



Annual Report

of

**The Operations of The
Barbados Drug Service**

**For Fiscal Year
April 1, 2015- March 31, 2016**

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LIST OF ABBREVIATIONS

ADR(s)	Adverse drug reaction(s)
BDS	Barbados Drug Service
BNDF	Barbados National Drug Formulary
CARPHA	Caribbean Public Health Agency
CRS	Caribbean Regulatory System
DFC	Drug Formulary Committee
DFCs	Duty free certificates
DIC	Drug Information Centre
D&TC	Drug and Therapeutics Committee
ESW	Electronic Single Window
ID	Identification card
INCB	International Narcotic Control Board
PV	Pharmacovigilance
QEH	Queen Elizabeth Hospital
SBS	Special Benefit Service
VAT	Value added tax
WHO	World Health Organisation

1.0 Executive Summary

The annual report of the Barbados Drug Service's (BDS) performance during fiscal year 2015-16 is set in the context of Barbados' national commitment to the pharmaceutical programme, being driven by its mission and vision. The mission of the BDS is, "to provide quality pharmaceuticals to all residents of Barbados at an affordable price and to serve the beneficiaries in a courteous and efficient manner", and its vision is, "to strengthen the operational capabilities through staff empowerment, public participation and cost sharing, and to lend support to the pharmaceutical services in the rest of the region". The efficiencies of the pharmaceutical service continues to be a national imperative driven by the multiple challenges of the increased demand, financial constraints and stock outages due to the inability of local suppliers to meet their contracted obligations. Despite these prevailing challenges the BDS maintained its efficiencies in medication success due to quality drugs, alternate drug sources and prudent financial management.

Public pharmacies are required to report monthly data on the number of prescriptions dispensed, revenue collected and drugs which are out of stock by suppliers. With respect to stock outages the local distributors are required to inform the Barbados Drug Service as soon as this information is made available to them. This would allow the BDS to put the necessary corrective measures in place in a timely manner to avoid critical stock outages. The functions of the Barbados Drug Service are broad and includes the Barbados National Drug Formulary (BNDF), the Special Benefit Service (SBS), the Barbados Drug Service Pharmacy Service, the Drug Inspectorate, Pharmacovigilance and the Drug Information Centre (DIC).

During the 2015-16 fiscal year, the BDS spent a total of approximately \$20.3 million on the combined public and private drug expenditure. This was a 12% decrease over the previous fiscal year. The public service's arm of the BDS managed 14 pharmacies, a significant portfolio that included 104 professional and support staff, at an approximate personal emoluments cost of \$5.1 million. Conversely, the private sector's portfolio incorporated 89 private pharmacies which are contracted to provide dispensing services to the BDS' beneficiaries. This service accounted for approximately \$8.7 million in expenditure.

Approximately 69,211 patients accessed care in the public sector in the period under review versus 67,040 in the private sector. These pharmaceutical services were made affordable to all Barbadians through the Maximum Price Contract tenders system and beneficiaries were given the option in their choice of accessing service in the public or private pharmacy. The key findings for fiscal year 2015-16 show an overall improvement in expenditure: 6% decline in the public sector and 19 % decline in the private sector.

Operational Excellence

The overall BDS expenditure decreased by 6% in 2015-16 (\$26.7 million) over 2014-15 (\$28.3 million). The Stakeholders' continued support, dedication, and commitment to the BDS was met with successes in our operations. Overall the public sector spent \$11.7 million on 1.1 million prescriptions which represented a 6% decrease in

expenditure and a 6% decrease in the prescription volume. Similarly, in the private sector 827,374 prescriptions were filled at a cost of \$8.7 million. This was a 2% decrease in prescription volume and 19% decrease in expenditure. The 67, 040 patients in the private and 69,211 patients in the public can all boast of the equity in service across both sectors and fairness to all in receiving quality drugs.

The BDS also empowered the public in good medication management through its Drug Information Centre and quarterly public lectures.

During the 2015-16 fiscal year the formulary was re-categorised into Category A, B and C drugs. Category A drugs were free of cost to all beneficiaries at point of service, Category B drugs were free at point of service to beneficiaries accessing service in the public sector only and with a prescription from a consultant or Medical Officer of Health. Category C drugs were approved for use in the private sector only, whereby patients would pay the duty free and zero rated prices. In an effort to ensure prudent management, all requests for Category B drugs within the public sector require prior approval by the Director, BDS upon submission of a Category B application form. Our focus on operational efficiencies in this regard will be compared with the non-formulary Specially Authorized Drugs (SADs) in the previous year. The approvals in 2015-16 fiscal year for the Category B drugs showed a 17% decrease when compared with the SAD approvals in 2014-15. The expenditure similarly decreased by 45% with the average cost of a Category B drug dropping to \$88 when compared to the average SAD cost at \$133 in 2014-15.

The overall BDS financial management was successful in reducing expenditure by 6% in the year under review versus the previous 2014-15 fiscal year.

The positive results seen in the BDS are credited to the performance of outstanding staff and other stakeholders alike. Staff was willing to go the extra mile, to ensure that the mission was realized. The BDS seeks to further enhance its service delivery environment to all its customers through staff training, and an overhaul of the selection and procurement systems.

Delivering On Our Promise

The 2015-16 fiscal report showed that the BDS continued to upkeep its promise to beneficiaries in “delivering quality pharmaceuticals at an affordable price”. Of the six benefit categories, the ranking in order of prevalence in the public sector was, hypertension, diabetes, asthma, cancer, epilepsy and glaucoma. These six disease benefit categories all ranked within the top ten therapeutic categories. The ranking in the private sector was slightly different as follows: hypertension, diabetes, glaucoma, asthma, cancer, and epilepsy. Hypertension and diabetes maintained their ranking at position 1 and 2 respectively which correlates with the prevalence of the 2012-13 co-morbidity risk factors among stroke and acute Myocardial Infarction patients for the January 2012 to December 2013 Barbados National Registry Report.¹

1. Barbados National Registry, 2012-13 Annual Report; 2011, Rose AMC, Martelly TN, Craig LS, Maul L, Hambleton IR, Hennis AJM, and the BNR-CVD Surveillance Team

The Drug Formulary Committee (DFC) carried out literature reviews during their drug selection meetings and made their decisions on evidence based medicine. This resulted in the publishing of the 34th edition (April 1, 2015 – March 31, 2016) of the Barbados National Drug Formulary which listed the deletion of three drugs and addition of four.

The Supply and Inventory arm of the BDS had a challenging year in terms of maintaining continuous supplies of the 2,385 contracted drugs, but the BDS was able to meet its demands through alternative sources within accepted practices of the BDS.

The quality of the services and products offered by the BDS was maintained under the vigilant eye of the three Drug Inspectors. The Drug Inspectors processed applications for the importation and exportation of narcotics, therapeutic substances, psychotropic drugs and precursor chemicals. These were followed up with approvals being issued by the relevant authority. In addition to processing these import and export authorizations, they inspected drug manufacturing facilities, public and private pharmacies, nursing homes and pharmaceutical warehouses; all in an effort to ensure that quality is preserved within the pharmaceutical environment in Barbados.

The Evolution Continues

Despite the achievements and successes made in 2014-15 and the struggle to operate against a strong current of global economic pressures that put strain on how healthcare dollars are allocated and spent, the BDS continued its quest to ensure that it maintained a competitive edge in its operational and regulatory functions. It therefore sought to develop its technological infrastructure and embrace innovative data-driven decisions. Its modus operandi was to guarantee decision making based on facts and information, and that stakeholders were provided the highest level of service. The BDS was therefore committed to achieve improved efficiencies and reduced duplications in assisting in the MedData project under the Health Information System. This was to accomplish networking at all government pharmacies through the Ministry of Health network. The department also continued its assistance in the development of the Electronic Single window for Barbados under the Ministry of Finance. Though these projects were not completed in the reporting year, the process was begun, and the end in sight was the impetus to propel the process forward.

2.0

Introduction

The Barbados Drug Service is a department within the Ministry of Health with the responsibility for the pharmaceutical programme. It carries out regulatory and operational functions in pharmaceutical delivery service in Barbados. It partners with patients and other stakeholders to attain many of Barbados' most pressing and evolving pharmaceutical needs. The service and product solutions are focused on drug selection, procurement, quality assurance, rational use of medicines, surveillance of drug use and pharmaceutical education. The BDS with 104-member staff complement comprised of professional and support staff spans across the administrative headquarters and 14 district pharmacies. The BDS fulfilled its mission, "to provide quality pharmaceuticals to all residents of Barbados at an affordable price and to serve the beneficiaries in a courteous and efficient manner"

by advancing the quality, accessibility, safety and affordability of pharmaceutical care in Barbados.

The BDS maintained its operations with a resulting 6% savings due to operational efficiencies in the 2015-16 Revised Estimates versus the 2014-15 Actual Expenditure, it was essential that the Barbados Drug Service maintained achievements under three

strategic objectives, namely:

- (i) to ensure access of affordable, safe, and quality drugs in all government healthcare institutions and the private participating pharmacies;
- (ii) to maintain and update the Barbados National Drug Formulary through ongoing formulary reviews and the rational use of medicines; and
- (iii) to ensure quality and safety of drugs through pharmacovigilance and appropriate regulatory frameworks such as testing, inspection, monitoring and surveillance.

The BDS provides a wide selection of pharmaceuticals that are used in treating the most common disease conditions in Barbados under the Supply and Inventory Service. Additionally, it offers other services that lend to the total improved pharmaceutical environment. The services offered by the BDS are as follows

- (i) the Barbados National Drug Formulary (BNDF),
- (ii) the Supply & Inventory Service,
- (iii) the Special Benefit Service (SBS),
- (iv) the Barbados Drug Service Pharmacy Service,
- (v) the Drug Inspectorate,
- (vi) the Drug Information Centre (DIC), and
- (vii) Pharmacovigilance

3.0

Historical Information

The Barbados Drug Service was established in April 1980 in accordance with Government's objective of reducing the cost of prescribed drugs while ensuring the continuous availability of quality products of known therapeutic effectiveness. Its operations were governed by the Drug Service Act 1980-58 and the Financial Administration and Audit (Drug Service) Rules, 1980. The Drug Service (Special Benefit Service) Regulations, 1986 was later added with the establishment of the Special Benefit Service in 1981. The BDS' tenets were shaped by the fundamental philosophy of the World Health Organisation (WHO) which states that "Essential medicines save lives, reduce suffering and improve health, but only if they are of good quality and safe, available, affordable and properly used."²

The BDS has maintained its operations by developing cost effective, sustainable and efficient financing mechanisms which are essential for successful access to formulary drugs. "It is a core principle of pharmaceutical financing that medicines should be available at all times in adequate amounts, in the appropriate dosage and at a price that individuals and the community can afford."³

Historical evidence has shown that in sticking to our mandate over the years, we were able to achieve operational excellence and deliver on our promises. Our past lessons and milestones can only serve to strengthen our tomorrow.

2. Baghdadi, G. et al WHO Medicines Strategy: countries at the core 2004-2007. WHO, Geneva 2004

3. Beaver C. and Yoshida J. Consultation on Financing of Essential Medicines. (Unpublished report.) Manila, WHO Regional Office for the Western Pacific, 2006.

3.1

MILESTONES

- **April 1980** - BDS established under the Drug Service Act
- **April 1981** - Special Benefit Service established with co-payment in the private sector; persons over 65 years paid \$5.00 per prescription and persons in other benefit categories paid 50% of the cost of the prescription.
- **1983-2013** - BDS designated as a World Health Organisation collaborating centre in Drug Supply Management.
- **April 1986** - Co-payment was removed and beneficiary's age for children changed from under 6 years to under 16 years of age.
- **May 1986** - Pharmacy Act replaced the 1894 Druggist Act which was repealed.
- **1990** - Commencement of BDS Public Lecture series and the formation of the Asthma Association of Barbados
- **1999** - Re-development of BDS Strategic Plan
- **2001** - Upgrade of BDS Software
- **2002** - Revision of the BDS Strategic Plan
- **2004** - Introduction of duplicate prescriptions
- **2008** - Introduction of Pharmacovigilance
- **April 2010** - Beneficiaries limited to Barbados citizens and Permanent Residents Only
- **April 2011** - Formulary Review
- **April 2011** - Introduction of a dispensing fee in the private sector
- **April 2011**-Mandatory electronic reimbursement submission by Private participating Pharmacies (PPP)
- **April 2012** - Glaucoma added to the list of beneficiaries
- **April 2015** - Recategorisation of the formulary – Categories A, B and C

The category of BDS beneficiaries evolved over the years. The current BDS' beneficiaries as listed in **Table 1** include persons living with diabetes, hypertension, cancer, asthma, glaucoma and epilepsy who receive formulary drugs used in the treatment of these illnesses free of cost at point of service in both the public and private pharmacies. The drug costs for prescriptions filled in private pharmacies are reimbursed to the Private Participating Pharmacies (PPP) by the BDS but the patients pay the dispensing fee which is calculated on the cost of the drug. No dispensing fee is charged to patients in the public sector.

Table 1: Beneficiaries of the Barbados Drug Service

Groups Currently Covered (Beneficiaries)	Provision of Drugs And Related Items	
	Public Sector	Private Sector
1. Persons 65 years and over	Free drug cost and no added dispensing fee	* Free drug cost and patient pays the dispensing fee
2. Children under 16 years of age	Free drug cost and no added dispensing fee	* Free drug cost and patient pays the dispensing fee
3. Persons who receive prescribed formulary drugs for the treatment of Hypertension, Diabetes, Cancer, Epilepsy, Glaucoma and Asthma	Free drug cost and no added dispensing fee	* Free drug cost and patient pays the dispensing fee
4. Persons between 16 and 64 who are not included in 3 above	Free drug cost and no added dispensing fee	Patient pays drug cost** + pharmacy mark-up

* A dispensing fee was charged to patients from April 1, 2011

** Patient pays a reduced cost free of duties and taxes

4.0 **ACTIVITIES**

During the 2015-16 fiscal year, the Barbados Drug Service continued to meet its strategic objectives through seven operational and regulatory activities. The activities spanned the public and private sectors and provided an enabling environment for service delivery to be optimally effective and efficient.

BDS ACTIVITIES

- (1) The Barbados National Drug (BNDF)
- (2) The Supply and Inventory Service
- (3) The Special Benefit Service (SBS)
- (4) The Barbados Drug Service Pharmacy Service
- (5) The Drug Inspectorate; and
- (6) The Drug Information Centre (DIC)
- (7) Pharmacovigilance

4.1 **ACTIVITY 1: BARBADOS NATIONAL DRUG FORMULARY**

The Drug Formulary Committee made recommendations to the Minister of Health for the introduction of Categories A, B and C drugs into the 34th edition of the Barbados National Drug Formulary. The chemical moieties recommended are as follows:

- Category A drugs: 943
- Category B drugs: 866 and
- Category C drugs: 1,029.

Approval was given for the formulary to be recategorised as follows:

Category A Drugs: Drugs are made available “free of cost” at point of service to all beneficiaries (Barbadian Citizens and Permanent Residents) upon presentation of the approved identification.

Category B Drugs: Drugs are made available to all Barbadian Citizens and Permanent Residents “free of cost” at the point of service in

the public sector, with an approved Category B application form, and will be paid for in the private sector.

Category C Drugs: Drugs in this category are purchased by all patients in the private sector at subsidized cost through the VAT free and duty free concessions. These drugs are not stocked in the public sector.

In accordance with Section 5(3) and 5(A) of the Drug Service Act Cap. 40A, the Minister of Health after consulting with the Drug Formulary Committee approved the preparation of the 34th edition of the BNDF through the Drug Service (Barbados National Drug Formulary) (Approval) Order, 2015.

During the year under review the Minister of Health approved the following recommendations submitted by the Drug Formulary Committee with respect to four (4) additions to, and three (3) deletions from the Barbados National Drug Formulary.

Drugs Added

- Avamys 27.5 mcg nasal Inhaler
- Brinzolamide 1% Eye drop
- Dorzolamide 2% Eye drop
- Zopiclone 7.5mg Tablet

Drugs Deleted

- Ketoconazole oral
- Salmeterol Xinafoate inhaler
- Nasonex nasal spray

The BDS printed and distributed fifteen hundred copies of the 34th edition of the BNDF. Complimentary copies were given to medical, dental and pharmacy practitioners; medical and pharmacy students; and the Chief Executive Officer, Queen Elizabeth Hospital for placement on each ward.

4.1.2

CATEGORY B DRUGS

1. Patients can only benefit from these drugs after the Medical Officer of Health in the respective polyclinic or outpatient clinic or Consultant in the Queen Elizabeth Hospital, Geriatric and District Hospitals, or Psychiatric Hospital request the drug through the Chairman, Drug & Therapeutics Committee, QEH or Director, BDS. Once approval is given the Category B drug is dispensed.
2. Category B drugs will be made available to all Barbadian Citizens and Permanent Residents “free of cost” at the point of service in the public sector and will be paid for in the private sector.
3. Public sector patients will be able to access Category B drugs by presenting a prescription signed or countersigned by a Consultant or Medical Officer of Health and approval from the D&TC, QEH or DBDS. Beneficiaries must also

present one of the approved forms of identification:

- (i) Barbados Identification Card (ID) which identifies the bearer as “Barbadian”;
- (ii) Barbados Passport with the Barbados National Registration number;
- (iii) Barbados Identification Card plus a passport of citizenship with the stamp from the Barbados Immigration Department that reads: "I hereby certify that the holder is a Permanent Resident of Barbados", or;
- (iv) Barbados Identification Card plus a Permanent Resident's certificate issued by the Immigration Department."

The Specially Authorised Drugs were replaced with the Category B drugs in the year under review and they accounted for 1% or \$124,943.90 of the BDS’ budget during this period. This amount spent on these Category B drugs represented a 45% reduction over the amount spent on supplying SADs in the previous year.

Table 2: SAD Expenditure versus Public Sector Drug Expenditure for the 2006 - 2016 Fiscal Years

Year	Total Drug Expenditure in Public Sector based on drugs purchased	Specially Authorised Drugs/ Category B Drugs**					
		Approvals	% Change in Approvals	Expend.	% Change in Expend.	Average Cost/ SAD	Expend. % to Total
2006-07	\$11,403,711.00	608	-22%	\$322,594.94	39%	\$530.58	3%
2007-08	\$10,439,220.00	715	18%	\$280,942.37	-13%	\$392.93	3%
2008-09	\$12,932,110.00	955	34%	\$299,312.72	7%	\$313.42	2%
2009-10*	\$12,150,516.00	1,426	49%	\$198,202.38	-34%	\$138.99	2%
2010-11	\$12,451,937.00	982	-31%	\$125,953.12	-36%	\$128.26	1%
2011-12	\$11,765,288.00	1,016	3%	\$123,919.64	-2%	\$121.97	1%
2012-13	\$13,481,501.00	1,183	16%	\$113,894.70	-8%	\$96.28	1%
2013-14	\$11,998,305.00	1796	52%	\$136,233.34	20%	\$75.74	1%
2014-15	\$12,444,809.00	1708	-5%	\$226,953.34	67%	\$132.88	2%
2015-16	\$11,662,572.00	1424	-17%	\$124,943.90	-45%	\$87.74	1%

* Tamiflu® was purchased for the H₁N₁ treatment

** SADs were replaced with the Category B Drugs in the 2015-16 fiscal year

4.2

ACTIVITY 2: THE SUPPLY AND INVENTORY SERVICE

The 2015-16 fiscal year continued to be a challenging one in terms of maintaining a continuous supply of all 2,838 products which were contracted (**Table 3**). This represents 717 chemical moieties distributed in 1,436 drug profiles. The distribution of the products into the formulary Categories A, B and C is as recommended above by the Drug Formulary Committee. At the end of the contract period there were only 2,465 products contracted, due to several contractual changes including the inability of local distributors to supply the contracted items. This was either due to manufacturing challenges from principals or too small a quota for feasible supplies.

Table 3: Number of Drugs Contracted for the Five Year period 2010-2016

Criteria	Fiscal Year					
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Drugs contracted	2736	2754	2709	2725	2720	2,838
Add to Contract	186	173	71	327	88	173
Delete from contract	122	165	126	98	59	260
Change Formulary Status	34	20	7	80	69	5
Name Change	8	1	12	4	2	
Change Local Agent*	N/A	N/A	N/A	N/A	14	48
Price Change	26	50	51	38	45	100
Amend Protocol Quantity	13		11		6	
Package Size Change	3	7	5	3	9	19

*Information is only available from the 2014-15 fiscal year

The 173 products added to the contract represent items that were already contracted but which the manufacturers opted to share the distributorship with additional local agents. The 260 deletions were a result of items being awarded but for which no Duty Free Certificates were processed within 6 months of the contract i.e. the supplier did not fulfill the contract.

Despite the supply challenges in accessing contracted pharmaceuticals, the BDS was able to meet its demands through alternative overseas sources.

Table 4 shows the number and value of the DFCs processed in the 2015-16 fiscal year by local agents. The total value of the 8,700 certificates processed was \$63,453, 382; non contract DFCs contributed \$10,298,972 of this total. Non contract duty free items consist mainly of items used by the QEH and anti-neoplastic preparations for private use. A non contract DFC may also be issued for an item which was sourced by BDS as a replacement for a contracted item.

Table 4: Number and Value of Duty Free Certificates Processed in 2015-16 vs. 2014-15

Local Agent	Number of DFC Items Processed		Value of Contracted DFCs (\$)		Value of Non Contracted DFCs(\$)	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
A. A. LAQUIS LTD	4	3	261,102.88	124,921		
ALL HEALTH INC	5	7	73,519.13	23,507	244.66	5,574
ARMSTRONG HEALTHCARE INC	951	479	5,954,466.56	3543403	1,777,635.59	1128443
BIOKAL LIMITED	200	221	590,388.26	969603	\$86,969.15	123435
BRYDEN STOKES LTD	2699	2566	26,092,431.85	23208177	2,453,864.37	1690695
COLLINS LTD	3386	2724	22,237,587.11	18856503	1,057,950.46	624280
FACEY TRADING	N/A	9	N/A	16,384	N/A	N/A
GP AVIS AGENCIES INC	N/A	10	N/A	31,151	N/A	N/A
ISLANDS MEDICAL SUPPLIES INC	2	3	73,191.82	25,466	N/A	4,608

Local Agent	Number of DFC Items Processed		Value of Contracted DFCs (\$)		Value of Non Contracted DFCs(\$)	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
LAIN TRADING	4		13,040.67	N/A	7,869.77	N/A
MASSY DISTRIBUTION (BDOS) LTD	845	473	3,272,532.52	2,093,874	29,372.00	22,223
PHARMACY SALES CARIBBEAN	484	464	3,472,184.40	1,400,365	4,885,065.64	4,470,466
RX PRO INC	120	160	1,412,936.92	757,257	N/A	N/A
Total	8,700	7119	68,453,382.12	51,050,612	10,298,971.64	8,069,725

The total cost of medicines purchased in the public sector in the period under review was \$10,996,658. The highest expenditure went to Collins Limited at \$5.2 Million, followed by BrydenStokes Ltd. at \$3 Million and then Armstrong Health Care Inc. at \$1 Million. Island Medical Supplies Inc. was the lowest at \$2,161 in BDS sales.

Table 5: Cost of Medicines Purchased from Supplier in Fiscal Year 2015-16

Local Supplier	Total Amount Purchased
A.A. Laquis (Barbados] Ltd.	\$98,264.33
All Health Inc.	\$19,927.54
Armstrong Health Care Inc	\$1,070,259.65
Barbados Family Planning Association	\$36,200.00
Biokal Ltd.	\$22,837.47
Bryden Stokes Ltd.	\$2,965,509.98
BW (2011) Limited	\$4,228.46
Collins Ltd	\$5,192,275.14
Headley's Customs Brokers	\$1,104.76*
Intercontinental Pharma Inc.	\$75,802.60
Island Medical Supplies Inc.	\$2,161.04
Massy Distribution (Barbados) Ltd.	\$425,437.55
Pharmacy Sales Caribbean	\$393,004.29
Rx Pro Inc.	\$678,517.87
West Indies Rum Distillery	\$11,127.09
Total	\$10,996,657.77

* Fee paid to the Barbados Family Planning for the clearing of imported contraceptives on behalf of the BDS

4.3 ACTIVITY 3: THE SPECIAL BENEFIT SERVICE

4.3.1 Beneficiaries

Approximately 67,000 beneficiaries filled 830,000 prescriptions at 89 Private Participating Pharmacies for a reimbursable value of \$8.7 million through the Special Benefit Service for the year April 1, 2015 to March 31, 2016. Beneficiaries include the following:

- (1) Persons 65 years of age and over;
- (2) Children under 16 years of age;
- (3) Beneficiaries, of any age, who receive prescribed Formulary Drugs for the treatment of hypertension, diabetes, cancer, asthma, epilepsy, and/or glaucoma.

Table 6: Prescription Activity by Age Category in the Private Sector for the 2015-16 Fiscal Year

Age Category	Number of Patients	Prescription Volume	Expenditure (\$)	Avg. Cost/ Prescription (\$)
65 years and over	25,007	511,478	5,287,270	10.34
16-64 years*	24,617	261,587	2,977,791	11.38
Under 16 years	17,416	54,309	404,092	7.44
Total SBS Patients	67,040	827,374	8,669,153	11.35

* Estimated data for the patients who received drugs in the disease-related benefit categories

Tables 6 and 7 shows that the highest expenditure, prescription volume and patient count was in the 65 years and over benefit category. In the reporting period, approximately \$5.3 million was reimbursed to the Private Participating Pharmacies for dispensing 511,478 prescriptions to twenty five thousand and seven patients in this age category. As to be expected, this age group has been consistent in having the highest prescription volume and expenditure over the years. The 16-64 age group follows closely in patient count with just under twenty five thousand patients. The prescription volume for this age category was however 50% of that recorded in the higher age category; with approximately two hundred and sixty-two thousand prescriptions (32% of the total prescription count) dispensed for a cost of \$3 million giving this group a higher average prescription cost of \$11.38 as against \$10.34 in the 65 years and over bracket.

Table 7: Analysis of Age Categories in SBS

Age Category	Percentage of Total Patients	Percentage of Total Prescriptions	Percentage of Total Cost
65 years and over	37%	62%	61%
16-64 years*	37%	32%	34%
Under 16 years	26%	7%	5%

* Estimated data for the patients who received drugs in the disease-related benefit categories

In the benefit categories listed in **Tables 8 and 9**, hypertension accounts for the largest prescription volume and expenditure (44% and 45% respectively) as well as the highest patient count; diabetes is in second place in prescription volume and expenditure (17% and 24% respectively). Glaucoma continues to be a high expenditure category with \$1.5 million being reimbursed in the period under review and at an average prescription cost of \$22.35 against \$10.75 and \$14.33 for hypertension and diabetes respectively. Similarly, due to the high-priced drugs used in the treatment of cancer, it has the highest average prescription price of \$49.00.

In summary, the benefit categories represent only 74% of the prescription volume submitted to SBS but account for 98% of the SBS expenditure.

Table 8: Prescription Activity by Benefit Category in the Private Sector for the 2015-16 Fiscal Year

Benefit Category	Number of Patients	Prescription Volume	Expenditure (\$)	Average Cost per Prescription	Average Cost per Patient per year
Hypertension	32,276	363,615	3,909,386	\$10.75	\$121.12
Diabetes	14,190	143,949	2,063,369	\$14.33	\$145.41
Glaucoma	6,543	66,737	1,491,619	\$22.35	\$227.97
Asthma	9,000	24,831	513,129	\$20.66	\$57.01
Cancer	1,040	5,837	286,025	\$49.00	\$275.02
Epilepsy	2,107	10,403	270,775	\$26.03	\$128.51
All Other	37,130	212,003	134,850	\$0.64	\$3.63
TOTAL	67,040	827,374	\$8,669,153	\$11.35	\$140.13

N.B. Patients could be counted in more than one category because a patient may be hypertensive and diabetic as well as a 65 or over and a under 16 receiving non-benefit medication.

Table 9: Benefit Categories as a Percentage of Total Expenditure & Prescription Count

Benefit Category	Percentage of Prescriptions	Percentage of Total Cost
Hypertension	44%	45%
Diabetes	17%	24%
Glaucoma	8%	17%
Asthma	3%	6%
Cancer	1%	3%
Epilepsy	1%	3%
All Other	26%	2%

4.3.2 Private Participating Pharmacies (PPP)

Eighty-nine (89) Private Participating Pharmacies (PPP) were contracted to provide Special Benefit Service to the BDS' beneficiaries in the private sector during the year under review.

PPP which withdrew from the SBS during the reporting period 2015-16

- Friendship pharmacy
- K.E. Prescriptions Services
- Genucare pharmacy
- Multimed pharmacy

PPP which joined the SBS during the reporting Period 2015-16

- Unique pharmacy
- Total Care pharmacy
- Medshop pharmacy
- Neighbourhood Care pharmacy
- Jillandee HLP
- Roundhay pharmacy

4.3.3 Usage of the Special Benefit Service

During the reporting period, a total of 67,040 patients received 827,374 prescriptions from the Private Participating Pharmacies (PPP) through the SBS programme at a cost of \$8,669,153 (See **Table 8**). The cost paid to the private pharmacies relates only to the

drug cost because from the 2011-12 fiscal year patients paid the dispensing fee, as calculated on the prescription pricing formula in **Table 10**.

Table 10: Prescription Pricing Formula

Cost of Drug to Pharmacy	Dispensing Fee to be Paid by the Beneficiary
\$0 - \$2.00	\$5.00 minus Drug Cost
\$2.01 - \$10.00	Cost plus \$5.00
\$10.01 - \$20.00	Cost plus \$7.00
\$20.01 - \$40.00	Cost plus \$12.00
Over \$40.00	Cost plus 30%

The Special Benefit Service expenditure continues to decline since the restructuring in 2011. The first 4 years after the restructuring it stood at approximately \$11 Million and in the year under review it is at approximately \$9 million as shown in **Table 11**.

Table 11: SBS Percentage Changes in Prescription Volume and Expenditure

Year	Prescription (Rx) Volume	Expenditure (\$)	% Change in Expenditure	% Change in Rx Volume	\$/Rx
2006-07	1,846,882	31,587,931	3.43%	38.7%	\$17.10
2007-08	* 2,055,016	36,535,775	15.66%	11.27%	\$17.78
2008-09	N/A	36,633,590	0.27%	N/A	N/A
2009-10	N/A	40,561,950	10.72%	N/A	N/A
2010-11	N/A	34,574,833	-14.76%	N/A	N/A
2011-12	879,104	10,787,176	-68.80%	N/A	\$12.27
2012-13	864,335	10,639,956	-1.36%	-1.68%	\$12.31
2013-14	828,328	10,643,775	0.04%	-4.17%	\$12.85
2014-15	841,221	10,619,933	-0.22%	1.56%	\$12.62
2015-16	827,374	8,669,153	-18.37%	-1.65%	\$10.48

* Estimated Value

Table 12: Top 25 Drugs Dispensed in the Private Sector

RANK	ACTIVE INGREDIENT	MAIN INDICATION	TOTAL COST
1.	Valsartan	Hypertension	\$1,193,782.24
2.	Blood Glucose Test	Diabetes	\$886,561.26
3.	Gliclazide	Diabetes	\$841,925.07
4.	Latanoprost	Glaucoma	\$746,545.59
5.	Cyproterone	Antineoplastic	\$487,636.03
6.	Telmisartan	Hypertension	\$474,606.44
7.	Valsartan/HCTZ	Hypertension	\$412,260.56
8.	Brimonidine	Glaucoma	\$399,725.50
9.	Telmisartan/HCTZ	Hypertension	\$392,561.90
10.	Indapamide	Hypertension	\$355,975.97
11.	Dorzolamide/Timolol	Glaucoma	\$310,529.00
12.	Travoprost	Glaucoma	\$301,797.97

RANK	ACTIVE INGREDIENT	MAIN INDICATION	TOTAL COST
13.	Biphasic Isophane Insulin	Diabetes	\$200,428.44
14.	Metformin	Diabetes	\$199,581.14
15.	Budesonide/Formoterol	Asthma	\$194,770.82
16.	Candesartan/HCTZ	Hypertension	\$187,523.99
17.	Fluticasone/Salmeterol	Asthma	\$153,141.77
18.	Candesartan	Hypertension	\$150,865.31
19.	Bisoprolol	Hypertension	\$134,438.52
20.	Fluticasone	Asthma	\$108,085.44
21.	Amlodipine	Hypertension	\$96,612.44
22.	Acarbose	Diabetes	\$96,312.84
23.	Brimonidine/Timolol	Glaucoma	\$78,815.27
24.	Carbamazepine	Anticonvulsant	\$77,711.29
25.	Atorvastatin	Cholesterol	\$60,431.42
TOTAL:			\$8,542,626.22

Table 12 shows the Top 25 drugs, by expenditure, reimbursed by BDS to the private participating pharmacies. These drugs represent 98.54% of the total expenditure paid to the private participating pharmacies for 2015-16 fiscal year and they are all from the benefit categories, with the exception of atorvastatin, for the treatment of cholesterol, which falls at position 25.

4.4 ACTIVITY 4: THE BDS PHARMACY SERVICE

4.4.1 BDS Public Sector Pharmacy Service

The BDS pharmacy service is comprised of 14 pharmacies in 9 polyclinics, 3 out-patient clinics and 2 district hospitals. These pharmacies are strategically located across the island to ensure easy access by all patients.

Table 13: Analysis of Public Sector Prescriptions by Age for 2015-16

Age Category	Patients*	Prescription Volume*	Expenditure*	Avg. Cost/ Prescription	Average Cost /Patient/year
65 years & Over	15,776	527,464	\$4,533,352	\$8.59	\$287.36
Under 16 years	12,542	55,786	\$327,331	\$5.87	\$26.10
16-64 years	37,075	475,936	\$4,181,318	\$8.79	\$112.78
TOTAL	69,211	1,120,971	\$11,662,572	\$910.40	\$168.51

* The difference (3,818 patients, 61,785 prescriptions and \$2,620,571) represents those patients for whom there is no recorded date of birth e.g., patients in the District Hospitals, children under 6 weeks old and non-nationals for whom system-generated temporary registrations are created.

Table 14: Analysis of Age Categories in Public Sector Patients

Age Category	Percentage of Patients	Percentage of Prescriptions	Percentage of Total Cost
65 years and over	23%	47%	39%

16-64 years*	54%	43%	36%
Under 16 years	18%	5%	3%

As can be seen in **Tables 13 and 14** the largest expenditure within the public sector for fiscal year 2015-16 is in the over 65 year group at 39%, followed closely by the 16-64 year group at 36%. However, the majority of patients (54%) are within the 16-64 age group, compared to 23% in the 65 years and over group. The under 16 years group represents only 18% of the patients seen in the public sector.

Table 15: Prescription Activity by Benefit Category in Public Sector

Disease Category	Patient count	Rx count	Cost	Cost/ Prescription	Cost per patient
Cancer	522	4,965	495,610.79	99.82	949.45
Diabetes	12,409	167,492	2,357,608.32	14.08	189.99
Hypertension	24,305	352,491	3,201,551.71	9.08	131.72
Glaucoma	1,783	14,872	289,632.23	19.48	162.44
Asthma	8,701	37,412	576,982.41	15.42	66.31
Epilepsy	2,501	19,084	444,206.16	23.28	177.61

Tables 15 and 16 show that hypertension has the greatest patient count, prescription count and expenditure in the benefit categories. These represent 35.1%, 31.5% and 30.9% of the totals respectively. Despite the fact that it has the largest numbers, the cost per prescription for hypertension is the lowest at \$9.08, compared to \$14.08 for diabetes. The highest medication cost per patient is that used in the treatment of cancer at \$99.82 per prescription. This is due to the high unit costs for these anti-neoplastic medicines.

Table 16: Benefit Categories as a Percentage of Total Expenditure

	Percentage by Patient Count	Percentage of Prescriptions	Percentage of Total Cost
Cancer	0.8%	0.4%	4.8%
Diabetes	17.9%	14.9%	22.8%
Hypertension	35.1%	31.5%	30.9%
Glaucoma	2.6%	1.3%	2.8%
Asthma	12.6%	3.3%	5.6%
Epilepsy	3.6%	1.7%	4.3%

Table 17: Prescription Count at BDS Pharmacies in 2015-16

PHARMACY NAME	PRESCRIPTION COUNT	COST OF DRUGS DISPENSED (\$)
1. Branford Taitt Polyclinic	127,843	\$1,161,098.98
2. David Thompson Health & Social Services Complex	42,051	\$381,046.12
3. Edgar Cochrane Polyclinic	84,645	\$750,015.23
4. Eunice Gibson Polyclinic	94,568	\$986,541.24
5. Geriatric Hospital	31,204	\$265,387.28
6. Glebe Polyclinic	101,637	\$1,005,463.56
7. Maurice Byer Polyclinic	122,822	\$1,228,169.49
8. Randal Phillips Polyclinic	140,525	\$1,336,361.59
9. St. Andrew Out-Patient Clinic	11,250	\$104,730.83

PHARMACY NAME	PRESCRIPTION COUNT	COST OF DRUGS DISPENSED (\$)
10. St. Joseph Out-Patient Clinic	10,327	\$100,733.69
11. St. Philip District Hospital	10,974	\$95,807.34
12. St. Philip Polyclinic	115,906	\$1,039,042.65
13. St. Thomas Out-Patient Clinic	11,020	\$108,278.70
14. Winston Scott Polyclinic	173,523	\$1,609,353.14
15. Psychiatric Hospital	42,676	\$1,490,542.15
TOTAL	<u>1,120,971</u>	<u>\$11,662,572.00</u>

Of the twelve BDS pharmacies which provide pharmaceutical service to the general public, Winston Scott Polyclinic Pharmacy had the highest prescription volume and drug expenditure followed by Randal Phillips, Branford Taitt and Maurice Byer polyclinic pharmacies, in declining order. These drug expenditures were all in excess of \$1 million for the 2015-16 financial year. These four pharmacies all offer extended-hour service ranging from 6:30 p.m. at Branford Taitt, 8:30 p.m. at Maurice Byer and Randal Phillips and 10:00 p.m. at Winston Scott Polyclinic. The pharmacies at the St. Andrew and St. Thomas Out-Patient clinics which provide 2-day & 3-day service respectively have the lowest ranking as detailed in **Table 17**. The pharmacies at the Geriatric and St. Philip District Hospitals cater to in-patient and staff prescriptions only.

It should be noted that the cost of drugs for the Psychiatric Hospital is included here because their budget for pharmaceuticals remains under the BDS' item 210 - Supplies & Material even though BDS does not have administrative responsibility for that pharmacy. The cost of drugs dispensed at the Psychiatric Hospital pharmacy is over \$1 million annually with the prescription count under 43,000. This compares to the prescription volume at the David Thompson Health & Social Services Complex but with an expenditure of about \$1 million less. This anomaly can be attributed to one of two main factors, either (i) the majority of the medication distributed from the pharmacy is bulk stock to the nurses who in turn dispense it in the community patients and without the level of accountability of stock as would be used in the dispensing pharmacy module; and (ii) many of the newer anti-psychotic preparations are costlier than other formulary preparations listed in the Barbados National Drug Formulary. **Table 18** bears out this position whereby anti-psychotic drugs occupy 4 of the top 25 places with a total cost of approximately \$850,300 even though it is not one of the benefit categories.

Collection of Revenue and Overall Expenditure

The revenue outlined in **Table 18** is collected at the 12 BDS public pharmacies as explained above.

Table 18: Revenue Collected vs. Cost of drugs dispensed by Pharmacy

Pharmacy	Revenue Collected 2015-16 (\$)	Cost of Drugs Dispensed (\$)	% Revenue Collected vs. Total Cost of Drugs Dispensed
Branford Taitt Polyclinic	18,740	\$1,161,098.98	1.80%

Pharmacy	Revenue Collected 2015-16 (\$)	Cost of Drugs Dispensed (\$)	% Revenue Collected vs. Total Cost of Drugs Dispensed
David Thompson Health & Social Services Complex	6,993	\$381,046.12	2.10%
Edgar Cochrane Polyclinic	9,315	\$750,015.23	1.40%
Eunice Gibson Polyclinic	11,073	\$986,541.24	1.30%
Geriatric Hospital	0	\$265,387.28	0.00%
Glebe Polyclinic	17,250	\$1,005,463.56	1.90%
Maurice Byer Polyclinic	22,632	\$1,228,169.49	2.10%
Randal Phillips Polyclinic	23,926	\$1,336,361.59	2.00%
St. Andrew Out-Patient Clinic	857	\$104,730.83	0.90%
St. Joseph Out-Patient Clinic	2,058	\$100,733.69	2.30%
St. Philip District Hospital	0	\$95,807.34	0.00%
St. Philip Polyclinic	19,053	\$1,039,042.65	2.10%
St. Thomas Out-Patient Clinic	811	\$108,278.70	0.80%
Winston Scott Polyclinic	25,152	\$1,609,353.14	1.80%
Psychiatric Hospital	0	\$1,490,542.15	0.00%
TOTAL	157,861	\$11,662,572.00	

The monies collected are primarily from non-beneficiaries i.e. persons who are not citizens or permanent residents. Other categories of persons, who are required to pay for medication, include the following:

- Persons without a National Registration Number
- Persons whose prescriptions originate in the private sector but are not beneficiaries i.e. patients 16-64 whose prescriptions are for medication other than those for the treatment of asthma, cancer, diabetes, epilepsy, glaucoma or hypertension.
- Persons with prescriptions, originating from the public sector clinic, for family planning products i.e. oral contraceptives and intra-uterine devices.
- Persons who require medication outside of the BDS protocols i.e. for quantities greater than the BDS monthly maximum allowable quantities or combinations of medication not allowed by BDS.

The pricing formula for medication in the public sector is the same fixed cost + mark-up as in the private sector (**Table 10**).

Table 19 shows that 1,120,971 prescriptions were dispensed in 2015-16 at a cost of \$11,662,572. This represented a 6.3% decrease in expenditure and a 6.4% decrease in prescription volume over the previous year. The average cost per prescription over this ten year period was \$13.41.

Table 19: BDS Pharmacies' Percentage changes in Prescription

Year	Prescription Count	% change	Cost of Drugs Dispensed (\$)	% change	\$/Rx
2006-07	659,750	-6%	\$11,403,711	28%	\$17.28
2007-08	662,677	0.4%	10,439,220	-8.5%	15.75
2008-09	731,639	10.4%	12,932,110	23.9%	17.68
2009-10	778,267	6.4%	12,150,516	-6.0%	15.61
2010-11	814,400	4.6%	12,451,937	2.5%	15.29
2011-12	1,083,082	33.0%	11,765,288	-5.5%	10.86
2012-13	1,206,351	11.4%	13,481,501	14.6%	11.18
2013-14	1,244,739	3.2%	11,998,305	-11.0%	9.64
2014-15	1,198,187	-3.7%	12,444,809	3.7%	10.39
2015-16	1,120,971	-6.4%	11,662,572	6.3%	10.40

Table 20: Top 25 Drugs Dispensed (by Expenditure) in the Public Sector in 2015-16

Rank	Active Ingredient	Main Indication	TOTAL COST
1.	Blood Glucose Strips	Diabetes	1,082,949.13
2.	Valsartan	Hypertension	1,056,606.96
3.	Gliclazide	Diabetes	723,851.86
4.	Cyproterone	Prostate Cancer	489,460.89
5.	Biphasic Isophane Insulin	Diabetes	409,850.92
6.	Quetiapine	Antipsychotic	395,888.49
7.	Telmisartan	Hypertension	311,150.40
8.	Indapamide	Hypertension	302,930.22
9.	Valsartan/HCTZ	Hypertension	261,285.48
10.	Telmisartan/HCTZ	Hypertension	236,440.62
11.	Metformin	Diabetes	223,730.70
12.	Budesonide/Formoterol	Asthma	219,310.30
13.	Risperidone	Antipsychotic	165,289.56
14.	Fluticasone/Salmeterol	Asthma	144,703.60
15.	Flupenthixol	Antipsychotic	144,604.01
16.	Fluphenazine	Antipsychotic	144,514.09
17.	Atorvastatin	Cholesterol	135,370.73
18.	Bisoprolol	Hypertension	131,938.84
19.	Acarbose	Diabetes	127,920.37
20.	Phenytoin	Seizures	113,505.21
21.	Amlodipine	Hypertension	108,957.25
22.	Carbamazepine	Anticonvulsant	106,608.46
23.	Salbutamol CFC Free	Asthma	92,115.06
24.	Latanoprost	Glaucoma	84,008.76
25.	Brimonidine	Glaucoma	73,682.32

Table 21: Categorisation of Top 25 drugs Dispensed in the Public

Therapeutic Category	Cost	Percentage
Diabetes	2,568,302.98	35.2%
Hypertension	2,409,309.77	33.1%
Prostate Cancer	489,460.89	6.7%
Antipsychotic	963,801.36	13.2%
Asthma	456,128.96	6.3%
Cholesterol	135,370.73	1.9%
Anticonvulsant	106,608.46	1.5%
Glaucoma	157,691.08	2.2%

As reflected in **Tables 20 and 21**, the top 25 drugs dispensed in the public sector represent 62.5% of the total expenditure on drugs purchased in the public sector. Of those 25 drugs, 35.2% were for the treatment of diabetes, 33.1% for the treatment of hypertension, and 13.2% were for the treatment of psychiatric illnesses. This differs from that seen in the private sector, where hypertension and diabetes ranked at positions 1 and 2 respectively in terms of expenditure. However, when the top ten therapeutic categories were compared by expenditure in the public sector (**Table 22**), hypertension topped the list followed by diabetes, and thirdly antipsychotics.

Table 22: Top Ten Therapeutic Categories (by Expenditure) in the Public Sector in 2015-16 Fiscal Year

Therapeutic Description	Prescription Count	COST (\$)
Hypertension	277,617	2,614,617
Diabetes Mellitus	185,770	2,769,648
Antipsychotics	15,978	947,277
Antineoplastics	4,971	496,389
Respiratory Agents	37,094	573,977
Anticonvulsants	17,789	5,979,144
Lipid Lowering	70,354	166,267
Antiglaucoma Agents Miscellaneous - Glaucoma	12,298	234,945
Antiallergic EENT	12,949	171,422
Analgesic Agents	58,111	91,391

4.4.2

Public versus Private Sector Usage

The performance of the BDS dispensing service as shown at **Table 23** was relatively constant from the 2011-12 period to coincide with the post-restructuring phase. Overall, in the last five years, public sector expenditure averaged at approximately \$12 million or \$1 million per month whilst the private sector averaged at \$10 million over the post-restructuring period. This can be compared with the last ten year cycle where public expenditure averaged at the same \$12M and private at \$23M. This change as seen in the public versus the private sector can be attributed to the exodus of prescriptions from the private to the public sector and without the additional dispensing fee which no longer is borne by the BDS but by the patients. Also during this period the beneficiaries accessing the Special Benefit Service was limited to citizens and permanent residents only.

Table 23: Total Number of Prescriptions filled and Their Expenditure in the Public

and Private Sectors for Ten Fiscal Years 2006-16

Year	Public Sector			Private Sector			% Difference in Rx Cost (private vs. public)
	Prescription (Rx) ^(a)	Expenditure (\$)	Cost/Rx	Rx's	Expenditure (\$)	Cost/Rx	
2006-07	659,750	11,403,711	\$17.28	1,846,882	31,587,931	\$17.10	-1%
2007-08	662,677	10,439,220	\$15.75	2,055,016*	36,535,775	\$17.78	11.42%
2008-09	731,639	12,932,110	\$17.68	N/A	36,633,590	N/A	N/A
2009-10	778,267	12,150,516	\$15.61	N/A	40,561,950	N/A	N/A
2010-11	814,400	12,451,937	\$15.29	N/A	34,574,833	N/A	N/A
2011-12	1,083,082	11,765,288	\$10.86	887,249	10,787,176	\$12.20	10.98%
2012-13	1,206,351	13,481,501	\$11.18	864,335	10,639,956	\$12.31	9.18%
2013-14	1,244,739	11,998,305	\$9.64	828,328	10,643,775	\$12.85	24.98%
2014-15	1,198,187	12,444,809	\$13.64	841,063	10,619,933	\$12.71	-7.32%
2015-16	1,120,971	11,662,572	\$10.40	827,374	8,669,153	\$10.48	0.76%

* Estimated values

4.5 ACTIVITY 5: THE DRUG INSPECTORATE
4.5.1 Quality Assurance

The Barbados Drug Service is the National Regulatory Authority that performs several functions under the Drug Inspectorate. In regard to the Good Regulatory Practices the Drug Inspectorate addressed the following aspects: (i) sustainability of resources; (ii) cooperation with all stakeholders; (iii) transparency and accountability of the decision making process; (iv) competency in evaluation of drug quality, safety and efficacy; and (v) independency amidst a climate of harmonization and mutual recognition of regional partners. Great strides have been made in achieving regional harmonization through the Caribbean Regulatory System (CRS) operating under the umbrella Caribbean Regional Public Health Agency (CARPHA).

Continuous efforts were made to ensure that drugs imported and sold in Barbados were manufactured in accordance with the United States Pharmacopoeia and the British Pharmacopoeia standards. However, with the embryonic establishment of the CARPHA through the merge of the Caribbean Regional Drug Testing Laboratory and four other individual agencies in the region, the analytical activities have been riddled with challenges and delays. During the period under review it was difficult to receive analytical results on the samples submitted for testing and no drug samples were therefore sent to CARPHA.

4.5.2 Therapeutic Substances

In accordance with the Therapeutic Substances Act 1949, there were 707 licenses issued in 2015-16 to local pharmaceutical companies to allow them to import antibiotics and sulphonamides into the country. This represented a 3 percent decrease over the previous year (See **Table 24**).

Table 24: Therapeutic Substances Permits Issued for 2009-15 Fiscal Years

Year	Permits Issued
2009-10	465
2010-11	652
2011-12	523
2012-13	771
2013-14	633
2014-15	727

Year	Permits Issued
2015-16	707

4.5.3 Importation and Exportation of Narcotic Drugs

Import and export Authorisations and Certificates were issued for the importation and exportation of narcotic and controlled substances, which fell under the purview of the 1961 Convention on Narcotic Drugs. **Table 25** gives the quantities of narcotics that were imported and exported during fiscal year 2015-16 with pethidine showing the largest import and export followed by morphine.

Table 25: Import and Export Permits Issued for Narcotic Drugs for 2015-16

Narcotic	Quantities	
	Import (gm.)	Export(gm.)
Pethidine	7311.47	2483.00
Morphine	1293.98	2202.00
Codeine	938.00	53.875
Fentanyl	6.876	0.00
Methadone	0.00	0.00
Cocaine	0.00	0.00

4.5.4 Psychotropic Substances

With regards to the 1971 Convention on Psychotropic Substances, during fiscal year 2015-16, **Table 26** gives the comparative quantities imported and exported for these Schedule II, III and IV Psychotropic Substances.

Table 26: Schedules II, III, and IV Psychotropic Drugs Imported and Exported during Fiscal Year 2015-16

Psychotropic Substances	Schedule	Amount Imported (gms.)	Amount exported (gms.)
Methylphenidate	II	1172.65	1194.60
Clobazam	IV	870.00	7.00
Diazepam	IV	2407.50	15.60
Clonazepam	IV	375.00	118.50
Midazolam	IV	552.20	116.00
Bromazepam	IV	31.50	0.00
Phenobarbital	IV	2653.10	5904.50
Nitrazepam	IV	0.00	0.00
Zolpidem	IV	252.00	21.50
Alprazolam	IV	331.10	12.60
Pentobarbital	III	6654.00	0.00
Chlordiazepoxide	IV	111.30	15.20
Lorazepam	IV	1337.00	211.20
Dexamphetamine	II	0.00	0.00

4.5.5 Precursor Chemicals

In accordance with the International Narcotic and Control Board (INCB) permits were issued for the importation of 200.3gm of **ephedrine** and 400.5gm. of **pseudoephedrine** during the 2015-16 fiscal year. It must be noted that there was a 672% increase in the reported importation of pseudoephedrine since it became mandatory by the INCB during the year under review for all products, including cough syrups, to be reported.

4.6 ACTIVITY 6: DRUG INFORMATION SERVICE *Nature and Scope:*

4.6.1

Public Education Programmes

The Barbados Drug Service Public Lecture Series consists of four annual lectures designed to raise awareness of public health issues and introduce our audience to emerging ideas from leading experts in the areas of public health practice, scientific investigation, family and child health, and behavioral health. **Table 27** list the lectures hosted during the 2015-16 fiscal year. These lectures empowered the public to achieve excellence in their medication regimen and overall health care.

Table 27: Public Lectures Held During Fiscal Year 2015-16

Date	Topic	Speaker
April 14, 2015	The Prevention and Treatment of Sports Injuries	Dr. Rene Best
July 28, 2015	The Management of Pancreatic Cancer in Barbados	Mr. Selwyn Ferdinand
October 27, 2015	The Management of Glaucoma in Barbados	Dr. Grosvenor
March 15, 2016	Is Men's Health in Crisis? – Exploring Causes and Solutions	Panel: Mr. Anderson Kellman, Psychologist Dr. Omar Edwards, MOH Rev. Solomon Odoom Mr. Saul Leacock, Counsellor Mr. Wayne Greaves, President of Winston Scott Polyclinic's Men's Health Group

4.7

ACTIVITY 7: PHARMACOVIGILANCE

Nature and Scope:

4.7.1

Drug Monitoring

The World Health Organisation (WHO) established its Programme for International Drug Monitoring in response to the thalidomide disaster detected in 1961. Together with the WHO Collaborating Centre for International Drug Monitoring, Uppsala, WHO promotes pharmacovigilance (PV) at the country level. At the end of 2010, 134 countries were part of the WHO PV Programme. PV monitoring was established at the Barbados Drug Service in 2011 with an aim to enhance patient care and patient safety in relation to the use of medicines; and to support public health programmes by providing reliable, balanced information for the effective assessment of the risk-benefit profile of medicines. This aim is achieved through the detection, assessment, understanding and prevention of adverse effects or any other drug-related problem.

During the 2015-16 fiscal year, a total of 124 PV reports were submitted (see Table 28), 59% relating to female patients, 25% male and the additional 14% of unknown gender.

Table 28: Statistics showing persons who report ADRs

Persons Submitting Reports	# of Reports Submitted
Patients	17
Doctors-Polyclinics	68
Doctors-Private	0
Queen Elizabeth Hospital	0
Pharmacists-Polyclinics	27
Others	12
Total	124

Table 28 above shows the type of persons that report adverse drug reactions (ADRs), while Figure 1 below shows that almost 60% of ADRs

are reported by females while less than 30% are reported by men. There were 14% of reporters that their gender was not reported.

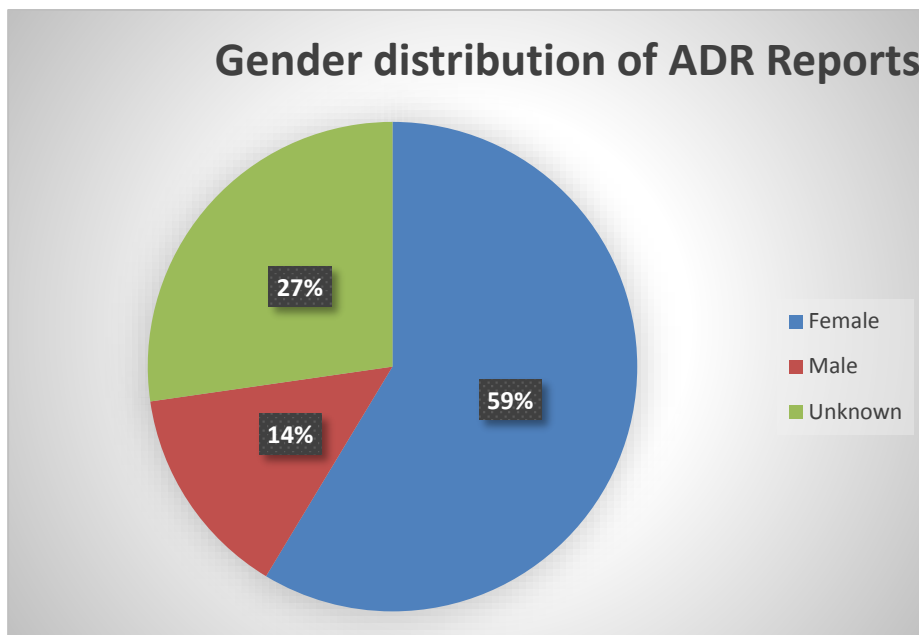


Figure 1: Gender Distribution of ADR Reports

Figure 2 below shows that the top 20 reported substances in Barbados which mirrors the international reports in the WHO global database. Examples of the top global reported drugs include acetylsalicylic acid, omeprazole, paracetamol, atorvastatin, metformin, amlodipine, and diphtheria/pertussis vaccine.

Top 23 Reported ADRs in Barbados

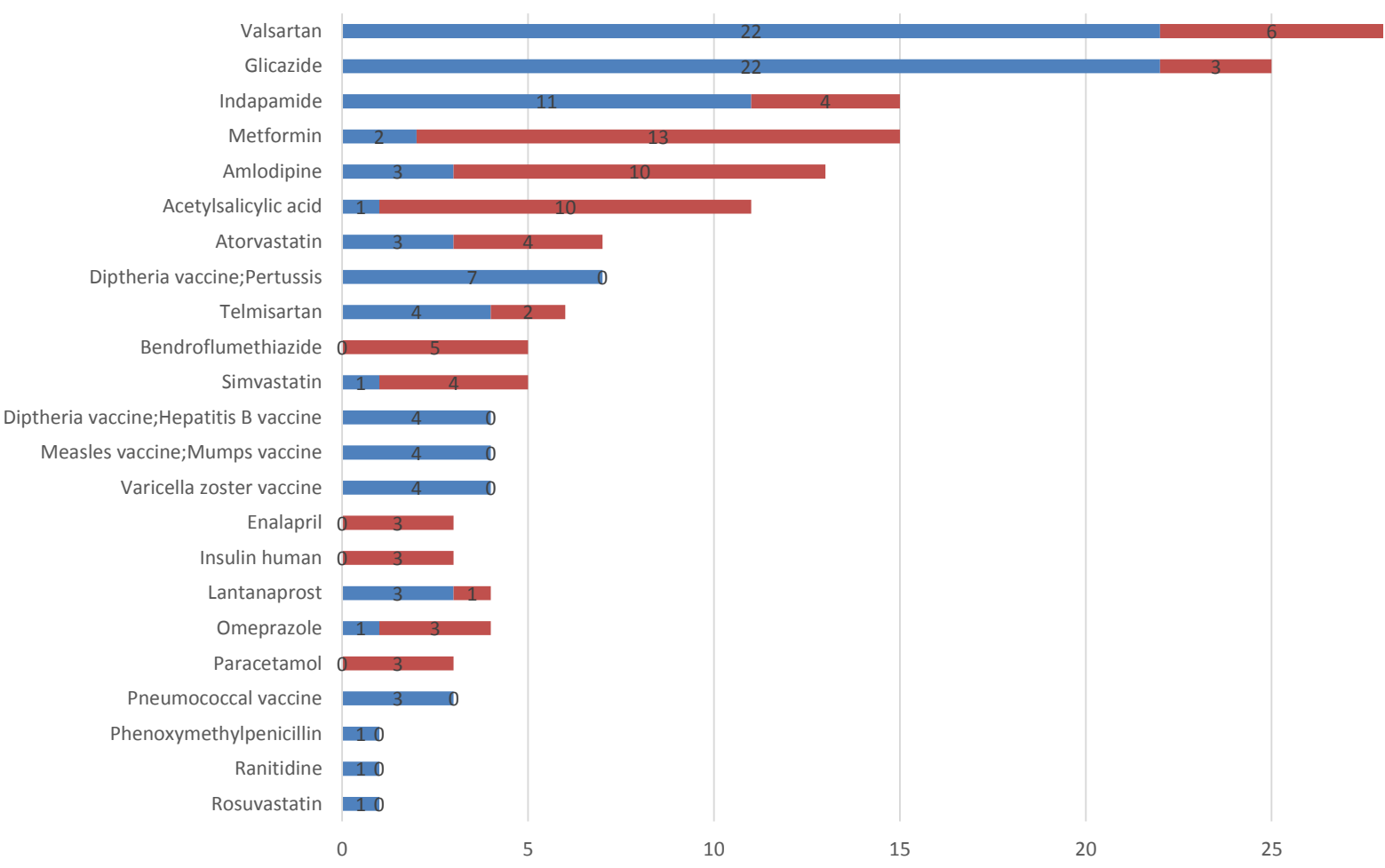
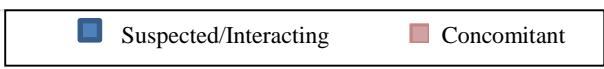


Figure 2: Top 23 reported ADRs in Barbados



5.0 Resource Management

The BDS drug expenditure in the both the Public and in the Private Sectors for the 2015-16 fiscal year are presented at Appendix A (financial statement) and Appendix B (Statistics showing drug expenditure and prescription volume between 1982/83 and 2015/16 financial years).

Table 29: Health Expenditure on the BDS Dispensing Service Over

Year	Estimated End of Calendar Year Population*	Total Health Expenditure*	Health Expenditure on BDS Dispensing Service		
			Amount (public and Private) (\$)	% of Total Health Expenditure	Per Capita (\$)
2006-07	273,952	350,674,341	42,991,642	12.3%	156.93
2007-08	274,688	372,853,380	46,974,994	12.6%	171.01
2008-09	275,171	381,057,823	49,565,700	13.0%	180.13
2009-10	275,848	384,096,541	52,712,466	13.7%	191.09
2010-11	276,507	355,847,415	47,026,770	13.2%	170.07
2011-12	276,781	366,985,247	22,552,464	6.1%	81.48
2012-13	277,674	347,705,764	24,118,457	6.9%	86.86
2013-14	277,515	342,381,895	22,642,080	6.6%	81.59
2014-15	274,344	337,392,974	23,134,910	6.9%	84.33
2015-16	276,633	334,849,180	20,331,725	6.1%	73.50

* Provided from Draft Estimates

** Provided from Barbados Statistical Services

The BDS has performed creditably as it relates to the provision and accessibility of pharmaceutical service. The BDS' model of free pharmaceuticals at point of service has resulted in continued indicators of well-being, which include a high average life expectancy at birth, good maternal and child health survival rates, declining prevalence of infectious diseases and access to essential medicines as is reported in the 2014 Economic and Social Report.

Though there was a marginal increase in the BDS expenditure as a percentage of the total health expenditure in 2015-16, due to the overall costs increase of pharmaceuticals on the global market, the BDS still maintained its expenditure at 7.76 percent that of the total health care (**Table 29**), which is still below the 10% benchmark. This represented a per capita public expenditure on pharmaceutical services of \$93.92. This success can be attributed to its overall stewardship in maintaining the restructuring strategic measures which were implemented in the 2010-11 fiscal year.

Table 30: BDS Revised Estimates and Actual Expenditure for Fiscal Year

Budget Heads	Revised Estimates (\$)	Actual Expenditure (\$)	Revised Estimates (\$)	Actual Expenditure (\$)	% Change in Actual Expenditure in 2015-16 vs. 2014-15
	2014-15		2015-16		
Total Personal Emoluments	5,234,377	5,103,074	5,002,161	5,129,712	0.5%
Total Goods and Services	22,743,680	22,634,088	21,215,330	20,850,349	-7.9%
Total Capital	26,000	9,956	32,500	25,609	157.2%
Total Expenditure	28,004,057	27,747,118	26,249,991	26,005,670	-6.3%

The BDS was successful in reducing its total expenditure in 2015-16 fiscal year

compared to 2014-15 (Table 30).

6.0 Evolving Solutions in 2015-16 Fiscal Year

6.0.1 Wide Area Network and Health Information System

Work continued on developing the software to facilitate the networking of all government pharmacies onto the Ministry of Health network. During the year under review, the pharmacy at the Psychiatric Hospital was added to the Ministry of Health's Wide Area Network:

6.0.2 Electronic Single Window (ESW)

The BDS after being introduced to the ESW concept as a means to lower operating costs, stimulate innovation, promote research and development, encourage training, and facilitate market penetration and economy-wide competitiveness and growth.

The main benefit to the BDS was to improve all interconnected businesses, suppliers, service providers and associated institutions in the form of a cluster model.

Unfortunately, however, the BDS was unable to use the software for purposes of importing pharmaceuticals. This was due to a lack of funding to achieve a seamless and smooth implementation of the ESW.

6.0.3 Audits

Monthly and annual audits were carried out on 96 private participating pharmacies and three separate audits on one public pharmacy. Reports of these audits highlighted some anomalies and the necessary remedial action was implemented.

6.0.4 Duty Free Module

The electronic processing of Duty Free Certificates (DFC) submitted by local agents for all pharmaceuticals awarded contracts with the BDS during the year under review continues to operate efficiently. This software application allows the BDS to (i) process only eligible Duty Free Certificates; (ii) improve the overall monitoring of the contracted drugs on island, and (iii) reduce the processing time when compared to a manual system.

Appendix A - Financial Statement 2015-16

Receipts and Payments Account for Period April 1, 2015 to March 31, 2016 with comparative figures for 2014-15

<u>Receipts</u>	2015-16	2014-15
	\$	\$
Accountant General*	26,249,991	28,004,057
Recertification of Private Pharmacies	11,338	7,700
District Pharmacies (Sale of Pharmaceuticals)	410,604	245,173
Total	26,671,933	28,256,930

<u>Payments</u>	\$	\$
Total Personal Emoluments	5, 129,712	5,103,074
Travelling	62,385	57,950
Utilities	9,251	17,142
Rental of Property	22,746	27,612
Library	8,923	8,604
Supplies & Materials	12,011,713	12,278,532
Maintenance of Property	24,491	25,763
Operating Expenses	8,710,840	10,218,484
Machinery and Equipment	25,609	-
Furniture and Fixtures	-	9,956
Professional Services	-	-
Savings	666,263	509,813
Total	26,671,933	28,256,930

***Accountant General**

Personal Emoluments	\$5,002,161	5,234,377
Other	\$21,215,330	22,743,680
Capital	\$32,500	26,000
Total	\$26,249,991	28,004,057

Appendix B - Drug Service Expenditure and Prescription Volume

DRUG SERVICE EXPENDITURE AND PRESCRIPTION VOLUME											
YEAR	PUBLIC EXPENDITURE*	SBS EXPENDITURE**	TOTAL EXPENDITURE ON MEDICINES	PUBLIC PRESCRIPTION (PRESC.)	PUBLIC PRESC. AVG. COST	PUBLIC AVG. MTHLY PRESC.	PRIVATE PRESC.	PRIVATE PRESC. AVG. COST	PRIVATE AVG. MTHLY PRESC.	PUBLIC EXP % age of TOTAL EXP	PRIVATE EXP. % of TOTAL EXP.
1982-83	2,720,368	140,756	2,861,124	0	0	0	21,126	7	1,761	95	
1983-84	4,291,991	207,772	4,499,763	262,287	16	21,857	26,384	8	2,199	95	5
1984-85	5,403,538	341,990	5,745,528	345,613	16	28,801	50,220	7	4,185	94	6
1985-86	7,713,963	435,745	8,149,708	501,416	15	41,785	41,390	11	3,449	95	5
1986-87	7,793,103	1,508,793	9,301,896	660,045	12	55,004	148,082	10	12,340	84	16
1987-88	8,536,816	3,346,816	11,883,632	654,679	13	54,557	300,000	11	25,000	72	28
1988-89	7,605,795	3,627,183	11,232,978	649,629	12	54,136	362,718	10	30,227	68	32
1989-90	9,269,966	4,701,687	13,971,653	859,474	11	71,623	371,327	13	30,944	66	34
1990-91	11,001,320	5,667,514	16,668,834	857,252	13	71,438	449,446	13	37,454	66	34
1991-92	9,308,874	5,896,776	15,205,650	843,450	11	70,288	425,727	14	35,477	61	39
1992-93	9,369,846	6,330,465	15,700,311	840,569	11	70,047	494,681	13	41,223	60	40
1993-94	9,440,576	7,228,270	16,668,846	844,789	11	70,399	555,000	13	46,250	57	43
1994-95	10,283,264	8,307,134	18,590,398	845,219	12	70,435	578,808	14	48,234	55	45

Appendix B Cont'd - Drug Service Expenditure and Prescription Volume

DRUG SERVICE EXPENDITURE AND PRESCRIPTION VOLUME											
YEAR	PUBLIC EXPENDITURE (\$)	SBS EXPENDITURE (\$)	TOTAL EXPENDITURE ON MEDICINES (\$)	PUBLIC PRESCRIPTION (PRESC.)	PUBLIC PRESC. AVG. COST (\$)	PUBLIC AVG. MTHLY PRESC.	PRIVATE PRESC.	PRIVATE PRESC. AVG. COST (\$)	PRIVATE AVG. MTHLY PRESC.	PUBLIC EXP % age of TOTAL EXP	PRIVATE EXP. % of TOTAL EXP.
1995-96	9,612,632	9,979,983	19,592,615	818,927	12	68,244	692,735	14	57,728	49	51
1996-97	10,270,825	11,923,867	22,194,692	446,987	23	37,249	743,765	16	61,980	46	54
1997-98	10,346,838	10,857,428	21,204,266	502,689	21	41,891	803,990	14	66,999	49	51
1998-99	8,763,104	9,273,790	18,036,894	504,632	17	42,053	806,950	11	67,246	49	51
1999-00	12,589,080	13,590,363	26,179,443	527,046	24	43,921	786,738	17	65,562	48	52
2000-01	14,687,363	15,798,637	30,486,000	532,363	28	44,364	833,050	19	69,421	48	52
2001-02	15,439,374	17,360,242	32,799,616	476,955	32	39,746	921,110	19	76,759	47	53
2002-03	15,966,640	20,259,106	36,225,746	519,438	31	43,287	955,000	21	79,583	44	56
2003-04	8,323,481	21,851,776	30,175,257	637,851	13	53,154	990,943	22	82,579	28	72
2004-05	8,262,528	23,115,488	31,378,016	687,578	12	57,298	1,113,093	21	92,758	26	74
2005-06	8,930,806	30,540,237	39,471,043	700,604	13	58,384	1,331,537	23	110,961	23	77
2006-07	11,403,711	31,587,931	42,991,642	659,750	17	54,979	1,846,882	17	153,907	27	73
2007-08	10,439,220	36,535,775	46,974,994	662,677	16	55,223	2,055,016	18	171,251	22	78

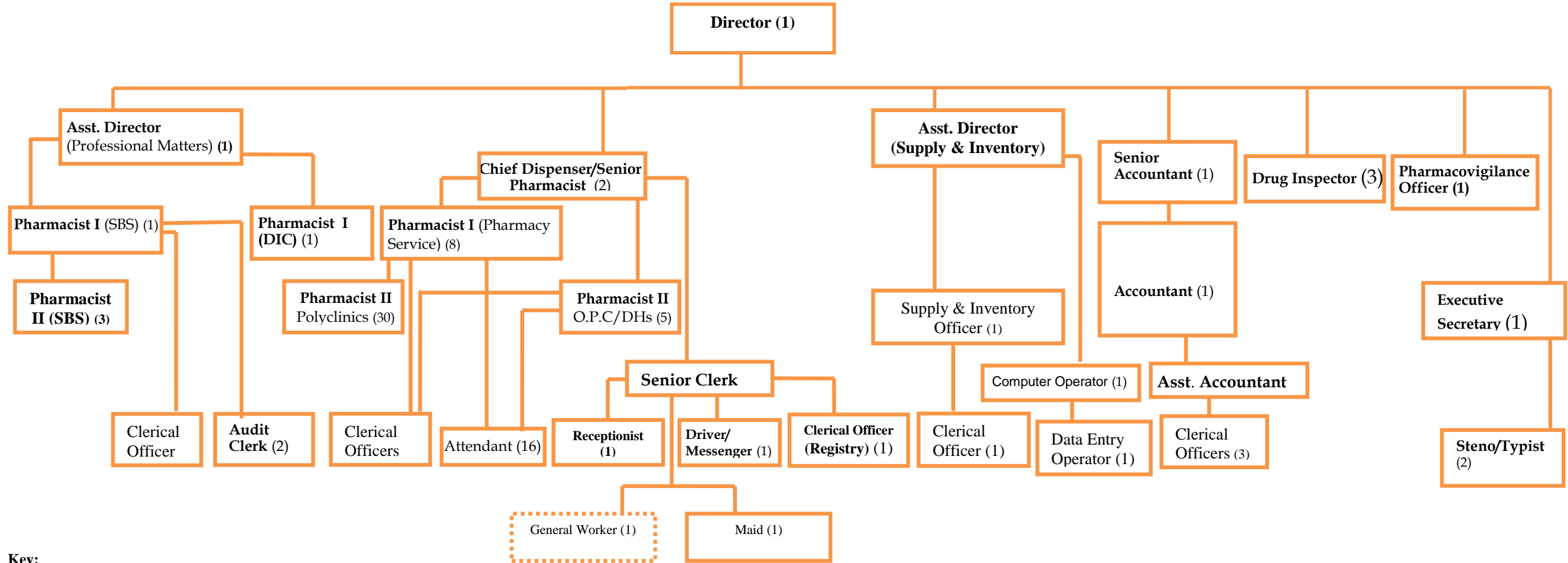
Appendix B Cont'd - Drug Service Expenditure and Prescription Volume

DRUG SERVICE EXPENDITURE AND PRESCRIPTION VOLUME											
YEAR	PUBLIC EXPENDITURE (\$)	SBS EXPENDITURE (\$)	TOTAL EXPENDITURE ON MEDICINES (\$)	PUBLIC PRESCRIPTION (PRESC.)	PUBLIC PRESC. AVG. COST	PUBLIC AVG. MTHLY PRESC.	PRIVATE PRESC.	PRIVATE PRESC. AVG. COST	PRIVATE AVG. MTHLY PRESC.	PUBLIC EXP % age of TOTAL EXP	PRIVATE EXP. % of TOTAL EXP.
2008-09	12,932,110	36,633,590	49,565,700	731,639	18	60,970	N/A	N/A	0	26	74
2009-10	12,150,516	40,561,950	52,712,466	778,267	16	64,856	N/A	N/A	0	23	77
2010-11	12,451,937	34,574,833	47,026,770	814,400	15	67,867	N/A	N/A	0	26	74
2011-12	11,765,288	10,787,176	22,552,464	1,082,101	11	90,175	879,104	12	73,937	52	48
2012-13	13,481,501	10,636,956	24,118,457	1,206,351	11	100,529	864,335	12	71,637	56	44
2013-14	11,998,305	10,643,775	22,642,080	1,244,739	10	103,728	828,328	13	69,027	53	47
2014-15	12,444,809	10,690,101	23,134,910	1,287,986	9	107,332	841,063	13	69,901	53	47
2015-16	11,662,572	8,669,153	20,331,725	1,120,971	10	93,414	827,374	10	68,948	57%	43%
Total	345,356,782	464,338,416	809,695,197	24,108,373	14.32518	2,009,031	21,945,922	21.15830066	1,828,827	43%	57%

* Cost of drug purchases

**Cost of drugs dispensed

Appendix C - Barbados Drug Service - Organisation Chart (2015-16)



Key:
 DHs – District Hospitals
 DIC – Drug Information Centre
 O.P.C - Out-Patient Clinics
 SBS – Special Benefit Service

Established Post: Director (1); Assistant Director (2); Chief Dispenser/Senior Pharmacist (1); Drug Inspector (3); Executive Secretary (1); Pharmacist I (3); Pharmacist II (33); Supply & Inventory Officer (1); Accountant (1); Assistant Accountant (1); Senior Clerk (1); Clerical Officer (14); Steno/Typist (2); Computer Operator (1); Data Entry Operator (1); Driver/Messenger (1); Maid (1) (Post established in Ministry of Health)
 Temporary Post: Senior Accountant (1); Chief Dispenser/Senior Pharmacist; Pharmacist I (7); Pharmacovigilance Officer (1); Pharmacist II (5); Clerical Officer (1); Audit Clerk (2); Receptionist (1); General Worker (1); Attendant (6)



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