

APPLICATION LEVELS OF PRINCIPLES OF POCT IMPLEMENTATION, MANAGEMENT, AND MAINTENANCE THROUGH THE PERCEPTIONS OF HEALTHCARE PROFESSIONALS AT A TERTIARY HOSPITAL IN UYO, AKWA STATE, NIGERIA

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ABSTRACT

Background: The application of principles for the implementation, management, and maintenance of point-of-care (POC) testing system service is unclear in tertiary healthcare settings in Nigeria. Hence, the study assessed these principles through the perceptions of healthcare professionals (HCPs).

Methods: The cross-sectional study was conducted among 300 HCPs in the University of Uyo Teaching Hospital (UUTH), southern Nigeria, using a pre-tested self-administered questionnaire that assessed the major principles for POC system service. The questionnaires assessed the implementation principles (determination of healthcare need, presence of POC Organizing and implementation committee, POC testing policy/accountability protocols, direct involvement of Health care Professionals (HCPs) and the training and certification of operators), the management principles (establishment of quality assurance and audit policies, establishment of maintenance and inventory control policies, establishment of documentary protocols) and the maintenance principles (accreditation and/or regulation of POC testing systems/devices and the central laboratory's involvement in effecting all the principles). Categorical data were summarized in frequency and percentages and presented in tables and figures.

Results: Regarding implementation principles, most respondents affirmed not having determined the healthcare need, clinical/operational/economic benefits, performance requirements, clinical risks, and costs before deployment (63.3%), not having any POC organizing/implementation coordinating committee (83.3%), no POC testing policy/accountability protocols (96.7%), and no training/certification of operators for POC systems/devices in the hospital and/or their departments/units (91.7%) ($p < 0.001$). On the management principles, most respondents affirmed negatively to having established quality assurance/audit policies (83.3%), maintenance/inventory control policies (91.7%), and documentary protocols for POC systems/devices in the hospital and/or their department/unit (96.7%) ($p < 0.001$). Concerning the maintenance principles, most respondents affirmed to no accreditation/regulation policy (73.3%) and involvement of the central laboratory regarding the POCT systems/devices within the hospital and/or their departments/units (78.4%) ($p < 0.001$).

Conclusion: The level of application of POC principles is low within UUTH based on current findings. This highlights a critical gap in current operational practices, posing potential risks to the quality of patient diagnostic data. Immediate development/implementation of targeted programs and enhanced compliance protocols to address these deficiencies is recommended.

Keywords: Point-of-Care Testing, Healthcare professionals, POC implementation, Management and maintenance

INTRODUCTION

The point-of-care (POC) testing system, characterized by the introduction, initiation, and execution of core laboratory services at or near the site of patient care, that allows for expedited laboratory test results and timely clinical decisions, is a rapidly expanding clinical diagnostic resource in modern-day healthcare delivery.¹⁻⁶

Though POC system services gained momentum a few decades ago, they're gradually revolutionizing and positively impacting how diagnostic healthcare services are currently being delivered around the globe.¹⁻² The system has a unique advantage of reducing the turnaround time of test procedures compared to the centralized laboratory services, which consequently enhances decision-making from the healthcare providers, thereby improving patient experience as well as clinical outcome.¹⁻¹³ The appreciation of this clinical relevance in modern-day diagnostic healthcare services has led to its full embrace in the Western populations; regrettably, this is not the same in less developed nations, including Nigeria.³⁻⁸ More than 86% of American and United Kingdom hospitals use at least one POCT system.³⁻⁸ In Sub-Saharan Africa, availability is highly inconsistent. Only 19% of essential diagnostic tests (including glucose and malaria) are consistently available in primary healthcare settings. In specific urban studies (e.g., Nigeria), good utilization of POC devices is reported by only about 32.2% of clinicians.^{4,11-14}

To realize the full benefits of the POC system service in any healthcare setting requires a strong institutional framework that adheres to the core principles for its implementation, management, and maintenance.⁸⁻¹³ In the context of Laboratory Medicine practices, these principles are organizational factors or best practices to ensure efficient introduction, initiation, and execution of POC system service and strategies to optimize its benefits in any healthcare setting.⁸⁻¹⁴ The implementation principles include five key components: 1. Determination of healthcare the need, the clinical, operational, and economic benefits, the performance requirements, the clinical risks, and the costs involved before deploying POC systems/devices, 2. POC Organizing and Implementation Coordinating Committee, with involvement of the Central Laboratory, 3. POC testing policy/accountability protocols guiding the use of POC testing systems/devices, 4. Direct involvement of HCPs in the procurement and evaluation of POC systems/devices, and 5. The training and certification of operators of the POC testing systems/devices.⁸⁻¹⁴ The management principles include three key components: 1. Establishment of quality assurance and audit policies for the POC testing system/devices, 2. Establishment of maintenance and inventory control policies for POC testing systems/devices, and 3. Establishment of documentary protocols during the use of any of these POC systems/devices.⁸⁻¹⁴ The maintenance principles include two key components: 1. Accreditation and/or regulation of POC testing systems/devices, and 2. The central laboratory's involvement in the implementation, management, and maintenance of POC testing systems/devices.⁸⁻¹⁴

However, the level of application of these core principles is unclear in most healthcare institutions across Nigeria.^{4,11-14} Hence, the study assessed the application level of major principles for POC implementation, management, and maintenance in healthcare settings, through the perception of healthcare professionals (HCPs), at the University of Uyo Teaching Hospital (UUTH) within the southern part of Nigeria.

MATERIALS AND METHODS

Study Location

The study was conducted at the University of Uyo Teaching Hospital (UUTH). UUTH is a publicly funded tertiary hospital located along the famous Abak Road in Uyo, the capital city of Akwa Ibom State, within the southern part of Nigeria. The hospital has a total staff strength of 739 healthcare professionals (HCPs) encompassing the following: medical doctors/dentists, nursing/midwifery staff, pharmacists, laboratory scientists, healthcare management/support staff, and other healthcare workers.¹⁵

Study Design

This was a descriptive cross-sectional study.

Ethical Approval/Considerations

Ethical approval was obtained from the Health Research Ethics Committees of UUTH (Assigned reference no: UUTH/AD/S/96/VOL.XXI/476) for commencement. All study participants provided written consent and assent before recruitment, and all study protocols adhered to the ethical standards outlined in the World Medical Association's Helsinki Declaration.

Study Population

The study population included randomly selected HCPs (medical doctors/dentists, nursing/midwifery staff, pharmacists, laboratory scientists, healthcare management/support staff, and other healthcare workers) in UUTH.

Eligibility Status

Inclusion Criteria

The criteria for inclusion included full-time HCPs engaged in clinical services in UUTH.

Exclusion Criteria

The criteria for exclusion included part-time staff members and non-clinical staff in the hospital.

Sample Size Calculation

The sample size was calculated from the population size using the Taro Yamane formula ($n = \frac{N}{1 + N \times e^2}$) at a maximum acceptable error margin of 5% degree of freedom (95% chances of being right).¹⁶ Using the total of 739 healthcare workers

in the Taro Yamane formula, the required sample size was calculated as 259.3 (approximately 260). Accounting for a 10% non-response rate; $260/0.9 = 288.9$ (approximately 300)

Hence, using the Taro Yamane formula, a sample size of 260 HCPs was obtained. Accounting for a 10% non-response rate gave a final sample size of 300. Thus, 300 questionnaires were distributed to those HCPs who met the inclusion criteria.

Categories of HCPs

The HCPs were categorized into six broad categories as defined in the World Health Organization (WHO) 2013 Global Atlas of the Health Workforce,¹⁷ as recently documented by Oni and colleagues.¹⁸ These six broad groups of HPs include physicians/dentists, nursing/midwifery staff, pharmacists, laboratory scientists, healthcare management/support workers, and other healthcare workers (dietitians and nutritionists, medical assistants, physiotherapists, medical trainees, interns, respiratory therapists, operators of medical/dental equipment).¹⁷

Allocation of Study Participants by the Different Groups of HCPs

This was done using the proportionate allocation protocols recently described by Oni and colleagues¹⁸ based on the total number of HCPs in the study facility

Proportionate allocation per category of HCPs

	Staff Strength/Facility	Number of Staff Planned to be Recruited/Facility
Categories of Healthcare Professionals		
Physicians/dentists (specialists/residents)	391	160
Nurses/midwives	147	60
Laboratory scientists	124	50
Pharmacists	13	5
Health management support staff	13	5
Other healthcare staff*	51	20
Total	739	300

*Other healthcare staff: dietitians and nutritionists, medical assistants, physiotherapists, medical trainees, interns, respiratory therapists, and operators of medical/dental equipment

(n=739), the proportion of HCPs in each of the six broad categories as defined in the WHO 2013 Global Atlas of the Health Workforce,¹⁷ the total number of HCPs in each category within the study centre, and the calculated minimum sample size of the study (n=300). For example, for the physicians/dentists = $391 \times 300 / 739 = 160$ physicians/dentists planned to be recruited.

Sampling Method & Technique

The multi-stage sampling technique was adopted and involved, as recently documented by Collins and colleagues.¹⁹

- Selection of groups of HCPs based on inclusion criteria by stratification, as recently described.¹⁹
- Selection of HCPs using computer-generated random numbers from each professional group in each study center from the staff list as a sampling frame, as recently described.¹⁹

Study Tool

A paper-based, self-administered questionnaire was developed for the study. It had three sections covering basic job characteristics, the POC system availability and device utility, and ten major principles for POC system service implementations, management, and maintenance in healthcare settings. These ten major POC principles include the following:²⁰

A. Implementation Principles

- 1) Determining the (i) healthcare need (ii) the clinical, operational, and economic benefits (iii) the performance requirements (iv) the clinical risks, and (v) the costs involved before deploying any of the POC systems/devices in the hospital and/or the department/unit.
- 2) POC Organizing and Implementation Coordinating Committee with involvement of the Central Laboratory within the hospital or in the hospital and/or department/unit
- 3) POC testing policy and accountability protocols in the hospital or your department, guiding the use of

any of these POC systems/devices in the hospital and/or the department/unit

- 4) Direct involvement in the procurement and evaluation of any of these POC systems/devices in the hospital and/or the department/unit.
- 5) Training and certification of all the operators of these POC systems/devices in the hospital and/or the department/unit

B. Management Principles

- 6) Establishment of quality control (internal or external), quality assurance, and audit policies for the

use of any of these POC systems/devices in the hospital and/or the department/unit

7) Establishment of maintenance and inventory control policies for the use of any of these POC systems/devices in the hospital and/or department/unit.

8) Establishment of documentary protocols (test request, result produced, and action taken) during the use of any of these POC systems/devices in the hospital and/or the department/unit.

C. Maintenance Principles

9) Accreditation and/or regulation from internal or external bodies for any of the POC systems/devices in the hospital and/or the department/unit.

10) Central laboratory involvement in the maintenance of POC systems/devices in the hospital and/or department/unit.

Pilot Testing & Validation of Study Tool

The study was assessed based on the procedures recently described by Dingwoke and colleagues.¹¹ The assessment was done by experts in the field (Consultant Physicians in Laboratory Medicine and Public Health) to ensure that the study tool items aligned with the study objectives and to establish both face and content validity. The reliability of the study tool was ensured through a pre-test on 20 randomly selected HCPs within the hospital, and the feedback gathered informed modification of some questions to align with the key purpose of the study.

The reliability of the study tool was assessed using Cronbach's alpha, with a coefficient of $e^{>0.91}$ of each study tool component, indicating good internal consistency and confirming that the study items reliably measured the intended construct, as recently described by Dingwoke and colleagues.¹¹

Data Collection

The data collection was done by trained research assistants. They functioned to obtain consent, hand over the questionnaire to respondents and retrieve the questionnaire when respondents had finished filling the questionnaires. They also provided clarifications to respondents when needed.

First, all potential participants were approached to participate in the study, and following informed consent acquisition and confirmation of eligibility status, the validated questionnaire was self-administered. The study collection period spanned June to August 2025.

Data Definition

A cut-off mark of 80% was adopted as low adherence (<80%) or high adherence ($e^{>80\%}$) rate on the "yes

response options" to each of the 10 items of the three major components of the POC testing principles, as previously defined.²¹

Data Analysis

Statistical Package and Service Solution (SPSS, IBM, Chicago, IL, USA) for Windows version 25.0 was used for statistical analysis. Before analysis, all research data were first inspected for missing data or mistakes in data entry process and this was corrected. Categorical data were summarized in frequencies and percentages and presented in tables and figures

RESULTS

FIG. 1 depicts the categories of HCPs who responded through the study tool based on the proportionate allocation process.

FIG. 2 depicts the departments/units of the HCPs who responded to the study tool. As depicted, most respondents hailed from the Department of Internal Medicine (n=100; 33.3%), seconded by those from the Department of Haematology and Blood Transfusion (n=50; 16.7%) (FIG. 2).

Table 1 depicts the POC system devices, test materials, and tests in use in UUTH that were identified by respondents to the study tool. In Table 3, glucose

Table 1: POC System Devices, Test Materials, & Tests Identified by Responders in UUTH

S/N	POC System Devices/ Test Materials	n	%
1	Glucose meters	180	60.0
2	Urine dipstick tests	140	46.7
3	HIV rapid test	25	8.3
4	Urine pregnancy test	25	8.3
5	Haematocrit reader	5	1.7
6	HbA1c	5	1.7
7	Malaria rapid test	5	1.7
8	Coagulometer	5	1.7
9	Blood gas analysers	5	1.7
10	Bilirubin meter	5	1.7
11	Cardiac marker reader	5	1.7
12	HBsAg rapid kit	5	1.7
13	Hepatitis C virus rapid kit	5	1.7
14	Syphilis rapid test	5	1.7

POCT: *point of care*; HIV: *human immunodeficiency virus*; HbA1c: *glycated haemoglobin A1c*

meters (n=180; 60.0%), urine dipstick tests (n=140; 46.7%), HIV rapid test (n=25; 8.3%), and urine pregnancy test (n=25; 8.3%) constituted the majority of the POCT system devices, test materials, and tests currently in use in UUTH (Table 1).

Table 2: Responses to questions regarding the perception of principles of POC system service implementation, management, and management in UUTH (n = 300)

Categories of Questions on POC Key Principles		Yes n (%)	No n (%)
A Implementation Principles Component			
1	Determination of the healthcare need, the clinical, operational, and economic benefits, the performance requirements, the clinical risks, and the costs involved before deploying any of the POC testing systems/devices	110 (36.7)	190 (63.3)
2	POC Organizing and Implementation Coordinating Committee, with involvement of the Central Laboratory	50 (16.7)	250 (83.3)
3	POC testing policy and accountability protocols guiding the use of POC testing systems/devices	10 (3.3)	290 (96.7)
4	Direct involvement of HCPs in the procurement and evaluation of POC systems/devices	155 (51.7)	145 (48.3)
5	Training and certification of operators of these POC testing systems/devices	25 (8.3)	275 (91.7)
B Management Principles Component			
6	Establishment of quality assurance and audit policies for POC testing system/devices	50 (16.7)	250 (83.3)
7	Establishment of maintenance and inventory control policies for POC testing systems/devices	25 (8.3)	275 (91.7)
8	Establishment of documentary protocols during the use of any of these POC systems/devices	10 (3.3)	290 (96.7)
C Maintenance Principles Component			
9	Accreditation and/or regulation of POC testing systems/devices	80 (26.7)	220 (73.3)
10	Central laboratory involved in the implementation, management, and maintenance of POC testing systems/devices	65 (21.6)	235 (78.4)

POC: *point of care*; HCPs: *healthcare professionals*

Table 2 depicts the responses to questions regarding perception of major principles of POC system service implementation, management, & Management in UUTH.

Regarding the POC implementation principles as shown in Table 2, most of the respondents affirmed

not having determined the healthcare need, the clinical, operational, and economic benefits, the performance requirements, the clinical risks, and the costs involved before deploying any of the POC systems/devices (n=190; 63.3%), not having any POC organizing and implementation coordinating committee (n=250; 83.3%), no POC testing policy and accountability

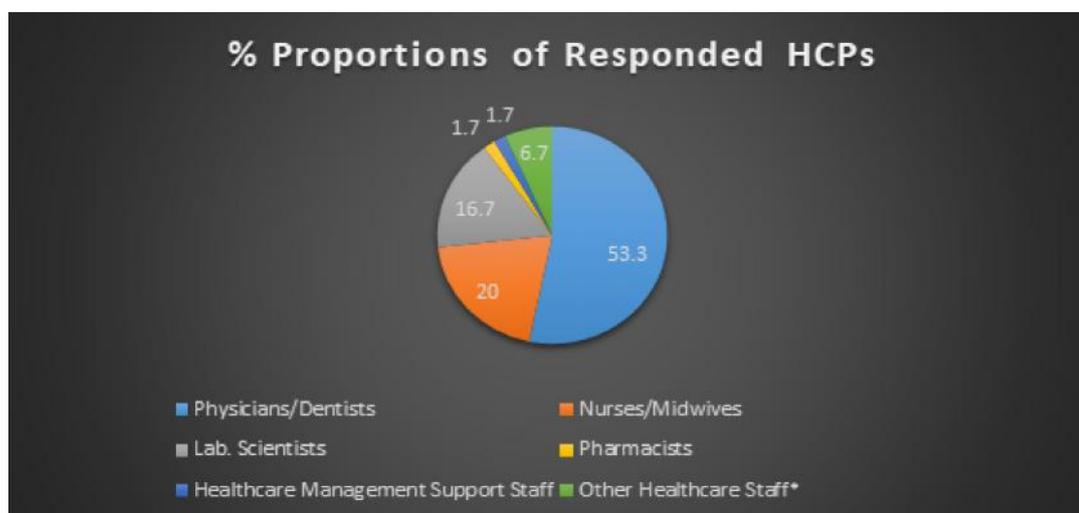


Figure 1: Categories of healthcare professionals who responded (Total = 300)

HCPs: *Healthcare professionals*; *Other healthcare staff*: *dieticians and nutritionists, medical assistants, physiotherapists, medical trainees, interns, respiratory therapists, and operators of medical/ dental equipment.*

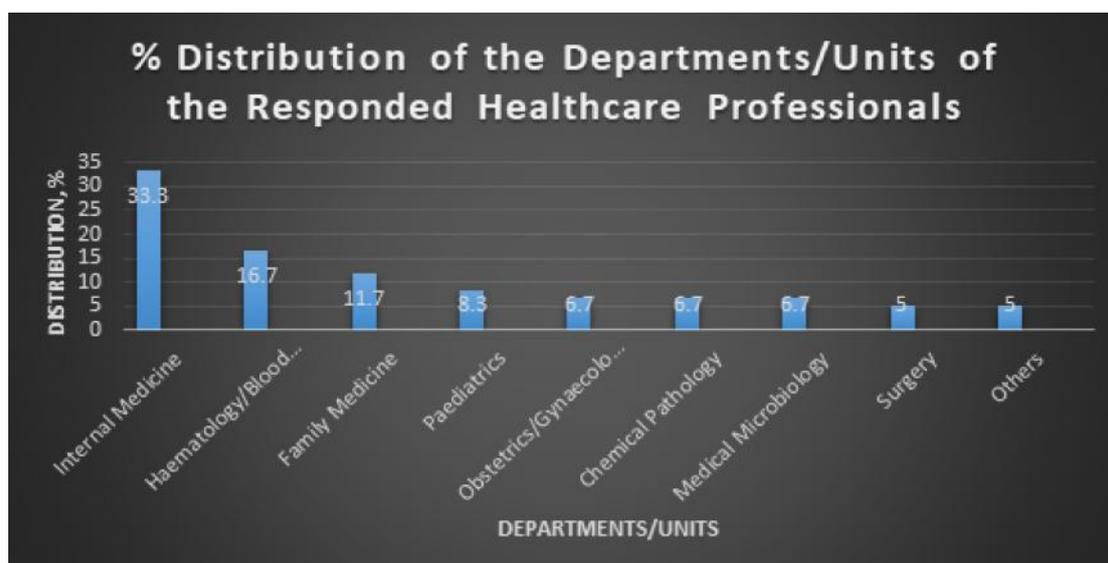


Figure 2: Department/Unit of healthcare professionals who responded (Total = 300)

HCPs: Healthcare professionals

Others: Histopathology, Radiology, Community Health, Physiotherapy, Dental, Anaesthesia, Ophthalmology, ENT, Psychiatry, Health Management Support Unit, & Pharmacy

protocols (n=290; 96.7%), and no training and certification of operators of the POC systems/devices in the hospital or their various departments/units (n=275;91.7%) (Table 2).

Regarding the POC management principles as shown in Table 2, most of the respondents also affirmed negatively to having established quality control (Internal or external), quality assurance, and audit policies for the use of any of these POC systems/devices (n=250;83.3%), established maintenance and inventory control policies for the use of any of these POC systems/devices (n=275;91.7%), and established documentary protocols during the use of any of these POC systems/devices in the hospital or their various department/unit (n=290; 96.7%) (Table 2).

In terms of the POC maintenance principles, most respondents also affirmed not having any accreditation and/or regulation from internal or external bodies for any of the POC systems/devices (n=220; 73.3%) and no central laboratory involvement in any aspects of the implementation, management, and maintenance of POC systems/devices in hospital or their various departments/units (n=235; 78.4%) (Table 2).

DISCUSSION

Principal Findings

The current study is the first to focus on this important aspect of POC testing system service, with an emphasis on the key principles of its implementation, management, and maintenance, as expected of a tertiary hospital in Nigeria. The study findings indicate

widespread use of POC testing systems/devices among the HCPs in the studied centre. However, the level of application of major POC principles required for its implementation, management, and maintenance was comparatively low in the studied area based on the responses from the HCPs in UUTH.

Firstly, after evaluating the POC implementation principles among HCPs, it was noted that the majority did not affirm the identification of the healthcare needs, the clinical, operational, and economic advantages, the performance criteria, clinical risks, and costs before the implementation of POC systems. This included the absence of a dedicated organizing or implementation coordinating committee for POC, a lack of a POC testing policy and accountability protocols, and no training or certification for operators of POC systems within the hospital or across their respective departments or units.

Secondly, following assessment of the POC management principles, most of the respondents also affirmed having no established quality assurance and audit policies, no maintenance and inventory control policies, and no documentary protocols for POC systems/devices in the hospital and/or their department or unit.

Lastly, when enquired about the POC maintenance principles, most of the respondents also confirmed that there were no accreditation/regulation for the POC, and no involvement of the central laboratory in

any aspects of POC testing system service within the hospital and/or their departments or units.

Principal Finding Relationships with the Existing Literature

The current study findings seem to corroborate the very few available and recent reports on the state of implementation, management, and maintenance of POC testing system services in tertiary healthcare centers in Nigeria.

Aimed to determine the quality management practices for POC testing system services among HCPs in five Nigerian tertiary healthcare settings across the geopolitical zones using a descriptive study design with an interviewer-administered questionnaire, as well as visual inspection of data and facilities of studied sites, Nnakenyi and colleagues observed that POC testing system services sites were mainly operated by the physicians (40%), with glucose meters (65%) being the most predominant POC testing system used, which concurs with our current findings.¹² Furthermore, Nnakenyi and colleagues also observed that only 26% of the sites had documentation of training on the POC before use, method validation was not performed in 81% of the sites, internal quality control and external quality assessment were performed at few of the sites, there was no traceability of results on the device to the patients tested at most (78%) of the sites, troubleshooting a faulty device was performed by non-laboratorians at 77% of the sites, most of the sites did not involve the laboratory in device procurement (74%), validation (77%), maintenance (78%), troubleshooting (64%), or monitoring the accuracy of the results (74%), and none of the five tertiary healthcare settings studied had a POC committee which all corroborates the latest findings.¹²

In another similar study conducted by Inaku and colleagues aimed to evaluate the knowledge, factors that may affect results generated, quality control practices, and the importance of POC regulation on the overall testing process among HCPs at the University of Calabar Teaching Hospital using a pre-tested questionnaire, the authors also reported about the predominance of the POCT glucose meters (91.4%) in their study.²²

Though the respondents had good knowledge of most POC testing device principles and favourable opinions on the need for instrument validation, institutional POCT committee, and the proper regulation of POCT system service in the studied centre, Inaku and colleagues observed that quality control practices were undertaken only by 24.3% of respondents. Most respondents had no structured

training and certification on the use of POCT system services, which aligns with the current study.²²

Contributing Factors

Low POC implementation in Nigerian hospitals stems from a combination of factors, including weak organizational policies and frameworks for POC services, inadequate infrastructure, financial constraints, limited human resources, low awareness of POC benefits, and hesitancy to adopt new technologies due to unfamiliarity or resistance to change.^{4,11,23} Additionally, poor POC management in Nigeria is driven by insufficient training and supervision, inadequate quality control, supply chain problems, and limited resources. These challenges hinder effective POC management, undermining patient care and diagnostic accuracy.^{4,11,23} Furthermore, the maintenance of POC testing systems/devices in Nigerian hospitals is hampered by inadequate funding, insufficient training, a lack of maintenance culture, and supply chain issues for reagents and spare parts. Infrastructure limitations, such as unreliable power supply and inadequate storage facilities, also contribute to the problem.^{4,11,12,23}

Relevance of Findings to Clinical Practice & Future Research

It is hoped that the findings of this study will lead to significant institutional policy changes that will maximize the potential of POC in healthcare settings by applying the principles evaluated here. Additionally, future research should investigate the key factors influencing these principles using more detailed study designs.

Study Limitation

The study was limited by several factors that should be addressed as areas for improvement in future research studies. First, the study was a single-centre hospital study; hence, its conclusions lack generalizability to the wider hospital settings within the study zone due to unique local workflows, staffing, and management structures. Secondly, as a questionnaire-based qualitative research study conducted among HCPs within this single hospital setting, these respondents might be tilted to giving socially desirable answers, hide true feelings, or be influenced by emotions, rather than being fully truthful. Thirdly, the questionnaires deployed for the current study adopted a closed-ended response (yes/no) format, which may have offered limited deep insights, forcing simplistic answers and potentially missing crucial details because respondents must choose from pre-set options, which might not fully represent their views, leading to data loss, forced choices, potential bias from question

wording, and frustration, preventing the discovery of unexpected issues or rich qualitative context.

CONCLUSION

The study findings indicate widespread use of POC testing systems/devices among the HCPs in the studied centre. However, the level of application of major POC principles required for its implementation, management, and maintenance is low in the studied area. This highlights the urgency to address these issues to enable the realization of the full benefits and potential of the POCT system service, especially within the tertiary healthcare settings in Nigeria.

ADDENDUM

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Data Availability Statement: The authors declare that all data supporting the findings of this study are available, and raw data can be obtained from the corresponding author upon request.

Authors' Contributions: JCO, CA, MBO, CVO, and QNN conceived and designed the study; CVO and QNN acquired the data; JCO, CA, and MBO supervised the data acquisition; CVO and QNN conducted the data analysis. JCO, CA, and MBO interpreted the data. CVO and QNN drafted the manuscript; JCO, CA, and MBO critically revised the manuscript for important intellectual content; and all the authors finally reviewed the draft of the manuscript, read, and approved the final version of it for publication.

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APPENDIX 1

SUPPLEMENTARY MATERIAL: Detailed Responses to questions regarding the perception of principles of POC system service implementation, management, & Management in UUTH (n = 300)

Categories of Questions on POCT Key Principles		Yes n (%)	No n (%)
A Implementation Principles Component			
1	Did your department/unit determine the (i) healthcare need (ii) the clinical, operational, and economic benefits (iii) the performance requirements (iv) the clinical risks, and (v) the costs involved before deploying any of the POC testing systems/devices in the hospital and/or your department/unit?	110 (36.7)	190 (63.3)
2	Is there any POC Organizing and Implementation Coordinating Committee with involvement of the Central Laboratory within the hospital or in your department/unit?	50 (16.7)	250 (83.3)
3	Is there any POC testing policy and accountability protocols in the hospital or your department guiding the use of any of these POC testing systems/devices in the hospital and/or your department/unit?	10 (3.3)	290 (96.7)
4	Were you directly involved in the procurement and evaluation of any of these POC systems/devices in the hospital and/or your department/unit?	155 (51.7)	145 (48.3)
5	Are there any training and certification of all the operators of these POC testing systems/devices in the hospital and/or your department/unit?	25 (8.3)	275 (91.7)
B Management Principles Component			
6	Are there any established quality control (Internal or external), quality assurance, and audit policies for the use of any of these POC testing systems/devices in the hospital and/or your department/unit?	50 (16.7)	250 (83.3)
7	Are there any established maintenance and inventory control policies for the use of any of these POC testing systems/devices in the hospital and/or your department/unit?	25 (8.3)	275 (91.7)
8	Are there any established documentary protocols (test request, result produced, and action taken) during the use of any of these POC testing systems/devices in the hospital and/or your department/unit?	10 (3.3)	290 (96.7)
C Maintenance Principles Component			
9	Has there been any accreditation and/or regulation from internal or external bodies for any of these POC testing systems/devices in the hospital and/or your department/unit?	80 (26.7)	220 (73.3)
10	Is the central laboratory involved in any aspects of the implementation, management, and maintenance of POC testing systems/devices in the hospital and/or your department/unit?	65 (21.6)	235 (78.4)

POC: point of care; HCPs: healthcare professionals