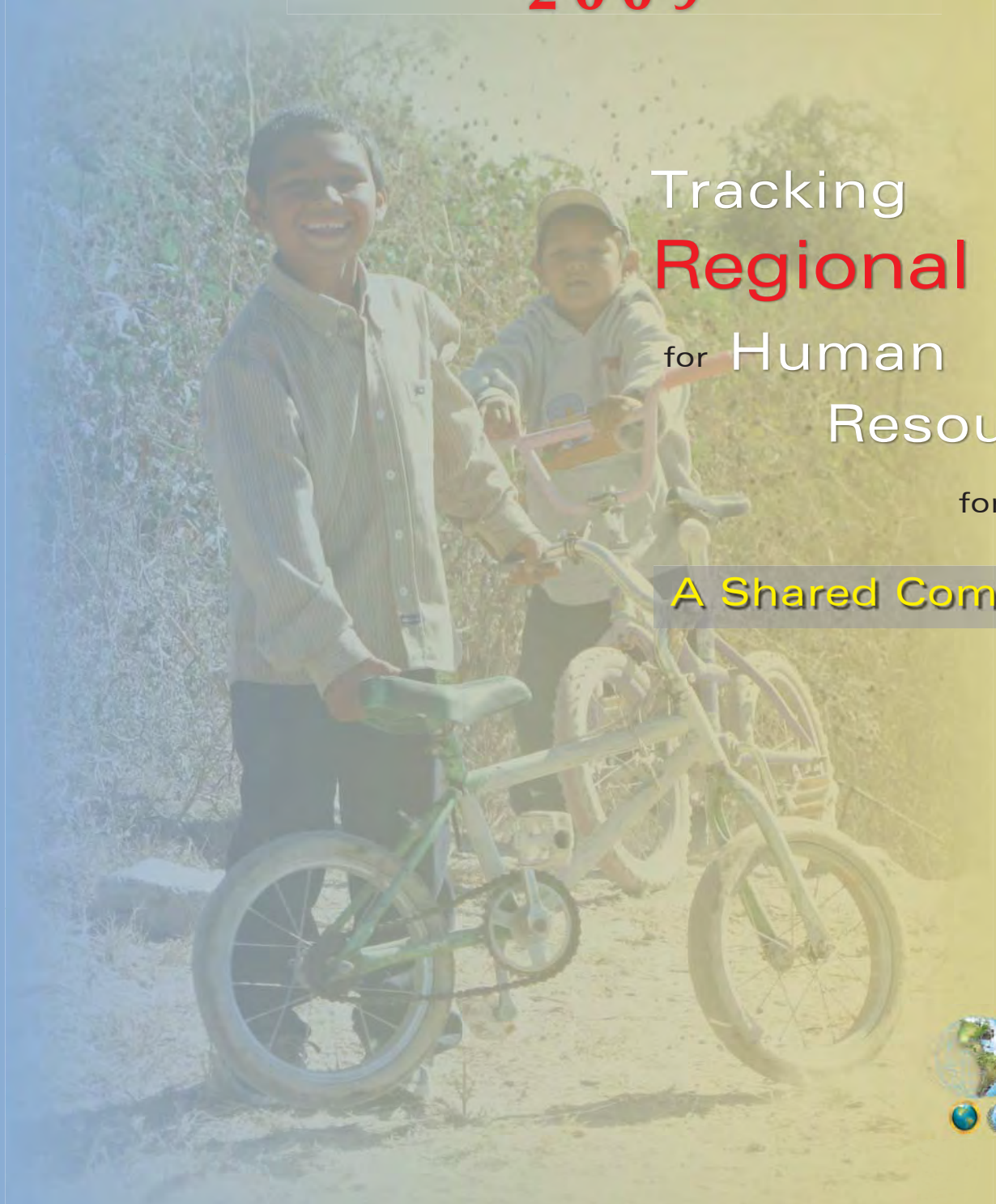
CORE DATA

HUMAN RESOURCES FOR HEALTH

Stocks and Flows - Education - Management

BARBADOS

2009



Tracking
Regional Goals
for Human
Resources
for Health

A Shared Commitment

Pan American Health Organization
Regional Office of the World Health Organization

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Executive Summary

In its 2006 annual report, the World Health Organization reported on Human Resources for Health (HRH) among its member states. For many Caribbean nations, there were little data available. To improve this paucity of information, the Pan-American Health Organization (PAHO) has partnered with the Ministry of Health of Barbados to support the systematic collection and analysis of HRH data in Barbados as part of the country's 10-year commitment to health workforce development. This report is the result of this partnership, and summarises data from Barbados, one of five Eastern Caribbean nations included in the project. In November 2007 a project Core Data Set was collectively defined through consensus among the participating Caribbean countries, and data collection in Barbados started in June 2008. The core dataset includes qualitative, quantitative and descriptive data items.

Data were collected from a range of data sources, including census information, personnel and other administrative databases, and professional registration data. This report describes the general considerations and specific methodologies followed in assembling the Barbados HRH data set. Details of this new national resource are described, and summary statistics present an overview of the health workforce in Barbados. The report focuses on the number of healthcare workers per 10,000 population—"the density per 10,000". Using this summary measure there are 13.1 doctors, 39.7 nurses and midwives, and 17.2 nursing assistants for every 10,000 people in Barbados.

Key recommendations include:

(1) Providing targeted training to improve quality of the data management by key data sources.

(2) Prioritising core data set items to ensure that that the collection of information vital to HRH planning and policy development is sustainable.

(3) Focus on developing and using the current Government personnel software (SmartStream) as a tool for the continued collection of information on HRH into the future.

(4) Conduct a complete HRH-personnel national survey to quantify the healthcare workers in the private healthcare system.

(5) Standardising the procedures of this cross-country data collection initiative (for data management, data analysis and “databasing”) to ensure that the data obtained are comparable, and easily updated by others in the future.

1. Introduction

1.1. Background and Report Structure

Background

In its 2006 annual report, the World Health Organization (WHO) reported on Human Resources for Health (HRH) among its 192 member states.[1] This report recognized widely varying data availability, with many non-OECD nations having limited access to information on their health workforce. National data were collected as part of this effort, using three approaches: WHO national surveys conducted through its regional and country offices, contacting various national administrative sources, or "compiled from a previous version of the WHO's Global database on the health workforce."[1] Data from many Caribbean nations[2] were collected using this third approach, which obtained very little detail, with information that had not been updated for a number of years.

To improve this paucity of information, the Human Resources for Health Unit of the Pan-American Health Organization (PAHO) has partnered with the Ministry of Health of Barbados to support the systematic collection and analysis of HRH data in Barbados as part of the country's 10-year commitment to health workforce development. In addition, this extensive data collection programme has been extended to other countries in the Caribbean region, including Belize, Jamaica, Trinidad & Tobago, and 5 Eastern Caribbean countries.[3] It is expected that these data collection exercises will form the basis for a regional HRH database to follow HRH trends through time. In turn, this resource can help to inform priorities and sustainable policies for enabling a healthcare workforce tailored to the needs of the individual countries and the region as a whole.

This report from the Eastern Caribbean data collection team, presents data from Barbados. The four further Eastern Caribbean countries (Dominica, Grenada, St. Lucia, St. Vincent and the Grenadines) will be presented in "phase 2" of the eastern Caribbean arm of this regional data collection exercise.

1. World Health Organization. The World Health Report 2006: working together for health. WHO Press, Geneva.
2. Antigua and Barbuda, Bahamas, Barbados, Dominica, Grenada, Guyana, Haiti, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago.
3. There are five Eastern Caribbean countries taking part in this HRH data collection exercise: Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines.

Report Structure

A project core dataset was collectively defined through consensus among the participating Caribbean countries at the Data Management Project Orientation Meeting in Bridgetown, Barbados in September 2007 (see Appendix 1). This core dataset has been subdivided into four data subsets to facilitate the collection and presentation of collected data:

- **Data Subset 1.** Human Resources in Health (HRH) - Quantitative data (Item 1)
- **Data Subset 2.** Human Resources in Health (HRH) - Descriptive data (Item 2b -2k)
- **Data Subset 3.** Education system related to HRH - Quantitative data (Item 3a-3m)
- **Data Subset 4.** Education system related to HRH - Descriptive data (Item 2a, 3n-3y)

To facilitate management of the data collection once the preparatory work had been completed, the project was divided into the following four phases:

- **Phase 1.** Identification of information sources
- **Phase 2.** Identification of information
- **Phase 3.** Data collection
- **Phase 4.** Data analysis

The activities and outcomes in each phase will be described during the course of this report. Phases 1, 2, 3 are reported in Chapter 2 (Methods), and Phase 4 is described in Chapter 3. Each chapter will be divided into the four data subsets described above (HRH – Quantitative, HRH – Descriptive, Education – Quantitative, Education – Descriptive).

1.2. Aims of the Project in Barbados

The overall aims of the PAHO Data Management Project for Human Resources in Health are (A) to assess and analyze human resources in health, and (B) To establish information systems and networks for knowledge exchange that are sustainable. The specific aim of the Barbados arm of this project was to identify, collate and summarize HRH resources from all existing sources of information and highlight areas where information is unavailable. On completion of the situation analysis, recommendations and processes to enable the information to be updated will be provided,

1.3. Objectives of the Project in Barbados

The above aim for Barbados can be broken down into four objectives (as detailed in the original request for proposals):

- **Objective 1.** Develop a situation analysis of the main components of the health workforce in Barbados
- **Objective 2.** Describe the main Human Resources in Health trends
- **Objective 3.** Summarize a limited set of problems or challenges related to Human Resources in Health that hamper the improvement of the health system
- **Objective 4.** Provide a plan for establishing a data collection/management process that can be part of a sustainable updating practice.

1.4. Preparatory Work

Development of Core Data Set

An orientation seminar was held to facilitate the development of a core data set that would be relevant to all participating countries. The seminar took place in Barbados (28-29 September 2007) and was attended by teams from Jamaica, Belize, Trinidad and Tobago and Barbados/EC, along with relevant PAHO country programme officers. In addition to presentations from each research group on potential approaches for data management and previous experiences from Canada and the United States, workshops were held to discuss and agree on the various components of the core data set. Ultimately, the seminar developed a core dataset for implementation by all data collection teams (see Appendix 1 for the full core dataset).

Contributors and Stakeholders

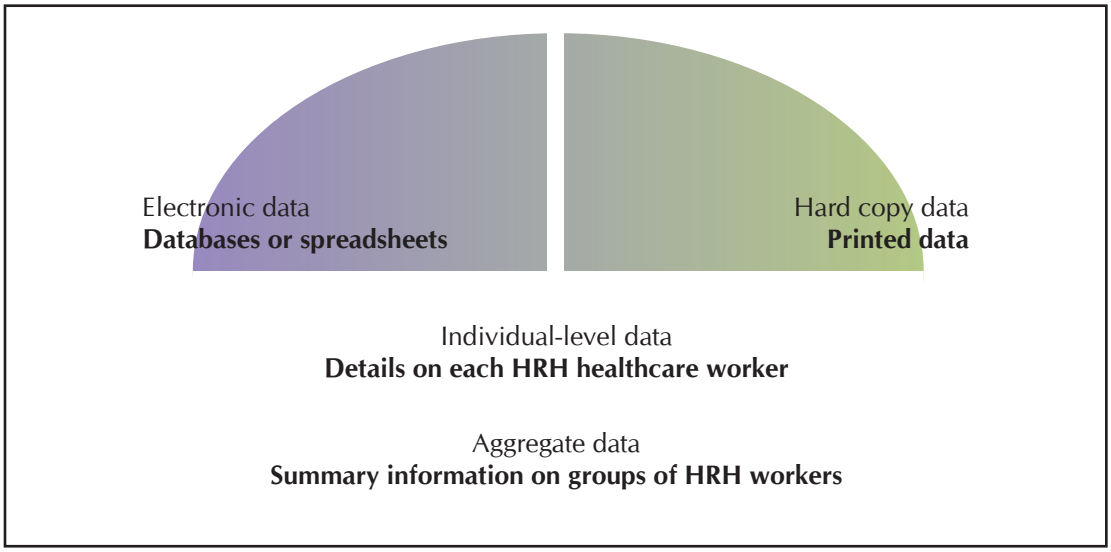
Initially a network of contributors/stakeholders was established involving members of the Ministry of Health, education facilities, healthcare providers, and other government departments involved in human resources for health. This network was used as the basis for establishing a data collection mechanism.

The PAHO office in Barbados facilitated meetings with key individuals from the Ministry of Health (MoH), including the Permanent Secretary and the Principal Personnel Officer (PPO), who then assigned an MoH liaison officer, Mr. Marc Ifill of the Planning Unit, to the PAHO HRH Data Management Project. Mr. Ifill was key to making contact with all the relevant stakeholders within and outside the government, and played an important role in the data collection process.

Types of Data Available

The available data fell into one of four categories: individual-level or aggregate data presented in either electronic or hard copy format.

Figure 1.1: Types of data available



For this data collection exercise, data have been classified in one of these four formats: electronic individual-level data (EIN), electronic aggregate data (EAG), hard-copy individual-level data (HIN), and hard-copy aggregate data (HAG).

Wherever possible data were collected in EIN format. If EIN data were not available then electronic aggregated data (EAG) were collected. If electronic data were not available, summary data in hard copy (HAG) were collected. Hard-copy data were converted to electronic formats before data analysis, and anonymized during data collection. All electronic data were stored securely on an encrypted and access-controlled server. Names and other identifying information were replaced by a unique numeric code to anonymize all records.

Types of Potential HRH Data Sources

Where possible all quantitative data were validated using an alternative data source. There is no centralised data source containing information on the three healthcare sectors (private healthcare, public healthcare and Non-Governmental Organizations - NGOs), and data were collected on a sector by sector basis. Consequently, each sector will have different data sources.

There are various sources from which quantitative data pertaining to HRH can be collected. In Barbados the sources that are directly involved in HRH management can be broadly divided into the following types:

- **Type 1. Public Sector.** (Defined as public finance and provision of health care services) Consisting of the Ministry of Health (MoH) and the Queen Elizabeth Hospital (QEH). Data from this source was viewed as the most accessible.

- **Type 2. Private Sector.** (Defined as privately funded and provision of services on a cost basis to the patient.) Consisting of Bayview Hospital, the FMH Emergency Clinic, Sandy Crest Medical Centre, private physician offices, private laboratories, private imaging centres, private nursing services and private treatment centres.

  At the outset of the project the ease of obtaining information was perceived to be dependent on the regulations and infrastructure governing/supporting this sector. During the course of this project, it became apparent that although this sector is regulated by the Ministry of Health, there is no mechanism for enforcing registration or any punitive measures for not registering. Consequently, data collection in this sector has been limited to registration councils and the telephone directory.

- **Type 3. NGOs.** (Defined as not-for-profit non-governmental organizations that are related to disease areas or healthcare). The Ministry of Health has an "NGO desk" for communication with relevant NGOs and a list of NGOs have been obtained from here. These sources could provide data concerning HRH staff that are employed either on a full or part-time basis.

Many of these information sources could be considered primary sources as individual-level data can be obtained from Human-Resource records. However, for groups 2 and 3, as there was no centralised source for detailed individual-level data, and a comprehensive national survey would be needed to obtain the necessary information. This large-scale survey was beyond the scope of this current project, and different data sources were needed for both the private sector and NGOs. Where possible, alternative data sources were used to validate the data obtained.

Other Types of Potential Data Sources

In addition to the three types detailed above, the following institutions/organizations formed a further four types of potential data source:

- **Type 4. Unions.** Barbados has 35 unions, of which 11 have ties to the human resources in health.

- **Type 5. Registration Councils.** All healthcare professionals must register with their appropriate council in order to practice. When individuals register, their fees are paid at the government office of the registrar, and registration

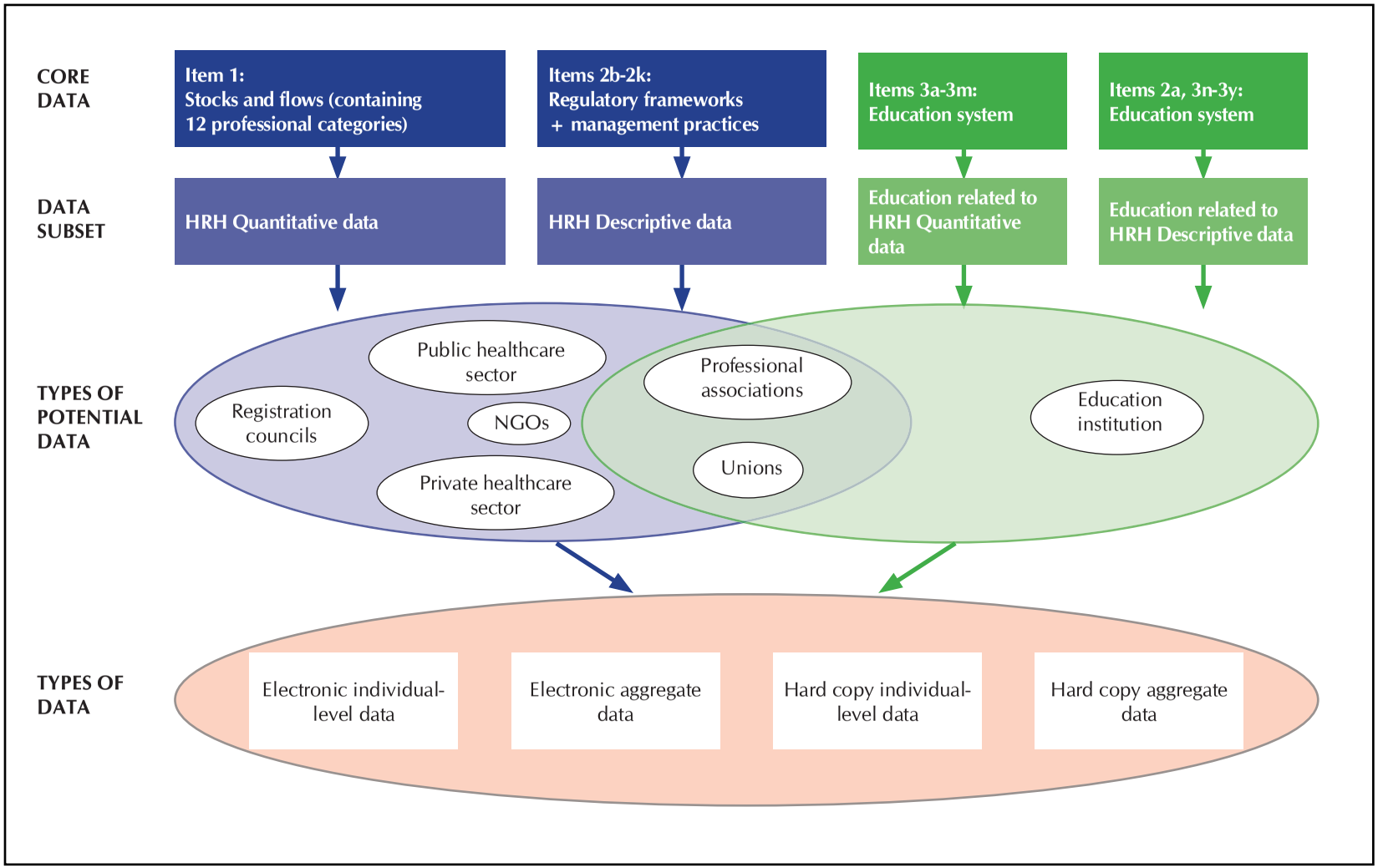
records are then kept by both the government and the registration councils. With the exception of the General Medical Council (for clinical registration), data from the Registrar's office were generally of better quality.

- **Type 6. Professional Associations.** Barbados has 18 professional associations.
- **Type 7. Educational institutions.** Barbados has two higher education institutions that provide HRH related training: The University of the West Indies and Barbados Community College. The former has three main campuses in Barbados (Cave Hill), Trinidad (St. Augustine) and Jamaica (Mona). Courses are split across campuses; e.g. degree level pharmacy is only available at St. Augustine, while medical training is now available on all three campuses. The latter provides associate degree level training for a limited number of health professionals such as nurses, pharmacists, and laboratory technicians.

Summary of Data and Data-Source Definitions (See Figure 1.2)

- **Data subsets:** HRH quantitative (Item 1a-c), HRH descriptive (Item 2b-2k), Education quantitative (Item 3a-3m), Education descriptive (Item 2a, 3n-3y).
- **Data collection phases:** (1) Identifying sources, (2) Identifying data, (3) Data collection, (4) Data analysis
- **Data source types:** (1) Government departments, (2) Private sector, (3) NGOs, (4) Unions, (5) Registration councils, (6) Professional associations, (7) Educational institutions

Figure 1.2: Summary of data types and data sources



2. Methods

2.1. Background

The success of health services depends critically on the size, calibre and commitment of the health workforce. However, relevant information on health workers remains widely dispersed and un-standardized. These limitations impede the ability to make informed decisions on resource allocation in the health sector. In Barbados, quantitative data on human resources for healthcare (HRH) and education have been assessed and collected from a wide range of sources. These sources can be grouped into the following areas:

- **Socioeconomic and demographic:** Census and household labour survey information.
- **Administrative registers:** Health provider personnel databases, College databases for graduation information.
- **Certification data:** Labour registration databases, registration councils (the licensing and accreditation bodies in Barbados).
- **Other sources:** National health accounts, Unions databases.

Counting the health workforce from this variety of sources is a challenge. The quality of the recorded information, the manner of collection, and the criteria for coding and categorizing are highly variable. This data management chapter describes the general considerations and specific algorithms followed in assembling the Barbados health workforce database. It then details the salient features of this new national resource.

2.2. Chapter Structure

This section is divided into three parts: General considerations, data collection, and dataset development. Data collection and data set development were accomplished in parallel in three phases: identification of data sources, identification of information, and data collection (see Chapter 1, Section 1.1). The process of data set development translated the core dataset into constituents that could be obtained from the various data sources. Detailed data collection and data management methods are available

in Appendix 7 (identifying data sources), Appendix 8 (preparing the health workforce database), and Appendix 9 (contents of the health workforce database).

2.3. General Considerations

2.3.1. Who Are Health Workers?

Following World Health Organization guidelines, we defined health workers as "all people engaged in the promotion, protection, or improvement of the health of the population". Strictly, this definition might include, for example, family or friends caring for the sick or frail. Such inclusions would blur the boundary of what constitutes a healthcare system. Moreover, information on this informal healthcare is rarely available. **We therefore restrict our definition for this project to include those healthcare workers being paid for their services.**

> " Human Resources for Health are those workers being paid for their services"

2.3.2. Defining Occupational Groups

Definitions of occupations may vary between institutions, and there will almost certainly be cross-national variation. This variation must be harmonized to a standardized occupational grouping. The International Standard Classification of Occupation (ISCO) provides one such framework for categorizing occupation. It measures occupations according to two dimensions: skill level and skill specialization. The most recent version (ISCO-88) uses a hierarchical 4-digit system that can be aggregated to progressively broader groups. To summarize occupations among health workers, we adopted twelve professional categories, which are described in Appendix 7. In discussions with Ministry of Health personnel we mapped all health sector jobs to these broad categories.

2.3.3. ISCO-88 in Barbados

ISCO-88 is the basis of a country specific occupational coding (BARSOC-89).

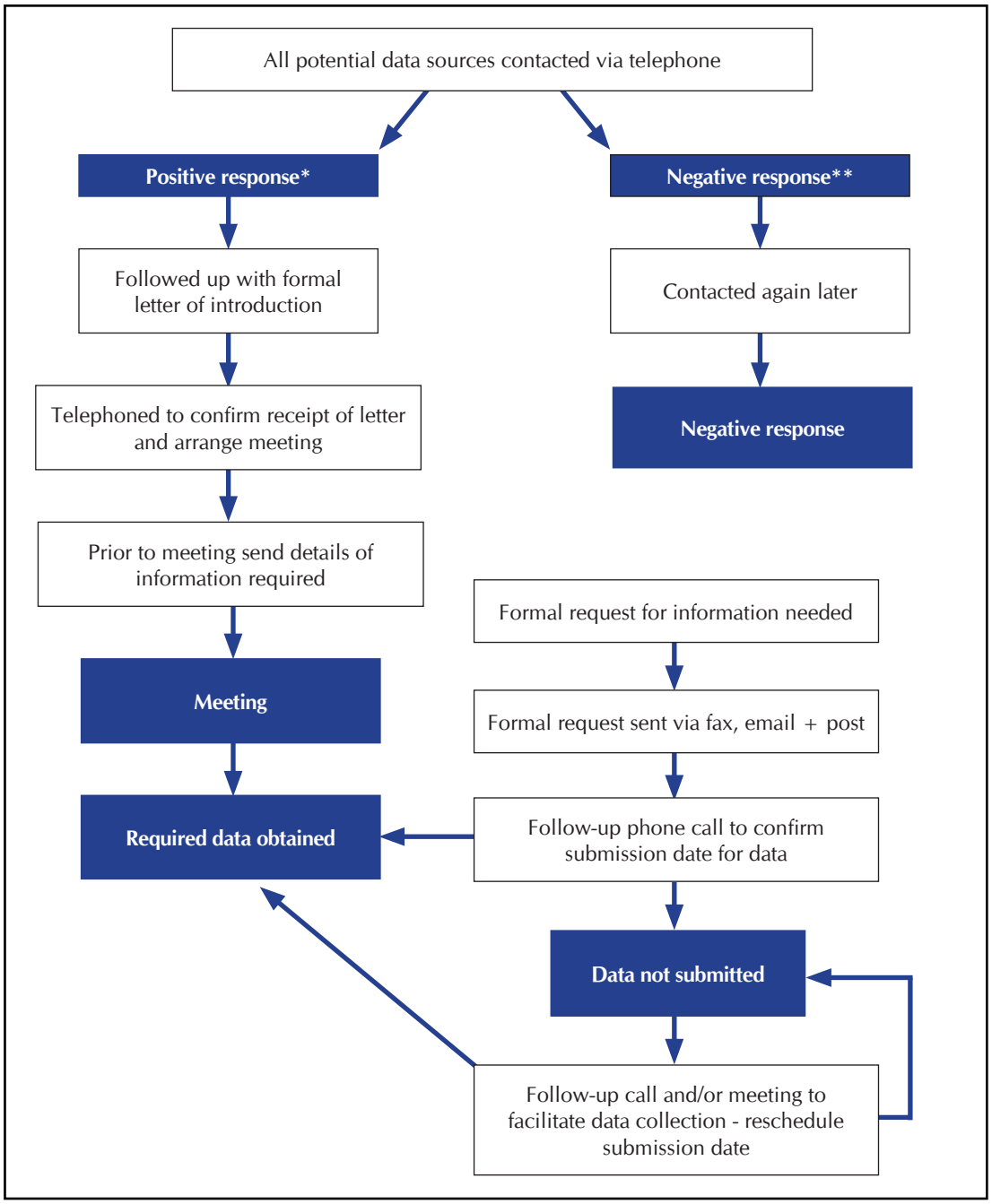
2.3.4. Non-Health Trained Workers in Health Industries

There are many non-health trained workers in health industries, such as managers, computing professionals, trade, clerical, and service workers. They provide managerial and infrastructure support, without which a healthcare system could not function—they are a valid component of the healthcare workforce.

2.4. Data Collection

The data collection process is summarized in Figure 2.1.

Figure 2.1: The process of collecting data from data sources



* Positive response = data source responded to communication

** Negative response = no response was obtained from data source.

2.4.1. The Data Collection Phases

Data collection consisted of the following phases:

- **Phase 1.** Identification of information sources. During the preparatory work, broad categories of data sources were identified and organizations and individuals constituting these categories were defined.
- **Phase 2.** Identification of information. Once the data sources had been identified, confirmation of the data held by each source was confirmed.
- **Phase 3.** Data collection. Once information availability had been confirmed with a data source, a request for the data was made. Figure 2.1 details the process involved in obtaining the identified information. When data were available and collected from multiple sources, all sources are documented.

These phases were project managed using milestones and activities, which are detailed in Appendix 2.

2.4.2. Identification of Data Sources

Full details on all public-sector, private-sector and NGO data sources are presented in Appendix 7).

2.5. Human Resources in Health - Data Source Details

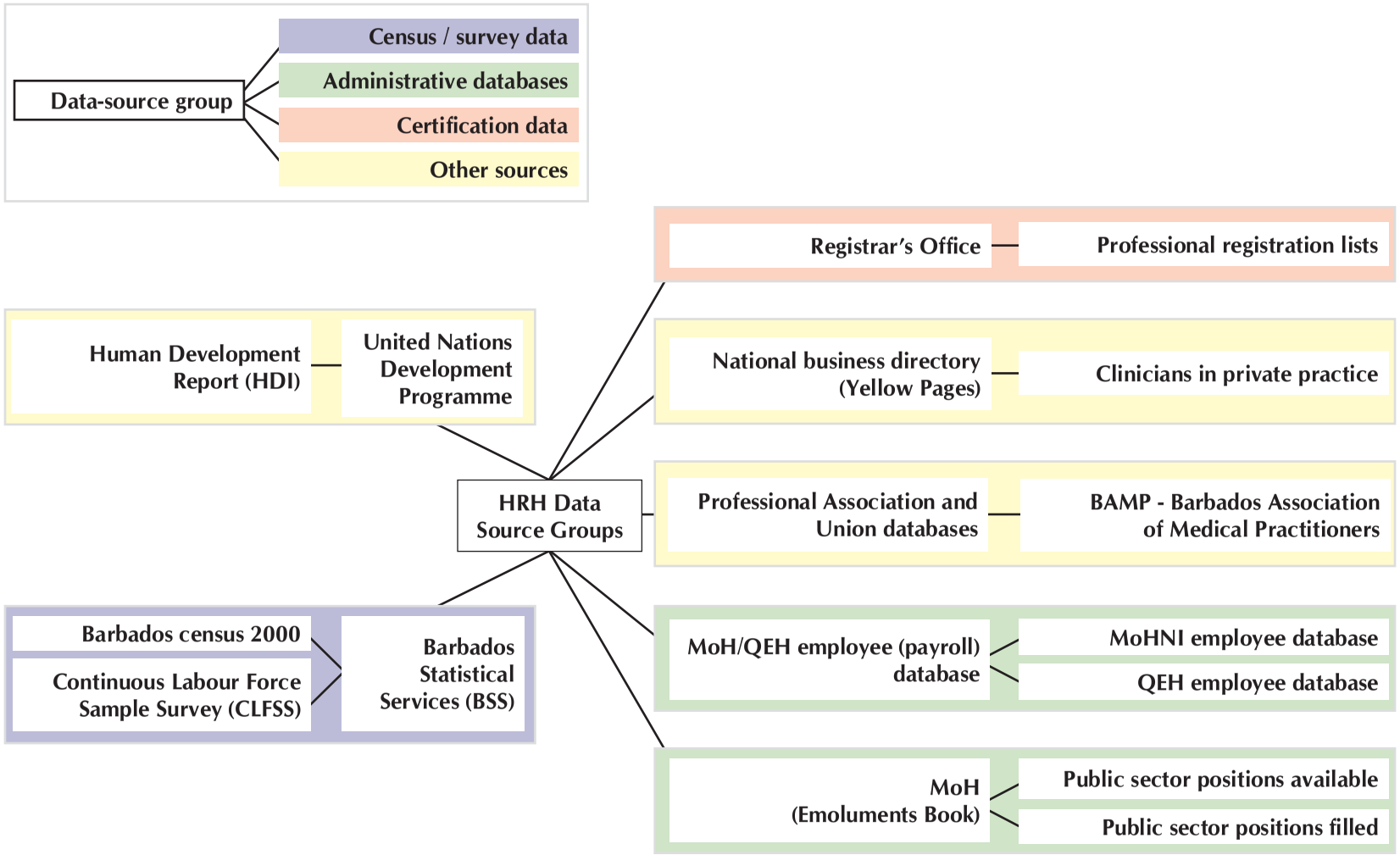
Data on the health workforce of a region or nation has rarely been collected systematically, and it means that current attempts to redress the information gap must use information from multiple sources of variable quality and formats. Moreover, there is also variability in terms of what data are collected, and how these data are summarized, stored, and presented. Particular data sources in Barbados are from several broad categories (and details of these can be found in Appendix 7).

Data sources can be grouped into four categories: census and survey data, administrative databases, certification data, and other sources. Particular data sources within these four categories are presented in Figure 2.2. Each data-source category is described in detail below.

Census and survey data

The Barbados census 2000: The latest national census in Barbados was on 1st May 2000. Two questions that provide some HRH information are those on occupation and industry. Occupation used the question “What was your main type of job or occupation during the past 12 months?” For coding occupation, the BARSOC-89 has

Figure 2.2: HRH data source groups



been used to the major group (1-digit) level.[4] Industry uses the question "In which industry or type of business did you work during the past 12 months? For coding industry, ISIC-rev.3, adapted for Barbados (BARSIC), has been used to the tabulation category (1-digit) level.[5] Occupation is therefore not recorded in sufficient detail to document and classify health-trained workers. Occupation and industry together do provide some useful information on the total number of workers overall in the health sector (industrial sector N – health and social work).

The Barbados Continuous Labour Force Sample Survey (CLFSS) is a quarterly sample survey designed primarily to provide regular estimates of the national employed / unemployed population. Each sample covers approximately 2% of all Barbados households—estimates are therefore subject to sampling error. Occupation and industry are collected, but again only major groups are coded. The survey can therefore provide less certain updates to the rather infrequent census information.

Administrative databases

Public health sector payroll: The Barbados Ministry of Health (MoH) maintains an employee database for payroll purposes. For each employee, this database provides an in-house (i.e. not ISCO-88 compliant) description of occupation, along with age, sex, and employment facility.

Emoluments Book: A second MoH data source (The Emoluments Book) provides details of number of funded health sector jobs, and which of these jobs are currently filled. Both data sources refer to the public health sector only. There are no equivalent databases for the private health sector.

Certification data

Many trained health sector workers must register in order to practice their trade. These lists of accredited and registered practitioners are published annually and are a useful source of trained health sector workers.

Other sources

An informal listing of private sector physicians is obtained from the national telephone directory (The Yellow Pages). Other informal sources include the registration

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4. The major occupational groups are: (01) legislators, senior officials and managers, (02) professionals, (03) technicians and associate professionals, (04) clerks, (05) service workers and shop and market sales workers, (06) skilled agricultural and fishery workers, (07) craft and related trades workers, (08) plant and machine operators and assemblers, (09) elementary occupations, (10) armed forces.

5. The major industry groups are: (A) Agriculture, hunting and forestry (B) Fishing (C) Mining and quarrying (D) Manufacturing (E) Electricity, gas and water supply (F) Construction (G) Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods (H) Hotels and restaurants (I) Transport, storage and communications (J) Financial intermediation (K) Real estate, renting and business activities (L) Public administration and defence; compulsory social security (M) Education (N) Health and social work (O) Other community, social and personal service activities (P) Private households with employed persons (Q) Extra-territorial organizations and bodies.

lists of professional associations and unions. However, registration with such organizations is not compulsory so the list is expected to be less complete than certification lists. To establish membership for other occupational groups would require new data collection using survey methodology, which is beyond the scope of this project.

2.6. Education for HRH - Data Source Details

2.6.1. General Considerations

Data on the education system for HRH describe the national infrastructure in place to train healthcare workers. Information comes from two sources, the Barbados Community College (BCC) and The University of the West Indies (UWI).

2.6.2. Education for HRH - Data Source Details

Unlike the HRH worker information, which was always at the individual-level (one row of computerised data per health worker), information on the education system for HRH workers was received as aggregate annual summaries of student intake and graduates.

Data sources can be grouped into four data-source categories: census and survey data, administrative databases, certification data, and other sources. Particular data sources within these four categories are presented in Figure 2.3. Data for this sector comes from administrative databases only, and the particular data sources are described in detail below.

Administrative databases

Barbados Community College (BCC): The BCC maintains statutes on all ratified vocational courses and degree programmes, and produces annual aggregate data on the number of student admissions and the number of students completing courses.

The University of the West Indies (UWI): The UWI maintains statutes on all ratified undergraduate and postgraduate degree programmes, and produces annual aggregate data on the number of student admissions and the number of graduate and postgraduate degrees awarded.

2.7. Preparing the Barbados Health Workforce Database

Full details on the computational algorithms used to combine the various datasets and prepare the Barbados health workforce database are presented in Appendix 8.

2.8. Contents of the Barbados Health Workforce Database

The technical specification of the Barbados health workforce database are presented in Appendix 9.

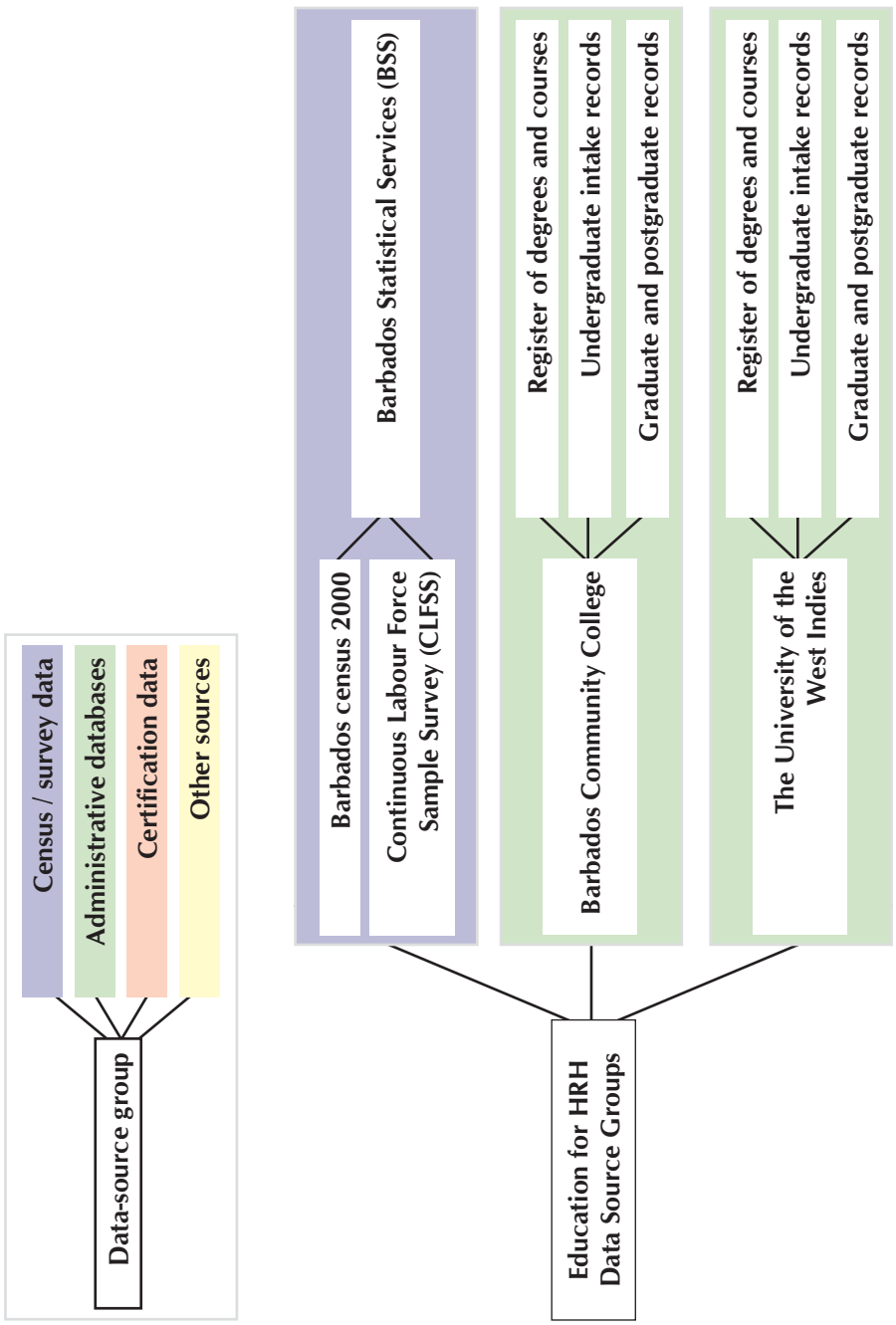


Figure 2.3. Education for HRH data source groups

2.8.1. Database Limitations

With the exception of the Ministry of Health and National Insurance administrative database, no data sources could provide complete information on important stratification variables—health worker age and sex.

The database does not include family members, other unpaid caregivers, and voluntary workers, all of whom provide important healthcare services in the community. There is currently no national data collection policy in place to record these healthcare workers.

Secondly, the database has no way of recognizing part-time workers, or workers who as part of a non-health industry job may contribute to the health of the nation—a good example might be police officers who enforce seatbelt or drink-driving laws.

The ability to stratify into public and private healthcare workers is an important one, and has been attempted in this database. However, many clinicians work in both sectors, and the relative time spent in each sector cannot be ascertained.

3. Results

3.1. Chapter Structure

The data collected are analyzed and presented in the usual four sections, Human Resources for Health (HRH) (quantitative and descriptive) followed by the Education System for HRH (quantitative and descriptive).

3.2. Statistical Notes

At all times, the population of Barbados (unstratified or stratified by either sex, age, or both) has been adjusted for undercount and inflated to account for official annual population growths between 2000 and 2008. Other population stratifications (e.g. by parish) have no published inflation factors, and the de facto population from the census date (May 2000) has been used.

Human resources for health have been defined by the World Health Organization as "the stock of all individuals engaged in the promotion, protection or improvement of public health."[6] For this report, and following the WHO world health report of 2006, we focus on paid activity.

Triangulation of data sources was central to this data collection exercise. Multiple sources of information were often available, and we developed an informal quality "checklist" to assess the usefulness of all collated information (see Chapter Two for details). Using these checklist conclusions, we focused on payroll and registration council data where possible to generate health worker counts for the public sector and associated worker estimates for the private sector. Census and Labour Force survey information did not present sufficiently detailed worker categories for either job or industry—using ISCO and ISIC codes only to level one.

Again following WHO practice, an important summary measure in this report is the number of HRH workers per 10,000 population (also known as the density per 10,000). This measure is widely used throughout the world, and so allows direct comparison with HRH resources in other countries. Moreover, the United Nations have estimated

6. The world health report 2000 – Health systems: improving performance. Geneva, World Health Organization, 2000.

that a minimum of 2.5 workers per 1,000 people (25 workers per 10,000 people) will be required to meet the health-related Millennium Development Goals (MDG) of child health, maternal health, and combating HIV/AIDS.

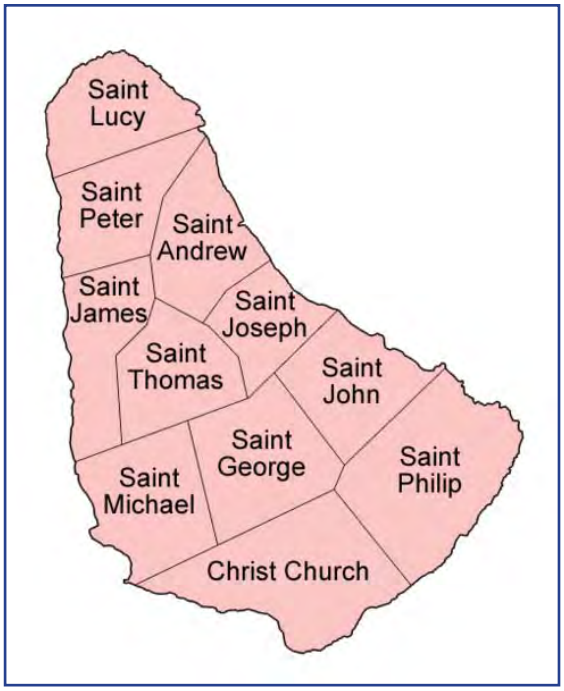
In a single major table of results (Table 3.3: Public-sector HRH workers by major occupational category) we offer Poisson exact confidence limits for this HRH-worker density, and an alternative summary measure—the Barbados population per worker. This alternative measure is the reciprocal of "density" and has been employed regularly in national and regional HRH reports from other countries.

A key summary measure in this report is the number of workers per 10,000 population—"the density per 10,000"

3.3. Barbados Notes

Barbados is an island in the Eastern Caribbean with a total land area of about 430 square kilometers (166 square miles). It is comprised of 11 administrative parishes. With over 600 people per square kilometer, it is one of the most densely populated nations in the world.[7] The United Nations Human Development Index[8] (a standard measure of human development, focusing on education, healthcare, income and employment) placed Barbados 37th in a league table of nations—third in the Americas behind the US and Canada. Barbados had a population at the 2000 census (adjusted for undercount) of 268,790. Accounting for population growth gives an estimated population in 2008 of 278,058. From the same census, the working population (aged 15 and older in employment) was 126,714. The Barbados statistical office does not have a definition for "urban" and "rural".

Figure 3.1: The eleven parishes



7. United Nations world population prospects 2005 (http://esa.un.org/unpp, accessed March 01, 2009).
8. United Nations human development Indices (http://hdr.undp.org/en/media/HDI_2008_EN_Tables.pdf accessed March 23, 2009).

For the purposes of this project, there will be a distinction between densely populated, and non-densely populated areas. The most densely populated parishes are: St. James, Christ Church and St. Michael (see Table 3.8).

At the 2000 census the Barbados population was primarily of African descent (93%), and so data stratifications by race or ethnicity were not applied.

3.4. Human Resources in Health (HRH) - Quantitative Information[9]

3.4.1. Public-Sector HRH Workers

Public-sector HRH workers by facility type

Barbados has an extensive public-sector health service, free to all residents at the point of care. The healthcare workers that make this possible are well documented and maintained via the Government payroll system, using a well known off-the-shelf database—Smartstream; workers are stratified into 234 job categories. These categories define pay-scales and are therefore important for local financial and administrative use. For national comparisons, these jobs have been grouped into 11 occupational categories defined by the project at its outset.[10]

Queen Elizabeth Hospital, the public-sector tertiary referral centre for the entire island, is the largest employer of healthcare workers, with 2,080 staff or 47.1% of the entire public-sector HRH workforce. District hospitals and polyclinics (walk-in day-care clinics) together employ another 1,806 (40.9%) of the HRH workforce (Table 3.1). Polyclinics vary greatly in size, with the largest (Winston Scott, 152 workers) some 6-times larger than the smallest Glebe (26 workers)—this size variation relates to their anticipated catchments and is assessed further in Table 3.8.

Public-sector HRH workers by major occupational category

Barbados has 4,420 public-sector healthcare workers, and the numbers, stratified by major occupational category, age and sex are presented in Appendix 3. In Table 3.3 to Table 3.6 these HRH counts have been used with population data from the Barbados 2000 census to present two key summary measures: HR worker density per 10,000 population and the number of people in Barbados per HRH worker.

9. Additional information (such number of vacant posts) were not available in an appropriate format.

10. The 12 PAHO occupation categories are: Medical doctors, Nurses and midwives, Dentists and allied trades, Pharmacists and allied trades, Social workers, Rehabilitation workers, Laboratory Technologists, Public health practitioners, Nutritionists, Mental-health practitioners, Other health workers.

Table 3.1: Number of HRH workers in each public-sector facility group

Public sector facility type	Number of workers (percent)
Queen Elizabeth Hospital (QEH)	2,080 (47.1%)
District Hospitals*	1,205 (27.3%)
Polyclinics	601 (13.6%)
Ministry of Health	159 (3.6%)
Environmental Protection Department / Vector Control Unit	92 (2.1%)
Drug services	89 (2.0%)
HIV services**	53 (1.2%)
Dental services	35 (0.8%)
Miscellaneous***	106 (2.4%)
TOTAL workers	4,420

*There are 3 district hospitals and 2 specialist hospitals in Barbados (see Table 3.2).

**There are 8 polyclinics in Barbados (see Table 3.2).

***Includes healthcare workers from the following centres: the Disability Unit, the Police Service, the Prisons Service, the Youth Service, Elayne Scantlebury Centre, Children's Development Centre, Nutrition Service.

Table 3.2: Number of HRH workers in each polyclinic and district / specialist hospital (excluding Queen Elizabeth Hospital)

Polyclinic	Number of workers (percent)
Black Rock, St. Michael	90 (15.0%)
Edgar Cochrane, St. Michael	30 (5.0%)
Glebe, St. George	26 (4.3%)
Maurice Byer, St. Peter	101 (16.8%)
Randall Phillips, Christ Church	91 (15.1%)
St. Philip, (Six-Roads, St. Philip)	38 (6.3%)
Warrens, St. Michael	73 (12.2%)
Winston Scott, St. Michael	152 (25.3%)
TOTAL polyclinic workers	601

District and Specialist Hospitals	Number of workers (percent)
St. Lucy District Hospital	56 (4.7%)
St. Philip District Hospital	167 (13.9%)
Gordon Cummins District Hospital, St. Andrew	64 (5.3%)
Geriatric Hospital, St. Michael	400 (33.2%)
Psychiatric Hospital, St. Michael	518 (43.0%)
TOTAL hospital workers	1,205

In the public sector, there are 13.1 medical practitioners per 10,000 population (or 1 doctor for every 762 Barbadians). This compares favorably with many middle-income nations, and is examined in more detail in Section 3.4.3. With over 1,100 nurses in the public-health system (a density of 39.7 per 10,000) there is one nurse for every 252 Barbadians and roughly 3 nurses for each doctor. In Barbados a second category of nursing staff exists—known as a nurse assistant—these certified staff are available to assist individuals with activities of daily living and bedside care under the supervision of fully-qualified nursing staff. With 479 nursing assistants in the public healthcare system (a density of 17.2 per 10,000) there is one nursing assistant for every 580 Barbadians.

> "There are 13.3 doctors, 39.7 nurses, and 17.2 nursing assistants for every 10,000 people in Barbados"

A fourth major category—other health workers—includes the many managers and auxiliary involved in maintaining healthcare and healthcare facilities; there are 65.9 other health workers per 10,000 population.

Table 3.3: Public-sector HRH workers per 10,000 population by major occupational category

Occupation	Number of workers	Density per 10,000 population (95% CI)	Population per worker
Medical doctors	365	13.1 (11.8 - 14.5)	762
Nurses and midwives*	1,103	39.7 (37.4 - 42.1)	252
Nursing assistants**	479	17.2 (15.7 - 18.8)	580
Dentists and allied	34	1.2 (0.8 - 1.7)	8,178
Pharmacists and allied	76	2.7 (2.2 - 3.4)	3,659
Social workers	109	3.9 (3.2 - 4.7)	2,551
Rehabilitation workers	53	1.9 (1.4 - 2.5)	5,246
Technologists	101	3.6 (3.0 - 4.4)	2,753
Public health practitioners	244	8.8 (7.7 - 9.9)	1,140
Nutritionists	15	0.5 (0.3 - 0.9)	18,537
Mental-health practitioners	9	0.3 (0.1 - 0.6)	30,895
Other health workers	1,832	65.9 (62.9 - 69.0)	152

*Nurses and midwives have the same occupational groupings in the Government payroll system.

**Assistant nurses are certified and full-time HRH-staff who assist individuals with healthcare needs such as activities of daily living (ADLs) and provide bedside care—including basic nursing procedures—all under the supervision of a Registered Nurse.

Table 3.4: Public-sector HRH workers
per 10,000 population by major occupational groupings

Occupation	Number of workers	Density per 10,000 population (95% CI)	Population per worker
Doctor, nurses, midwives	1,468	52.8 (50.1 - 55.6)	189
Doctors, nurses, midwives, nursing assistants	1,947	70.0 (66.9 - 73.2)	143
All health workers (excluding "other health workers")	2,588	93.1 (89.5 - 96.7)	107
All health workers	6,003	159.0 (154.3 - 163.7)	63

Table 3.5 highlights many (but not all) of the usual gender ratios in healthcare. There are broadly equivalent numbers of male and female medical practitioners (density - women: 5.5 per 10,000. men: 6.1 per 10,000). In all other occupation categories (except public-health) the number of women exceeds the number of men. This gender gap is most apparent for nursing staff (density - women: 33.5 per 10,000. men: 5.9 per 10,000) and is the main contributor to an overall ratio of more than 2 women in healthcare for every man (overall density - women: 106.2 per 1,000. men: 50.4 per 1,000).

HRH worker densities by broad age categories are presented in Table 3.6. The overall number of health workers increases with each age group: 18.1 per 10,000 among those younger than 30, 37.7 per 10,000 in the 30 to 39 age group, 43.0 per 10,000 among those aged 40 to 49, and 46.0 per 10,000 in those aged 50 to 59. The official Barbados retirement age of 65 means that there are fewer workers in the oldest age group. This age distribution—shifted towards older workers—may well reflect personnel entering the healthcare workforce on completion of training. An alternative scenario, with education attracting fewer trainees, is possible and requires the annual monitoring of HRH worker numbers. This monitoring would require an understanding of the employed population of Barbados, and we examine HRH workers in the context of the Barbados workforce in the next section.

Table 3.5: Public-sector HRH workers per 10,000 population by major occupational category and sex

Occupation	Women		Men		Total	
	Number of workers	Density per 10,000	Number of workers	Density per 10,000	Number of workers	Density per 10,000
Medical doctors	152	5.5	170	6.1	365	13.1
Nurses and midwives	932	33.5	164	5.9	1,103	39.7
Nursing assistants	410	14.7	65	2.3	479	17.2
Dentists and allied	33	1.2	1	0.1	34	1.2
Pharmacists and allied	58	2.1	18	0.6	76	2.7
Social workers	98	3.5	11	0.4	109	3.9
Rehabilitation workers	42	1.5	11	0.4	53	1.9
Technologists	70	2.5	31	1.1	101	3.6
Public health practitioners	75	2.7	167	6.0	244	8.8
Nutritionists	14	0.5	1	0.1	15	0.5
Mental-health practitioners	9	0.3	0	-	9	0.3
Other health workers	1060	38.1	763	27.4	1,832	65.9
Doctor, nurses, midwives	1084	39.0	334	12.0	1,468	52.8
Doctors, nurses, midwives, nursing assistants	1494	53.7	399	14.4	1,947	70.0
All health workers (excluding "other health workers")	1893	68.1	639	23.0	2,558	93.1
All health workers	7424	106.2	2774	50.4	10,393	159.0

Table 3.6: Public-sector HRH workers by major occupational category and age

Occupation	Younger than 30		30 to 39		40 to 49		50 to 59		60 and older	
	Number of workers	Density per 10,000	Number of workers	Density per 10,000	Number of workers	Density per 10,000	Number of workers	Density per 10,000	Number of workers	Density per 10,000
Medical doctors	93	3.3	132	4.7	76	2.7	38	1.4	26	0.9
Nurses and midwives	115	4.1	300	10.8	256	9.2	331	11.9	101	3.6
Nursing assistants	99	3.6	120	4.3	138	5.0	95	3.4	27	1.0
Dentists and allied	1	0.1	4	0.1	14	0.5	14	0.5	1	0.1
Pharmacists and allied	7	0.3	26	0.9	20	0.7	20	0.7	3	0.1
Social workers	3	0.1	21	0.8	25	0.9	46	1.7	14	0.5
Rehabilitation workers	7	0.3	19	0.7	12	0.4	10	0.4	5	0.2
Technologists	9	0.3	33	1.2	31	1.1	21	0.8	7	0.3
Public health practitioners	34	1.2	65	2.3	51	1.8	77	2.8	17	0.6
Nutritionists	2	0.1	7	0.3	1	0.1	5	0.2	0	-
Mental-health practitioners	2	0.1	3	0.1	2	0.1	1	0.1	1	0.1
Other health workers	130	4.7	318	11.4	569	20.5	620	22.3	195	7.0
Doctor, nurses, midwives	208	7.5	432	15.5	332	11.9	369	13.3	127	4.6
Doctors, nurses, midwives, nursing assistants	307	11.0	552	19.9	470	16.9	464	16.7	154	5.5
All health workers (excluding “other health workers”)	372	13.4	730	26.3	626	22.5	658	23.7	202	7.3
All health workers	1389	18.1	2762	37.7	2623	43.0	2769	46.0	880	14.3

Public-sector HRH workers and the Barbados workforce

The number of HRH workers as a percentage of the current Barbados workforce is presented by age and sex in Table 3.7. These data broadly reflect the observations in the previous section; the healthcare workforce represent an ever-increasing proportion of the total workforce as the workforce ages. Overall, women in healthcare represent 4.96% and men 2.09% of the total workforce. Notably, the oldest women in the healthcare workforce (those aged 60 and older) represent more than 10% of the female HRH workforce; Barbados benefits perhaps from the longevity of their careers.

Table 3.7: Public-sector HRH workers as a percentage of the employed population of Barbados aged 15 and over, by age and sex

Age	Women		Men		Total	
	Number	Percent	Number	Percent	Number	Percent
Younger than 30	312 / 15,756	1.98	150 / 18,661	0.80	462 / 34,417	1.34
30 to 39	710 / 17,432	4.07	324 / 18,648	1.74	1,034 / 36,081	2.87
40 to 49	786 / 10,407	7.55	400 / 10,818	3.70	1,186 / 21,226	5.59
50 to 59	889 / 13,579	6.55	388 / 15,397	2.52	1,277 / 28,976	4.41
60 and older	256 / 2,303	11.12	140 / 3,710	3.77	396 / 6,013	6.59
TOTAL	2,953 / 59,477	4.96	1,402 / 67,236	2.09	4,355 / 126,714	3.44

Public-sector HRH workers and polyclinic location

Polyclinics and district hospitals are located to service particular geographical populations (known as catchment areas) with most (6 out of 8) polyclinics catering to the more densely populated "peri-urban" parishes of St. Michael, Christ Church, and St. James.[11] However, Barbados is a small island, and residents are not tied to a single polyclinic for their primary healthcare. Many residents of the Northern parishes commute daily to the South for work—meaning that polyclinic use may not be closely tied to area of residence. With this important caveat in mind, Table 3.8 presents polyclinic workers per 10,000 population for the 5 broad catchment "regions" served by polyclinics.[12] The number of healthcare workers for each polyclinic varies from 12.9 per 10,000 in St. George to 31.5 per 10,000 in the "Northern" parish region (St. Peter, St. Lucy, St. Joseph, St. Andrew). The range of clinical doctors available for each parish region shows a similar spread, from 1.7 per 10,000 in St. George (1 doctor for every 5,882 people), to 3.1 per 10,000 in the Northern parish region (1 doctor for every 3,208 people).

11. The term peri-urban is used here to describe both urban and suburban settings – anything apart from "countryside" – the three parishes included in this definition occupy the South-Eastern corner of Barbados, extending along the South and West coasts – the so-called Bridgetown "conurbation."

12. These regions are based on parishes - the broadest geographical stratification in Barbados. When a parish had no polyclinic, the parish was assigned to the nearest polyclinic, creating the 5 parish regions (groups of parishes) presented in Table 3.8.

Table 3.8: Polyclinic workers by anticipated geographical catchment

Parish region	Polyclinics	Population	Density per km²	Joint population	Doctors / All polyclinic workers	Clinical doctors per 10,000*	All HRH workers per 10,000
St. Michael	Winston Scott,	83,684	2,145.70	118,016	32 / 345	2.7	29.2
	Black Rock,						
	Edgar Cochrane,						
	Warrens						
St. James	Warrens	22,742	733.6				
St. Thomas	Warrens	11,590	340.9				
Christ Church	Randall Phillips	49,498	868.4	49,498	13 / 91	2.6	18.4
St. Philip	Six-Roads**	20,540	342.3	29,413	5 / 38	1.7	12.9
St. John	Six-Roads**	8,873	261.0				
St. George	Glebe	17,868	406.1	17,868	4 / 26	2.2	14.6
St. Peter	Maurice Byer	10,699	314.7	32,086	10 / 101	3.1	31.5
St. Lucy	Maurice Byer	9,328	259.1				
St. Joseph	Maurice Byer	6,805	261.7				
St. Andrew	Maurice Byer	5,254	145.9				

* There is discrepancy between Ministry of Health printed lists of clinical doctors working at the 8 polyclinics and the numbers registered as polyclinic doctors on the Smartstream payroll system. This is probably due to the test implementation of extended polyclinic hours, which has resulted in the need for more clinicians on shift work.

** There was no payroll information for the St. Philip polyclinic (Six-Roads). Current data use hard copy information provided by the Ministry of Health.

Doctors and nurses in the public-sector: primary versus tertiary care

Clinical doctors are primarily employed in four facility types, Queen Elizabeth Hospital (QEH)—the country's only tertiary referral centre—the 8 primary care polyclinics, the 3 district hospitals, and 2 specialist hospitals (the Geriatric and Psychiatric hospitals). Table 3.9 describes the density of clinical doctors at these facility types. The densities vary considerably between facility types, with the highest density at the treatment intensive Queen Elizabeth Hospital. At the polyclinics, the density is less than one-quarter that of the QEH (2.1 per 10,000 compared to 9.7 per 10,000 at QEH). This lower polyclinic density may be a cause or effect of the large number of private primary care physicians in Barbados (see Section 3.4.2).

"There is 1 doctor for every 1,034 people at the QEH, and 1 doctor for every 4,794 people in the polyclinics"

Table 3.9: Nurses, nursing assistants, and clinical doctors per 10,000 population in three major facility types

Facility type	Number of workers	Density per 10,000 population (95% CI)	Population per worker
Doctors			
QEH	269	9.7	1,034
District hospitals *,**	19	0.7	14,635
Polyclinics	58	2.1	4,794
Nurses and midwives			
QEH	575	20.7	484
District hospitals	379	13.6	734
Polyclinics	124	4.5	2,242
Nursing assistants			
QEH	194	7.0	1,433
District hospitals	271	9.7	1,026
Polyclinics	2	0.1	-

* The three district hospitals act as elderly care homes, and do not have full-time clinical staff attached.

** The Geriatric Hospital has 8 clinical staff (density of 0.3 per 10,000). The Psychiatric Hospital has 3 clinical staff (density of 0.1 per 10,000). The psychiatric hospital also employs 3 psychologists and 1 psychotherapist.

Doctors in the public sector: specialist subgroups

There are no official Government records of the medical specialties in Barbados. A full survey of Queen Elizabeth Hospital (the country's only tertiary referral centre) has provided us with information on the numbers of clinical staff by hospital department. Departments reported staffing from the level of Senior House Officer and higher, and so the total number of clinical staff does not match the general total of 269 from Ta-

ble 3.9. The QEH reports 161 specialist senior staff, a further 43 sessional (part-time) specialists and 17 vacant senior posts (8% of the available posts).

Table 3.10: The number of senior clinical doctors at the Queen Elizabeth Hospital by employment type and by specialty

QEH department	Full-time	Sessional	Vacant	TOTAL
Accident & emergency	20	7	2	29
Emergency ambulance service	1	0	0	1
Anaesthesia	14	2	3	19
Otolaryngology (e.n.t.)	8	0	0	8
General practice unit	3	1	0	4
Cardiovascular services	6	0	0	6
Medicine	24	8	3	35
Obstetrics & gynecology	9	4	3	16
Ophthalmology	11	3	1	15
Pediatrics	12	4	1	17
Pathology	9	3	0	12
Psychiatry	4	1	0	5
Radiology	6	1	1	8
Radiotherapy	5	0	0	5
Rehabilitation	1	0	0	1
Staff clinic	0	2	0	2
General surgery	21	6	1	28
Orthopedic surgery	7	1	2	10
TOTAL	161	43	17	221

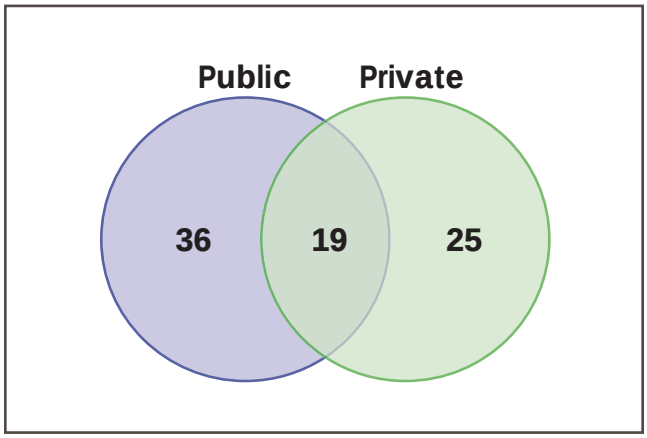
3.4.2. Private-Sector HRH Workers

Like many countries operating a social healthcare system, alternative private healthcare options exist in Barbados. Minimal regulations and a lack of standardised data collection mean that information on healthcare professionals in the private sector is limited to estimates of professions for which registration is required to practice a trade. There are five registration councils, covering medical doctors (the General Medical Council), nursing (the Nursing Council), dental care (the Dental Council), pharmacists (the Pharmacy Council), and a range of allied professions (the Paramedical Council). Alternative algorithms have been applied to achieve these private sector numbers, and these are explained below.

Medical doctors

Data on the number of medical doctors are available from the Government payroll system (public-sector doctors), The Official Gazette (all registered and practising doctors), and the General Medical Council (all registered private doctors).

Figure 3.2: Medical doctors in the public-and private-sectors



A common model for clinical work in Barbados is the public-sector doctor who also works part-time in private healthcare. The following algorithm provides numbers of clinicians in each sector and those working part-time in both.

Total doctors registered (The Official Gazette)	=	420
Doctors in public-sector (Government payroll data)	=	365
Doctors in private-sector (GMC database)	=	252
Doctors working in both public and private systems	=	(365 + 252) - 420 = 197

This means that of 365 clinical doctors in the public-sector, 197 (54%) of these also work part-time in the private-sector. And of the 252 private-sector clinical doctors, the same 197 (78%) also work in the public-sector. These are estimates only, and a national survey of private primary care physicians is needed to formalise the number of clinicians in the private healthcare system.

Dentists

Data on the number of dentists are available from the Government payroll system (public-sector) and from The Official Gazette (private-sector). There are 19 dentists

working in the public-sector and 68 dentists registered to practice in Barbados. This means that there are 49 (68 – 19) dentists working in the private-sector.[13]

Nurses

Using the same data sources and assumptions, there are 1,184 nurses in the public-sector and 1,103 nurses registered to practice in Barbados. This means that there are 81 (1,184 – 1,103) nurses working in the private system.

Pharmacists

Using the same data sources and assumptions, there are 61 pharmacists in the public-sector and 230 pharmacists registered to practice in Barbados. This means that there are 169 (230 – 61) pharmacists working in the private sector.

Table 3.11: HRH workers registered with five registration councils* in Barbados by occupational category

Occupation	Number registered	Number in public sector	Estimated full-time private-sector workers	Estimated part-time private-sector workers
Medical doctors	420	365	252	197
Dentists	68	19	49	-
Nurses**	1184	1103	81	-
Pharmacists	61	230	169	-

* The General Medical Council (GMC), the Nursing Council, the Dentist Council, the Pharmacy Council, and the Paramedical Council.

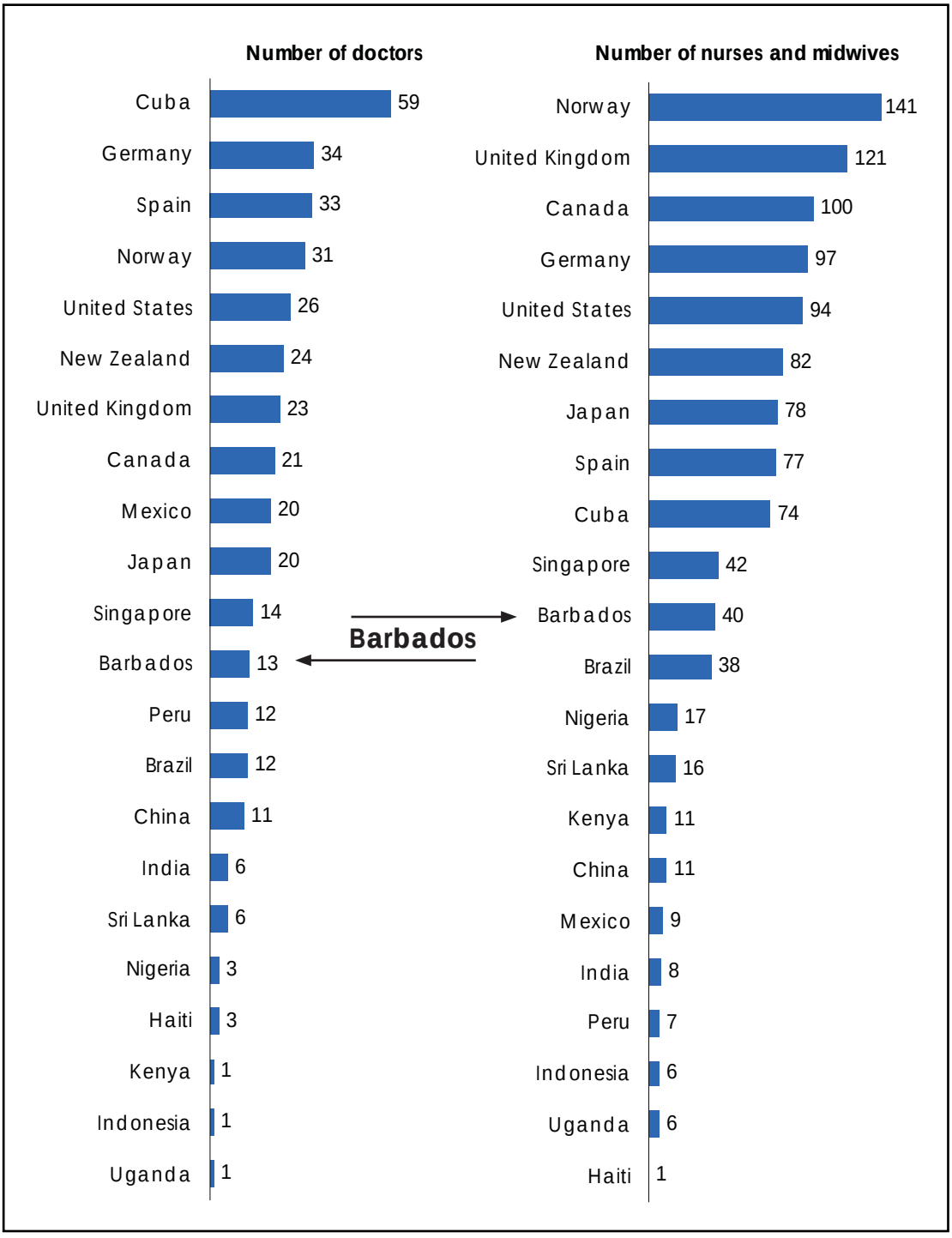
** Does not include nursing assistants.

3.4.3. Comparing Barbados HRH Workers with International Estimates

The World Health Organization's 2006 annual report[14] focused on human resources for health, providing health workforce estimates worldwide. In Figure 3.2 the density of doctors and nurses per 10,000 population is presented for Barbados (using data from this report),[15] and a further sample of 21 countries (using data from the WHO annual report).

13. This figure makes two assumption: (1) that there are no dentists working in both the public and private sectors and (2) that all registered dentists are actively practicing in Barbados.
14. World Health Organization. The World Health Report 2006: working together for health. WHO Press, Geneva.
15. Barbados data uses public-sector estimates only.

Figure 3.2: The number of doctors, nurses and midwives
per 10,000 population for Barbados and a sample of 21 countries worldwide



3.5. Human Resources in Health (HRH) - Descriptive Information

3.5.1. Regulatory Framework and Management Practices

For the public sector much of the regulatory tools concerning health employment are described in the Public Service Act, 2007,[16] Civil Establishment (General) Orders[17] and various acts covering registration and unionization. Table 3.12 details which legislation is associated with the various items of the core data set (ITEMS 3A to 3K). The Barbados Government online[18] contains information regarding performance measurement methods being developed by the Office of Public Reform and the Ministry of Health.

3.6. Education System Related to HRH - Quantitative Information

3.6.1. The Training Environment for Future Barbadian Healthcare Workers

In Barbados, two tertiary education institutes provide all training for health sector workers: The University of the West Indies (UWI) and the Barbados Community College. The system is complicated somewhat by the five campus model of the University: three main campuses in Barbados (Cave Hill), Jamaica (Mona), and Trinidad & Tobago (St. Augustine), one further campus in Bahamas, and the Open Campus dedicated to distance education. The UWI courses are campus-specific; any one health-related training course rarely takes place on all three main campuses. Until 2009, much of the health-sector training was offered in Jamaica and Trinidad & Tobago, and eligible Barbadian applicants were sponsored by the Barbados government to attend these courses. The UWI admissions process is organized at the campus-level, and so information on applicants, admissions, and graduates requires access to three administrative centres. At the completion of this report, two centres have provided information (Barbados and Jamaica).

16. Public Service Act, 2007-41. Supplement to Official Gazette No. 104 Dated: 17 December 2007.
17. The Civil Establishment Act Cap.21 The Civil Establishment (General) Order 2007 Statutory Instruments Supplement No.10. Supplement to Official Gazette No. 23 Dated: 19 March 2007.
18. http://www.barbados.gov.bb/opsr/hr_review.htm. Last accessed 01 March 2009.

Table 3.12: Descriptive data required concerning public sector management practices of human resources in health, and categories of potential information sources

Item	Descriptive data	Source	Reference	Comments
2A	Regulatory tools concerning University training programmes, accreditation, approval and financing.	University of the West Indies (UWI)	Not available	UWI's MBBS has been accredited by the Caribbean Accreditation Authority for Education in Medicine and other Health Professionals (CAAM-HP). CAAM-HP are also responsible for the accreditation of dental schools.
2B	Main regulatory tools for health employment: career paths selection systems, performance management, incentives and evaluation.	Ministry of Civil Service	CEO PSA	
2C	Main regulatory tools regarding licensing of professional practice (through professional boards, periodic register)	Registration councils	Acts for: doctors, nurses, pharmacists, dentists and paramedical professions	All health professional must register (and pay fees) with the appropriate registration council. There are also professional associations that act as unions and/or provide continuing education.
2D	Regulatory and licensing requirements for foreign workers	Registration councils CARICOM	As above and Caribbean Community Skilled Nationals Act The Barbados Accreditation Council*	Non-nationals follow the same criteria as nationals for registration. Fees are the same for both groups BAC-ensures that there is parity between qualifications.
2E	Main regulatory framework regarding unionization and collective actions	Ministry of Civil Service Ministry of Labour	Trade Union Act	
2F	Contracting models (Is the permanent tenure in the public service vs flexible, short term contract?)	Ministry of Health QEH	Little permanent tenure	

continues on next page...

continuation of Table 3.12

Item	Descriptive data	Source	Reference	Comments
2G	Selection process (Is there any selection process established or is the discretional appointment the norm?)	Ministry of Civil Service	PSA Part 4 (18), First schedule CC-8 Part 2	
2H	Salary and payment scales and relative values (i)Are there important differences between the medical and non-medical workers? (ii)Is the salary scale in health sector competitive with employment in other sectors?	Ministry of Civil Service	CEO-Schedule A	(i) There are no differences between medical and non-medical public sector workers. (ii) Profession dependent.
2I	Performance measurement: Is there any formal process of evaluation?	Ministry of Civil Service Ministry of Health Office of Public Reform	PSA - First schedule	
2J	CSME regulatory and accreditation requirements for free circulation and contracting of personnel	Barbados Accreditation Council*	(See footnote 16)	
2K	Any data on migration	Professional associations	Not obtained	

Note: CEO = Civil Establishment Order; PSA = Public Service Act; CC = Chapter in Constitution.

* The Barbados Accreditation Council. Guidelines for the Certificate of recognition of CARICOM skills qualification.

The number of applications and entrants to professional training programs

The number of applicants and entrants to The University of the West Indies for the academic years 2006-07 and 2007-08 is presented in Table 3.13. The equivalent number of applications and entrants to The Barbados Community College is presented in Table 3.14.

Table 3.13: The number of applicants and the percentage admitted for 9 course groups for ALL applicants, and for Barbadian citizens and residents (bb)

Training	2006-2007				2007-2008			
	Apply		Accept		Apply		Accept	
	All	bb	All (%)	bb (%)	All	bb	All (%)	bb (%)
Medical undergrad	683	122	158 (23.1)	28	973	116	211 (21.7)	21
Medical postgrad	101	9	53 (52.5)	2	120	11	44 (52.8)	4
Nursing undergrad	712	4	382 (53.7)	3	1,018	16	519 (51.0)	13
Nursing postgrad	54	4	25 (46.3)	3	72	2	45 (62.5)	1
Public Health	74	4	39 (52.7)	1	87	7	49 (56.3)	1
Physical Therapy	79	4	19 (24.1)	1	163	14	42 (25.8)	9
Nutrition	26	1	11 (42.3)	0	34	1	21 (61.8)	1
Counselling	4	0	3 (75.0)	0	6	0	3 (50.0)	0
Radiology	45	0	31 (68.9)	0	203	2	27	50
TOTAL	1,778	148	721 (40.6)	38	2,676	169	27	50

Preliminary data on the number of graduates are available from both the Jamaican and Barbados campuses of the University of the West Indies, and these information are reported in Table 3.15. Barbadians taking courses in medicine, nursing, pharmacy, and dentistry will also train in Trinidad (these data have not yet been received).

Table 3.14: The number of applicants and percentage admitted for The Barbados Community College from 4 course groups

Training	2004		2005		2006		2007		2008	
	Apply	Accept (%)	Apply	Accept (%)	Apply	Accept (%)	Apply	Accept (%)	Apply	Accept (%)
Nursing	582	171 (29)	581	153 (26)	759	156 (21)	686	196 (29)	525	186 (35)
Pharmacy	57	21 (37)	54	14 (26)	1	0 (-)	87	28 (32)	73	24 (33)
Public Health	86	25 (29)	41	7 (17)	81	22 (27)	44	0 (-)	102	56 (55)
Rehabilitation	0	0 (-)	24	9 (38)	0	0 (-)	62	15 (24)	0	0 (-)
Technologist	45	10 (22)	3	0 (-)	113	10 (9)	56	0 (-)	56	15 (27)
TOTAL	770	110	703	76	954	131	935	154	756	131

Table 3.15: The number of graduates from
The University of the West Indies (Jamaica and Barbados campuses)
from 9 course groups for ALL applicants, and for Barbadian citizens and residents (bb)[19]

Training	2003		2004		2005		2006	
	All	bb	All	bb	All	bb	All	bb
Medical undergrad*	96	2	90	7	76	2	127	27
Medical postgrad	33	0	30	0	33	1	32	3
Nursing undergrad	0	0	20	0	42	0	237	2
Nursing postgrad	30	2	38	1	20	0	29	3
Public Health	16	0	33	2	33	3	21	2
Physical Therapy	11	5	7	1	12	1	16	3
Nutrition	2	0	10	0	9	0	1	0
Counselling**	0	0	61	5	12	1	74	73
Radiology	0	0	0	0	0	0	0	0
TOTAL	188	9	289	16	237	8	537	113

*Includes 2006 data on 25 Barbadian graduates of the Medicine MBBS.

**Includes 2006 data on 19 Barbadian graduates of the Social Work BSc, 19 Barbadian graduates from the Psychology BSc, and 35 graduates from the Psychology BA.

3.7. Education System Related to HRH - Descriptive Information

Both the University of the West Indies and The Barbados Community College are involved in the training of HRH in Barbados. Concerning The Jamaican and Trinidadian campuses of the UWI train the majority of the professions associated with HRH, with the Cave Hill Campus involved in the training of social workers and psychologists.

Until 2008, Barbados has been responsible for training social workers and providing clinical training for the final two (clinical) years of the MBBS course. In September 2008 the University Medical School in Barbados was upgraded to a full faculty (The Faculty of Medical Sciences) and now offers a 5-year MBBS program.

The Barbados Community College offers a range of associate degree and non-degree programmes covering areas such as nursing and environmental health (see Table 3.17 for details). Due to its small size it was not possible to identify an alternative in-house system to provide validation data. The Barbados Community College was established by “The Barbados Community College Act.1968-23” and is funded and regulated by the government.

19. Data are awaited from the St. Augustine campus on applications, entrants, and graduates of their medical faculty courses (medicine, nursing, pharmacy, dentistry).

The following detailed tables (Table 3.16 to Table 3.19) cover the descriptive data items in the "education for HRH" section of the core dataset (see Appendix 1 for details of the core dataset).

Table 3.16: Core Dataset Item 3C. Number of HRH worker training degree courses offered across the three main campuses of the University of the West Indies (see Appendix 6).

Professional category	Faculty	Campus	Post-graduate	Degree	Certificate/ Diploma
Doctor	Medical Sciences	Mona	29	1	
	Medical Sciences	Cave Hill	6	1	
	Medical Sciences	St. Augustine	26	1	
	Grad School	Mona	1		
Nursing	Medical Sciences	Mona		4	2
	Medical Sciences	St. Augustine	6	1	
Dentistry	Medical Sciences	St. Augustine	1	1	
Pharmacy	Medical Sciences	St. Augustine	2	1	
Social work	Social Sciences	Mona		1	1
	Social Sciences	Cave Hill	1	1	
	Social Sciences	St. Augustine	2	1	
Rehabilitation	Medical Sciences	Mona		1	
Technologists	Medical Sciences	Mona		1	
Public health practitioners	Medical Sciences	Mona	5		
	Medical Sciences	Cave Hill	2		
	Medical Sciences	St. Augustine	4		
	Humanities & Education	St. Augustine	1		
	Pure & Applied Sciences	Mona	2		
	Grad School	Mona	1		
Nutritionists	Medical Sciences	Mona	3		
	Sciences & Agriculture	St. Augustine		2	
	Grad School	Mona	1		
Mental Health	Social Sciences	Mona	2		1
	Social Sciences	Cave Hill		1	
	Social Sciences	St. Augustine	5		1

Table 3.17. Core Dataset Item 3I. Entry requirements for each professional qualification

Profession	Faculty	Campus	Course name	Degree	Entry requirements
Doctors	Medical Science	Mona Cave Hill St. Augustine	Medicine & surgery	MBBS	**SCHEME A.** Passes in two (2) units of Chemistry, Biology or Zoology, and Physics at CAPE or GCE A-level equivalent. Pass in CSEC (CXC) General Proficiency or GCE O-level Mathematics is also required. **SCHEME B.** Passes in two (2) units of Chemistry, Biology or Zoology, and Mathematics at CAPE or GCE A-level equivalent. Pass in CSEC (CXC) General Proficiency or GCE O-level Physics is also required. **SCHEME C.** Passes in both units of Chemistry, Physics, and Mathematics at CAPE or GCE A-level equivalent. Pass in CSEC (CXC) General Proficiency or GCE O-level Biology is also required.
Nurses	Medical Science	Mona	Advanced nursing administration	Cert.	Unavailable.
			Advanced nursing education	Cert.	Unavailable.
			Generic nursing	BSc	5 CXC subjects or O-levels. Applicants' academic qualifications must include the following subjects/levels: English Language, Mathematics, Physics or Statistics. One subject from: Biology, Human & Social Biology, Integrated Science. Two or more subjects from: Agricultural Science, Geography, Caribbean History, a modern language, Social Studies, Religious Education, Food & Nutrition, Home Economics Management, Principles of Accounts, Principles of Business, Information Technology or Chemistry. No Applicant can have more than 2 subjects at CXC General 3 or at GCE level C or a combination of both.
Nurses	Medical Science	Mona	Nursing education	BSc	Unavailable.
			Post registered nurse		
			Nursing administration		

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continuation of Table 3.17

Profession	Faculty	Campus	Course name	Degree	Entry requirements
Nurses	Medical Science	St. Augustine	Nursing	BSc	Passes in at least five (5) subjects at CXC (CSEC) General Proficiency (Grades I or II and from 1998 Grade III) or GCE O-level or approved equivalents. Passes in at least two (2) subjects at CXC (CAPE) or GCE A-level or approved equivalents OR passes in four (4) GCE subjects or approved equivalents, of which at least three (3) must be at the A-level or equivalent.
	Barbados Community College	Barbados Community College	Nursing assistant	Cert.	2 CXC/O-level subjects (inc. English Language) or any qualification considered to be equivalent.
			General nursing	AD	4 CXCs/O-levels one of which must be Mathematics, Integrated Science or Biology.
			Community health nursing	PADD	Associate degree or equivalent and state registered midwife.
			Community mental health nursing		Associate degree or equivalent and psychiatric training.
			Midwifery		Associate degree in general nursing or equivalent.
			Shortened registered nurse		Associate degree in applied science/general nursing or equivalent.
Dentistry	Medical Science	St. Augustine	Dental surgery	DDS	See MBBS.
	Barbados Community College	Barbados Community College	Dental assistant	Cert.	2 CXC/O-level subjects (inc. English Language) or any qualification.

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continuation of Table 3.17

Profession	Faculty	Campus	Course name	Degree	Entry requirements
Pharmacy	Medical Science	St. Augustine	Pharmacy	BSc	**SCHEME A.** Passes in two (2) units of Chemistry, Biology or Zoology, and Physics at CAPE or GCE A-level equivalent. Pass in CSEC (CXC) General Proficiency or GCE O-level Mathematics is also required. **SCHEME B.** Passes in two (2) units of Chemistry, Biology or Zoology, and Mathematics at CAPE or GCE A-level equivalent. Pass in CSEC (CXC) General Proficiency or GCE O-level Physics is also required. **SCHEME C.** Passes in both units of Chemistry, Physics, and Mathematics at CAPE or GCE A-level equivalent Pass in CSEC (CXC) General Proficiency or GCE O-level Biology is also required. **SCHEME D.** Passes in both units of Chemistry, and one other from Biology, Zoology, Physics or Mathematics at CAPE or GCE A-level equivalent. Passes in CSEC (CXC) General Proficiency or GCE O-level Mathematics and Physics also required.
	Barbados Community College	Barbados Community College	Pharmacy	AD	5 CXCs one must be: Physics, Mathematics, Chemistry or Biology.
Social Workers	Social Science	Mona	Social work (special)	BSc	Passes in five (5) subjects including English Language at CSEC (CXC) General Proficiency, Grades I or II and from 1998 Grade III) /GCE O-level AND passes in at least two (2) subjects at GCE A-level OR other approved Associate degrees, Diplomas and Certificates, including the two-year certificate in Social Work from the UWI.
		Cave Hill			
		St. Augustine			

continues on next page...

continuation of Table 3.17

Profession	Faculty	Campus	Course name	Degree	Entry requirements
Rehabilitation Workers	Medical Science	Mona	Physical therapy	BSc	CXC General Proficiency Examination: five (5) subjects -Compulsory- English Language, Mathematics. Caribbean Advanced Proficiency Examination (CAPE)/Other Requirements: any two (2) unit CAPE, or two (2) GCE Advanced Level passes from the following list of subjects: Physics, Chemistry, Mathematics, Biology.
Technologists	Medical Science	Mona	Diagnostic imaging	BSc	Possess a minimum of six (6) CSEC CXC subjects, grades 1-3 or equivalents in the following: English Language, Mathematics or Physics, Biology or Human Biology, one other science subject, and two other subjects.
	Barbados Community College	Barbados Community College	Medical laboratory technology	AD	4 CXCs/O-levels must have: Mathematics, Chemistry and Biology.
Public Health Practitioners	Barbados Community College	Barbados Community College	Inspection of meat and other foods	PADD	Associate degree in Environmental Health or equivalent.
			Environmental health inspection	AD	4 CXCs/O-levels one of which must be Mathematics, Chemistry or Biology.

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continuation of Table 3.17

Profession	Faculty	Campus	Course name	Degree	Entry requirements
Nutritionists	Science & Agriculture	St. Augustine	Human nutrition and dietetics (Special)	BSc	Passes in a minimum of five (5) subjects at CSEC (CXC) General Proficiency (Grades I – III) or GCE O-level, or their equivalents, which must include: English Language, Mathematics and any two (2) of the following: Chemistry, Biology, Agricultural Science, Physics, Geography AND Passes in at least two 2-unit CAPE courses or two GCE A-level subjects, at least one of which must be a Science subject OR A Diploma or Associate degree in Agriculture, Nutrition and Dietetics, or Science from a recognized tertiary level institution, with normally a minimum average of B or GPA of 2.75
			Institutional and community nutrition	BSc	
Mental Health	Social Science	Mona	Psychology	BSc	(Same as above).
		Cave Hill	Psychology (Special)		
		St. Augustine	Psychology		
Traditional/ Alternative Health Practitioners					
Other Relevant Groups					

Table 3.18: Core Dataset Items 3C (BCC only), 3H and 3K. Duration of course and tuition costs for The University of the West Indies and the Barbados Community College

Profession	Faculty	Campus	Course name	Degree	Duration	Tuition (BDS) (for Barbadian)
Doctor	Medical Sciences	Mona Cave Hill St. Augustine	Medicine & surgery	MBBS	4/5	106,014*
Nursing	Medical Sciences	Mona	Advance nursing administration	Cert.	Unavailable	Unavailable
			Advance nursing education	Cert.	Unavailable	Unavailable
			Generic Nursing	BSc	3	Unavailable
			Nursing education	BSc	3	Unavailable
			Post registered nurse	BSc	3	Unavailable
			Nursing administration	BSc	3	Unavailable
		St. Augustine	Nursing	BSc	3	Unavailable
	Barbados Community College	Barbados Community College	Nursing assistant	Cert.	1	320
			General nursing	AD	3	630
			Community health nursing	PADD	1	320
			Community mental health nursing	PADD	1	320
			Midwifery	PADD	1	320
			Shortened registered nurse	PADD	1	320
Dentistry	Medical Sciences	St. Augustine	Dental surgery	DDS	4	Unavailable
	Barbados Community College	Barbados Community College	Dental assistant	Cert.	1	320
Pharmacy	Medical Sciences	St. Augustine	Pharmacy	BSc	3	Unavailable
	Barbados Community College	Barbados Community College	Pharmacy	AD	3	630

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continuation of Table 3.18

Profession	Faculty	Campus	Course name	Degree	Duration	Tuition (BDS) (for Barbadian)
Social Workers	Social Sciences	Mona Cave Hill St. Augustine	Social work (special)	BSc	3	33,838**
Rehabilitation Workers	Medical Sciences	Mona	Physical therapy	BSc	3	Unavailable
Technologists	Medical Sciences	Mona	Diagnostic imaging	BSc	3	Unavailable
	Barbados Community College	Barbados Community College	Medical Laboratory Technology	AD	3	630
Public Health Practitioners	Barbados Community College	Barbados Community College	Inspection of meat and other foods	PADD	1	320
			Environmental health inspections	AD	3	630
Nutritionists	Science & Agriculture	St. Augustine	Human nutrition and dietetics (Special)	BSc	3	33838**
			Institutional and community nutrition	BSc	3	33838**
Mental Health	Social Sciences	Mona	Psychology	BSc	3	33838**
		Cave Hill	Psychology (Special)	BSc	3	33838**
		St. Augustine	Psychology	BSc	3	33838**
Traditional/ Alternative Health Practitioners						
Other Relevant Groups						

*For those from contributing countries only up to 60894 BDS may be paid by the national's government.

**For those from contributing countries only up to 32993BDS may be paid by the national's government.

Table 3.19: Core Dataset Items 3N to 3S. Professional training

Item	Brief item description	UWI	BCC
3N	Ethnic / social sensitivity	Not known	Possible covered in core module - ethics and citizenship
3O	Shortages in faculty members	Not known	
3P	Curriculum matched to epidemiological profile	Not known	As BCC is government run there are ties between MoH and curriculum development
3Q	Are there sociocultural components	Not known	Possibly covered in core modules - ethics and citizenship and Caribbean society
3R	Curriculum renewal process	Not known	
3S	Lines of communication between curriculum development and HRH needs	Not known	Yes - MoH has members on the board

Items 3T, 3U, 3V, 3X - Professional development training

Both the QEH and Faculty of Medical Sciences (UWI) run in-service training lectures. QEH lectures take place on a weekly basis. The Barbados drug service also holds lectures, but these are not all in-service training. For nurses, doctors, pharmacists and dentists some continuing education is provided by the professional associations. At present it is not possible to estimate the number of hours or individuals taking part in in-service training. Data concerning credits offered were also unavailable.

Items 3W, 3Y - Fellowships

All economic and tuition costs are waived for Barbadians attending UWI. The only cost born by the student is the university fee (845BDS). “Financial Hardship” bursaries (approximately 10) are available to Barbadians at the University of the West Indies. National Development Scholarship - Ten are available to candidates pursuing courses in scare specialist areas identified as priorities to the development of the country. The scholarship provides funding for the student to study in the UK, US or Canada. Commonwealth scholarships - number available varies. China and Cuba also provide scholarships.

4. Discussion

To facilitate ease of data collection the Project Core Data Set was divided in to the four usual data sub-sets:

- HRH Data- Quantitative (Item 1)
- HRH Data - Descriptive (Items 2b-2k)
- Education Data related to HRH - Quantitative (Item 3a-3m)
- Education Data related to HRH - Descriptive (Item 2a, 3n-3s - professional training: Items 3t-3v, 3x - in-service training. Items 3w, 3x - scholarships)

This discussion will continue with this format.

4.1. HRH Data - Quantitative (Item 1)

This data sub-set was divided into the three data groups: public healthcare sector, private healthcare sector and NGOs.

The Public Sector

Data from the public sector came from the Ministry of Health and The Queen Elizabeth Hospital. The most reliable and readily usable (individual-level and electronic) data were obtained from the SmartStream payroll system used by both institutions. As all health professionals must register to practice, it was anticipated that information held by the registration councils (based at the MoH) would be a good alternate data source for this sector. Unfortunately, only the data on clinical registration (The General Medical Council) was well-maintained and in electronic format. These data, along with those from SmartStream allowed the estimation of clinicians practising in the private sector. A review of the paper documentation available from the other councils suggested that insufficient data were currently collected by these councils to be useful to the ongoing efforts of an HRH Observatory in Barbados. These registration councils (based in the

> "In the public sector, payroll data were accurate and reliable"

MoH), could be extremely valuable as an information source. More data are needed, with the information collected being regularly updated and stored in an electronic format. The Office of the Registrar (not Ministry of Health) also holds data concerning the registration status of all healthcare professionals. These data were provided in an electronic format, but appeared to substantially over-estimate the numbers of professionals, perhaps due to continuing registration of professionals working overseas.

Private Sector

Information concerning this sector was estimated for doctors (using a method described in Chapter 3, Section 3.4.2). However, to obtain a more accurate picture of the health professionals in the private sector a full national survey is needed. An alternative (longer term, but potentially more cost-effective) approach would be to ensure the reliability of the registration council information, which would enable more accurate assessment of private sector workers.

NGOs

NGOs are not currently regulated. The MoH has recently established an "NGO Desk" to organise information on these organizations. Their early data must be converted to an electronic format to be useful to future work on the PAHO HRH core data set. The recent introduction of this NGO desk provides an ideal opportunity to guide choices for data collection, and how to organise this collected information.

"Training in data management techniques is key to improving the quality of many data repositories"

Other Data Sources

In addition to the above sources, alternative sources of data such as unions and professional associations are also accessible. Data were not provided from these sources, and this situation could be improved with a systematic engagement between the relevant organizations and the Ministry of Health. Although not key to primary data collection, these sources could provide useful data for validation purposes.

Recommendations for Policy-Makers

- Utilise full functionality of SmartStream within the public healthcare sector.
- Encourage registration councils based at the MoH to establish and maintain electronic records to enable estimation of individuals in the private sector.
- Expand the information collected by registration councils.

- Establish a mechanism for data sharing with unions and professional associations.
- Establish mechanism for reconciling data from Registrar's office with those held by the registration councils.

Recommendations for Users

- Design and offer a data management training seminar to describe how organizational data can feed into HRH estimates, and how they can best manage their data using simple process improvements.
- Conduct survey of private healthcare sector to determine HRH in this sector.
- Establish extended data set to be collected and stored (electronically) by NGO desk.
- An additional resource for obtaining data concerning private physicians is the pharmaceutical companies (or their distributors). This data source should be utilized as part of any development work.
- Develop method for electronic mapping of "government occupations" to standard classifications described in Section 2.3.

4.2. HRH Data - Descriptive (Items 2B to 2K)

Much of the public healthcare sector regulatory framework and management practices are described in legislation. Although no longer under the control of the Ministry of Health, the QEH has a management framework that originates from the same legislation underpinning the entire public sector.

It was not possible to obtain details of the regulatory framework and management practices of the private healthcare sector and NGOs. To do this would require further network development, a thorough survey and face-to-face interviews. Barbadians have access to both private and public general practitioners, and due to the over burdened public system and the affluence of the population, more Barbadians are utilizing the private sector as a first choice primary care. Historically, obtaining information from the private sector has not been easy, but for HRH issues to be addressed effectively, engagement of this sector in the process is crucial.

Recommendations for Policy-Makers

- Utilise full functionality of SmartStream within the public healthcare sector.
- Develop mechanism to monitor and control professional registration with appropriate punitive measures for practising without registration.

Recommendations for Users

- Utilise full functionality of SmartStream within the relevant institutions.
- Expand HRH network to include “champion” private healthcare organizations (those most likely to provide information and the need for the initiative).
- Conduct survey to determine management practices of private healthcare providers.

4.3. Education Data Related to HRH - Quantitative (Items 3A to 3M)

Barbadians have two choices for local/regional further education, Barbados Community College (BCC) and the University of the West Indies (UWI). Data obtained from BCC were hard-copy and were converted to an electronic format. UWI comprises three campuses: Mona (Jamaica), Cave Hill (Barbados) and St. Augustine (Trinidad and Tobago), all offering a different selection of courses. The bulk of the HRH training takes place in Mona and St. Augustine, although (as of 2008-9) Cave Hill now has a Faculty of Medical Sciences. The three campus countries provide funding for UWI which entitles their citizens to study at UWI at minimal cost. Cave Hill primarily runs courses pertaining to the Professional Categories of Social Work, Medicine and Mental Health. So, most Barbadians interested in an HRH profession must study in Jamaica or Trinidad. Cave Hill data were obtained in an electronic format using the previously described methods. Data from Mona was made available with the assistance of Prof. Wilks (from the Jamaican HRH team). There was no counterpart in Trinidad, and data from St. Augustine campus remains undelivered. An accurate situation analysis of the quantitative aspects of the education system related to HRH, contact with some who has a cross- campus remit in this area would be extremely productive, allowing the development of a regular mechanism for obtaining this information, for updating data and analyzing trends.

Recommendations for Users

- Identify and meet cross-campus person responsible for admissions.
- Establish methods/processes for future data collection.
- Long-term: Encourage BCC to maintain and share electronic records.

4.4. Education Data related to HRH - Descriptive

Professional Training (Items 3N to 3S)

Detailed syllabi were not available for all the courses so it was not possible to establish training around social sensitivity or sociocultural training. We were unable to gain access to the relevant individuals involved in curricula development for the various professional groups. This was in part due to the international structure of the University system.

In-Service Training (Items 3T to 3V and 3X)

In-service training is not a prerequisite/condition for professional registration. As described earlier, some organization/associations conduct in-service training activities, but this is not standard practice. To establish what, if any in-service training is conducted, interviews with all institutions and professional associations would need to take place.

Scholarships (Items 3W and 3Y)

Data from the Ministry of Education were obtained in hard copy or via interview. At the time of interview, the Ministry were in the process of moving towards electronic data management and storage. The Ministry also records how many tuition fees are paid. In the future it may be possible to monitor trends in course applications, as well as having a potential source of validation data concerning Barbadians following HRH professional training.

Recommendations for Policy-Makers

- Establish network of health planners and curricula developers across educational institutions to ensure that existing HRH levels can be maintained, improved and be focussed towards the appropriate priority health areas.
- Encourage professional development as part of on-going registration process.

Recommendations for Users

- Establish network of curricula developers across UWI .
- Establish detailed situation analysis of how all curricula are developed and renewed.
- Long-term: Conduct in-depth situation analysis for in-service training.

- Re-establish contact with Ministry of Education regarding scholarship information.

4.5. Technical Recommendations

(01) Rework PAHO Core Data Set Professional Categories to match WHO categories

In the 2006 World Health Report, and with careful considerations of the underlying ISCO-88 framework, the World Health Organization detailed professional categories. The professional categories detailed in PAHO Core Data Set should be mapped to the more widely reported WHO categories. This would enhance opportunities for cross-national comparisons

(02) Develop Formalized Data Quality Assessment Criteria

In this report, informal data quality check system was implemented to "grade" the various datasets received. The assessment of data quality should be formalized, to promote a standard method for assessing quality of collected resources. Formal data quality standards and methods are available from organizations such as the International Monetary Fund Data Quality Reference website (http://dsbb.imf.org). Moreover, this would act as a starting point for improving the quality of the future data.

(03) Develop a Standardised Methodology for Data Entry, Management and Archiving

Country-level HRH data collection is being conducted by different groups. Therefore, more formal procedures for standardised data management, data analysis, and "databasing" are needed to ensure that the data obtained during the course of this situation analysis are comparable, and easily updated by others in the future.

(04) Code Job and Industry Data Beyond ISCO-88 Level One

Census data are a rich potential source of information on health sector workers, but to be useful this national enumeration must code job and industry data in greater detail. Currently, job codes are only recorded to the equivalent of ISCO-88 level 1. Coding to level 3 (and level 4 for clinical specialties) would transform the ability to report HRH summaries and monitor trends.

(05) Develop and Conduct Seminars on Data Collection, Entry and Storage

Much of the data were available in an electronic format, however, in many cases the data sets were not readily usable due to poor data entry and management processes. There were exceptions, payroll systems were uniformly of a high standard, and the General Medical Council had well maintained relational database. Training in simple data management techniques would be valuable.

(06) Establish a Priority List of Item from the Core Data Set

Data collection was not straightforward (and in some cases was arduous). The project ”core” dataset remains large, and there should be some efforts in establishing an order of priority for items in this dataset – items that are vital to HRH planning and development. This would allow future projects to focus efforts on priority data.

(07) Long-Term: GIS Mapping of Healthcare Facilities to Enumeration Districts to Facilitate HRH Planning

In geographically small nations such as Barbados, healthcare resource planning could be greatly enhanced with the ability to offer greater geographical accuracy when describing spatial aspects of healthcare resources. Currently, resources can only be described at the parish level. The island is split into census enumeration districts, and the distance between each district and each healthcare facility could be mapped with the use of (now cheap) Global Positioning Device (GPS) technology.

APPENDIX 1
CORE DATASET FOR PAHO DATA MANAGEMENT PROJECT

Developed through discussions with four research teams
(Barbados/Eastern Caribbean, Belize, Jamaica, and Trinidad & Tobago)
Christ Church, Barbados
November 28-29, 2007

1. STOCKS AND FLOWS

1A. Number of Workers in Health Activities

Numbers of Workers Reported in Each Professional Group (check and footnote differences with ISCO 88, see below if necessary) and are to be reported in the following categories:

1. Total Head Count.
2. Total Head Count in Active Practice.
3. Total Hours Worked.
4. A definition of Full Time Equivalent for the profession in the country (if exists).

Numbers in the above three areas must be also shown for:

- Combined Totals.
- Gender Specific Totals.
- Age Specific Groupings (It is recommended to report age groupings recommended by decade: 20-29 years; 30-39 years; etc. This grouping will match most census reports).

1B. Distribution of Workers in Health Activities

- Distribution according to Geographical Units (regional health authorities, parishes).

- Distribution by Population Size (i.e. numbers per 10.000 pop.).
- Distribution by Urban vs. Rural Areas (Group recognized that there is a common understanding of the terms “urban” and “rural” but that specific definitions vary – please footnote general description).
- Distribution working in Hospitals vs Non-Hospital Settings (Clinics, etc) (Footnote or specify those that work in both when possible).
- Distribution working in Public Practice vs. Private Practice vs. NGO’s (Footnote or specify those that work in both when possible, or quote studies showing evidence of double or multiple employment with estimates of relative weight of this condition).
- Distribution by Geographically Distinct Minority Populations (This should be gathered through secondary data sources).
    - In this study, minority populations are defined by ethnicity, language and religious groups that are in smaller numbers than the majority population group). In addition, and socioeconomic status?
    - In this study, minority populations that are included are only those living in distinct geographic areas.
- Distribution by Socioeconomic Level (Recommended through proxies, such as human development index).

1C. Professional and Subsets of Workers in Health Activities

The following professionals and subsets should be included in the core data set. Standard definitions of the each professional category and subset to be included can be compared to the international guideline of the International Labour Organization (ILO) in the International Standard Classification of Occupations (ISCO 88) and point out those professions that differ from the ILO classification: http://www.ilo.org/public/english/bureau/stat/isco/isco88/major.htm.

Individual country teams may expand this set to suit specific interests of each country.

- Medical Doctors - General Practitioners and Specialists.
- Nurses - Registered Nurses and Other Types of Nurses (Titles and Brief Qualifying Description).
- Dentists and Allied Professions in the “Family” of Dentistry.
- Pharmacists and Allied Professions in the “Family” of Pharmacy.
- Social Workers (Optional: to report total number of social workers, and then any significant subset).

- Rehabilitation Workers (Physical Therapists, Occupational Therapists, etc).
- Technologists (Laboratory, Radiation, etc.).
- Public Health Practitioners (e.g. Public Health Officers, Health Educators, Environmental Health Officers / Workers, etc.).
- Nutritionists.
- Mental Health other than Psychiatrists (e.g. Psychologists).
- Traditional/Alternative Health Practitioners (e.g. traditional healer, acupuncturist, etc.).
- Other Relevant Groups.

Additional Data Information to Include in Stocks and Flow:

a. Number of Health Workers as a Percentage of the Whole Workforce in the Country / Region.

b. Number of Positions in Health Services (Hospitals, Health centers).

c. Number of Positions that are Unfilled or Vacant (for 90 days or more), and the Percentage of Total Positions that this Number Represents (Vacancy Rate). If other definition or measure is used, please explain.

d. Projected Public Budgets (salaries and benefits) for Health and Projected Budget for HRH over the next five years.

e. Approved Loans or Donors' Projects involving Scaling-Up health Facilities that will Require Staffing in the next 5 years.

2. REGULATORY FRAMEWORK AND MANAGEMENT PRACTICES (DESCRIPTIVE)

a. Main regulatory tools concerning University training programs, accreditation, approval, and financing.

b. Main regulatory tools concerning health employment: Public sector regulations, private sector, NGO's specifically: selection systems, performance management, career paths, incentives and evaluation.

c. Main regulatory tools regarding licensing of professional practice (through professional boards, periodic register).

d. Regulatory and Licensing requirements for foreign workers.

e. Main regulatory framework regarding unionization and collective actions.

f. Contracting models (Is the permanent tenure in the public service the norm? Is the flexible, short term contract the norm?)

g. Selection process (Is there any selection process established? Or is the discretional appointment the norm?)

h. Salary and payment scales and relative values (Are there important differences between the medical and non-medical workers? The wage scale in the health sector is competitive with employment in other sectors?)

i. Performance measurement: Is there any formal process of evaluation?

j. CSME regulatory and accreditation requirements for free circulation and contracting of personnel.

k. As per suggested in the workshop, if there are data on migration that can be quoted, please do it here.

3. EDUCATION SYSTEM (DESCRIPTIVE)

The assessment of the Education component of the HRH field calls for review not only of professional training, such as Medical or Nursing schools, but also of the multiple continuing education, in-service, and life-long training activities.

a. How many Schools and Programs to train Health Professionals are in the country?

b. How many are accredited?

c. Within the schools and programs, how many degree levels are offered / required?

d. How many universities are public / private / off-shore?

e. How many seats are in each School and in each Program (per year, and if possible, for each year over the last five years).

f. How many persons enter each school and program each year? (per year, and if possible, for each year over the last five years).

g. How many graduates in each School and Program (per year, and, if possible, for each year over the last five years and proportion of graduates from identified minority populations).

h. Number of years of training needed for each profession.

i. Requirements for applying for entry to each profession.

j. Number of candidates who apply to the programs, and how many are accepted, and what percentage of the applicants are actually accepted into

the programs. For those that are denied, is the denial due to requirements, number of positions available, or shortages in professors, etc.?

k. Tuition cost of education for each profession.

l. Average age when students graduate from each program.

m. Gender ratios in each program.

n. Professional programs that include ethnic/social sensitivity as part of the training.

o. Are there shortages in faculty members?

p. Is the curriculum content of the various university or training institutions related to the health situation (such as matching the epidemiological profile needs and/or health priorities) of the country.

q. Are there sociocultural training components within the health curricula? If so, what type of training for what type of sensitization?

r. Description of curriculum renewal (process, frequency, etc.).

s. Are there processes and lines of communication between curriculum developers / academic leaders to coordinate curriculum design, academic priorities, and research focus with national strategic plans for health and/ or health human resources development?

t. Description of in-service training activities.

u. Estimates of the Total Number of Hours and persons in in-service training.

v. Estimates of credits offered / and required in each profession for advancement. Which of those credits are also eligible as credits toward advanced degrees?

w. How many fellowships / bursaries are offered annually in each of the academic program areas?

x. Professions requiring continuing education/ license renewal.

y. As per suggested by participants, please include any significant program/ funding for scholarships outside the country.

APPENDIX 2
MILESTONES AND ACTIVITIES ASSOCIATED WITH EACH DATA COLLECTION PHASE

Each phase was subdivided into milestones to facilitate project monitoring and these were broken down into activities to enable scheduling, resource allocation and identification of appropriate contacts.

Table A2-1:Milestones and activities associated with each data collection phase

Phase	Milestones	Activities
Preparatory work	1. Meet stakeholder representatives	Identify stakeholders
		Organise regular methods of updating stakeholders
	2. Review draft core data set	Identify data types needed to complete core data set
	3. Identify further contacts for information	Explore alternative data sources for data validation
	Meetings	Statistician Dean of Medical Faculty (UWI) MoH PS Cox and representatives from HR and PDU
PHASE 1: Identify information sources	1. Establish contact with all potential data sources	Determine island specific professions Circulate island specific professions Determine stakeholder specific information requirements Establish at least one potential source for each data item Contact each data source and provide list of data required
	2. Develop network of information sources	Identify additional contacts who are not stakeholders
	Meetings	Carol Gay - 1x/week Mark Ifill - 2x/week Stakeholder group - 1x/month

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continuation of Table A2-1

Phase	Milestones	Activities
PHASE 2: Identify published information	1. Collate all available reports, datasets provided by information sources	Contact each information source and obtain required documentation. Circulate list of documentation to ensure all relevant documentation has been identified
	2. Review literature to determine what data are currently available.	Identify documentation for minimal data set. Identify documentation for stakeholder specific information Identify areas where documentation is unavailable
	Meetings	Mark Ifill – 2x/week Stakeholder group – 1x/month
PHASE 3: Data gathering	1. Review documentation	Ensure collection of all identified documentation
	2. Review information	Collect data for minimal data set Collect data for stakeholder specific information Identify missing data
	Meetings	Mark Ifill – 2x/week Stakeholder group – 1x/month
PHASE 4: Data analysis	1. Data management	Convert core data set to data dictionary Annotate RF for data management purposes Prepare datasets for analysis Data entry
	2. Analysis	Calculate required statistics for core data set

Appendix 3

The Number of Public-Service Human Resources in Health (HRH) Workers in Barbados by Major Occupational Category, Age and Sex

Table A3-1: The number of public-service human resources in health (HRH) workers in Barbados by major occupational category, age and sex

Occupation Sex	Younger than 30	30 to 39	40 to 49	50 to 59	60 and older	TOTAL
Medical doctors						
Women	37	77	24	7	7	152
Men	22	49	49	31	19	170
Unknown	34	6	3	0	0	43
All	93	132	76	38	26	365
Nurses and midwives						
Women	168	340	333	387	114	1342
Men	44	75	58	39	13	229
Unknown	2	5	3	0	1	11
All	214	420	394	426	128	1582
Dentists and allied						
Women	1	4	13	14	1	33
Men	0	0	1	0	0	1
All	1	4	14	14	1	34
Pharmacists and allied						
Women	6	23	15	12	2	58
Men	1	3	5	8	1	18
All	7	26	20	20	3	76
Social workers						
Women	3	18	22	44	11	98

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continuation of Table A3-1

Occupation Sex	Younger than 30	30 to 39	40 to 49	50 to 59	60 and older	TOTAL
Men	0	3	3	2	3	11
All	3	21	25	46	14	109
Rehabilitation workers						
Women	7	17	9	7	2	42
Men	0	2	3	3	3	11
All	7	19	12	10	5	53
Technologists						
Women	7	24	18	16	5	70
Men	2	9	13	5	2	31
All	9	33	31	21	7	101
Public health practitioners						
Women	20	29	20	5	1	75
Men	12	36	31	72	16	167
Unknown	2	0	2	0	0	2
All	34	65	51	77	17	244
Nutritionists						
Women	2	7	1	4	0	14
Men	0	0	0	1	0	1
All	2	7	1	5	0	15
Mental-health practitioners						
Women	2	3	2	1	1	9
Men	0	0	0	0	0	0
All	2	3	2	1	1	9
Other health workers						
Women	59	168	329	392	112	1060
Men	69	147	237	227	83	763
Unknown	2	3	3	1	0	9
All	130	318	569	620	195	1832

Appendix 4
The Number of Registered Health Sector Workers in Barbados between 2003 and 2007 by Registration Occupation

Table A4-1: The number of registered health sector workers in Barbados between 2003 and 2007 by registration occupation

Occupation	Number registered				
	2003	2004	2005	2006	2007
General Medical Council (GMC)					
Medical practitioner	319	441	432	446	420
Nursing Council					
General nurse	570	551	594	599	720
Midwife	285	215	245	231	241
Psychiatric nurse	247	205	223	187	223
Nursing assistant	304	235	297	340	347
Dentist Council					
Dentists / dental surgeons	27	64	61	63	68
Dental auxiliaries	5	6	11	3	4
Dental hygienists	4	8	7	11	14
Pharmacy Council					
Pharmacists	146	211	232	228	230
Paramedical Council					
Acupuncturist	2	1	3	3	3
Cardiac technologist	na	1	1	2	2
Chiropodist	1	1	2	0	1
Chiropractor	3	4	6	1	5
Diagnostic radiographer	12	18	26	25	24
Medical laboratory technologist	26	35	32	29	32

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continuation of Table A4-1

Occupation	Number registered				
	2003	2004	2005	2006	2007
Nutritionist / Dietitian	na	na	na	1	3
Occupational therapist	6	7	7	8	7
Ophthalmic dispenser	4	4	9	8	8
Optometrist	1	8	10	10	na
Orthoptist	na	na	na	na	1
Osteopath	na	na	na	na	1
Physiotherapist	22	29	35	37	34
Podiatrist	na	na	1	2	1
Psychologist	7	11	10	15	13
Psychologist (clinical)	3	11	3	1	3
Reflexologist	na	na	na	na	8
Speech therapist	3	5	4	4	5
Therapeutic radiographer	1	na	4	na	4

Note: na = not available.

Appendix 5
Ministry of Health (Barbados)
Health Facility Codes

Table A5-1: Health facility codes

Facility code	Facility description
310	Prisons
415	Disability Unit
420	Welfare Dep
431	QEH: admin/tech
440	Mental Hosp
535	Youth Service
560	Industrial Schools
710	MOH: General Management
713	POLY: Warrens (ehs)
714	POLY: St.Philip (ehs)
716	POLY: Black Rock (ehs)
717	POLY: Winston Scott (ehs)
718	POLY: Randall Phillips (phs)
719	POLY: Maurice Byer (phs)
723	POLY: Winston Scott (mat)
724	Dental Health Service
725	POLY: Warrens (mat)
726	POLY: Black Rock (mat)
727	POLY: Glebe (mat)
728	POLY: Edgar Cochrane (mat)
729	POLY: Maurice Byer (mat)
730	POLY: Randall Phillips (mat)
732	MOH: Elayne Scantlebury Centre

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continuation of Table A5-1

Facility code	Facility description
735	MOH: Children's Dev. Centre
741	MOH: HIV Care/Support
742	MOH: HIV Treatment
743	MOH: HIV Program Management
745	Env Protection Dept
782	MOH: St. Lucy Dist Hosp
783	MOH: Gordon Cummins Dist Hosp
784	MOH: St.Philip Dist Hosp
820	MOH: Geriatric Hospital
830	MOH: Nutrition Service
835	MOH: Drug Service
1010	POLICE: HQ
8067	MOH: Vector Control Unit
8431	QEH: admin/tech
8435	QEH: Emerg ambulance

Appendix 6
Details of The University of the West Indies Degree Courses Related to Professional Training for HRH Workers

See Table A6-1 on the following page.

Table A6-1: Details of The University of the West Indies degree courses related to professional training for HRH workers

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
Doctor	Medical Sciences	Mona	Anaesthetics & intensive care		DM			
		Mona	Anatomical pathology		DM			
		Mona	Cardiothoracic surgery		DM			
		Mona	Chemical pathology		DM			
		Mona	Emergency medicine		DM			
		Mona	Family medicine		DM	MSc		
		Mona	Hematology		DM			
		Mona	Clinical hematology		DM			
		Mona	Laboratory hematology		DM			
		Mona	Internal medicine		DM			
		Mona	Medicine		DM, MD			
		Mona	Microbiology		DM			
		Mona	Neurosurgery		DM			
		Mona	Obstetrics & gynecology		DM			
		Mona	Ophthalmology		DM			
		Mona	Ophthalmology		DM			
		Mona	Pediatric surgery		DM			
		Mona	Pediatrics		DM			
		Mona	Pathology		DM	MPhil		
		Mona	Psychiatry		DM			

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continuation of Table A6-1

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
		Mona	Radiology		DM			
		Mona	Surgery ENT		DM			
		Mona	Surgery general		DM			
		Mona	Surgery orthopedic		DM			
		Mona	Otorhinol		DM			
		Mona	Urology		DM, MD			
		Mona	Medicine & surgery				MBBS	
		Cave Hill	Accident & emergency		DM			
		Cave Hill	Anaesthetics		DM			
...Doctor	Medical Sciences	Cave Hill	Family medicine			MSc		
		Cave Hill	Internal medicine		DM			
		Cave Hill	Obstetrics & gynecology		DM			
		Cave Hill	Ophthalmology		DM			
		Cave Hill	Medicine & surgery				MBBS	
		St. Augustine	Anaesthetics		DM MD			
		St. Augustine	Biochemistry		MD			
		St. Augustine	Emergency medicine		MD	MSc, DipG		
		St. Augustine	Family practice		DM			
		St. Augustine	Human anatomy					

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continuation of Table A6-1

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
...Doctor	Medical Sciences	St. Augustine	Human physiology					
		St. Augustine	Medical education	PhD				
		St. Augustine	Obstetrics & gynecology	PhD	MD, DM	MPhil, DipG		
		St. Augustine	Oral medicine			MSc		
		St. Augustine	Pathology		MD			
		St. Augustine	Pediatrics & child health		DM			
		St. Augustine	Pharmacology		DM			
		St. Augustine	Primary care & family health			DipG		
		St. Augustine	Primary care & family medicine			MSc, DipG		
		St. Augustine	Psychiatry		DM, MD			
		St. Augustine	Radiology		DM, MD			
		St. Augustine	Surgery		DM			
		St. Augustine	Urology		DM, MD			
	Graduate School	Mona	Diabetology			MPhil		
	Medical Sciences	Mona	Medicine & surgery				MBBS	
Nursing	Medical Sciences	Mona	Advance nursing administration					Cert.
		Mona	Advance nursing education					Cert.

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continuation of Table A6-1

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
...Nursing	Medical Sciences	Mona	Generic nursing				BSc	
		Mona	Nursing (clinical nurse specialist)			MSc		
		Mona	Nursing (mental health)			MSc		
		Mona	Nursing family practice			MSc		
		Mona	Nursing education			MSc	BSc	
		Mona	Nursing			MSc		
		Mona	Post registered nurse				BSc	
		Mona	Nursing administration			MSc	BSc	
		St. Augustine	Nursing				BSc	
Dentistry	Medical Sciences	St. Augustine	Dental surgery				DDS	
		St. Augustine	Dentistry			MSc		
Pharmacy	Medical Sciences	St. Augustine	Pharmacy	PhD		MPhil	BSc	
Social work	Social Sciences	Mona	Social work (special)				BSc	
		Mona	Social work					Dip.
		Cave Hill	Social work (special				BSc	
		Cave Hill	Social work			MPhil		
		St. Augustine	Social work (special)				BSc	
		St. Augustine	Social work	PhD		MPhil		
Rehabilitation	Medical Sciences	Mona	Physical therapy				BSc	

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continuation of Table A6-1

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
Technologists	Medical Sciences	Mona	Diagnostic imaging				BSc	
Public health practitioners	Medical Sciences	Mona	Community health			DipG		
		Mona	Health education & health promotion			MPH		
		Mona	Public health	PhD		MPH MPhil		
		Mona	Epidemiology			MPH		
		Cave Hill	Epidemiology	PhD		MPhil		
		St. Augustine	Community health	PhD		MPhil		
		St. Augustine	Epidemiology	PhD				
		St. Augustine	Pharmaceutics & public health	PhD		MPhil		
	Humanities & Education	St. Augustine	Health visiting			Dip		
	Pure & Applied Sciences	Mona	Occupational & environmental safety & health	PhD		MSc		
	Graduate School	Mona	Public Health			MSc		
Nutritionists	Medical Sciences	Mona	Nutrition	PhD		MSc		
		St. Augustine	Clinical nutrition	PhD				
	Science & Agriculture	St. Augustine	Human nutrition and dietetics (Special)				BSc	
	Science & Agriculture	St. Augustine	Institutional and community nutrition				BSc	
	Graduate School	Mona	Nutrition			MPhil		

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continuation of Table A6-1

Professional category	Faculty	Campus	Course name	PhD	DM / MD	MPhil / MSc / DipG	Degree	Cert. / Dip.
Mental Health	Social Sciences	Mona	Psychology	PhD				
		Mona	Clinical psychology			MSc		
		Cave Hill	Psychology				BSc	
	Medical Sciences	St. Augustine	Mental health related area	PhD		MPhil		
	Social Sciences	St. Augustine	Clinical psychology	PhD		MPhil		Dip
Traditional/ Alternative Health Practitioners								
Other Relevant Groups								

APPENDIX 7
IDENTIFICATION OF DATA SOURCES TO MEET THE GOALS OF THE "PROJECT CORE DATASET"

The project core data set (see Appendix 1) lists the core requirements. There are three main items: stocks and flows (Item 1), regulatory framework (Item 2), and education systems (Item 3). Stocks and flows is further divided into numbers of workers (Item 1A), worker distributions (Item 1B), and professional and subsets of workers (Item 1C). Each item requires a distinct set of data sources. In the following pages we list the data set items and describe the sources in Barbados that can potentially provide the necessary information.

Item 1. Stocks and Flows = HRH Quantitative Data

Item 1A. Number of workers in health activities (stratified for age and sex)
■ Total head count
■ Total head count in active practice
■ Total hours worked
■ A definition of full time equivalent for the profession (if it exists)

The required data in Item 1A have different sources for the public healthcare sector, the private healthcare sector and NGOs. Data sources in these three healthcare sectors (which are described in detail in Chapter 1, Section 1.1.3) are described below.

Public Sector

There is just one tertiary referral hospital in Barbados (The Queen Elizabeth Hospital). There is also a clinic system that is under the remit of the Ministry of Health and comprises 8 polyclinics, 3 district hospitals, and 2 specialist hospitals (Table A7-1). An alternative source of data for the public sector is the trade unions (Table A7-2).

Table A7-1: Ministry of Health healthcare facilities in Barbados

Facility	Name	Parish location
Polyclinics Services offered include Maternal and Child Care, Family Planning, Health Education, School Health Services, Communicable Diseases and Environmental Health	Black Rock	St. Michael
	Edgar Cochrane	St. Michael
	Glebe	St. George
	Maurice Byer	St. Peter
	Randall Phillips	Christ Church
	St. Philip (Six Roads)	St. Philip
	Warrens	St. Michael
	Winston Scott	St. Michael
District hospitals	Psychiatric Hospital	St. Michael
	St. Lucy District Hospital	St. Lucy
	Gordan Cummins Hospital	St. Thomas
	Geriatric Hospital	St. Michael
	St. Philip District Hospital	St. Philip

Table A7-2: Unions for healthcare workers in Barbados

Category of information source: Unions
The Barbados Workers' Union (BWU)
The National Union of Public Workers (NUPW)
The West Indies Group of University Teachers
Barbados Union of Teachers
Barbados Association of Medical Practitioners
Barbados Industrial and General Workers Union (BIGWU)
The National United Workers Union of Barbados (NUWUB)
The Barbados Registered Nurses Association (BRNA)
Barbados Clerical Union
Nurses Assistants Aids Association of Barbados
The Caribbean Congress of Labour (CCL)

Private Sector

Potential information sources for HRH workers in the private sector are listed in Table A7-3. All regulated workers are required to register with the appropriate registration council prior to practicing, and this forms a potential basis for counts of professional healthcare workers. Those that work solely for the public sector are exempt from registration fees.

Table A7-3: Registration councils and professional organization data sources

Category of information source	Registration councils / Professional organizations
Registration councils	The Dental Council
	The Pharmacy Council
	The General Nursing Council
	The Medical Council
	The Paramedical Council
Professional associations Secondary source for private sector and NGOs	Association of Caribbean Occupational Therapist (ACOT)
	Barbados Association of Medical Practitioners
	Barbados Association of Medical Rehabilitation Therapists
	Barbados Association of Podiatrists/Chiropodists
	Barbados Association of Chiropractic Physicians
	Barbados Association of Radiographers
	Barbados Association of Psychologists
	Barbados Association of Physical Therapists (BAPT)
	Barbados Association of Reflexologists
	Barbados Dental Association
	Barbados Pharmaceutical Society (BPS)
	Barbados Optical Association
	Barbados Occupational Therapy Association
	Barbados Society of Radiographers
	Barbados Association of Environmental Health Officers
	Barbados Nurses Association (BNA)
	Caribbean Association of Medical Technologists
	Caribbean Association of Nutritionists and Dieticians

Non-Governmental Organizations

Potential information sources among non-governmental organizations are listed in Table A7-4.

Table A7-4: Potential Non-Governmental Organization information sources

Category of information source: NGOs*
AIDS Society of Barbados
Asthma Association of Barbados
Barbados Association for the Blind and Deaf
Barbados Association for Mental Health (BAMH)
Barbados Association for the Mentally Retarded Child
Barbados Cancer Society
Barbados Council for the Disabled
Barbados Family Planning Association
Barbados Kidney Association
Barbados National Organization of the Disabled (BARNOD)
Barbados Red Cross Society
Cancer Support Services
Diabetes Association of Barbados
Heart and Stroke Foundation of Barbados Inc
Hope Foundation
Myasthenia Gravis Association of Barbados
Myeloma Lymphoma Leukemia Foundation of Barbados
Sports Medicine Association
St. David's Church Health Guild of the Anglican Church
The Adventist Health Ministries Department
The Menopause Society of Barbados
The Multiple Sclerosis Society
The Vitiligo Association

*As detailed by MoH NGO desk.

Item 1B. Distribution of workers in health activities
■ HRH by geographical units
■ HRH by population
■ HRH stratified by urban vs. rural
■ HRH stratified by hospital vs. non-hospital settings
■ HRH stratified by public-sector vs. private-practice vs. NGOs
■ HRH stratified by race / ethnicity (minority populations)
■ HRH stratified by socioeconomic level

Barbados has 11 parishes, and this geographical unit has been used to stratify healthcare workers spatially. Data on the Barbados population were available from the 2000 census.[20] These population data were obtained from the Barbados Statistical Service. The Barbados Statistical Service does not recognise an urban / rural stratification for Barbados, and we describe an anecdotal stratification in Chapter 3 - Results. Data sources for public, private, and NGO healthcare workers are provided in Table A7-1, Table A7-2, Table A7-3, and Table A7-4. Barbados has a predominantly African-descent population (93%), and so stratification of workers by race / ethnicity is not applied.

20. A full-enumeration national census is conducted by the Barbados Government Statistical Service every 10-years.

Item 1. Stocks and Flows = HRH Quantitative Data

Item 1C. Professional and subsets of workers in health activities
Using the following broad job categories: ■ (1) Medical doctors ■ (2) Nurses ■ (3) Dentists and allied ■ (4) Pharmacists and allied ■ (5) Social workers ■ (6) Rehabilitation workers ■ (7) Technologists ■ (8) Public health practitioners ■ (9) Environmental health officers ■ (10) Mental health workers ■ (11) Traditional/Alternative health practitioners ■ (12) Other relevant groups

Item 1C of the core data consists of eleven categories of professions and one dedicated to "other". Table A7-5 lists the professions in Barbados that constitute these twelve categories. These groups will be used when obtaining data from the three categories of information source (public, private and NGOs).

Table A7-5: Mapping the 12 PAHO job categories to Barbados professions

Core dataset professional categories	Barbados specific profession types	
Medical doctors - General practitioners and specialists	■ General Practice ■ GPs ■ Family medicine ■ Medical specialists ■ Anesthetists ■ Community medicine ■ Dermatologists ■ Diagnostic radiologists ■ Emergency medicine ■ Internal medicine	■ Neurologists ■ Nuclear medicine ■ Occupational medicine ■ Pediatrics ■ Rehabilitation ■ Psychiatrists ■ Laboratory specialists ■ Anatomical pathology ■ General/clinical pathology ■ Hematologic pathology

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continuation of Table A7-5

Core dataset professional categories	Barbados specific profession types	
... **Medical doctors - General practitioners and specialists**	■ General internists ■ Cardiologists ■ Endocrinologists ■ Gastroenterologists ■ Geriatricians ■ Hematologists ■ Infectious diseases ■ Medical oncologists ■ Radiation oncologists ■ Medical/radiation oncologists ■ Nephrologists ■ Respiratory medicine ■ Rheumatologists	■ Medical biochemistry ■ Medical microbiology ■ Neuropathology ■ Surgical specialities ■ Cardiovascular/thoracic ■ General ■ Neurosurgery ■ Obstetrics & gynecology ■ Ophthalmology ■ Otolaryngology ■ Orthopedic ■ Plastic ■ Urology
Nurses	■ Registered nurses ■ Mental health nurses ■ Public health nurses	■ Midwives ■ Nursing assistants ■ Care/Health aids
Dentistry	■ Dentists ■ Dental auxiliaries ■ Dental assistants	■ Dental hygienists ■ Dental technicians
Pharmacy	■ Pharmacists	■ Pharmacy technicians
Social work	■ Social workers	■ Care coordinators
Rehabilitation work	■ Physiotherapists ■ Occupational therapists ■ Rehab therapy technician ■ Speech therapists	■ Chiropodists ■ Podiatrists ■ Osteopaths
Technologists	■ Laboratory technicians ■ Radiographers	■ EEG technologist
Public health practitioners	■ Health promotion officer ■ Health education officer ■ Environmental health officers	■ Environmental health assistants ■ Environmental health specialists

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continuation of Table A7-5

Core dataset professional categories	Barbados specific profession types	
Nutritionists	■ Nutritionists ■ Dieticians	■ Community health aides
Mental health	■ Psychotherapist ■ Neurophysiology technician	■ Psychiatric social worker ■ Psychologists
Traditional / Alternative	■ Acupuncturist	
Health practitioners		
Other relevant groups	Professional, e.g.: ■ Accountants ■ Health planning officers Technical, e.g.: ■ EM technicians ■ Technical officers	Administrative, e.g.: ■ Stenotypists ■ Clerical officers Ancillary, e.g.: ■ Maids ■ Orderlies

Item 1. Stocks and Flows = HRH Quantitative Data

Item 1C. Additional data
■ HRH as a percentage of total workforce
■ Number of positions in the health services
■ HRH positions unfilled / vacant
■ HRH public budgets
■ HRH loans and donor projects

The working population aged 15 and over was obtained from the 2000 census with more recent survey estimates from the quarterly Labour Force Survey. The number of positions available, filled, and vacant in the health service draws on data from the Ministry of Health and the Queen Elizabeth Hospital. Projected public budgets and approved loans or donor projects that will require staffing in the next 5 years will come from the Ministry of Health.

Item 2. Regulatory Framework = HRH Descriptive Data (except item 2A)

Item 2. Regulatory framework and management practices
■ (A) Regulatory tools for university training
■ (B) Regulatory tools for health employment
■ (C) Licensing of professional practice
■ (D) Regulations on foreign workers
■ (E) Union regulations
■ (F) Contracting model (e.g., tenure)
■ (G) Job selection processes
■ (H) Salary
■ (I) Performance measurement
■ (J) CSME regulations and accreditation
■ (K) Migration

Item 2 is a set of descriptive HRH data (although note that item 2A is concerned with the regulatory tools for the education system). Item 2B was collected with data pertaining to education (see Item 3). Table A7-6 details the potential sources for the data needed for Item 2.

Table A7-6: Descriptive data required concerning management practices of human resources in health, and categories of potential sources

Item	Descriptive data	Potential source of information
2A	Regulatory tools concerning university training programmes, accreditation, approval and financing	■ University of the West Indies
2B	Main regulatory tools concerning health employment: selection systems, performance management, career paths, incentives and evaluation for the following - public sector, private sector, NGOs	■ Ministry of Civil Service ■ Ministry of Health ■ NGOs ■ Private sector
2C	Main regulatory tools regarding licensing of professional practice (through professional boards, periodic register)	■ Registration councils
2D	Regulatory and Licensing requirements for foreign workers	■ Registration councils ■ CARICOM
2E	Main regulatory framework regarding unionization and collective actions	■ Unions ■ Ministry of Civil Service ■ Ministry of Health

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continuation of Table A7-6

Item	Descriptive data	Potential source of information
2F	Contracting models (Is the permanent tenure in the public service vs flexible, short term contract	■ Ministry of Civil Service ■ Ministry of Health
2G	Selection process (Is there any selection process established or is the discretional appointment the norm?)	■ Ministry of Civil Service ■ Ministry of Health
2H	Salary and payment scales and relative values (Are there important differences between the medical and non-medical workers? Is the salary scale in health sector competitive with employment in other sectors?	■ Public healthcare sector ■ Private healthcare sector
2I	Performance measurement: Is there any formal process of evaluation?	■ Public healthcare sector ■ Private healthcare sector
2J	CSME regulatory and accreditation requirements for free circulation and contracting of personnel	■ CARICOM
2K	Any data on migration	■ Professional associations

Item 3. Education System = Education Quantitative Data

Item 3. Regulatory framework and management practices
■ (A) Schools and Programs to train health professionals
■ (B) How many are accredited?
■ (C) How many degree level programmes are offered?
■ (D) How many universities are public / private / off-shore?
■ (E) How many places are in each School / Program?
■ (F) How many persons enter each School / Program?
■ (G) How many graduates in each School / Program ?
■ (H) Number of years of training needed for each profession?
■ (I) Requirements for applying for entry to each profession?
■ (J) Number of candidates applying and accepted?
■ (K) Tuition cost of education for each profession?
■ (L) Average age when students graduate from each program?
■ (M) Gender ratios in each program

For all Items except A, B, and D the two tertiary educational facilities in Barbados were the main sources of information. Items A, B, and D are sourced from the Ministry of Education. There are two key institutions involved in the training of HRH; the Univer-

sity of the West Indies and Barbados Community College. The University of the West Indies (UWI) is spread across three campuses: Barbados, Cave Hill Campus; Trinidad & Tobago, St. Augustine Campus; and Jamaica, Mona Campus. The latter two are responsible for training the majority of the professions associated with HRH, with the Cave Hill Campus involved in the training of social workers and psychologists. Validation of the quantitative data from UWI using different university systems (for example the Dean's Office and the Admissions Office) was not possible. Historically, Barbados was only responsible for training social workers and providing clinical training for the final two years of the MBBS course. However from September 2008 the Faculty of Medical Sciences will offer the 5-year MBBS program rather than only the final 2 clinical years of training. The Barbados Community College offers a range of associate degree and non-degree programmes covering areas such as nursing and environmental health (See Table 3.17 for The University of the West Indies course details, and Table 3.18 for Barbados Community College course details).

Item 3. Education System = Education Descriptive Data

Item 3. Regulatory framework and management practices
■ 2(A) Regulatory tools for university training?
■ (N) Programmes including ethnic/social sensitivity?
■ (O) Shortages in faculty members?
■ (P) Do curriculums match epidemiological needs?
■ (Q) Sociocultural training components?
■ (R) Curriculum renewal?
■ (S) Linking of curriculums and national HRH strategies?
■ (T) In-service training activities?
■ (U) Hours and persons in in-service training?
■ (V) Professional credits offered by programs?
■ (W) Fellowships / bursaries offered?
■ (X) Professions requiring continuing education?
■ (Y) Programs/funding outside of country?

These data were divided into two types: (1) Professional training—requiring information concerning faculty staffing and curricula, and (2) Professional development—in-service, and life-long training activities—including some quantitative data regarding number of hours etc. Data concerning professional training can be obtained from the University of the West Indies (UWI) and the Barbados Community College (BCC), with supplementary or validation information from the Ministry of Education. Data concerning Professional Development was obtained from the various professional associations and the Faculty of Medical Sciences (UWI). Data pertaining to professional

development was obtained from the various categories of information sources and the University of the West Indies (UWI) (see Table A7-7).

Table A7-7: Sources of information for Education Systems related to HRH - Descriptive Data

Core dataset reference	Potential source of information*
2A	■ University of the West Indies
3N	■ University of the West Indies ■ Barbados Community College
3O	■ University of the West Indies ■ Barbados Community College
3P	■ University of the West Indies ■ Barbados Community College
3Q	■ University of the West Indies ■ Barbados Community College
3R	■ University of the West Indies ■ Barbados Community College
3S	■ University of the West Indies ■ Barbados Community College
3T	■ Public healthcare sector ■ Private healthcare sector ■ NGOs
3U	■ Public healthcare sector ■ Private healthcare sector ■ NGOs
3V	■ Public healthcare sector ■ Private healthcare sector ■ NGOs
3W	■ Ministry of Education
3X	■ Registration councils
3Y	■ Ministry of Education

*Which UWI campus is contacted will depend on where each course is taught.

APPENDIX 8
PREPARING THE BARBADOS HEALTH WORKFORCE DATABASE

The data management task was to create a standardized dataset from the disparate data source information. The process was fundamentally different for HRH workforce data (individual-level electronic or hardcopy information), and education data on training the HRH workforce (aggregate data). These two areas are considered separately below.

HRH data

Data were received as individual-level electronic data (EIN) or individual-level hardcopy information (HIN). Hardcopy information was computerized, then data-source specific algorithms were applied to each dataset to standardize data ready for merging into a single HRH workforce database.

HRH data quality

The quality of the various data sources varied widely. We informally assessed data source quality by recording five features of each dataset (Table A8-1).

Table A8-1: Five data quality assessment criteria

Quality criteria	
(1) How many core data items are available in dataset? (maximum of 5 core items: COUNT, OCCUPATION, SEX, AGE, LOCATION)	n / 5
(2) Can occupation be grouped into ISCO (3-digit) occupational groups?	Y / N
(3) Can occupation be grouped into 10 major WHO occupational groups?	Y / N
(4) Electronic data storage?	Y / N
(5) Quality control of recorded information?	Y / N

For criterion 1 we recorded the number of core data items available in the dataset (head count, and four important stratification variables: occupation, sex, age, location). For criterion 2 we recorded whether the listed occupation was in enough detail

to record the associated ISCO-88 occupational code to the 3-digit level—required for identifying health sector workers. For criterion 3 we recorded whether the listed occupation was in enough detail to record the associated 10 WHO occupation groups. If the answer to this was “NO” the data-source could not identify health-sector workers, and could not be used. For criterion 4, we recorded whether the data were stored adequately as an analyzable electronic dataset. For criterion 5, we assessed whether the data were updated regularly, with regular data quality control. The assessment of each data source is presented in Figure A8-1.

Converting HRH source data to database: data source algorithms

In Table A8-2 we list each data source, the data items we obtained from that source, and the data management algorithm we applied to convert the data source to a standardized format ready for the creation of the Barbados health worker database.

All data management was performed using Stata statistical software (version 10.1, StataLP Corporation, College Station, TX, USA). Electronic datasets were converted to Stata format using Stat/Transfer (version 9, Circle Systems Inc., Seattle, WA, USA). Formatted Excel spreadsheets (often containing textual information) were stripped of all formatting before conversion. Hard copy information were converted to unformatted Excel spreadsheets by scanning and text recognition (OmniPage, version 12, Nuance software, Burlington, MA, USA) if possible, and by manual data entry otherwise.

Data Management algorithms then generally involved variations on several common procedures.

- Data often were identifiable, so we permanently stripped identifying features (such as names, telephone numbers, addresses) and created an anonymous unique identifier for each individual worker.
- Because the purpose of recording occupation in the various Government databases is administrative rather than statistical, the occupation information does not follow the standard classification systems such as ISCO-88. Each data management algorithm therefore involved a semi-manual process of converting recorded occupation to aggregated occupational categories.
- A set of stratification variables were required to enable cross tabulations of health worker head counts. The fundamental stratification variable was occupation (described above). Secondary stratification variables were:

  a. Age of health worker

  b. Sex of health worker

  c. Geographical location of work premises (Barbados = parish)

  d. Private or public sector health worker

  e. Active (employed) or inactive (not employed) health worker

Figure A8-1: HRH Data source quality assessment

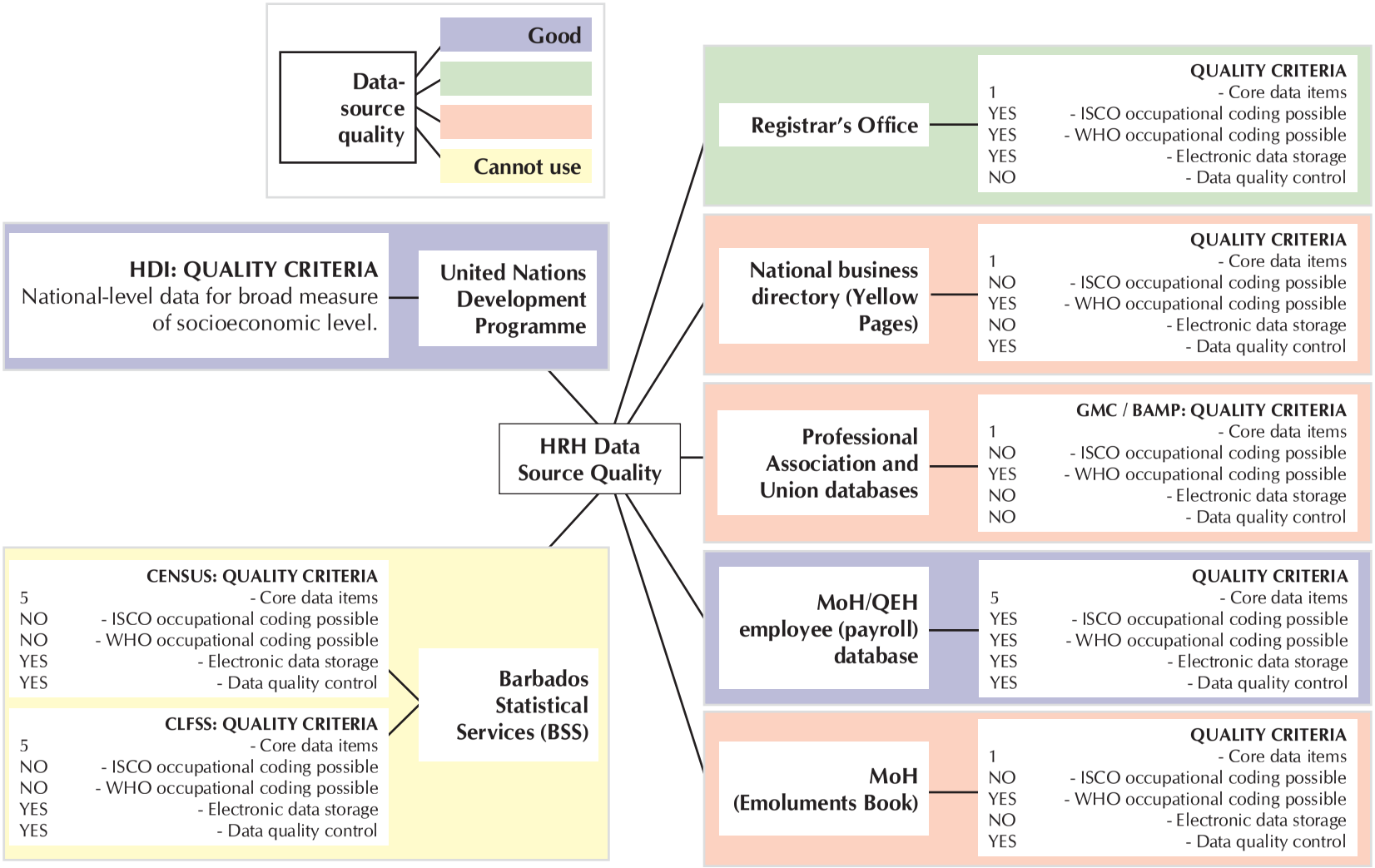

Table A8-2: HRH data items received, data management algorithms applied and final data items for each HRH data source

Registrar's office (28 Excel spreadsheets)	Yellow Pages (Hard copy)	MoH and QEH employee databases (Relational databases)	MoHNI Emoluments book (Formatted spreadsheet)
DATA ITEMS RECEIVED Head count - private sector Head count - public sector (QEH) Head count - public sector (MOHNI) Occupation Parish	**DATA ITEMS RECEIVED** Head count - private sector	**DATA ITEMS RECEIVED** Head count - public sector Occupation Facility type Sex Date of birth / age	**DATA ITEMS RECEIVED** Positions - public sector Positions filled - public sector
DATA MANAGEMENT (1) Anonymize datasets (2) Code PAHO occupation (3) Code parish (4) Create public / private sector indicator	**DATA MANAGEMENT** (1) Convert to spreadsheet (2) Anonymize dataset (3) Scan and mark for individual clinicians (4) Remove clinical practises (5) Add PAHO occupation (6) Create public / private sector indicator	**DATA MANAGEMENT** (1) Anonymize database (2) Code PAHO occupation (3) Code facility type (4) Use facility to code location (5) Create public / private sector indicator (6) Age = (date – birth date) / 365.25	**DATA MANAGEMENT** (1) Extract data from data sheet (2) Create new data spreadsheets (3) Expand to individual-level data (4) Code PAHO occupation (5) Code facility type (6) Create public / private sector indicator
FINAL DATA ITEMS HC Head count OC Occupation (see Appendix 1) FA --- SX --- DB --- AG --- PR Private sector PB Public sector AC Active FD Position filled (yes)	**FINAL DATA ITEMS** HC Head count OC Occupation (see Appendix 1) FA --- SX --- DB --- AG --- PR Private sector PB Public sector AC Active FD Position filled (yes)	**FINAL DATA ITEMS** HC Head count OC Occupation (see Appendix 1) FA Facility type SX Sex DB Date of birth AG Age in years PR Private sector PB Public sector AC Active FD Position filled (yes)	**FINAL DATA ITEMS** HC Head count OC Occupation (see Appendix 1) FA Facility type SX --- DB --- AG --- PR Private sector PB Public sector AC Active FD Position filled (yes/no)

Data management algorithms have been written in the Stata programming language, and will be available as part of the Barbados health worker database supplementary information. Additional data formats will be provided to ensure dataset access for all.

Education for HRH data

Data were received as aggregate electronic data (EAG) or aggregate hardcopy information (HAG). Hardcopy information was computerized, then simple data-source specific algorithms were applied to each dataset to standardize data. Educational data are available as a supplementary dataset to the HRH health workforce database (Table A8-3).

The data Management algorithms included several common procedures.

- The key stratification variable in this education dataset is course of study / degree programme. Course name listings were standardised, converted to numeric identifiers, and mapped to the 12 PAHO occupational categories, according to which trained cadre they supplied.
- Aggregate tallies of student intake and graduates were collected. These were converted to individual-level data by “expanding” the datasets to one row per student. An indicator was then created to identify the student as “new” or “graduating”.
- This individual-level data format then eased the process of creating further stratification variables—required to enable cross tabulations of new and graduating student head counts. The fundamental stratification variable was course type (described above). Secondary stratification variables were:

  a. Age of student

  b. Sex of student

- The educational institution (BCC or UWI) is recorded with each line of data, with key information on that institution.

Table A8-3: Education for HRH data items received, data management algorithms applied and final data items for each education data source

Barbados Community College (Hard copy aggregate data)	The University of the West Indies (Hard copy aggregate data)
DATA ITEMS RECEIVED Course listing Course length Course tuition fee Head count - course applications Head count - student intake Head count - graduates Year of intake and graduation Age breakdown of students Sex breakdown of students	**DATA ITEMS RECEIVED** Course listing Course length Course tuition fee Head count - course applications Head count - student intake Head count - graduates Year of intake and graduation Age breakdown of students Sex breakdown of students
DATA MANAGEMENT (1) Code course of study (2) Expand dataset to individual-level data (3) Code all stratification variables	**DATA MANAGEMENT** (1) Code course of study (2) Expand dataset to individual-level data (3) Code all stratification variables
FINAL DATA ITEMS PN Programme name (course) PI Programme indicator (ID) AS Course accreditation status PL Programme length PC Tuition cost of course PO Number of places on course PA Number of applications to course PE Number entering course PG Number graduating from course AG Age of student SX Sex of student	**FINAL DATA ITEMS** PN Programme name (course) PI Programme indicator (ID) AS Course accreditation status PL Programme length PC Tuition cost of course PO Number of places on course PA Number of applications to course PE Number entering course PG Number graduating from course AG Age of student SX Sex of student

APPENDIX 9
CONTENTS OF THE BARBADOS HEALTH WORKFORCE DATABASE

The outcomes of the data management processes described in Appendix 8 are two major datasets: one describing the Barbados health workforce, and one describing the educational infrastructure for training health workforce. The education for HRH dataset is a standalone supplement to the Barbados health workforce database.

Table A9-1: Dataset 1. The Barbados health workforce database

Variable	Description	Data type	Notes
HC	Head count	Integer	Each row contributes 1 person to the aggregated head counts
OC	Occupation (Appendix 1)	Integer	Uses 10-group WHO classification (Appendix 1)
FA	Facility type	Integer	Uses MoHNI facility type (Appendix 2)
SX	Sex	Categorical	1 = female 2 = male
DB	Date of birth	Date	dd/mm/yyyy
AG	Age in years	Integer	To nearest year
PR	Works in private sector?	Indicator	1 = yes 0 = no
PB	Works in public sector?	Indicator	1 = yes 0 = no
AC	Worker is economically active?	Indicator	1 = yes 0 = no
FD	Is position filled?	Indicator	1 = yes 0 = no

Table A9-2: Dataset 2. Education for HRH dataset

Variable	Description	Data type	Notes
PN	Programme name (course)	String	
PI	Programme indicator (ID)	Integer	
AS	Course accreditation status	Indicator	1 = accredited 0 = not accredited
PL	Programme length	Integer	In years
PC	Tuition cost of course	Numeric	In international dollars
PO	Number places on course	Integer	
PA	Number of applications to course	Integer	
PE	Number entering course	Integer	
PG	Number graduating from course	Integer	
AG	Age of student	Integer	To nearest year
SX	Sex of student	Categorical	1 = female 2 = male

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