address changing health system and population health needs.

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Annexes

Annex 1: Analysis of stakeholder feedback on current workforce composition

MEDICAL PRACTITIONERS

1. Adequacy of numbers and skills mix of medical professionals:

Physician stakeholders agreed that there are an adequate numbers of general practitioners (GPs) on island but an oversupply of some other primary care areas, particularly paediatrics and obstetrics-gynaecology for population needs. Given Bermuda's low birth numbers currently and downward 5 year trend, the need for paediatricians and ob-gyn physicians does not match the numbers. For example, according to hospital records, there were 852 births in 2007-2008 and steady decline since, to 577 births between March 2015- April 2016.

In workforce planning, we must clarify patient contact hours to confirm adequacy of each area, especially as we project future needs. Many physicians work part-time or reduced hours and this has implications on access to care.

Anecdotally, there is a wide variation in skills mix and clinical care quality among GPs. This also has implications on health outcomes and impacts effectiveness of health system.

2. Recommended standards and guidelines for medical workforce planning:

Physicians with Bermudian status or ties to the island should be given preference in registering to work on island. For non-Bermudians, a process should be followed to maintain appropriate numbers of each specialty and to assure work opportunities for Bermudian physicians. This is especially important in the primary care specialties.

Collaboration with the Department of Immigration is important to balance these considerations. No particular standard for determining optimal ratios of medical practitioners was preferred by stakeholders over another. It is recommended that an evidence-based standard be identified and adhered to for workforce planning.

3. Concerns regarding the current medical workforce in Bermuda:

Research is required to confirm, but stakeholders suspect that the ratios of certain specialties are over or under ideal levels. Recruiting and retaining certain specialties on island is an ongoing challenge

impacting care access and quality. Examples are the specialties of oncology, urology, and otolaryngology which have struggled to maintain safe levels of professionals to meet population needs. At the time of writing, for oncology and urology the numbers are considered acceptable but this is a variable situation as the professionals are primarily non-Bermudians.

Regarding physician qualifications and competence, stakeholders felt that no compromises should be made in terms of the quality of education and professional training, regardless of ties to Bermuda. Specialty or General Practice board certification should be required for all medical practitioners at this time. Global political, social and economic changes may occur in the future which may require this standard to change; but for now, there must be standard credentials for registration as a physician on island, regardless of nationality.

4. Major challenges facing the medical profession in Bermuda between now and 2030:

As noted, there is a perceived deficiency in the number of some specialist categories: urology, geriatrics, ENT, orthopaedic surgery and rehabilitation medicine are identified as having a growing need in future due to an aging population.

Assuring a high level of competency across all fields and verifying the training and skills of physicians from various international jurisdictions will continue to be a challenge. Credentialing processes must become more finely tuned and effective with the global workforce.

Educating Bermudian students to gain admission to accredited medical schools, internships and residency programs internationally will continue to be a high priority. Local public education must become more effective or Bermudian students will not be able to compete successfully with a well-educated highly trained international health workforce.

Medical practice administrative activities are increasing. On the horizon we see increasing expectations for reporting of clinical data, provision of outcomes data to various regulatory bodies, pre-certification for reimbursement of care, and more complex coding of medical visits. These all require information technology and knowledgeable support staff, both of which have financial implications. Unfortunately, the largest burden of these expectations will likely fall on primary care physicians who need to be supported through health care financing reform if universal health coverage is to become a reality.

5. List some solutions to the challenges identified above:

We must inspire and inform young Bermudians for careers in health, including medical specialties with a projected deficit in the coming decades. Also required is a quality educational system, both private and public. Education in STEM (science, technology, engineering and math) subjects must be to the highest international standards for Bermuda's students to remain competitive.

Healthcare regulators should continually update Standards of Practice for Medical Practitioners and enforce standards through adequate monitoring and evaluation of health outcomes. Feedback to the physicians about health outcomes will be valuable for motivating clinical best-practice.

An island-wide electronic health system would aid in population health assessment, outcome monitoring, appropriate information sharing (with careful controls) and streamlining care. Improving health information systems, including acquiring a national health information system, is essential for efficiency and effectiveness in health delivery.

NURSING

1. Adequacy of numbers and skills mix of nursing professionals:

Nursing professionals agreed that currently there are not enough skilled nurses and that nurses are not actively practicing case management or conducting discharge management due at times to workplace restraints. Nurses should be allowed to case manage and plan care for patients whilst in hospital. This improves efficiency for patients being discharged. Generally, it is felt that nurses are being underutilized and restricted in their roles and scope of practice to the detriment of care quality.

The skill mix of nursing professionals is considered sub-optimal. There are an abundance of nursing associates, more than can be monitored. The Bermuda Hospitals Board (BHB) professionals, both nursing and allied health, should be allowed to utilize their complete skill sets, to address discharge requirements more effectively.

More advanced skill sets are required within the acute care setting of BHB to meet complex medical treatment requirements especially for patients returning from overseas.

In addition, a clear orientation checklist of baseline skills is required for all nursing professionals to be assured they have of the minimal set of nursing skills and competences.

2. Recommended standards and guidelines for nursing workforce planning:

Nurses should be competent in their specific fields and there should be a standard certification level of competencies for entry level positions, as well as areas of specialty work. Continuing education and professional development should be readily available and should be required of all nursing professionals, regardless of work setting, to maintain registration with the Nursing Council.

Specialist nurses should be certified in the relevant areas by the appropriate certifying bodies. For advance practice nurses, Standards of Practice models are available from USA, Canada, or Australia and these are all appropriate to apply to Bermuda.

Likewise, case management and nursing case management standards are also available from various international jurisdictions.

Having at least minimum criteria in place for standards of care and education and training, offers public safety, quality and consistency of health care.

3. Concerns regarding the current nursing workforce in Bermuda:

There are concerns that the newly trained younger nurses do not remain at the bedside for sufficient time to meet the needs of the population. The lure of nursing administrative positions is great and bedside nursing jobs can therefore be difficult to keep filled.

Nursing education on island is a concern in that this opportunity is a recently established one and its sustainability and effectiveness have not been proven. There is some indication that the current structure to build up the Bermudian nursing workforce at Bermuda College is inadequate. The current program is limited in its capacity to educate students to qualify fully as nurses who can work immediately with the community. Further overseas education and training are required, and these opportunities are not available to all those potentially interested in nursing careers.

Some stakeholders recommended that registration at Bermuda College should be suspended until more graduates have taken the ensured pathway to be certified as nurses. The suggestion is that the college should support former nursing graduates to continue studies overseas, in order that they may qualify on the certification exam, before enlisting new students to the program.

Going forward, it is crucial to promote clear guidelines to assure that all prospective students understand the pathway to becoming fully certified nurses.

4. Major challenges facing the nursing profession in Bermuda between now and 2030:

The international nursing shortage is a challenge currently and will continue to be so in the next decades. Maintaining interest in bedside nursing will also pose a challenge as nursing opportunities expand in multiple settings outside the acute care hospital.

The challenge of maintaining job satisfaction for front-line nurses, and creating incentives for them to remain in such jobs, will remain and may increase in the coming years.

Bermuda is making progress in the recognition of advanced practice nursing, and this is encouraging. Increasingly, the value of these highly trained professionals is recognized by physicians, nursing staff, policymakers and the public. The efficiency of the health system in managing chronic non-communicable diseases has been shown to be aided by advanced practice nursing professionals. This category of nurses will need to play a more prominent role in health delivery in the coming decades.

5. List some solutions to the challenges identified above:

Workplaces can create "clinical ladders" to chart a course for advancement and continuing education to improve job satisfaction of nurses. Newly qualified nurses should be informed of the opportunities for advancement in any setting they work. They should be assisted and encouraged to have continuing education and skills enhancement to be qualified for an ever advancing scope of practice.

Funding for such education and training must be made available, and advocacy for further development of policies, educational and training programs should occur.

PSYCHOLOGY/COUNSELING

1. Adequacy of numbers and skills mix of psychology professionals:

The field of psychology is constantly changing and the demands for additional areas of practice such as Sports Psychology and Neurodevelopmental Psychology arise occasionally.

There are no specific data available that address the range of expertise required for Bermuda's population. Clients who can afford to do so and/or require more in-depth analysis, frequently opt to go abroad for psychological assessments.

Documentation of the areas of specialization that are needed in psychology should be undertaken. Most psychologists are only certified in a single area, but are sometimes required to generalize their scope of practice. This results in psychologists having to manage psychological conditions and situations for which they have suboptimal experience.

2. Recommended standards and guidelines for psychological services workforce planning

The Code of Conduct and the Psychological Practitioners Act 1998 (which is being reviewed and will be amended) provide the overall guidelines for the practices of psychologists and are used as reference points for people considering this career. The Current practice by National Training Board to direct students to professionals in the field at the undergraduate level is considered to be very helpful and a valuable resource for students interested in studying Psychology. The Government Portal can be beneficial in guiding students and professionals towards the steps necessary for registration locally.

Standards for practice are based mainly on US standards, but Canadian and United Kingdom standards, are incorporated. The current Code of Conduct, which is being revised in 2017, outlines the standards of the Psychologists who are registered.

3. Concerns regarding the current psychology workforce in Bermuda:

The Psychological Practitioners Act 1998 is the legislation regulating psychologists in Bermuda and is in the process of being reviewed. A Cabinet Memorandum for amendments to the legislation was approved in February 2017 and amendments are currently being drafted into legislation.

There is an issue with insurance coverage, so although a service is available, the insurance only provides payment for certain services leaving the client unable to receive the treatment that they may need. This lack of coverage forces some clients to seek psychiatric and diagnostic and psychological care only when it will be covered by insurance. Thus, they may not receive the most appropriate type or quality of care required. Insurance covers only a set amount of cost locally, irrespective of the type of service provided. However, when going for services off island, more coverage is provided, in part because a medical practitioner may lead the case assessment.

More education for insurance companies on this matter is required, although efforts have been made for years regarding this concern. Underwriters determine what is covered and they may have little education on the actual clinical needs of clients or the types of billable services provided by psychologists. That is, knowledge of the correct CPT codes can improve. For instance, psycho-educational assessments should be covered by insurance as currently these services, which could be met on island, require transfer overseas.

There is a need to maintain and promote the profession to the public. The benefits of psychological services to a community must be communicated widely, especially in light of the lifestyle related chronic disease risk factors plaguing the community. Behavioural interventions will be increasingly important for managing the NCD epidemic.

Promotion of the profession to potential students who may be interested in psychology or counselling is also important. We must spark interest at every educational level and correct misconceptions such as that there are no jobs available in psychology. Work options for persons with a psychology degree are quite broad and varied.

However, we have to be cognizant of the size of Bermuda and the viability of certain areas of Psychology in Bermuda. This can be facilitated by reactivating the student membership category of the Professional organization. Increased guidance and promotion of the field is required in order to assist others with making appropriate choices when selecting Psychology as a field of study. The need for accurate data e.g. through surveys and review of documented information to support trends, areas of specialization

and expertise of practitioners is being considered by the Council and Bermuda Psychological Association.

4. Major challenges facing the psychology profession in Bermuda between now and 2030:

Psychology is a popular degree option at the undergraduate level and some students are pursuing this option at the advanced degree level without guidance and direction from those in the field locally, particularly regarding local registration requirements.

Employment projections on the Island are difficult to predict due to the large number of self-employed psychologists.

Newer areas of expertise in the field of psychology are not always fully embraced by local organizations and practitioners; therefore, it is difficult to guide students wanting to study new areas of psychology research and/or practice without having data to support their ability to be employed locally. Professionals are registered under the generic title of Psychologist, but expertise is not always known e.g. Clinical, Educational and Counselling. The Council is advocating for this to be included in the registration application moving forward.

The insurance reimbursement practices are not always aligned with other jurisdictions and the use of updated CPT codes. Additionally, there appears to be some inconsistency with how insurance companies reimburse psychologists (for example, psychologists conducting assessments versus psychotherapy) even though all practitioners are registered to practice locally. This could impact on the future of Psychologists who choose to practice privately. When travelling off -island to receive services, more coverage is provided in part because medical facilities and practitioners may lead the case e.g. when a child has a neurodevelopmental assessment.

5. List some solutions to the challenges identified above:

Health professional regulators should create a more comprehensive database of specialty areas of psychologists based on registration and re-registration application data. This can then be published on the Council's website, the BHeC website and with the Registrar General's office.

Through the Council's website, provide more education to students studying psychology informing them about the different fields represented locally, resources to contact for guidance, and information on what areas of psychology are in growing demand on the island.

Post on the Council's website the employment data collected on local psychology practices that was sent to Immigration in 2014 to allow the public to be able to view what is available on island and what practices may be demanded in the future (based on local and international trends).

A) A more comprehensive database of specialty areas of psychologists based on registration and re-registration applicants can be created so that areas of expertise are highlighted. This can then be published on the Council's website, the BHeC website, the Bermuda Psychological Association's website and with the Registrar General's office.

B) Through the Council's website a link can be created to direct prospective Psychologists to the Association's website which can provide more education to students studying Psychology. . This can inform them about the different fields represented locally, resources to contact for guidance, and information on what areas of psychology are in growing demand on the island.

C) Post on the Council's website the employment data collected on local psychology practices that was sent to Immigration in 2014 to allow the public to be able to view what is available on island and what practices may be demanded in the future (based on local and international trends).

ALLIED HEALTH (includes physiotherapy, occupational therapy, dietetics, speech & language pathology)

1. Adequacy of numbers and skills mix of allied health professionals:

There is a varied opinion from stakeholders regarding adequacy of numbers in the professions. Most agree there are not adequate numbers of the above categories of professionals to meet the growing needs of the community. The burden of chronic NCDs and their complications often require lengthy follow up support by allied health professionals within the community setting. The numbers of these professionals do not meet current demand from the experience of most stakeholders (wait lists are lengthy or services cannot be provided in a timely fashion for hospital discharge planning).

There is anecdotal evidence of saturation in some areas, particularly within physiotherapy and in specialized areas.

To answer this question more accurately, we must look at the specific health professions across various settings and consider specific health system factors: healthcare setting - hospital, long term care facility, community, etc. vs. population demographics.

2. Recommended standards and guidelines for allied health workforce planning: Please REVISE entirely

The standards and guidelines will relate to the specific profession. There was no consensus on guidelines to follow by the professional stakeholders consulted, but such recommendations would be obtained as part of the workforce planning process.

Currently data are not collected on the specialty areas of interest for each category of profession. Such data will need to be related to the standard once it is agreed.

Training standards for registration in Bermuda are variable because the allied health workforce has been trained across various jurisdictions. Some jurisdictions are broader in comparison to others. Likewise, the registration guidelines, training and qualifications required per profession, varies.

In this professional category as well, it is perceived that there is a need for increased public awareness of which professions are registered under allied health and their relation to similar un-registered professions.

3. Concerns regarding the current allied health workforce in Bermuda

Support for obtaining required post-graduate training and skills must be given priority attention. For example, when a Bermudian completes the education process they would have no experience and would require mentoring, supervision and support to develop sufficient experience for independent practice. Supervision by a seasoned professional would be ideal but reliable arrangements for these pairings do not currently exist on island.

There is evidence that some jobs are being tailored specifically for guest workers which places trained Bermudians at an occupational disadvantage. For instance, Job Descriptions may not allow for a newly trained individual to enter the field.

Allied Health Professional services often not mandated for care upon discharge and this short-changes the quality of rehabilitation service delivery and limits optimal outcomes.

4. Major challenges facing allied health profession in Bermuda between now and 2030:

Tracking of persons interested in various professions and currently being trained is a recognized challenge. Communication with students over the course of their education is a requirement which has not yet been achieved

Developing Policy and Regulation standards, and training individuals in Compliance and Investigation, is a required to improve monitoring of healthcare providers.

With the aging population and increasingly complex medical conditions, comes increased health needs and number of clients. Bermuda is anticipated to need more allied health assistants as well as more robust regulation of the scope and quality of practice of these professionals.

5. List some solutions to the challenges identified above:

Formal regulation of allied health assistants and other professions will assure quality and safety in the professions.

More attention is needed to regulation by monitoring compliance and workforce needs Human Resources needed

DENTISTRY

1. Adequacy of numbers and skills mix of dental professionals:

Dental professionals agreed that currently there are adequate number of dentists for population needs. However, the numbers of dental assistant and hygienists are currently perceived to be inadequate.

2. Recommended standards and guidelines for dental workforce planning:

There need to be rules, guidelines or criteria for allowing a practice to bring in additional dentists from overseas. Presently, the Dental Board recognizes qualified Bermudians, spouses of Bermudians, and spouses/partners of primary work permit holders. However, there are dentists on the island who do not have familial ties.

The Board approves dental practitioner credentials. It is for the Department of Immigration to approve the work permits. The Department of Immigration has agreed that going forward the Dental Board (and other professional boards) would be consulted annually on workforce requirements.

No specified standard of workforce planning for dentistry was recommended by the group of stakeholders consulted.

3. Concerns regarding the current workforce in Bermuda in the dental profession:

We are currently slightly over capacity. There was no need to include non-Bermudian dentists at this time according to surveys conducted by the Dental Association and a review of dentists per capita figures from other jurisdictions.

4. Major challenges facing the dental profession in Bermuda between now and 2030:

There is a concern regarding the practice of allowing non-dentists to manage and own dental businesses. This concern is because the regulations and laws that protect patients apply to dentists not non-professional business owners. Auxiliary employees are under the supervision of the dentist. If business persons are allowed to set up practices it would create a need to import more dentists and currently this is not deemed necessary. It obstructs Bermudian dentists from making a livelihood. This consequence is heightened by the increasing work permits being issued for foreign general dentists without ties to Bermuda.

There are variations in the demand for dental care and it would be important to have in place a description of conditions where we would allow for the import of non- Bermudian dentists. Furthermore, there should be a set guidance regarding which offices would be allowed to hire and at what rate imported care would be paid. Finally, it should be considered whether it is appropriate to allow dental business to be set up where the owner, dentist or not, is not practicing within the business.

These workforce issues have not been discussed formally and openly, but must be, for a jurisdiction our size.

The aging population of seniors have increased by 29 %. Life expectancy is now 81.29. It was 79.88 in 2010 and is expected to rise to 82.07 by 2020. In addition to this, more seniors are retaining their teeth than in previous decades. The greater dental need of seniors along with the higher expectations for care (e.g. implants etc) and the increased number of individuals should have a continual increasing effect on dental service needs.

Diabetes and Periodontal disease have a synergistic effect which affects the cost of health; and in order to limit healthcare costs periodontal disease needs to be ameliorated to improve the level of control of diabetes.

Heart disease and Periodontal Disease are significantly correlated. Dental health is proven to be a significant factor in the outcome of diseases of the heart and circulatory system and availability of services is crucial to decreasing the risks of heart disease. Pregnancy health and premature birth are likewise correlated with periodontal disease. Access to good oral health care will be increasingly recognized as a factor in disease prevention.

Dental service utilization is reduced due to the economy. Previously there were long waiting periods in many practices in spite of the number of dentists. Some practices still have six month wait periods. However, there are indications that many individuals are avoiding dental care in favour of managing other expenses. This means there are unmet needs which will impact the overall cost of health care. Should the economic downturn reverse, the need for dental professionals can be expected to increase appropriately to improve NCD management.

The effect of a national health plan on dental utilization is that it should ideally increase dramatically. In particular those who have avoided dental care are likely to seek immediate services.

5. List some solutions to the challenges identified above:

Dental professionals recommend limiting work permits to legal spouse of Bermudians. Implement a "Ties to Bermuda Policy" to obtain a work permit is deemed a reasonable measure at this time. Recommended Ties: Legal spouse of Bermudian; if spouse's permit is less than 1 year, the applicant should be allowed to do locums only; years of Service in Government clinic >7 years, should be given preference for continuity of care.

Work permits with the tie of Years of Service to Bermuda's public should be considered before spouses of other guest workers also because these applicants have demonstrated commitment to Bermuda's community.

Any office/ company applying for a work permit holder must be able to comprehensively service patients if the work permit is not renewed. Offices should not solely rely on foreign nationals.

Place a temporary hold on all new work permits until an ideal policy can be created and implemented (except government clinic where there is an established need based on experience).

A suggested solution for non-dentist office ownership: Licensing authorities should establish regulations which hold entities providing dental services that are owned by non-dentists or dentists not currently licensed or practicing in Bermuda to the same ethical and legal standards as those that are owned by licensed/ actively practicing dentists in Bermuda (currently American Dental Association policy)

PHARMACY

1. Adequacy of numbers and skills mix of pharmacy professionals:

The current numbers of pharmacists in the retail sector are considered adequate though there is not always adequate locum coverage for absences. Given that the majority of pharmacists are non-Bermudian we must be able to maintain this number and assure stability of the workforce. We must both maintain the number of pharmacists on island and increase number of Bermudian pharmacists to assure sustainability of the workforce. Diversity is a benefit and Bermuda is very diverse. Yet long term sustainability and stability of the workforce are equally important.

An ageing population and an increasing emphasis on provision of other services (for example medication reviews) will mean that pharmacists will have to maintain or improve their clinical knowledge and skills.

2. Recommended standards and guidelines for pharmacy workforce planning

No specific standard or guideline was suggested by the consulted pharmacy professionals.

It was recommended that to aid workforce planning and meet population requirements, we must maintain the ease of pharmacists obtaining work permits. This will also preserve the diversity in the profession.

Simultaneously, we should encourage more Bermudians to study pharmacy, and maintain lists of number of students studying abroad. Inclusion of pharmacy in career fairs highlighting the healthcare professions will be an important tactic going forward.

3. Concerns regarding the current workforce in Bermuda in the pharmacy profession:

Pharmacy should be on the list of "essential professions" for Bermuda especially given that the majority of pharmacists are non-Bermudians and because it is an essential job for the health system.

Given current information, the small number of Bermudians entering the profession is a concern. Particularly given the aging population and the need for support for managing chronic NCDs, the pharmacy profession will maintain its relevance to the health system.

Other concerns are poly-pharmacy and the health risks associated with this, also more pronounced with an aging population. Dispensing errors and the need for timely investigation of pharmacy complaints is perceived as a concern among the professionals.

4. Major challenges facing the pharmacy profession in Bermuda between now and 2030:

Bermuda will need to be able to come up to date and in line with global pharmacy policies and population needs. Modern legislation is required to enable pharmacists to expand their scope of practice beyond the standard dispensing function to include other services which support community health: vaccinations, cholesterol and diabetes screening, pregnancy testing and so forth.

Limited consultation on medical problems and specific dispensing or pharmacist prescribing can be easily adopted if pre-existing guidelines can be established. These services support health education and health information requirements of the public, and reduce the cost of office visits to physicians.

Maintaining job satisfaction among pharmacists can be assisted by allowing a fuller scope of practice and more meaningful health service provision.

In the years ahead, attention will need to be paid to preventing an oversupply of pharmacies on the island. We will need to determine a sustainable number so that provision of care is not compromised and the business thrives.

5. List some solutions to the challenges identified above:

Allowing pharmacists to deliver an expanded scope of health services is a wise health system move because pharmacists are the most easily accessible professionals in primary care: open the most hours, usually the cheapest (often free service) and can be relied upon to offer professional advice within the appropriate scope of practice.

Prescribing rights for pharmacists should be explored for this reason. People should be able to come to pharmacists and receive more assistance than is available currently. This would fortify the provision of primary health as well as improve job satisfaction of the professionals

Similarly, stakeholders in the profession felt that regulations should be revised to allow pharmacists to expand their scope of practice appropriately.

To control the risk of poly-pharmacy (multiple prescriptions by multiple physicians), an electronic medical information system is required. A centralized medical database should be created, with the

necessary attention to privacy and confidentiality, but allowing a streamlined service provision, minimizing duplication and over-utilization.

Improved collaboration between multidisciplinary teams including pharmacists also serves as a protection from poly-pharmacy and supports a continuum of care in the community for patients.

Pharmacists can help reduce amount of hospital admissions and pill-load of individuals if given consultation time. This could have significant health outcome benefit.

We should encourage students to study science and consider pharmacy careers due to the dynamic balance of pharmacy professionals; encouragement to become pharmacy technicians is also important because this field is a stepping stone to the profession.

Historically, less than 5 of pharmacists are male Bermudians. It will be important to enlighten the population regarding the profession and make access to educational course that are not time consuming or expensive

Increase cooperation between Pharmacy Council, Ministry of Health and other physicians to encourage collaboration in care of patients: community continuum of care for those with chronic disease.

Establishing procedures for tracking students abroad and encouraging them will be a helpful aid to recruitment, as will increasing visibility of the profession at career fairs, school presentations.

To improve regulatory oversight and controls in pharmacy practices, a full time pharmacy inspector is required. Currently such expertise is provided to the Ministry by a pharmacy consultant who provides less than 40 hours per month.

GOVERNMENT OF BERMUDA

Ministry of Health

Office of Chief Medical Officer

Pan American Health Organization

World Health Organization

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