



**REPORT OF THE AUDITOR
GENERAL
ON**



**MANAGEMENT OF
HEALTH CARE WASTE
AT HOSPITALS
PERFORMANCE AUDIT**



The Auditor General is the head of the Audit Office of Guyana. He is the external auditor of the public accounts of Guyana and is responsible for conducting financial/compliance and performance/value-for-money audits with respect to the consolidated financial statements, the accounts of all budget agencies, local government bodies, all bodies and entities in which the State has a controlling interest, and the accounts of all projects funded by way of loans or grants by any foreign state or organization.

In conducting performance/value-for-money audits, the Auditor General examines the extent to which a public entity is applying its resources and carrying out its activities economically, efficiently, and effectively with due regard to effective internal management control.

This report has been prepared in accordance with Part V Sections 24 and 28 of the Audit Act 2004. In conducting this audit, we followed the Code of Ethics and Standards and Guidelines for Performance Auditing of the International Organization of Supreme Audit Institutions (INTOSAI), of which the Audit Office of Guyana is a member.

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PERFORMANCE AUDIT REPORT

Management of Health Care Waste at Hospitals



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EXECUTIVE SUMMARY

Why we did this audit

Health care waste, if not properly managed can affect the health and safety of citizens. Also, health care waste must be managed to reduce environmental risks. We did this audit to determine how hospitals managed this waste from January 2017 to July 2019.

Key messages

All stages in the management of health care waste were lax, creating human and environmental health hazards. Policies and plans were not established to efficiently and effectively manage waste activities, resulting in a lack of coordination among officials. The absence of waste collection schedules and monitoring at each hospital led to ad hoc collection patterns which put at risk the health of patients and workers. Poor segregation systems resulted in injuries to workers from sharps in bags. The audit work was repeatedly delayed because hospitals did not provide requested documents and did not always respond to the audit findings.

What we found

Sharps containers with infectious waste were everywhere. Inadequate storage space and poor storage practices resulted in large amounts of sharps containers and boxes stowed haphazardly at hospitals. Sharps containers with untreated infectious waste were stock-piled for months in rooms and hospital compounds.

Sharps containers were not puncture-proof. Used syringes and needles were in plastic soda bottles used as sharps containers. We found this practice when hospitals were out of stock of the required containers. For example, the Georgetown Public Hospital Corporation used Coca-Cola bottles with original labels to collect sharps waste. The bottles were not labeled and sealed to prevent persons from removing the used syringes and needles. As a result, used syringes and needles were easily accessible to persons, which could have resulted in theft and infections if used.

Equipment to protect employees was not always available. Prolonged stock-outs caused by shortages or short supplies led to personal protective equipment being unavailable to waste handlers. Waste handlers wore part and sometimes none of the personal protective equipment when executing their duties. Management's failure to monitor waste handling activities resulted in waste handlers' exposure to infections.

Waste was dumped on the floor after treatment. We found that this unsatisfactory situation at the Georgetown Public Hospital Corporation was because the shredder and belt of the autoclave were out of order. The machine was not working at capacity, which caused containers of untreated waste to accumulate, resulting in health and environmental risks to waste handlers.

Way forward

We made 18 recommendations to deal with the causes of lax waste management by establishing and implementing national and hospital policies, monitoring all activities, using recommended containers and bags, and reviewing the collection and storage of waste. These recommendations should be addressed urgently in the short term.

Introduction

1. The audit of the Management of Health Care Waste at Hospitals was undertaken by the Audit Office of Guyana for the period 1 January 2017 to 31 July 2019. The audit focused on the administration, segregation, transporting, storage, and disposal of health care waste at five hospitals. The operations of hospitals are governed by Acts, Regulations, and Guidelines which include Health Facilities Licensing Act 2007, Health Facilities Licensing Regulations 2008, Occupational Safety and Health Act 1997, Environmental Protection Act 1996, and the WHO Guidelines.

2. The waste generated from hospitals and other health care facilities is divided into several categories. The audit focused on the three types of health care waste shown in Table 1 below.

Waste Category	Description and Examples
Sharps	Items that can cut and cause punctures e.g. needles, pipettes, knives, blades, broken glass, and infusion sets.
Infectious	Items suspected to contain pathogens e.g. waste with blood or body fluids, blood, dressings, and laboratory cultures.
General	Materials that do not pose any particular biological, chemical, radioactive, or physical hazard e.g. paper, cardboard, plastic wrappings, discarded food, metal, wood, and textile.

Table1 - Categories of Health Care Waste
Source: WHO Safe Management of Waste from Health Care Activities

3. Poorly managed health care waste can negatively affect human health. All persons who handle or come into the immediate vicinity of hazardous health care waste are likely at risk of exposure to a hazard. Health care professionals, waste handlers, and anyone who comes into contact with such waste face the dangers of infectious diseases such as Human Immunodeficiency Virus (HIV), Septicaemia, and Hepatitis viruses B and C. The Human Immunodeficiency Virus is transmitted by pathogens, blood, sexual secretions, and body fluids. The Hepatitis B and C infections are also transmitted by blood and body fluids. Needlestick injuries caused by improper sharps disposal also increase the risk of injury or illness to the above persons. Therefore, hospitals must have robust systems to ensure the safety and health of health care professionals, waste handlers, and the general public.

4. There are many treatment technologies available to treat health care waste. The burning of waste releases harmful chemicals and pollutants into the environment. Consequently, the chemicals and pollutants could find their way into citizens' bodies when they breathe, drink, and eat contaminants. Hospitals must use care when selecting the right technology to treat waste to minimize environmental risks.

5. For health care waste to be properly managed, all stages of the management process must be given equal attention and the necessary resources needed to function effectively and efficiently. The waste management process is illustrated in Figure 1 below.

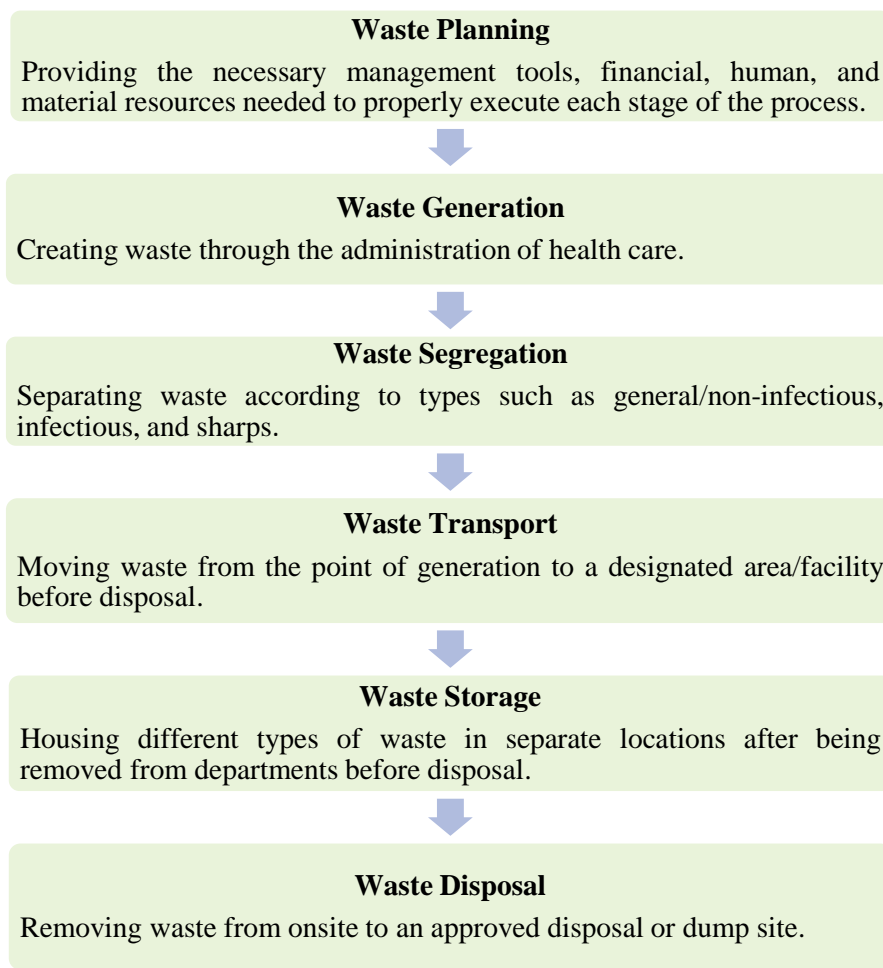


Figure 1 - Waste Management Process
Source: Audit Office of Guyana system documentation

6. The management of health care waste at hospitals across the country varies depending on the geographical location of the facility and whether the facility is a Referral Hospital, a Regional Hospital, a District Hospital, a Diagnostic Centre, a Health Centre, or a Health Post. Notwithstanding the type of facility and its location, health care waste must be managed in such ways as not to compromise the health and safety of employees, the general public, and the environment as a whole.

Reasons for undertaking the audit

7. This audit focused on whether hospitals managed health care waste efficiently and effectively to mitigate health and environmental risks. Our audit examined waste management activities at five hospitals in four administrative regions:

- West Demerara Regional Hospital.
- Georgetown Public Hospital Corporation.
- Diamond Diagnostic Centre.
- New Amsterdam Regional Hospital.
- Linden Hospital Complex.

8. This audit is important because Guyanese and parliamentarians need assurance that hospitals have managed health care waste. Health care waste, if not properly managed, can affect the health and safety of citizens. The findings of this report may help other health facilities better manage health care waste.

Audit objective

9. The overall objective of the audit was to assess whether hospitals managed health care waste efficiently and effectively to mitigate health and environmental risks.

Audit criteria

10. Audit criteria are reasonable standards against which management practices, controls, and reporting systems can be assessed. The audit criteria and their sources are at the back of this report.

Financial and administrative management

11. The management of health care waste falls under the Ministry of Public Health and the Ministry of Communities. The Permanent Secretary and each Regional Executive Officer are expected to establish and maintain adequate management controls over financial and human resources, monitor the effectiveness of the controls, and ensure that relevant legislations such as the Procurement Act 2003 and Regulations, Health Facilities Licensing Act 2007, and Regulations, Occupational Safety and Health Act 1997 and the Environmental Protection Act 1996 are complied with. Funding for the management of health care waste is provided through annual appropriations received from the Consolidated Fund.

Roles and responsibilities of key players

12. The Permanent Secretary has overall responsibility for the financial management of the Ministry of Public Health. At the regional level, the Regional Executive Officer is responsible for the management of the Regional Democratic Council. Each Permanent Secretary and Regional Executive Officer is assisted by Accountants, Procurement Officers, and other staff to manage and control the financial resources of the Ministry and the Council.

13. The Chief Medical Officer has overall responsibility for health care matters. This officer is assisted by the Director of Standards and Technical Services and the Director of Environmental Health. These officers receive feedback from the Regional Health Officer or Director of Regional Health Services for facilities that are under the control of the Regional Democratic Council. On the other hand, the Chief Medical Officer receives information from the hospitals which are under the control of the Ministry of Public Health.

Report structure

14. This report is structured as follows:
- *Chapter 1* – Administration of the Waste Management System.
 - *Chapter 2* – Segregation and Collection of Waste.
 - *Chapter 3* – Transport and Storage of Waste.
 - *Chapter 4* – Treatment and Disposal of Waste.

Chapter 1

Administration of the Waste Management System

Policy not in place for waste management

15. At the national level, the Ministry of Public Health and the Ministry of Communities are responsible for regulating and overseeing waste management activities in Guyana. Such activities include developing strategies, policies, and plans for waste management. We expected the Ministries to coordinate to develop a national policy for the effective management of waste produced by health care facilities or hospitals in the country. We also expected that strategies would be in place for implementing the policy and resources allocated to create a sustainable waste management system.

16. The Ministries did not provide us with a national policy on the management of waste in the country. We noted that the Ministries complied with the Health Facilities Licensing Act 2007 and the Health Facilities Licensing Regulations of 2008. The legal instruments require each health facility or hospital to be certified to operate. In this regard, provision was made for compliance in areas such as waste management, sanitation and safety, and occupational safety and health.

National waste management plan not presented

17. All health care waste management operations should be organized and planned. Planning defines the approach for implementing improved waste management and allocating resources, roles, and responsibilities. A comprehensive waste management plan will describe the actions to be implemented by the relevant authorities, health care personnel, and waste handlers. Having a sound plan will explain to personnel what needs to be done and help coordinate the roles of the personnel involved in executing the plan.

18. Section 4 (e) of the Ministry of Health Act of 2005 requires the Ministry “*to develop and ensure the implementation of the National Health Plan and other action plans and directives, including human and all other resource required necessary for assessing monitoring and implementing such policies and plans, founded on population-based needs for health care programmes, services and facilities.*”

19. We expect the Ministry of Public Health to collaborate with the Ministry of Communities to develop and implement a medical waste management plan to guide waste management activities in hospitals. We expect each hospital to assign a department or unit to oversee and enforce compliance with all aspects of the plan. It was reported through interviews that there is a national medical waste management plan to guide hospitals in good waste management practices. However, the document was not presented for audit scrutiny, despite repeated requests. As such, we were unable to determine the strategies that were in place to efficiently and effectively manage health care waste activities in hospitals.

Absence of waste management plans

20. Section 18 of the Health Facilities Licensing Regulations 2008 requires each health facility or hospital to have written policies and procedures that will stipulate the scope and conduct of the care and services that are provided. Each hospital was expected to develop and implement a waste management plan for the efficient and effective management of health care waste.

21. The management of the Linden Hospital Complex presented a draft waste management plan that was developed in 2017. There was no evidence that management had approved the plan. We could not determine whether the plan was operational and the date it was put into operation by the hospital.

22. New Amsterdam, West Demerara, and Diamond Hospitals did not develop waste management plans for the period under review. The Georgetown Public Hospital Corporation presented a single-page document purported to be the hospital's waste management plan. An examination of the document revealed that it was the findings from an inspection conducted to evaluate the hospital's practices and compliance with national guidelines. The Diamond Diagnostic Centre failed to present to us a waste management plan.

23. The absence of waste management plans at hospitals compromised the efficient and effective management of health care waste.

Recommendation: *The Audit Office recommends that the Chief Medical Officer ensures that hospitals develop and implement waste management plans so that each facility's waste management operation is compliant with national policies and regulations.*

The Linden Hospital Complex's Response: A medical waste management plan document with adjustments was developed and complied with.

The Diamond Diagnostic Centre's Response: The Centre does have a waste management plan that was created by the Regional Health Office in 2018. A copy is present at the institution.

The Georgetown Public Hospital Corporation's Response: A revised unapproved Medical Waste Management Plan exists. A copy of this revised Medical Waste Management Plan is attached for your perusal and the management of GPHC commits to presenting this plan to the Georgetown Public Hospital Board for approval.

Absence of waste management committees

24. The effective management of health care waste is one strategy used to control infections in hospitals. A waste management committee is key within a hospital. One of the key responsibilities of this committee is to develop a waste management plan to assist in the effective management of health care waste. The following members may be part of a waste management committee.

- Chief Executive Officer.
- Heads of Departments.
- Infection Control Officer.
- Chief Pharmacists.
- Radiation Officer.
- Matron.
- Hospital Manager and Hospital Engineer.
- Finance Controller.
- Waste Management Officer.

25. The above members are to be appointed in writing by the Board of Directors, and each member's duties and responsibilities are to be clearly defined. The overall responsibility of a waste management officer is to develop a waste management plan and the daily operation and monitoring of the waste disposal system in the health care facility.

26. The audit sought to determine whether each hospital had appointed a waste management committee to oversee its waste management operations. The following was obtained through interviews and document reviews at each hospital.

Georgetown Public Hospital Corporation

- The hospital’s Chief Executive Officer is responsible for forming this committee from key personnel within the hospital. The committee shall consist of the personnel shown in Table 2 below.

Designated Personnel	
Chief Executive Officer	Environmental Officer
Chief Pharmacist	Occupation Safety & Health Officer
Radiation Officer	Matron
Quality Assurance Manager	Finance Controller
Sanitation Officer	Waste Management Officer

Table 2- Waste Management Committee Personnel
Source: Hospital documents

- Contrary to the above, the hospital’s committee comprised a Waste Management Consultant, Coordinator Sanitation and Janitorial Services, and Director and Engineer of the Facilities Management Department. We were not provided with documents to support the members’ appointments and the roles and responsibilities of the committee. Further, we did not receive minutes arising out of meetings of the committee, and we could not conclude that meetings were held during the period. As a result, we could not conclude that the Georgetown Public Hospital Corporation efficiently and effectively managed waste management activities during the period.

Linden Hospital Complex

- We were informed that the hospital had in place a joint Safety and Health Committee which performed some functions of a waste management committee. We were unable to determine the functions and goals of this committee. The ten female and two male committee members, drawn from different areas of the hospital, were appointed in 2014 to serve for four years. Our interviews with management revealed that the committee met monthly to discuss waste management matters. We were not given the minutes of the meetings and so could not determine the key decisions taken by the committee over the years.

New Amsterdam and West Demerara Hospitals, Diamond Diagnostic Centre

- The above hospitals did not have waste management committees for the review period.

Recommendation: *The Audit Office recommends that the Chief Medical Officer should put systems in place to ensure that waste management committees are established in all hospitals to oversee and monitor waste management activities.*

The Georgetown Public Hospital Corporation's Response: A new Medical Waste Management Committee will be instituted shortly in accordance with our revised Waste Management Plan.

The Diamond Diagnostic Centre's Response: The Medical Superintendent explained that a waste management team was established in the year 2017 and comprised of the administrator and matron. The officer further explained that the superintendent is the only person who is executing duties as it pertains to medical waste management of the health facility.

Standard Operational Procedures not presented

27. Part II Section 11 (e) of the Health Facilities Licensing Regulations of 2008 requires each facility to “have an updated Manual of Administrative Procedures (including operational routine procedures and standards).” A Standard Operational Procedure, commonly referred to as an SOP, is a set of step-by-step instructions compiled by an organization to help workers carry out complex routine operations.

28. We expected hospitals to establish, approve and implement SOPs for collecting, segregating, transporting, and storing health care waste. We also expected hospitals to communicate with employees so that employees are aware of the content of the SOPs. Our visits to the hospitals revealed the following: -

- (a) The Linden Hospital Complex used SOPs during the period of our audit. The procedures detailed the actions to be taken by waste generators and waste handlers when separating, collecting, storing, transporting, and disposing of health care waste.
- (b) The Georgetown Public Hospital Corporation used the guideline of the World Health Organisation to develop policies for the management of health care waste. The policies guided staff on requirements and procedures that must be followed when handling health care waste. However, the strategies used by management to communicate the policies to staff could not be ascertained. In the circumstance, it could not be determined if staff understood what was required of them when collecting, segregating, transporting, and storing health care waste.

- (c) The Diamond Diagnostic Centre developed a Biomedical Waste Management Manual. The manual provides actions staff should take when handling waste at various stages.
- (d) The New Amsterdam and West Demerara Hospitals did not have written procedures to guide employees when collecting, segregating, transporting, and storing health care waste. The failure of the hospitals to develop procedures to guide employees could have affected the uniformity of performance in efficiently and effectively executing tasks.

Recommendation: *The Audit Office recommends that: (i) the Chief Medical Officer ensures that the management of hospitals establishes, approves, and implements Standard Operational Procedures to guide persons who are involved in waste management activities; and (ii) the Chief Medical Officer and the management of hospitals put systems in place to monitor the use of Standard Operational Procedures by waste handlers.*

The Georgetown Public Hospital Corporation's Response: The revisions are not available.

Documents for staff training not presented

29. For hospitals to achieve acceptable practices in health care waste management, all personnel must receive the appropriate training. The Occupational Safety and Health Act 1997 directs employers to provide every worker with training on the safe and healthy manner of carrying out his or her work. It is the responsibility of the head of the hospital to identify someone to coordinate and implement training courses for staff who handle health care waste. All courses should be attended by managers and other personnel and must not be gender-biased.

30. Personnel at all the hospitals visited informed us that employees were continuously trained in waste management practices. Specifically, at the Georgetown Public Hospital Corporation, we were told that employees were trained once a year in areas such as segregating, handling, storing, and disposing of waste. However, the documents to support the training were not presented. As a result, we did not know the frequency of training sessions and the number of employees who attended each session. We learned from interviews that only employees who worked in laboratories were fully knowledgeable of waste management principles and practices. As a result, workers responsible for handling health care waste may not have known the principles and new practices to do their jobs.

Recommendation: *The Audit Office recommends that the management of each hospital ensure that waste handlers are continuously trained in waste collection and treatment, as well as safe disposal methods of waste.*

The Georgetown Public Hospital Corporation's Response: Currently training is done in an ad-hoc manner to address identified needs and correct deficiencies, and limited records are kept of personnel training. The management of the GPHC commits to maintaining better records of

training for both formal and ad-hoc training activities. Further, formal training sessions will be planned and executed.

The Diamond Diagnostic Centre's Response: All handymen and porters that were hired by the Regional Democratic Council were subjected to occupational safety and health training that would include waste management. This was so since these are the persons that would be in direct contact with both general and medical waste. As it relates to the nurses, the management of medical waste is an integral part of their training and the same goes for doctors. Additionally, management has ensured strategic placement of medical waste management protocols throughout the hospital that serves as a refresher.

Breaches of waste management policies

31. Best practice recommends that waste management systems in hospitals be periodically monitored and reassessed by a responsible government agency. This agency should assess waste management systems and provide recommendations to correct any deficiencies identified. Further, the methods for treating waste should be regularly updated to keep abreast of new developments.

32. Each hospital should have a monitoring plan in place to efficiently and effectively manage waste activities. None of the five hospitals presented their monitoring plans. As a result, we could not determine how management gained assurance that waste management systems were working as they should. Also, what actions were taken over the years to improve efficiencies in the systems. We found that each hospital assigned an officer to monitor how the facility collected, stored, and disposed of health care waste. However, the officers did not provide us with monitoring schedules to validate that checks were done through the years.

33. Each hospital inappropriately handled and poorly stored waste in unsecured locations. Further, hospitals failed to treat hazardous waste. There was insufficient personal protective equipment and waste containers. Also, waste handlers did not comply with the regulations for personal protective equipment, and there was no data on medical waste to inform decision-making. These findings indicated a lack of monitoring of waste management activities at each hospital.

Recommendation: *The Audit Office recommends that the management of hospitals put systems in place to ensure that waste management activities are continuously monitored and are in keeping with the regulations.*

Budgets for waste management activities not presented

34. An organization's budget is a financial plan for a defined period. This plan usually covers one year. The provision in a budget for waste management activities should include amounts to acquire consumables such as containers, sharps boxes, personal protective equipment, and the training of waste handlers.

35. The budgets of the Ministry of Public Health and the Ministry of Communities provided amounts to manage waste in hospitals. In addition, the Materials Management Unit of the Ministry of Public Health provided each hospital with gloves, garbage bags, safety boxes, and sharp containers.

36. For the years 2017 and 2018, the Linden Hospital Complex allocated \$3.450M and \$3.5M, respectively, to purchase waste management materials, maintain treatment facilities, train staff, and pay for waste disposal. We could not determine what method management used to cost each activity. Georgetown, New Amsterdam, West Demerara, and Diamond Hospitals did not provide information about the amounts budgeted for the management of medical waste during the period under review. As such, we could not determine whether (1) all requirements were taken into consideration when determining the budgeted amounts (2) budgeted amounts were provided for waste management (3) the amounts provided were adequate to execute management activities, maintain waste management facilities and acquire all the necessary gear, equipment, and containers needed for use.

Stock-outs of equipment

37. There were stock-outs of personal protective equipment at the Linden, New Amsterdam, West Demerara, and Diamond Hospitals. When staff requested the needed items for use, they were either not supplied or supplied in short quantities and some items were continuously out of stock during the period under review.

38. Sharps waste should be collected in a yellow, puncture-proof, impermeable container that is hard to open after closure. All containers should be marked with the word “SHARPS” and have the biohazard symbol on them. Whenever the prescribed containers are unavailable, hospitals can use plastic bottles or metal cans to collect the sharps waste. However, all original labels must be removed or concealed, and the container marked to indicate its contents.

39. Whenever sharps containers were out of stock at the Georgetown Public Hospital Corporation, plastic soda bottles were used as sharps containers, as shown in Figure 2 below. As seen in the picture, the bottle had the original label and was not marked as recommended. Further, it was not puncture-proof and sealed to prevent persons from removing the used syringes and needles. As a result, used syringes and needles were easily accessible to persons, which could have resulted in theft and infections if used.



Figure 2 – Used syringes and needles in plastic bottles with original labels
Georgetown Public Hospital Corporation
Photo: Audit Office of Guyana

Recommendation: *The Audit Office recommends that the Chief Medical Officer ensure that the management of the hospitals uses the recommended containers to collect waste. The use of the recommended containers will eliminate the risks to waste handlers when collecting, segregating, and disposing of waste.*

The Georgetown Public Hospital Corporation's Response: The used needles stored in drink bottles were collected from health centers and originated from private homes of patients using insulin. We will have to work along with patients and the relevant authorities to curb this habit.

40. This situation could be avoided with proper planning, budgeting, and monitoring. As a result of the short supply of items, we concluded that waste management activities and equipment were not adequately budgeted for by the Ministries and by extension, the hospitals.

Recommendation: *The Audit Office recommends that the management of hospitals review the annual waste management budgets to ensure that funds are sufficient to meet waste management activities. Management should provide the auditors with all budgets for the period under review.*

The Georgetown Public Hospital Corporation's Response: The Georgetown Public Hospital Corporation as a subvention agency, caters to its overall budget for medical and solid waste management, however it is not catered for under a specific line item.

Health care waste was not documented

41. One of the first steps in the safe disposal of health care waste is to know the types and quantity of waste produced in the hospital. Knowing the type and volume of waste generated will help health officials to make efficient, effective, and timely decisions to estimate the number of storage containers, storage areas, transportation needed, and treatment technologies for the different types of waste. Waste data collected and recorded over time provide health officials with information about the quantities of waste generated in individual parts of the hospital. The management of each hospital was expected to maintain records to account for the amount and types of waste generated, treated, or disposed of daily. The following information was garnered from visits to hospitals.

Georgetown Public Hospital Corporation

- The officials informed us that waste treatment logs were maintained. However, the logs were not presented for audit examination. Therefore, we were unable to determine the type and quantity of waste generated, treated, and disposed of during the period of the audit. The officials presented us with statements that documented infectious waste that was collected from private institutions. However, the type and volume of waste from the 3,440 sharps containers and 25,814 waste bags were not stated in any of the reports.

Linden Hospital Complex

- The officials did not give us a daily record of the type and quantity of waste generated, treated, and disposed of by the hospital. The officials presented us with the incineration register, which we noted was not written up properly neither was the information certified by the responsible officer.

New Amsterdam and West Demerara Hospitals

- Both hospitals did not maintain a daily record of the type and quantity of waste disposed of, generated, and treated. Also, hospital officials did not keep documents to show the dates the incinerators worked and the amounts and types of waste treated and removed.

Diamond Diagnostic Centre

- Management reported that a register was maintained to show the number of hazardous bags, sharps containers, and boxes collected, and the date and time of each collection. We were not presented with the register to verify this information. As such, we could not ascertain the quantity and type of waste generated at the hospital.

42. The failure of hospitals to document health care waste resulted in us not being able to determine the type and quantities of waste generated, treated, and, disposed of daily by each hospital. Therefore, we could not conclude whether hospitals made efficient, effective, and timely decisions to store, treat, and transport health care waste.

***Recommendation:** The Audit Office recommends that the management of health care facilities ensure that waste generation data are collected and documented daily.*

***The Georgetown Public Hospital Corporation's Response:** Currently, the records collected are only used for billing purposes to private facilities. The GPHC acknowledges that record-keeping must be improved to support decision-making; hence the proposal for the employment of the Waste Management Officer to support this activity.*

Conclusion

43. The Ministry of Public Health and the Ministry of Communities did not efficiently regulate health care waste at hospitals. A policy was not in place to manage waste. Further, a national medical waste management plan, and individual management plans from hospitals for good waste management practices, were also not provided for audit. In addition, there were stock-outs of personal protective equipment at four of the five hospitals.

Chapter 2

Collection and Segregation of Waste

Waste collection schedules were not in place

44. The World Health Organisation recommends the daily collection of most waste, with fixed collection times corresponding to the pattern of waste generation during the day. Management of hospitals should have systems in place to ensure the prompt collection of waste from areas within the health care facility. Further, management was expected to prepare and implement waste collection schedules that reflect fixed collection times and to ensure full compliance with the times scheduled. A robust monitoring system and adherence to the collection times would help minimize potential health and environmental hazards to users of the facilities.

45. None of the five hospitals presented us with waste collection schedules or documents to substantiate approved collection times. The officials informed us that general and hazardous waste generated within wards, departments, and clinics were removed by hospital staff at designated times, based on schedules developed by management. However, the schedules were not presented to us and we observed ad hoc collection patterns. As it relates to sharps boxes and containers, these were removed when filled to the stipulated level.

46. The audit team visited the hospitals for three months to determine waste collection patterns. The Georgetown Public Hospital Corporation and the Linden, West Demerara, and New Amsterdam hospitals, collected general and hazardous waste containers twice daily. The waste was placed in larger containers at a central storage site before being removed at varying times during the day. However, labels were not on the containers to show the type of waste. Consequently, this could have led to improper segregation and improper treatment of infectious waste.

47. The Diamond Diagnostic Centre did not have a waste collection schedule showing specified waste collection times. Hospital officials said that once filled, only then are containers and bins removed from wards, departments, and clinics. Thus, containers with waste were in the areas longer than a day. This practice put at risk the health and safety of staff, patients, and visitors to the hospital.

48. There was no evidence that management monitored waste collection at each hospital. The absence of waste collection schedules and monitoring activities at each hospital led to ad hoc collection patterns. As a result, this posed a threat to the health of staff, patients, and visitors to the hospital.

49. **Recommendation:** *The Audit Office recommends that the management of hospitals put in place waste collection schedules and enforce collection times to ensure the prompt collection of waste.*

The Georgetown Public Hospital Corporation's Response: Internal waste collection schedules can be established. However, frequent monitoring of the garbage situation is encouraged to ensure there is no overflowing of receptacles since the rate of waste generated varies by the area daily. We believe this is a better and more efficient system.

The Diamond Diagnostic Centre's Response: The collection of both general and medical waste is scheduled. The medical waste is removed every Thursday (weekly) by the Georgetown Public Hospital Corporation and the general waste is picked up every morning by the waste disposal company.

Inappropriate use of waste containers and plastic bags

50. All waste containers must be strong, leak-proof, and lined with sturdy plastic bags. The World Health Organisation recommends waste containers be labeled with well-fitting lids, and both the container and bag should be of the correct colour for the type of waste. Accordingly, colour coding is recommended as follows: -

- Yellow for infectious waste.
- Brown with a warning system for chemical and pharmaceutical waste.
- Black for general waste.

51. Hospitals should have proper waste segregation methods and a system of colour coding for waste containers and plastic bags. The use of a colour-coding system makes it simple for hospital staff to put waste into the correct containers. Further, colour coding provides a visual indication of the likely risk posed by the waste in the container and enables waste handlers to safely remove the waste from the containers.

52. We expected each hospital to have the correct waste collection containers and bags to ensure that waste is properly segregated and collected to prevent the risk of potential infections to disposal workers. We visited the various wards in the hospitals during July and August 2019. The findings at the individual hospitals are below.

- (a) Waste containers were not leak-proof, strong, and lined with plastic bags. We found that four hospitals used plastic laundry baskets to collect general waste. While this was unacceptable, management did not ensure that baskets were lined with plastic bags. An example was the orange laundry basket, seen in Figure 3 below, used at the maternity ward of the New Amsterdam Hospital. The waste was in the basket, which had large

holes and no plastic bag. Thus, anyone coming into contact with the waste ran the risk of being infected by harmful microorganisms.



Fig. 3 – General waste in an inappropriate container without a plastic bag
Maternity Ward New Amsterdam Hospital
Photo: Audit Office of Guyana

(b) The hospitals did not always adhere to the colour-coding system. We noted that general waste containers were coloured yellow, gray, orange, blue, and pink. We also saw that all hospitals used red plastic bags to collect and store waste, contrary to the WHO Guidelines. Waste containers at hospitals were not always labeled and had no covers or lids. The Diamond Diagnostic Centre had an opened and labeled infectious waste container as shown in Figure 4 below. However, hospital officials did not ensure containers and bags were of the recommended colour, thus increasing the risk of improper treatment of the waste.



Fig. 4 - Infectious waste bin in laboratory
Diamond Diagnostic Centre
Photo: Audit Office of Guyana

The Diamond Diagnostic Centre's Response: At all times, management makes it their duty to have the appropriate waste collection material available to staff when requested.

Improper segregation of waste led to injury to waste handlers

53. To control the flow of health care waste, the person who produces the waste should segregate that waste into different parts, based on the potential hazard and disposal route. A simple waste segregation system entails waste handlers separating hazardous waste from non-hazardous waste at the point of generation.

54. All the hospitals had ineffective systems in place to segregate waste. We determined this because health care workers and the general public did not comply with the system. We observed food boxes in the infectious waste container at the Linden Hospital Complex. Conversely, containers for general had soiled dressings and other infectious waste material at the New Amsterdam Hospital, as shown in Figure 5 below. We believed that health workers and others might have been unaware of what goes into each container and waste handlers could have suffered injuries when handling waste.



Fig. 5 - General waste container with soiled dressings
Female Medical Ward New Amsterdam Hospital
Photo: Audit Office of Guyana

55. The failure to segregate infectious waste from general waste can cause injury to health workers, patients, waste handlers, and the general public. We requested incident reports from hospitals to determine if there were injuries to waste handlers from the improper segregation of waste. A document presented by the Georgetown Public Hospital Corporation highlighted six instances of four waste handlers suffering needle sticks from needles sticking out from plastic bags. We could not determine the seriousness of the injuries and whether they contracted infections such as HIV or Hepatitis B and C. This situation demonstrated the lack of monitoring by officials to have sharps placed in puncture-proof containers and to ensure that waste handlers used personal protective equipment to protect themselves from injuries.

Recommendation: *The Audit Office recommends that the Chief Medical Officer ensures that the management of the hospitals put mechanisms in place to educate waste handlers on the proper segregation of waste to prevent them from being injured from sharps and other infectious waste.*

The Georgetown Public Hospital Corporation's Response: We hope to alleviate this issue through greater enforcement of policies and educational sessions.

Public awareness of waste segregation methods

56. We observed various posters and signs on walls to educate persons on how to separate health care waste. The posters and signs included pictorial charts on walls and written labels on or above bins. We observed that the signs on the walls of wards, clinics, and departments were not permanently affixed. We found no evidence that officials employed ways to communicate the requirements to persons with disabilities. We concluded that all persons may not have been knowledgeable about the methods to segregate waste and hence, could not comply with the requirements of the hospitals.

Recommendation: *The Audit Office recommends that the Chief Medical Officer ensures that the management of the hospitals put permanent signs in all departments to educate producers of waste on the proper way to segregate waste.*

The Linden Hospital Complex's Response: Temporary medical waste management labels were re-designed and placed on all bins in the Complex. Recommendations to place permanent pictures will be looked at in the final quarter when funds are available. The hospital has acquired red foot pedal bins but is presently having some difficulties acquiring the black foot pedal bins.

The Georgetown Public Hospital Corporation's Response: Staff on orientation are informed of the waste disposal protocols. Additionally, these points are emphasized in training courses and refresher training sessions are scheduled within departments where there are violations of the protocols.

Conclusion

57. Health care waste was not always collected and segregated in keeping with established guidelines. No hospital provided us with waste collection schedules to show the approved collection times for waste. Four hospitals collected waste twice daily, and the other hospital collected only filled containers or bins. There was improper use of containers and plastic bags at hospitals, and hospitals did not adhere to the recommended colour-coded scheme for containers and bags. Notably, sharps containers were not always labeled and puncture-proof. Therefore, waste handlers were at risk when collecting, segregating, and disposing of health care waste. There was a lack of compliance at hospitals for proper waste segregation. Poor segregation practices resulted in infectious waste being placed in general waste containers.

Chapter 3

Transport and Storage of Waste

Set transportation routes were not always in place

58. Whenever possible, waste handlers should transport waste during less busy times. Waste handlers should use set routes when transporting waste to prevent exposure to staff, patients, and visitors. A health facility should use off-peak hours to protect the health and safety of staff, patients, and visitors. Each health facility should identify set routes for waste to be transported. Further, there should be waste collection schedules at each hospital.

59. The Linden and New Amsterdam Hospitals had set routes for transporting health care waste. In contrast, the Georgetown Public Hospital Corporation did not have a set route to transport waste. The route used was the same as that used by medical staff, patients, and visitors to the hospital. This practice by the hospital could have risked the health and safety of staff, patients, and visitors to the hospital.

Waste collection logs were not kept

60. None of the hospitals presented us with waste collection schedules, resulting in waste being transported at varying times each day. Further, the hospitals failed to present logs that showed the times and frequency waste was collected. In the absence of schedules and logs, we could not determine when and how often waste was collected and whether the times were fixed and reliable.

Recommendation: *The Audit Office recommends that the management of hospitals put in place fixed transportation routes and times for waste collection. The Audit Office also recommends that management maintain waste collection logs to show the time and frequency waste is collected.*

Containers and trolleys were not covered

61. Each hospital should have containers or trolleys with well-fitting lids or covers to transport waste. Each container or trolley should be appropriate colour code and marked accordingly. The World Health Organisation recommends hazardous and non-hazardous waste be transported separately. Similarly, the Health Facilities Licensing Regulations 2008 require infectious waste other than syringes, needles, lancets, or other blood-letting devices to be transported in marked receptacles. The hospitals were expected to have the right kinds of marked containers in place. In addition, there should be a record or log of the times waste was collected from storage facilities.

62. The containers and trolleys used to transport waste were not colour-coded. Also, there were no markings to identify the type of waste transported. Further, the containers and bins used by the Georgetown and West Demerara Hospitals were not always fitted with covers, as shown in Figure 6 below, to prevent the possible spread of infectious agents from the waste. In addition, the Georgetown, West Demerara, and New Amsterdam hospitals transported general and infectious waste together using the same equipment.



Fig. 6 - Waste container with infectious waste without cover or lid
West Demerara Regional Hospital
Photo: Audit Office of Guyana

Waste transported in patient's wheelchair

63. The Diamond Diagnostic Centre, had no designated container or trolley fitted with wheels to transport waste. Waste was carried by hand or in the wheelchair used by patients. This practice of waste being transported by hand and in the wheelchair used by patients can result in accidents or injury to the waste handler and infections in the patients using the wheelchair.

Recommendation: *The Audit Office recommends that the management of hospitals put mechanisms in place to ensure that health care waste is transported in the appropriate container and that each container is marked to indicate the type of waste.*

The Georgetown Public Hospital Corporation's Response: Management will seek to procure receptacles with covers and enforce the separate collection of different categories of waste. PPEs are procured for waste management staff, and enforcement of the use of these PPEs will be strengthened.

Waste handlers not properly attired when transporting waste

64. One way to mitigate potential risks to waste handlers is to ensure that workers are suitably clothed. The Health Facilities Licensing Regulations mandate that hospitals have the appropriate protective clothing available for those workers who may come into contact with infectious materials. Similarly, the World Health Organisation recommends that workers who transport waste use personal protective equipment such as gloves, masks, overalls, and special shoes.

65. Each hospital should have provided waste handlers with Personal Protective Equipment (PPEs) to ensure their safety when handling health care waste. Our discussions with workers revealed that they received gloves, face masks, aprons or overalls, and long boots. However, the items were not always available or were supplied in short quantities when requested. We highlighted the situation of stock-outs of personal protective equipment earlier in the report.

66. We visited the five hospitals to observe whether waste handlers wore the above items when handling waste. The waste handlers at the West Demerara Hospital and the Linden Hospital Complex wore the required equipment. At the Georgetown, New Amsterdam, and Diamond Hospitals, waste handlers wore only a part of the equipment. In other instances, none of the equipment was worn by waste handlers while executing their duties.

67. We expected management to monitor waste handlers to ensure they wore personal protective equipment when transporting waste. We found no formal monitoring system in place at none of the hospitals. Management indicated that while there is no formal monitoring system, they engage in continuous discussions with waste handlers about the importance of wearing PPEs when executing their duties. Management's failure to monitor waste handlers resulted in them not always wearing personal protective equipment to protect themselves from infections.

Recommendation: *The Audit Office recommends that the management of hospitals monitor waste handlers to ensure that they wear all equipment when performing their duties.*

The Diamond Diagnostic Centre's Response: All porters were provided with safety boots, facemasks, and gloves. However, there isn't compliance when it comes to utilizing the resources available to them.

The Georgetown Public Hospital Corporation's Response: The GPHC's budget for and procure PPEs for all staff members. A reconciliation exercise will be conducted to determine if all staff members were provided with those protective gear and the status of them. Increased monitoring and enforcement will be initiated to enforce compliance.

Improper storage of waste

68. Each hospital should have central storage areas for keeping different types of waste until the waste is treated or collected for transport offsite. Each storage area should be sized according to the volume of waste generated and the frequency of waste collection. Further, each central storage area must be fully enclosed with some ventilation and not be near food preparation areas. All storage areas should be protected from the sun and be inaccessible to unauthorized persons, insects, animals, and birds. The recommended maximum storage time for health care waste should not exceed 24 hours. During storage, hazardous and non-hazardous waste should be placed at separate locations to prevent cross-contamination. Further, hazardous waste containers should be clearly labeled and locked.

69. During inspection visits, it was observed that all hospitals used red garbage bags to collect hazardous waste. Our examination of the bags revealed that they were not 2mm thick as recommended. In addition, the source of waste was not specified on the bags. Below are the findings from each hospital we visited.

Linden Hospital Complex

- This hospital has a storage area for infectious waste that was termite-infested. A closer examination of the area revealed that construction material, garbage bins, and laboratory waste encumbered the storage space. As a result, sharps containers and boxes were in an unsecured area in the old incinerator room.
- We examined the sharps boxes to determine the source of the waste and the dates they were stored. We were unable to determine this information. We noted that the skip bin with general waste was not covered or had a lock to prevent unauthorized persons from accessing its contents.

Diamond Diagnostic Centre

- There was an enclosed area in the hospital to store waste. In addition to hazardous waste, unserviceable equipment, and other items were in the same enclosure. We noted that the area was not properly secured and was accessible to birds, animals, and insects. We observed plastic bags of waste strewn on the floor of the enclosure. The fact that the facility was unsecured could have resulted in waste bags being torn apart by birds and animals looking for food and the area becoming contaminated with pathogens. Further, persons were at risk of contracting vector-borne diseases such as malaria and dengue fever, spread by mosquitos. In addition, the bacterial disease leptospirosis, spread through the urine of infected animals or contaminated water, could have been transmitted to humans causing high fever, meningitis, vomiting, and liver failure.

Management of Health Care Waste at Hospitals

- The above observations confirmed an ineffective system for the storage of waste. As a result, this placed the health and safety of health care workers, waste handlers, and the public at risk.

Georgetown Public Hospital Corporation

- There was a designated room that stored sharps containers of infectious waste. The room was within the area housing the autoclave machine. The room's size was inadequate given the number of containers on hand at the time of the visit. In addition to containers stored in the infectious room, containers were also in the autoclave room and the hospital compound. Those containers were exposed to sun and rain, unprotected, and accessible to unauthorized persons, as shown in Figures 7 and 8.
- In addition, seven of the nine green containers which were used to store hazardous waste had no covers or locks, making the contents accessible to unauthorized persons.
- Having containers of waste unprotected and accessible to unauthorized persons could have resulted in persons searching the containers for valuables or taking used needles and syringes and reusing them. Further, the search could have resulted in injuries from sharps and posed a high risk of disease transmission among waste handlers and other persons.



Figs. 7 & 8 - Sharps stored within the autoclave facility and hospital compound
Georgetown Public Hospital Corporation
Photos: Audit Office of Guyana

West Demerara Regional Hospital

- There is no designated storage area within this hospital for infectious waste. We observed infectious waste containers haphazardly in and out of the room housing the incinerator as shown in Figures 9 and 10 below. We examined the sharps boxes to determine the source of the waste and the dates they were stored. We were unable to determine this information. Further, general and hazardous waste was in the same container and location. In addition, areas were accessible to animals and unauthorized individuals.



Figs. 9 & 10 - Sharps boxes & containers stored in and out of incinerator room
West Demerara Hospital
Photos: Audit Office of Guyana

New Amsterdam Hospital

- The hospital has two waste storage cells next to the incinerator and near the emergency waiting and triaging areas. The storage site for general and hazardous waste had containers in an open and unsecured area in the hospital compound. The containers were not marked, secured, or fitted with covers to prevent access by unauthorized persons and animals, as shown in Figure 11 below.



Fig. 11 - General and hazardous waste bins
New Amsterdam Hospital
Photo: Audit Office of Guyana

- The storage facility for infectious waste was not marked and secured. Even though the area had gates to prevent unauthorized access, the openings above the gates permitted entry by unauthorized persons and animals, as shown in Figure 12 below. Further examination of the area revealed the floor littered with used tubes, syringes, and face masks. As it relates to general waste, we noted this type of waste in the same containers as infectious waste.



Fig. 12 - General and hazardous waste containers
New Amsterdam Hospital
Photo Audit Office of Guyana

Recommendation: *The Audit Office recommends that the management of hospitals put mechanisms in place to ensure that health care waste is properly stored and secured in the appropriate container and that each container is marked to indicate the type of waste.*

The Georgetown Public Hospital Corporation's Response: The GPHC is challenged by inadequate space for the storage of infectious waste consequently we are increasing our efforts to quickly process the waste. The GPHC has adopted a new policy where hazardous waste collected is not kept for more than three days without being treated and disposed of thus alleviating some of the storage concerns. Greater enforcement of SOPs will be encouraged to ensure that waste is stored together.

Conclusion

70. Health care waste was not properly stored and transported. We did not know when and how often waste was collected and whether the times were fixed and reliable. Many health facilities' storage systems were ineffective. While hospitals had designated storage areas, some areas were inadequate for the volume of waste. Waste was unsecured and accessible to unauthorized persons and animals. Many times, the right containers were not used to transport waste. At one hospital, waste was carried by hand or in the wheelchair used by patients.

Chapter 4

Treatment and Disposal of Waste

71. One reason to process or treat health care waste is to remove or minimize the potential hazard. The Health Facilities Licensing Regulations of 2008 recommends that infectious waste other than syringes, needles, lancets, or other blood-letting devices capable of transmitting infection from one person to another be processed to make the waste harmless. The World Health Organisation recommends treatment technologies for health care waste. One of the recommended steam treatment technology for infectious waste is the use of autoclaves. Incineration is another treatment technology recommended by the WHO. Table 3 below shows the type of treatment technology used by the four hospitals for the treatment of waste.

Region No	Name of Hospital	Treatment Technology	
		Autoclave	Incinerator
3	West Demerara Regional Hospital		√
4	Georgetown Public Hospital Corporation	√	
6	New Amsterdam Regional Hospital		√
10	Linden Hospital Complex		√

Table 3 – Treatment technology used by hospitals
Source: Interviews and observations

Incinerators not authorized to operate

72. Incineration is a treatment technology that reduces organic and combustible waste to inorganic, incombustible matter. An advantage of incineration is that it significantly reduces the waste volume and weight. On the other hand, incineration results in the release of harmful chemicals and pollutants into the atmosphere and the generation of residual ash.

73. The West Demerara, New Amsterdam, and Linden hospitals used incinerators for burning waste. The hospitals did not have environmental authorizations or permits from the Environmental Protection Agency to operate the incinerators. The use of the incinerators released harmful chemicals and pollutants into the air, water, and even the food supply. Consequently, the chemicals and pollutants could have gotten into citizens' bodies when they breathed, drank, and ate contaminants. As a result, we conclude that the unauthorized use of equipment by hospitals to treat waste posed environmental and health risks to persons.

Treatment facilities not in keeping with stated policies

74. The Standards and Technical Services department of the Ministry of Public Health developed a waste management policies checklist in Table 5 below for hospitals. The criteria hospitals must comply with when operating autoclaves and incinerators are as follows: -

Criteria	Autoclave	Incinerator
There are written Standards Operating Procedures	√	√
Operational records are maintained	√	√
A log is maintained of the temperature/pressure of each sterilizer run	√	
Located away from the main facility and in a secure, clear, and fenced area		√
Ash has been characterized		√
Log of equipment/treatment is maintained		√

Table 5 – Waste management policies checklist
Source: Ministry of Public Health

75. We visited the hospitals to determine whether there was compliance with the Ministry’s requirements for the operations of incinerators. Visits to the West Demerara Regional Hospital and the Linden Hospital Complex revealed the following.

West Demerara Regional Hospital

- The incinerator was located in a structure away from the main facility. However, the building was not secure or fenced in keeping with the Ministry of Public Health policy. Further, the structure and area were poorly maintained, as shown in Figure 13. There were holes in the roof, and the equipment was vulnerable to water damage from rain. Further, the equipment appeared out of order, and management did not present us with documents to substantiate its use and maintenance. Therefore, we could not determine the last date the incinerator operated and its maintenance during the period.

Management of Health Care Waste at Hospitals



Fig.13 - Incinerator room West Demerara Regional Hospital
Photo: Audit Office of Guyana

- Further, many sharps boxes were stored inside and outside the structure. From the number of containers and boxes on hand, we concluded that the hospital did not promptly treat and dispose of infectious waste.

Linden Hospital Complex

- The incinerator was in a structure from the main building of the hospital. The fence had breaches in two places which permitted unauthorized persons and animals to access the building. The building had items of waste other than infectious waste. We observed unserviceable equipment and boxes of general waste stored in the building, as evidenced in Figure 14 below. Further, management did not present us with any documents for the incinerator. Therefore, we could not determine the last date the incinerator operated and its maintenance during the period.



Fig. 14 – Unserviceable items in the incinerator room
Linden Hospital Complex
Photo: Audit Office of Guyana

Recommendation: *The Audit Office recommends that the management of:*

(a) The West Demerara Regional Hospital secures the incinerator and ensures it is in good working order and functioning effectively to treat its health care waste.

(b) The Linden Hospital secures and maintains the incinerator to ensure the safety of its workers.

Autoclave not working at full capacity

76. The Georgetown Public Hospital Corporation has an autoclave to treat biomedical waste generated by the hospital, Diamond Diagnostic Centre, and health care facilities in Georgetown and its environs. An autoclave is a machine that uses high-pressure steam to kill harmful bacteria and viruses on sharps, materials contaminated with blood, gauze, bandages, drapes, gowns, and beddings. The treated waste is fed into a shredder and then into a shoot, after which the shredded waste goes into large bins for disposal. This process reduces the quantity of waste and makes it safe for disposal. While the waste treated by an autoclave will retain its physical appearance, it can be made smaller using a shredder or a grinder. This shredder can reduce the volume of treated waste by 80%.

77. When we visited the hospital, sharps containers with untreated infectious waste were in the hospital compound, the biohazard room, and the autoclave facility, as shown in Figure 15 below.



Fig. 15 - Infectious waste stored in the compound
Georgetown Public Hospital Corporation
Photo: Audit Office of Guyana

Management of Health Care Waste at Hospitals

78. We found out that the autoclave was not working at full capacity because the electronic belt and shredder were not working. We do not know when the parts stopped working and the efforts made by management to repair them. After treatment, the autoclave dumped the waste on the floor to cool, before being carted to bins for disposal. The practice of dumping treated waste on the floor encumbered the facility and posed risks to waste handlers. This practice also delayed any further treatment and prevented the proper disposal of waste. Figures 16 and 17 show treated waste on the floor.



Figs. 16 & 17 - Treated waste dumped on the floor to cool
Georgetown Public Hospital Corporation
Photos: Audit Office of Guyana

Recommendation: *The Audit Office recommends that the management of Georgetown Public Hospital Corporation put systems in place to have the autoclave working at full capacity, to reduce the stockpile of health care waste.*

The Georgetown Public Hospital Corporation's Response: Efforts are ongoing to have the conveyer belt repaired and the shredder replaced. Hazardous medical waste is not treated at the autoclave but rather disposed of in a special chamber at the Higgs Bosch dumpsite.

Waste not disposed of regularly

79. Inquiries of hospital personnel revealed that waste was removed for disposal by government waste disposal services, private contractors, or sanitation workers of the Georgetown Public Hospital Corporation. Table 5 below provides details of who was responsible for the removal of the various types of health care waste at each hospital.

Name of Hospital	General (Black Bag)	Hazardous (Red Bag)	Infectious (Sharp Container)	Infectious (Sharp Box)
	Removed by			
Georgetown Public Hospital Corporation	Private contractor	Private contractor after treatment by autoclave	Private contractor after treatment by autoclave	Private contractor after treatment by autoclave
Linden Hospital Complex	Linden Town Council	Linden Town Council after treatment (burning)	Linden Hospital Complex - taken to Georgetown Hospital for treatment	Linden Town Council after treatment (burning)
New Amsterdam Hospital	Private contractor	Private contractor	Private contractor after treatment (burning)	Private contractor after treatment (burning)
West Demerara Hospital	Private contractor	Private contractor	Georgetown Hospital Sanitation Department	Private contractor
Diamond Diagnostic Centre	Government waste disposal services	Government waste disposal services	Georgetown Hospital Sanitation Department	Georgetown Hospital Sanitation Department

Table 5 - Waste collectors
Source: AOG system documentation and interviews

80. The Georgetown Public Hospital Corporation required the contractor to remove waste twice daily from the hospital. The contractor did not comply and removed waste every other day. As a result, this posed a health hazard to staff, patients, and the general public.

81. General and hazardous waste stored on-site at the Linden, West Demerara, New Amsterdam, and Diamond Hospitals was collected as scheduled. As it relates to the treatment and removal of infectious waste at the Linden and West Demerara Hospitals, efficient systems were not in place at the institutions. There were large quantities of sharps containers and boxes stored haphazardly at the storage facilities. The sharps containers at the West Demerara Regional Hospital were on-site for more than five months. The delay in promptly disposing of the waste compromised the health and safety of waste handlers.

Recommendation: *The Audit Office recommends that:*

- (a) *The management of Georgetown Public Hospital Corporation reviews its waste collection and treatment operations to prevent waste from being stockpiled at the facility. Also, ensure that the waste disposal contractor complies with the established schedule for disposing of waste at the facility.*
- (b) *The management of Linden and West Demerara Hospitals put systems in place to ensure that infectious waste is removed for treatment regularly to avoid stockpiles of waste in unsecured locations.*

The Diamond Diagnostic Centre's Response: Diamond Diagnostic Centre relies on the Georgetown Public Hospital Corporation to remove its medical waste and we do not know where the waste is disposed of after treatment. Also, we do not depend on any government entity to pick up the general waste we depend on a private company paid by the Regional Democratic Council to do our removal.

Conclusion

82. General and hazardous waste stored on-site at four hospitals were collected as scheduled. Even though the autoclave was in use at one hospital, there was a large amount of untreated infectious waste in sharp containers, the biohazard room, and the autoclave facility. Waste handlers at the Georgetown Public Hospital Corporation dumped treated waste on the floor before being carted to the bin for disposal. We concluded that hospitals did not always dispose of health care waste in such a manner to mitigate health and environmental risks.

Overall conclusion

The hospitals did not efficiently and effectively managed health care waste to mitigate health and environmental risks. We base our conclusion on the following:

- Ministry of Public Health and Ministry of Communities did not coordinate and prepare policies and plans to regulate the management of health care waste. Further, hospital officials did not monitor waste management activities.
- Waste was not collected and stored in approved containers. Hospitals failed to develop waste collection schedules, resulting in ad hoc collection times. Used syringes and needles were in unsealed plastic bottles used as sharps containers. The syringes and needles were easily accessible to persons, which could have resulted in theft and infections if used.

Management of Health Care Waste at Hospitals

- Waste segregation systems were ineffective. Poor segregation practices resulted in infectious waste placed in general waste containers. Waste handlers suffered injuries from sharps placed in bags.
- Health care waste was not properly stored and transported. Storage areas were inadequate for waste volume resulting in sharps containers and boxes stowed haphazardly at hospitals. As a result, health care waste was unsecured and accessible to unauthorized persons and animals. At one hospital, waste was transported in the wheelchair used by patients.
- Hospitals did not always dispose of health care waste in such a manner to mitigate health and environmental risks. A broken autoclave led to treated waste dumped on the floor before disposal.

About the audit

This report prepared by the Audit Office of Guyana looked at how health care waste was managed by hospitals, falling under the Ministries of Public Health and the Communities. Our responsibility was to provide objective information and advice and conclude whether the Ministries and hospitals complied in all significant respects with the established criteria.

Scope and approach

The audit covered the period 1 January 2017 to 31 July 2019 and focused on the following lines of enquiry:

- Administration of the Waste Management System.
- Segregation and Collection of Waste.
- Transport and Storage of Waste.
- Treatment and Disposal of Waste.

We sought to determine whether hospital officials followed relevant laws, regulations, policies, and WHO Guidelines and if there was monitoring of the waste management activities at the five hospitals. We conducted structured interviews with management and staff of the Georgetown Public Hospital Corporation, Linden Hospital Complex, New Amsterdam Regional Hospital, West Demerara Regional Hospital, Diamond Diagnostic Centre, and the Ministry of Public Health. We also reviewed relevant documents and reports and analyzed data collected to arrive at our conclusions.

Audit criteria

The main criteria that we used to conduct this audit and their sources are as follows: -

Criteria	Sources
We expect the Ministry of Public Health and Ministry of Communities to coordinate and prepare policies and plans to regulate the management of health care waste.	Ministry of Health Act 2005 Health Facilities Licensing Act 2007 Health Facilities Licensing Regulations 2008 Occupational Safety and Health Act 1997
We expect the management of hospitals to collect, store, segregate, and transport waste in approved containers to minimize health and environmental risks.	WHO Safe Management of Wastes from Health Care Activities Second Edition
We expect the management of hospitals to have the required facilities for storing waste until the waste is treated and collected for disposal.	WHO Safe Management of Wastes from Health Care Activities Second Edition



DIAMOND DIAGNOSTIC CENTRE

East Bank Demerara
Guyana
Telephone: 265-4681/265-4601



Ms. Claireann James
Audit Manager
Audit Office of Guyana
13th February 2020

Dear Ms. James,

RE: RESPONSE TO PERFORMANCE AUDIT ON THE MANAGEMENT OF MEDICAL WASTE AT DIAMOND HOSPITAL FOR THE PERIOD OF 01-01-2017 TO 07-2019.

This letter serves as a response to the report submitted by the Audit Office of Guyana.

Absence of a medical waste management plan

The Diamond Diagnostic Center do have a medical waste management plan that was created by the Regional Health Office in 2018. And a copy is present at the institution.

No medical waste management committee in place

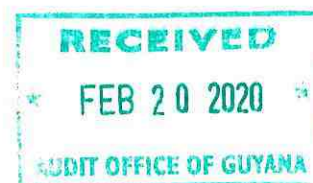
There was a medical waste management team established in the year 2017 comprising of Dr. Stephenson, the administrator and the matron, however Dr. Stephenson is the only person that is executing duties as it pertains to medical waste management of the health facility.

Insufficient trained staff within the waste management process

All handymen and porters that were hired by the Regional Democratic Council were subjected to Occupational and health safety training that would include waste management. This was so since these are the persons that would be in direct contact with both general and medical waste. As it relates to the nurses, the management of medical waste is an integral part of their training and the same goes for the doctors. Additionally, management as ensured the strategic placement of medical waste management protocols throughout the hospital that serves as a refresher.

Waste collection containers

At all times management makes it their duty to have the appropriate waste collection material available to staff when requested.



Nonadherence to waste collection schedule

The collection of both the general and medical waste is scheduled. The medical waste is removed every Thursday(weekly) by the Georgetown Public Hospital Corporation and the general waste is picked up every morning by Pooran's.

Protective gears for waste handling staff

All porters were provided with safety boots, facemasks and gloves, however there isn't compliance when it comes to utilizing the resources available to them.

Treatment of medical waste

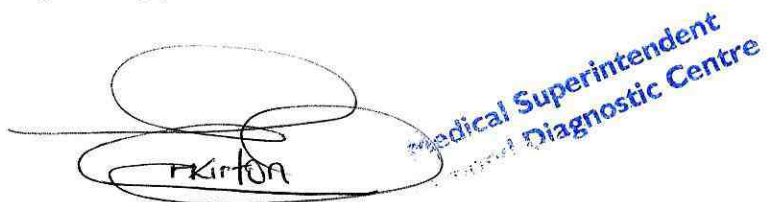
Georgetown Public Hospital Corporation is responsible for both the treatment and disposal of medical waste.

Removal of waste

As stated, before we at the Diamond Diagnostic Center do not remove our medical waste however we rely on the GPHC to do same and we don't have knowledge of where this waste is disposed after treatment. Also, we do not depend on any government entity to pick up our general waste we depend on a private company paid by the Regional democratic council to do our removal.

All for your information and guidance.

Yours Respectively,



.....
Dr. Ericka Kirton MD, MBA-HHSM
Medical Superintendent (ag).

Cc: Ms. Pauline Lucas, Regional Executive Officer, Region 4
Dr. Quincy Jones, Regional Health Officer, Region 4

MINISTRY OF PUBLIC HEALTH LINDEN HOSPITAL COMPLEX

Riverside Drive, Watooka, Linden, Guyana
Tel. No. 592-444-6182 Email: lindenhospital@gmail.com

August 25, 2020

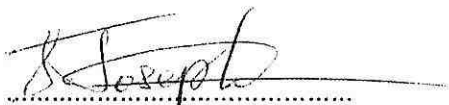
Ms. Claireann James
Audit Director (ag.)
The Audit Office of Guyana

Dear Ms. James,

Subject: Report on the Waste Management Audit

Some amount of non-compliant areas were corrected such as follows:

1. Medical Waste Management Plan document with adjustments were made and compiled.
2. Medical Waste Management Committee along with the Infectious Prevention and Control Committee were merged and are presently undergoing training for two (2) months. The Committee Policy and Terms of Reference was also prepared.
3. Monitoring of medical waste management is being done daily and environmental cleaning of the storage area. However, there is still some amount of work to be done in this area.
4. Temporary medical waste management labels were re-designed and placed on all bins in the Complex. Recommendations to place permanent pictures will be looked at in the final quarter when funds are available. The Hospital was able to acquire red foot pedal bins but is presently having some difficulties in acquiring the black foot pedal bins.
5. Implementation of log books to record the collections of medical waste management are in use with both Attendants and Drivers signing off when the waste is being removed.



Ms. Sharon Joseph
O.S.H. Officer



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Georgetown, Guyana

Georgetown Public Hospital Corporation



We Care
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September 16, 2020

Mr. Deodat Sharma,
Auditor General
63 High Street, Kingston
Georgetown

Attn : Ms. Claireann James, Audit Manager

Re: Performance Audit on the Management of Medical Waste at the Georgetown Public Hospital Corporation for the Period 01 January, 2017 to 31st July, 2019

Please see attached, the Georgetown Public Hospital Corporation's response to the Performance Audit on the management of medical waste conducted for the period 01st January, 2017 to 31st July, 2019.

We are available, if necessary, to further discuss the report and answer queries.

Kindly contact Mr. Gerron Parker, Facilities Management Department, on 225-7066 during the hours of 08:00 to 16:30 hours, Monday to Friday to coordinate the necessary arrangements.

Regards,



Brigadier (Ret'd) George Lewis MSS., MSc.
Chief Executive Officer



Copy: Mr. Gerron Parker, Director (ag) Facilities Management Department

Chapter 1 - Administration of the Waste Management System

Medical waste management plan

Management's Response: A revised unapproved Medical Waste Management Plan exists. A copy of this revised Medical Waste Management Plan is attached for your perusal and the management of GPHC commits to presenting this plan to the Georgetown Public Hospital Board for approval.

Medical waste management committee

Management's Response: A new Medical Waste Management Committee will be instituted shortly in accordance with our revised Waste Management Plan.

Standard Operational Procedures

Management's Response: The revisions are not available.

Training staff in good waste management practices

Management's Response: Currently training is done in an ad-hoc manner to address identified needs and correct deficiencies, and limited records are kept of personnel training. The management of the GPHC commits to maintaining better records of training for both formal and ad-hoc training activities. Further, formal training sessions will be planned and executed.

Monitoring of medical waste management activities

Management's Response: Steps will have to be put in place to document waste collected at the GPHC; currently only records of waste collected off site are recorded. Plans are in progress to improve storage facility of medical waste with the procurement of a chill container to store medical waste at the required temperature. The use of PPEs will be reinforced.

Financing medical waste management activities

Management's Response: The Georgetown Public Hospital Corporation as a subvention agency, caters to its overall budget for medical and solid waste management, however it is not catered for under a specific line item.

Chapter 2 – Segregation and Collection

Public awareness of waste segregation method

Management's Response: Staff on orientation are informed of the waste disposal protocols. Additionally, these points are emphasized in training courses and refresher training sessions are scheduled within departments where there are violations of the protocols.

Waste segregation

Management's Response: We hope to alleviate this issue through greater enforcement of policies and educational sessions.

Waste collection containers

Management's Response: The privately-owned contracted cleaning services is responsible for the placement of the correct coloured bags in bins, while the nurses or respective departments head have the responsibility of ensuring that they request the correct disposal container for the various locations.

The management will task the Coordinator of Sanitation and Janitorial Service and the Waste Management Consultant to increase the monitoring of departments and wards to ensure that waste is properly segregated and that waste bins follow the designated colour-coding system. Efforts will also be made to employ a Waste Management Officer to perform this duty in the long run.

The used needles stored in drink bottles were collected from health centres and originated from private homes of patients using insulin. We will have to work along with patients and the relevant authorities to curb this habit.

Waste collection schedule

Management's Response: Internal waste collection schedules can be established; however, the frequent monitoring of the garbage situation is encouraged to ensure there is no over flowing of receptacles since the rate of waste generated varies by areas daily. We believe this is a better and more efficient system.

Chapter 3 – Transport and Storage

Transporting medical waste

Management's Response: Management will seek to procure receptacles with covers and enforce the separate collection of different categories of waste. PPEs are procured for waste management staff, and enforcement of the use of these PPEs will be strengthened.

Safety of workers handling waste

Management's Response: The GPHC's budget for and procure PPEs for all staff members. A reconciliation exercise will be conducted to determine if all staff members were provided with those protective gear and the status of them. Increased monitoring and enforcement will be initiated to enforce compliance.

Storage of medical waste

Management's Response: The GPHC is challenged by inadequate space for the storage of infectious waste consequently we are increasing our efforts to quickly process the waste. The GPHC has adopted a new policy where hazardous waste collected is not kept for more than three

days without being treated and disposed of thus alleviating some of the storage concerns. Greater enforcement of SOPs will be encouraged to ensure that waste is stored together.

Chapter 4 – Disposal

Use of hydroclave facility

Management’s Response: Efforts are ongoing to have the conveyer belt repaired and the shredder replaced. Hazardous medical waste is not treated at the autoclave but rather disposed of in a special chamber at the Hags Bosch dumpsite.

Lack of medical waste data

Management’s Response: Currently the records collected are only collected for billing purposes to the private facilities. The GPHC acknowledges that record keeping must be improved to support decision making; hence the proposal for the employment of the Waste Management Officer to support this activity.

Waste disposal

Management’s Response: The contractual agreement catered for a smaller compactor. After realizing that it filled rapidly and caused overflowing. The management of GPHC and the contractor of the private disposal service agreed to install a larger compactor at no additional cost. We will have to do an addendum to the existing contract to regularize this situation.