

AUDITOR GENERAL'S DEPARTMENT

PERFORMANCE AUDIT REPORT

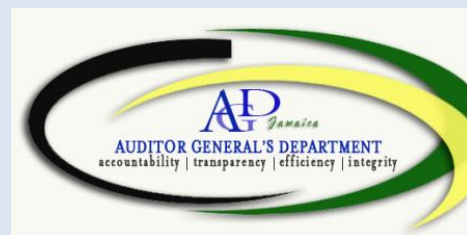
NATIONAL HEALTH FUND

**MANAGEMENT OF THE SUPPLY AND DISTRIBUTION OF PHARMACEUTICALS
AND MEDICAL SUNDRIES**

The Auditor General is appointed by the Governor General and is required by the Constitution, Financial Administration and Audit Act, other sundry acts and letters of engagement, to conduct audits at least once per year of the accounts, financial transactions, operations and financial statements of central government ministries and departments, local government agencies, statutory bodies and government companies.

The Department is headed by the Auditor General, Pamela Monroe Ellis, who submits her reports to the Speaker of the House of Representatives in accordance with Section 122 of the Constitution of Jamaica and Section 29 of the Financial Administration and Audit Act.

This report was prepared by the Auditor General's Department of Jamaica for presentation to the House of Representatives.



Auditor General of Jamaica
Auditor General's Department
40 Knutsford Boulevard
Kingston 5, Jamaica, W.I.
www.auditorgeneral.gov.jm

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The National Health Fund (NHF) was established in 2003 to reduce the financial burden of healthcare on the Jamaican population. The mandate of the Fund accords with the National Development Plan Vision 2030, which identifies National Outcome #1 - *Healthy and Stable Population*, as a priority for the achievement of National Goal # 1: *Jamaicans are empowered to achieve their fullest potential*.

The performance audit covered the period FY2011/12 to FY2015/16 and incorporated FY2016/17 information. It sought to determine whether the NHF's Pharmaceutical Division was effectively managing its supply and distribution of pharmaceuticals and sundries in a manner that supports the needs of the public health care system. In this regard, the audit focussed on the management of inventory and the distribution of pharmaceuticals and sundries. The audit found that the Pharmaceutical Division failed to attain its service level targets related to the supply of critical drugs and the treatment of chronic illnesses and supplied only an average 65.2 per cent of orders to public healthcare facilities. NHF's inability to satisfy demand arose in a context where the Pharmaceutical Division experienced shortfalls in inventory due to a number of factors, including stock-outs due in part to credit holds, global shortages and timing factors related to customs clearance. As indicated in our earlier financial statements analysis, NHF experienced a high level of trade receivables, which affected its ability to pay suppliers. NHF sought to reduce its receivables through regular dialogue with its main debtor, MOH, and the implementation of a performance-tracking indicator in FY2015/16.

I note that the Pharmaceutical Division recently renovated its main warehouse facilities in an effort to improve its operations. The NHF also indicated plans to implement a new warehouse management system to improve its overall inventory management processes. I anticipate that these developments will enhance NHF's efficiency and effectiveness in delivering on its mandate to support the national healthcare system.

Thanks to the Management and staff of the NHF for the cooperation and assistance given to my staff during the audit.



Pamela Monroe Ellis, FCCA, FCA, CISA
Auditor General

What do stakeholders expect from the NHF?

Patients want assurance that they have access to critical items and medications for chronic illnesses.



Hospitals and Pharmacies want assurance that pharmaceuticals and medical supplies are available to dispense to patients in a timely manner.



Parliament wants assurance that the NHF is providing adequate support to health services that will improve the quality of life and productivity of the population.



Executive Summary

The National Health Fund, established by the National Health Fund Act of 2003, commenced operations on April 1, 2003. The Act was amended in 2011 to allow for a transfer of the assets and liabilities of the Health Corporation Limited (HCL) to the NHF. On April 1, 2011, the NHF assumed responsibility for the procurement, warehousing and distribution of pharmaceuticals and medical sundries, which are undertaken through its Pharmaceutical Division, as well as provide retail services through its Drug Serv pharmacies. Among the objectives of the Division, is to make pharmaceutical and medical supplies accessible and available to government-owned health facilities and, provide patients with greater access to medical treatment and preventative care for specified diseases and specified medical conditions.

The performance audit covered the period FY2011/12 to FY2015/16 and incorporated FY2016/17 information. It sought to determine whether the NHF's Pharmaceutical Division efficiently and effectively managed its supplies and distribution of pharmaceuticals and sundries to support the delivery of quality public health care and fulfil the objectives of the Fund, which accords with Vision 2030 National Development Plan.



Key Audit Question

Does the NHF's management of pharmaceuticals and sundries support the delivery of quality healthcare to the public?

NHF provides valuable services to public health facilities and the general population, particularly to persons with chronic illnesses, through the provision of pharmaceuticals and sundries that are relatively unaffordable from private health service providers. A fully functional inventory management system is therefore critical for ensuring a reliable supply of pharmaceuticals and sundries. However, we found that NHF did not always meet the demand of its customers given inconsistent supplies, which impaired its efforts to support the delivery of quality healthcare, consistent with National Outcome #1 - *Healthy and Stable Population* of the Vision 2030 National Development Plan.

Key Findings

NHF improved its management of spoilage

1. NHF improved in its management of the level of spoilage in its warehouse for pharmaceuticals and sundries. The reduction of spoilage is a critical component for quality control as expired and short shelf-life pharmaceuticals affect the Pharmaceutical Division's ability to guarantee the quality and

usefulness of supplies to the public. NHF reduced the level of spoilage of existing stocks to 0.1 per cent in FY2015/16 from 0.9 per cent in FY2012/13, well within its target of 0.6 per cent of average inventory. As such, the level of spoilage would have been too insignificant to affect the supply of pharmaceuticals and sundries to the public healthcare system. Of note, the reduction in the level of spoilage was achieved through zoning¹ and the First expired - First out (FEFO) methodology for stocking which requires goods with the earliest expiry dates to be sold first. This practice minimizes the risk of replacing outdated or spoilt items for which such expenditure cannot be recovered.

We however found deficiencies in other aspects of the NHF's inventory management process particularly related to the adequacy of stocks, monitoring and coordination of stock levels.

NHF was not consistent with its supply of essential drugs to the public health care system

2. In order to provide a consistent supply of pharmaceuticals and sundries, the NHF needs to have an effective and efficient inventory management system. Core to this requirement is having the stock it needs, when it needs it, and knowing where it is stored, while improving customer service levels. Also critical, is the operation of an effective system to evaluate pharmaceutical needs in healthcare institutions.
 - i. NHF established service level targets for critical items, and for pharmaceuticals used in the treatment of chronic illnesses (Chronic illness items). The service level target is a key performance indicator (KPI) of the Pharmaceutical Division. This indicator measures the proportion of orders from public health facilities that are satisfied during a given period. Although NHF lowered the respective service level targets to 90 per cent in FY2015/16 from 95 per cent in FY2013/14 after meeting with the MOH in June 2014, NHF failed to meet the reduced targets. NHF's service levels for critical items and chronic illnesses remained below target for FY2016/17, at 80 per cent and 84 per cent, respectively. However, this represented a notable improvement, relative to 73 per cent and 75 per cent for the previous year. NHF's failure to meet service level targets over the review period arose from factors such as (a) credit holds by suppliers; (b) timing of customs clearance; (c) global shortages and (d) inaccurate inventory levels.
 - ii. We found that some suppliers withheld orders, as NHF did not make timely payment for purchases 95.8 per cent of the time between FY2013/14 and FY2016/17. For example, there were 56 instances in FY2015/16, where pharmaceuticals and sundries were out of stock due to such delays. NHF reduced the settlement time for invoices to an average 32 days after the due date in FY2016/17, from 57 days in FY2015/16, in line with the performance for FY2013/14. However, NHF's ability to settle obligations with suppliers was still constrained by a build-up in outstanding collections from its sale of pharmaceutical and sundries (trade receivables) to public healthcare facilities. NHF policy provides a maximum credit period of 45 days; however, trade receivables

¹ Zones are designated areas in the warehouse for specific classes of pharmaceuticals and medical supplies.

were outstanding for an average 222 days in FY2016/17 relative to 129 days FY2011/12. Concurrently, the stock of trade receivables was \$4.5 billion at end FY2016/17, an increase of 267.5 per cent relative to FY2011/12, of which 94.0 per cent was due from Ministry of Health (MOH). At end FY2016/17, 67.6 per cent (\$2.9 billion) of trade receivables due from MOH were overdue in excess of 90 days. Of note, NHF wrote off \$2.0 billion of the outstanding trade receivables due from MOH in FY2016/17.

- iii. NHF sought to reduce the level of receivables from MOH through regular dialogue and implementation of a performance-tracking indicator in FY2015/16, but those efforts were largely ineffective. Further, in order to settle balances with suppliers, NHF transferred a total of \$2.4 billion from the Benefits Division between FY2011/12 and FY2016/17. However, given that NHF indicated that the funds of the Benefits Division are earmarked for other purposes, a continual drawdown may not be sustainable if the stock of overdue receivables is not reduced.
- iv. Having adequate supplies and accurate records of pharmaceuticals and sundries in the warehouse enable timely delivery of crucial items to healthcare facilities. We found for example, that in October 2016, 24 items listed as 'out of stock' were awaiting customs clearance. We also found instances of inaccurate inventory levels between FY2013/14 and FY2016/17. From internal audit reports, we compiled 1,987 items for FY2013/14 and found an 87.3 per cent inventory accuracy level, as 252 items in the warehouse varied from inventory records. Of this, 141 items had a lower physical quantity (negative variance). For FY2016/17, of 1,194 items counted, 320 varied from the system balance (183 negative variances), resulting in a 73.2 per cent inventory accuracy². In instances where items in the warehouse were fewer than reflected on the inventory system, this would have affected NHF's ability to meet its targeted service level.
- v. In terms of overall service delivery, NHF only filled an average 65.2 per cent of total quantities of supplies ordered from health facilities during the period FY2011/12 to FY2016/17. For example, we identified 582 incidents of pharmaceuticals and sundries being out of stock for FY2015/16. Of this total, 36 per cent related to General Drugs; 13 per cent - Cardiac Drugs; 13 per cent – Antibiotics; and 11 per cent - Anti-Psychotic Drugs. Consequently, the shortfalls in filling orders implied that patients might not have had important medications when needed and might have increased their out of pocket expenditure to purchase these from private pharmacies.

Recommendations

1. The NHF must apply greater control over its inventory management processes that will assure public health facilities and patients of an adequate and consistent supply of pharmaceuticals and sundries.

² The NHF noted that the variances resulted from: (1) Errors where items posted to the system had incorrect codes (2) Loans Returns, (3) Quantities were received short from the supplier, (4) Includes damaged Items, (5) Items sent on manual order to hospitals.

2. NHF must move with alacrity to secure a permanent solution to the problem of receivables outstanding from the MOH.

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Part One

Introduction

Background

1.1 The NHF was established as a body corporate by the National Health Fund Act, under the Ministry of Health, and commenced operations on April 1, 2003. NHF's mission is 'to reduce the financial burden of healthcare in Jamaica by providing funding and information, selected healthcare benefits, pharmaceuticals and medical supplies to the public sector, through the utilization of efficient and customer friendly systems'.

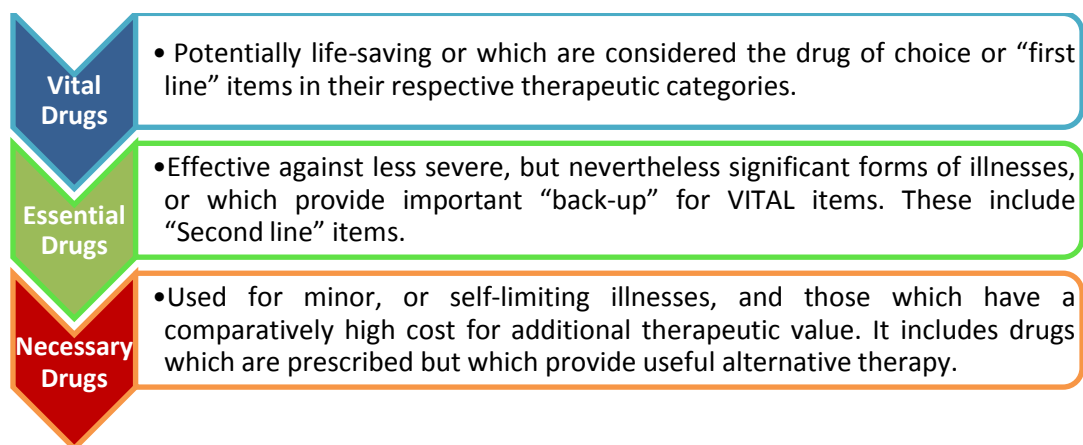
Functions of National Health Fund

1.2 Section 3 of the Act states, the principal objects of this Act are to:

- a) provide prescribed health benefits to all residents, regardless of age, gender, health or economic status;
- b) provide greater access to medical treatment and preventative care for specified diseases and specified medical conditions;
- c) make pharmaceutical and medical supplies accessible and available to government-owned health facilities;
- d) secure improvement in the productivity of residents by reducing time lost on the job, that is attributable to personal and family health care problems;
- e) reduce the Island's disease burden through health promotion and protection programmes; and
- f) provide support to health services, promote, and encourage the utilization of primary health care to improve the quality of life of the Island's population.

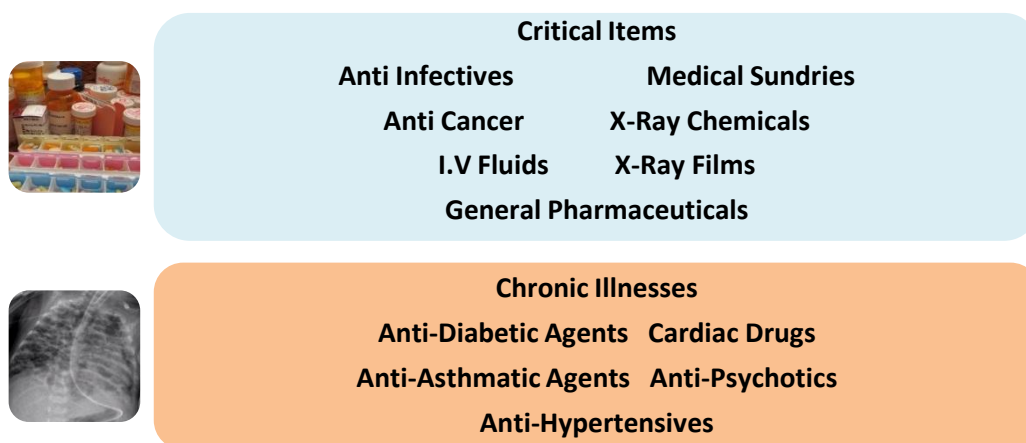
1.3 The NHF, through its Pharmaceutical Division, provides to public health facilities, pharmaceuticals and sundries listed on the Vital, Essential and Necessary (VEN) List. The VEN List reflects the policy of MOH for the appropriate procurement and use of safe drugs and sundry items in public institutions. The VEN system of classification for drugs and medical supplies, which accords with the World Health Organization Guidelines, serves to assist in the rational use of drugs. The Guidelines integrates two key principles, namely (1) the use of drugs supported by scientific data on safety, efficacy and compliance; and (2) the cost effective use of drugs within the constraints of the health care system.

The criteria used to determine the drugs to be included on the VEN list, which currently has over 850 items relates to:



1.4 The Pharmaceutical Division mainly derives its revenue from sales of pharmaceuticals, medical supplies and sundries to the Ministry of Health, Regional Health Authorities (RHAs), Drug Serv Pharmacies, other Government agencies and Non-Government Organizations (**Table 1**). Supplies relate to critical items including anti-infective as well as medical sundries and drugs for the treatment of chronic illnesses (**Figure 1**). The Pharmaceutical Division supplies these goods based on orders received from the respective customers and utilizes a main physical warehouse facility to undertake its functions.

Figure 1: NHF's Critical and Chronic Illnesses Items



Financing

1.5 The NHF revenue sources are:

- a) 20 per cent of Special Consumption Tax charged on tobacco products;
- b) 5 per cent of Special Consumption Tax collected;
- c) ½ per cent of annual earnings up to \$500,000 paid by an employee and employer collected under the NIS; and
- d) sale of Pharmaceuticals, which is spread across the Pharmaceutical Division and Drug Serv Pharmacies - the retail sales arm of the entity.

Table 1: Revenue from Sale of Pharmaceuticals (J\$M)

Financial Year	2016/17	2015/16	2014/15	2013/14	2012/13	2011/12
Warehouse Operations	2,613.6	2,956.6	2,557.2	2,749.2	2,464.0	2,105.0
Drug Serv Pharmacies (Retail Sales)	3,819.2	2,168.6	2,090.5	1,652.5	1,286.0	1,169.1
Total Revenue from Sale of Pharmaceuticals	6,432.8	5,125.2	4,647.7	4,401.7	3,750.0	3,274.1

Source: NHF audited Financial Statements

Audit Scope and Methodology

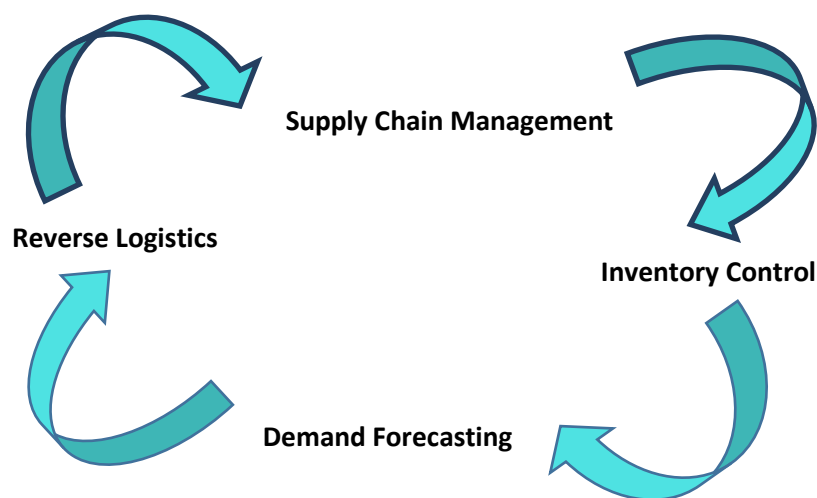
1.6 We conducted the audit to assess NHF Pharmaceutical Division's management of inventory in relation to the warehousing and distribution of pharmaceuticals and sundries. The performance audit covered the period FY2011/12 to FY2015/16, and incorporated information for FY2016/17. Our audit was planned and conducted in accordance with the International Organization of Supreme Audit Institutions (INTOSAI) Auditing Standard for Performance Audits. The planning process involved gaining an understanding of the operations of the NHF's Pharmaceutical Division. In conducting the audit, we reviewed documents, interviewed senior management and staff as well as, observed the Division's operations. We also obtained the views of stakeholders from a focus group discussion. An assessment of the NHF's financial statements for FY2011/12 to FY2015/16 prior to the audit also assisted in identifying areas that might have impeded the Fund's capacity to deliver on its mandate.

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Part Two

Inventory Management and Supply of Pharmaceuticals

2.1 Inventory management, that is, the administration of “non-capitalised assets” (inventory) and stock items, is an element of supply chain management, which relates to the supervision of the flow of goods from manufacturers to warehouses, and from these facilities to customers. The establishment of a robust inventory management system is therefore critical to the control of an organisation’s inventory and operational costs. An effective inventory management system includes the establishment of a *safety stock*, *economic order quantity*, *price management*, *monitoring of inventory turnover* and the *coordination of inventory levels with suppliers and customers*. The incorporation of these principles by the NHF is critical to the efficient management of its pharmaceutical inventory in order to provide adequate supplies to the public on a consistent basis.



2.2 The efficient management of pharmaceutical inventory is essential to NHF achieving its mandate of ‘making pharmaceuticals and medical sundries accessible and available to government-owned health facilities’. An efficient system requires accurate and ongoing monitoring of inventory in accordance with demand. In a context where delays affect ordering costs (fees associated with placing orders) and shortages can inflate market prices, it is important that NHF manage its inventory in a manner that minimizes inventory costs³. The NHF utilizes the Microsoft Dynamics Great Plains software⁴ to manage inventories in the Pharmaceutical Division, since April 1, 2011. We found that NHF was able to reduce the

³ The Economic Order Quantity (EOQ) is the number of units that a company should add to inventory with each order to minimize the total costs of inventory—such as holding costs, order costs, and shortage costs.

⁴ Microsoft Dynamics Great Plains software, under license from Microsoft is an enterprise resource planning solution for businesses.

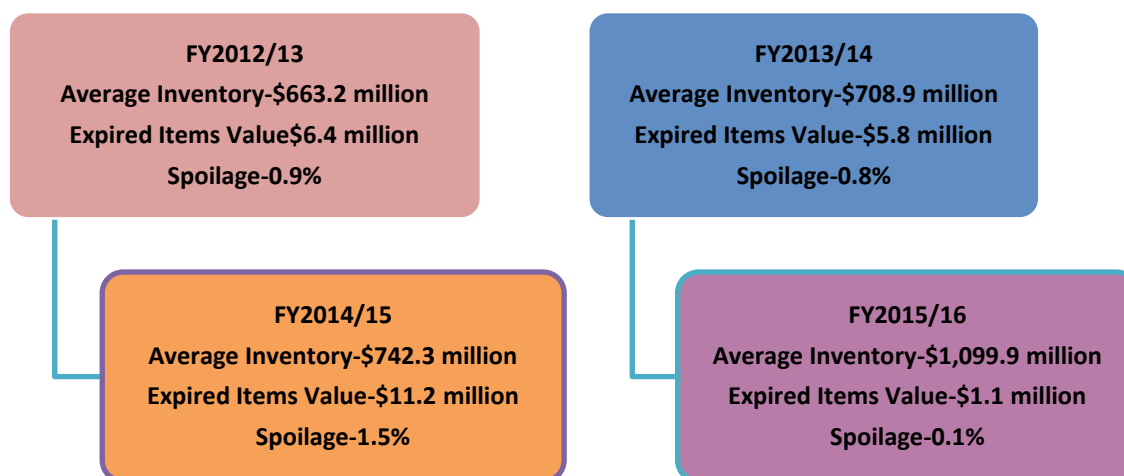
level of spoilage for existing stocks in the warehouse, however, there were deficiencies in other aspects of NHF inventory management related to the adequacy of stocks, monitoring and coordination of stock levels with its suppliers and public healthcare facilities.

Spoilage Management Improves

2.3 NHF improved its management of spoilage levels in its warehouse over the review period. The management of spoilage levels is a critical component for quality control, as expired and short shelf-life pharmaceuticals affect NHF's ability to guarantee the efficacy of drugs supplied to the public. The Division categorizes and labels pharmaceuticals by batch number and expiry date and practices the First expired - First out (FEFO)⁵ methodology for stocking. The use of zoning also enabled the Pharmaceutical Division to select and issue first, soon-to-be expired pharmaceuticals.

2.4 NHF removed expired pharmaceuticals from the active stock to the warehouse section for damaged and expired goods in accordance with its Operational Policy and Procedures for Expired Items. We found that the Pharmaceutical Division was successful in reducing spoilage to 0.1 per cent (\$1.1 million) of average inventory in FY2015/16 from 0.9 per cent (\$6.4 million) in FY2012/13, well below the targeted ceiling of 0.6 per cent. Notably, while the use of zoning and FEFO may have also aided in containing operational costs as well as reputational risks, the level of spoilage would have been too insignificant to affect the supply of pharmaceuticals and sundries to the public health sector (**Figure 2**).

Figure 2: NHF's Spoilage Levels



Source: AuGD's Analysis

⁵ The First Expired First Out is an inventory management method that allows for products with the shortest life to be distributed first.

NHF's growth in outstanding trade receivables affected timely payment to suppliers

2.5 The principal objective for any company in managing accounts receivables, is to be paid. The faster receipt of outstanding amounts from debtors, improves a company's ability to pay its suppliers. The management of trade receivables by NHF is therefore important, as the sale of pharmaceuticals and sundries is the primary source of funding for the Pharmaceutical Division. A delay in payment to suppliers consequent on build-up in outstanding collections resulted in credit holds by suppliers, which had an adverse impact on the NHF's ability to restock inventory.

2.6 NHF provides a maximum credit period of 45 days⁶, however we found that collections (trade receivables) progressively worsened as debtors owed NHF for an average of 222 days in FY2016/17, relative to 129 days in FY2011/12. Concurrently, the stock of trade receivables was \$4.5 billion at end FY2016/17, an increase of 267.5 per cent relative to FY2011/12, of which 94.0 per cent was due from Ministry of Health (MOH). At end FY2016/17, 67.6 per cent (\$2.9 billion) of trade receivables due from MOH were overdue in excess of 90 days. Of note, NHF wrote off \$2.0 billion of the outstanding trade receivables due from MOH in FY2016/17.

2.7 Based on the significant overdue receivables, NHF's ability to make timely payments to suppliers was constrained. This led to stock-outs, which affected NHF's ability to provide crucial pharmaceuticals to the public health care system. On average, NHF failed to make payments on time in 95.8 per cent of cases, between FY2013/14 and FY2016/17, despite receiving generally long credit periods (**Table 2**)⁷. NHF reduced the settlement time for invoices to an average 32 days after the due date in FY2016/17, from 57 days in FY2015/16, in line with the performance for FY2013/14. The delays in settlement impaired its ability to satisfy orders from clients. In a context where quotes for supplies are largely in US dollars, there were also foreign exchange risks which affected restocking prices. Hence, efforts to make timely payments to suppliers would have been in the best interest of the NHF in containing the cost of pharmaceuticals and sundries and reducing the likelihood of credit holds.

In order to meet payments to suppliers, NHF transferred a total of \$2.4 billion from the Benefits Division on multiple occasions between FY2011/12 and FY2016/17. NHF indicated that funds from the Benefits Division are earmarked for other purposes; hence, a continual drawdown may not be sustainable if the stock of overdue receivables is not reduced.

⁶ Credit periods are outlined in NHF Pharmaceutical Division Sales and Credit Policy.

⁷ NHF's suppliers provided credit periods ranging from 30 days to a maximum of 180 days, with the exception of a few suppliers that required cash up front. Of those that gave credit periods, only three of 46 suppliers (6.5 per cent) provided credit periods less than 60 days for the 2015-17 contract period, a reduction from the 5 of 39 suppliers (12.8 per cent) for the 2013-2015 contract period.

Table 2: Late payments on invoices

	On-time		Late			Total Late (%)
		1-30 days	31-60 days	61-90 days	Over 90 days	
FY2016/17	185	1,158	507	339	92	91.9
FY2015/16	115	911	629	394	638	95.7
FY2014/15	24	521	604	549	514	98.9
FY2013/14	58	873	630	162	38	96.7
Average (%)						95.8

Source: AuGD's Analysis

2.8 For example, we identified 40 instances of credit holds by 13 different suppliers, with one particular supplier accounting for more than half of these occurrences between FY2013/14 and FY2015/16. For FY2015/16, there were 15 cases where pharmaceuticals that were out of stock, stemmed from unpaid bills to the particular supplier, who had placed credit holds on orders from the NHF. Of note, a number of these pharmaceuticals remained out of stock for three consecutive months and up to a total of six months. We however, found no cases of stock-outs relating to pharmaceuticals supplied by the remaining 12 suppliers. There was also a further 41 cases in which pharmaceuticals were out of stock where suppliers had not given notice of credit hold and as such, the NHF would not have been alerted to a potential non-delivery of orders.

2.9 Notwithstanding its challenges with receivables, we found that NHF had no systematic method for determining the order in which invoices were to be paid, as well as there were errors in the posting of invoices to effect payments. NHF often made payments on current invoices, before settling outstanding claims from the same supplier. We noted that bills remained unpaid to 118 days in FY2015/16 from 47 days in FY2011/12. Given budgetary constraints, efficient management of payments is essential to ensuring a consistent and timely supply of pharmaceuticals and sundries from suppliers.

2.10 NHF adopted various strategies to improve its management of receivables and implemented a performance-tracking indicator in FY2015/16, targeting monthly statements and correspondence to stakeholders. From FY2013/14, NHF sent letters to the MOH, its main debtor, regarding the status of outstanding balances for the supply of pharmaceuticals and sundries. However, despite formal commitments from MOH to liquidate overdue receivables, NHF failed to secure a timeline for the reduction.

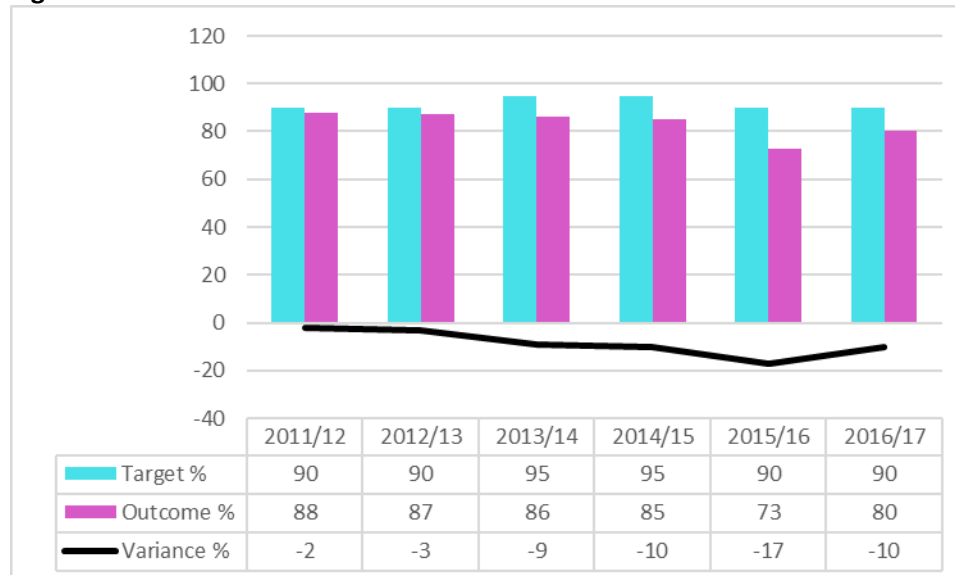
NHF indicated plans to adjust its pricing mechanism, at the start of FY2017/18, to reflect the cost of items and a five per cent management fee on the cost of pharmaceuticals and medical sundries and operational expenses recoverable from MOH/RHAs⁸.

⁸ The current pricing mechanism utilized by the NHF applies an average mark-up of 30 per cent for pharmaceuticals and sundries supplied to the RHAs and Drug Serv pharmacies.

NHF service levels were below target for critical items and chronic illness items

2.11 NHF has specific service level targets for both critical items and for chronic illness items. The service level indicator is one of the key performance indicators (KPIs) of the Pharmaceutical Division. This indicator measures the proportion of orders from public health facilities that are satisfied during a given period. NHF defines critical items as life-saving items that are difficult to source locally, and includes medical sundries, x-ray films and intravenous fluids. Chronic illness items include anti-diabetic and anti-asthmatic agents, cardiac drugs and anti-psychotics. The respective service level targets were reduced to 90 per cent in FY2015/16 from 95 per cent in FY2013/14, following a meeting with MOH representatives in June 2014, which resulted in MOH officials reducing the quantities to be tendered. Notwithstanding, we found that NHF failed to meet the reduced service level target for both critical items and chronic illness items in FY2016/17, a trend similar to that observed in earlier periods (**Figures 3 and 4**).

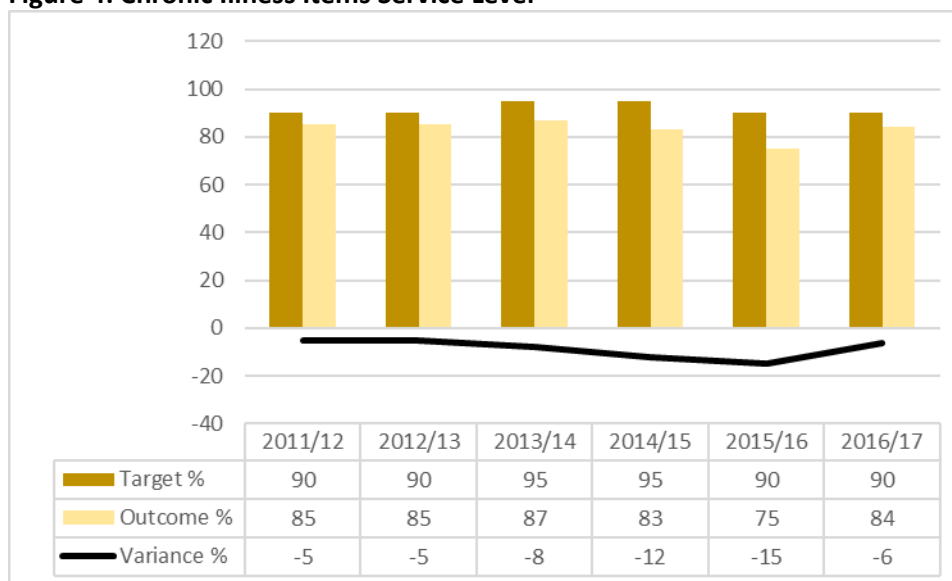
Figure 3: Critical Items Service Level



Source: NHF's quarterly performance and annual reports

2.12 NHF's service levels for critical items and chronic illnesses remained below target for 2016/17, at 80 per cent and 84 per cent, respectively although this represented a notable improvement, relative to 73 per cent and 75 per cent for the previous year (**Figure 4**). However, the general underperformance over the audit period indicated an under filling of orders, such that these items would not have been accessible to the public when needed. Consequently, NHF's effectiveness in supporting public health care would have diminished.

Figure 4: Chronic Illness Items Service Level



Source: NHF's quarterly performance and annual reports

2.13 NHF indicated that it relied on utilization patterns and estimates of demand to determine stock levels. However, NHF's inability to meet its service level targets suggests a deficiency in its target-setting methodology and estimation of demand. It also highlights the need for a more effective needs assessment methodology, which would facilitate greater coordination with MOH and suppliers to assist in inventory management and mitigate the risk of stock-outs.

NHF was not consistent in its supply of essential drugs to public healthcare facilities and patients

2.14 Stock counts are an essential part of inventory monitoring to verify the accuracy of stock levels in a warehouse and can assist in signalling potential stock-outs. As part of its inventory management process, the Pharmaceutical Division undertook ad hoc counts to ascertain the accuracy of stock levels; however, officers did not always conform to the established guidelines, which required a fixed number of counts per month. In that regard, there were no ad hoc counts between FY2013/14 and FY2016/17 with the exception of the months of June 2016 and February 2017 (**Table 3**).

Table 3: Ad hoc counts conducted by Inventory Officers

No. of items counted by Inventory Officers*		
	June 2016	February 2017
Inventory Officer 1	60 items	30 items
Inventory Officer 2	80 items	30 items
Inventory Officer 3	33 items No count submitted for week 4	14 items
Inventory Officer 4	15 items Count only submitted for week 4	15 items
Inventory Officer 5	No count submitted	20 items

Source: NHF Pharmaceutical Division's monthly report

*Each Inventory Officer should count at least 60 items per month

2.15 From internal audit reports, we compiled 1,987 items for FY2013/14 and found only 87.3 per cent inventory accuracy level, as 252 items in the warehouse varied from the inventory records. Of this, 141 items had a lower physical quantity (negative variance). For FY2016/17, of the 1,194 items counted, 320 varied from the system balance (183 negative variances) resulting in a 73.2 per cent inventory accuracy. By not having accurate knowledge of the numbers for each item listed in its warehouse, the NHF could not always assure public health facilities of its ability to meet the demand for pharmaceuticals and sundries, and fulfil its obligations to the public health system (**Table 4**).

Table 4: Analysis of NHF's Ad hoc Counts

Fiscal Year	Inventory Counted	Positive Variance	Negative Variance	Total Variance	Inventory Accuracy* (%)
FY2016/17	1,194	137	183	320	73.2
FY2015/16	1,151	92	115	207	82.0
FY2014/15	1,114	70	61	131	88.2
FY2013/14	1,987	111	141	252	87.3

Source: NHF's Internal Audit Reports; *Weighted average

The NHF responded that the variances resulted from (1) errors where items posted to the system had incorrect codes (2) returned items on loan, (3) quantities received short from suppliers, (4) damaged Items, (5) items sent on manual order to hospitals.

2.16 NHF finance department introduced cycle counts as part of its independent inventory monitoring of the Pharmaceutical Division in July 2015, but suspended this activity during the renovation of the warehouse. The finance department conducted complete counts in October 2016 and March 2017. We noted that the cycle counts by the finance department also confirmed that recorded inventory levels were not always accurate (**Table 5**). NHF advised that it would introduce a revised Ad Hoc Inventory Monitoring Procedure on June 1, 2017.

Table 5: Analysis of NHF Finance Division's Cycle Counts

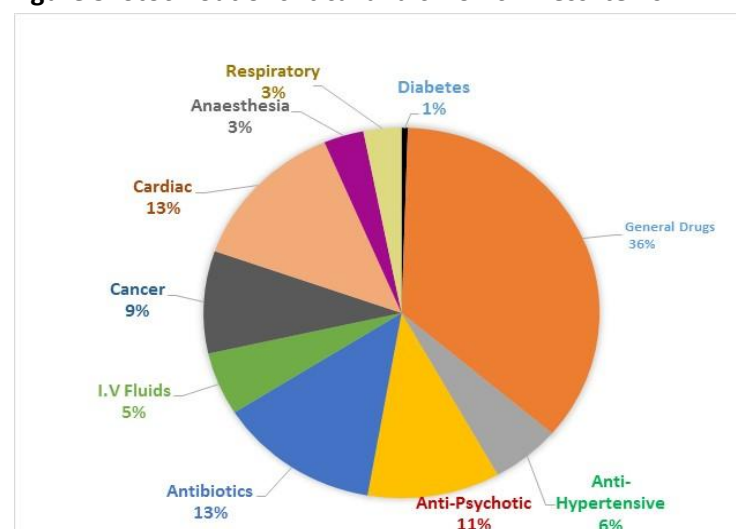
Fiscal Year	Inventory Counted	Positive Variance	Negative Variance	Total Variance	Inventory Accuracy (%)*
FY2016/17	2,541	229	264	493	80.6
FY2015/16	1,879	120	123	243	87.1

Source: NHF's Finance and Investment Division; *Weighted average

2.17 In addition to credit holds and inconsistencies in stock counts, other factors such as global shortages and the timing of clearance of goods at customs, also contributed to shortages of pharmaceutical and sundries in NHF's warehouse. We found that 24 items listed as 'out of stock' in October 2016, were awaiting customs clearance. In addition, between May 2015 and February 2016, 142 items were out of stock due to global shortages listed on American Society of Health-System Pharmacists (ASHP) and Food and Drug Administration (FDA) schedules. We identified 582 incidents of pharmaceuticals and sundries being out of stock for FY2015/16. Of this total, 36 per cent related to

General Drugs; 13 per cent - Cardiac Drugs; 13 per cent – Antibiotics; and 11 per cent - Anti-Psychotic Drugs (**Figure 5**).

Figure 5: Stock-out of critical and chronic illness items



Source: AuGD's Analysis

2.18 Hence, in terms of overall service delivery, NHF only filled an average 65.2 per cent of total quantities of supplies ordered (including critical and chronic illness items) from health facilities for the period FY2011/12 to FY2016/17. The percentage of all orders invoiced (excluding back orders) fell to 66.6 per cent in FY2016/17 from 79.1 per cent in FY2011/12, underlining a declining trend for the period reviewed (**Table 6**). Consequently, the shortfalls in filling orders implied that patients might have not had crucial medications when needed and might have increased their out of pocket expenditure to purchase these from private pharmacies.

Table 6: Total Quantity of Pharmaceuticals and Sundries Ordered

Financial Year	Quantity Ordered	Quantity Invoiced	Quantity Invoiced From Back Order	Total Quantity Invoiced	Percentage of Orders Invoiced (%)
2016/17	25,123,554	16,733,023	1,590,949	18,323,972	66.6
2015/16	30,252,201	15,838,549	1,742,829	17,581,378	52.3
2014/15	24,166,104	14,213,928	1,430,013	15,643,941	58.8
2013/14	24,329,734	15,391,722	1,673,029	17,064,751	63.3
2012/13	22,971,569	16,282,254	1,145,482	17,427,736	70.9
2011/12	19,865,561	15,705,709	103,274	15,808,983	79.1
Average (%)					65.2

Source: AuGD analysis of NHF Data

2.19 NHF's inability to satisfy orders also indicated weaknesses in coordination with the public healthcare facilities and the conduct of needs assessments. Although NHF conducted demand surveys to inform its purchases, these were largely informal. A more coordinated and integrated approach that alerts when stocks falls below the safety levels in the public healthcare facilities and the NHF's warehouse could mitigate the risk of stock-outs and assist in containing associated costs.