REPUBLIC OF ZAMBIA

MINISTRY OF HEALTH

Zambia Assessment onFrontline Health Service Readiness and Capacities in the Context of COVID-19 Pandemic

World Health Organization

June 2021

FOREWORD

The health sector has maintained its commitment to the attainment of the Universal Health Coverage, despite the COVID-19 pandemic that has challenged the resilience of health systems globally. Several multisector actions against the current pandemic have taken place, and the health sector has been responding to prevent further transmission, manage cases, and ensure the continuity of essential health services amidst the COVID-19 pandemic.

In line with the focus on uninterrupted service delivery, the Ministry of Health in collaboration with the World Health Organization conducted the first of four rounds of Frontline Health Service Readiness and Capacity Assessment (FHSRCA) aimed to determine the demand and supply side of health services at facility level in the context of the COVID-19 pandemic. The WHO assessment tools for COVID-19 Case Management Capacity and Continuity of Essential Health Services (CEHS) were applied.

This report shows that most of the COVID-19 case management centres had majority of the tracer medicines for COVID-19 management, while almost all the primary health facilities had availability of the routine tracer vaccines. Further, the report shows that clinical staff had the higher history of COVID-19 infections, and the infection rate was higher among rural facility staff.

The number of primary health care facilities providing COVID-19 vaccines was higher than the number of facilities with cold chain equipment. Further, COVID-19 vaccine was available in 85% of COVID-19 case management centres, and two-third of these facilities had and were providing AstraZeneca/Oxford vaccine while Janssen/Johnson & Johnson Vaccines and Sinopharm vaccine which was available in less than ten percent of the facilities.

The report further reveals that COVID-19 pandemic had caused fluctuations in utilization of routine and Emergency Health Services (EHS) in the country. Overall, there was a reduction in the provision of EHSs during the pandemic relative to the pre-pandemic period and marked increases in inpatient admissions and NCD care services were observed after the pandemic started in the country. The health sector will continue to prioritise investments in the health care delivery to ensure continuity in the provision of essential health services.

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ACKNOWLEDGEMENTS

This report is a result of efforts by the various stakeholders from the Ministry of Health, Zambia Statistics Agency and the WHO Country and Regional Offices. The country team was led by Director Quality Assurance/Improvement and Director Monitoring & Evaluation in the Ministry of Health. Therefore, the Ministry of Health would like to acknowledge all those who were involved, in one way or the other, in the data collection, analysis and development of this report.

The data collection team is highly appreciated for the tireless efforts towards the completion of the assessment amidst the COVID-19 third wave.

Sincere gratitude goes to WHO for supporting the assessment technically and financially throughout the entire implementation process to report writing. Special thanks go to the WHO Regional Office team for working closely with the country team to ensure successful implementation of the first phase.

The exercise could not have been successful without the cooperation and support from the facility in-charges, Medical Superintendents, Senior Medical Superintendents, and the entire country team. The Ministry recognizes them for willingly taking their time to respond to the phone survey and providing accurate data without which this exercise would have been futile.

Finally, I appreciate the technical, financial and logistical support provided by WHO in undertaking the exercise through data collection, data analysis and development of this report.

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Acronyms and Abbreviations

CEHS	Continuity of Essential Health Services
COVID-19	Coronavirus Disease 2019
CPS	Conditional Poisson Sampling
FHSRCA	Frontline Health Service Readiness and Capacity Assessment
HCW	Health Care Worker
HF	Health Facilities
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
ICU	Intensive Care Unit
IMST	Incident Management Support Team
IPC	Infection Prevention and Control
MFL	Master Facility List
MoH	Ministry of Health
MRI	Magnetic Resonance Imaging
OPD	Out-patient department
PNC	Postnatal Care
PCR	Polymerase Chain Reaction
PDT	Photodynamic Therapy
PPE	Personal Protective Equipment
WHO	World Health Organization

Executive summary

The government of Zambia has maintained its commitment to the attainment of the Universal Health Coverage, despite the current COVID-19 pandemic in the country. So far, Zambia has experienced three waves of the pandemic that has costed human lives and challenged the nation's health systems, for the sustained delivery of quality health services to all Zambians. Several multisector actions against the pandemic have taken place, and the health sector has been responding to prevent COVID-19 transmission, manage COVID-19 cases, and ensure the continuity of essential health services during the last eighteen months of the pandemic period.

In June 2021, The Ministry of Health in collaboration with the World Health Organization conducted the first of four rounds of Frontline Health Service Readiness and Capacity Assessment (FHSRCA). The assessment aimed to determine the demand and supply side of health services at facility level in the context of the COVID-19 pandemic, and thereby guide the delivery of COVID-19 and non-COVID-19 related responses of the health sector. The WHO tools for COVID-19 case management capacity and Continuity of Essential Health Services (CEHS) assessment were adapted into the country context to study in a nationally representative sample of 243 health facilities that include all (fifty-two) COVID-19 case management centres in Zambia. In addition to these facility assessments, routine data from the country's District Health Information System (DHIS-2) data was analysed to track trends in essential health service utilization and outcomes during the pandemic.

The results of this assessment are organized around ten main areas, and these comprise facility readiness for COVID-19 case management, human resources for health, diagnostics, medical equipment availability, oxygen availability, availability of essential medicines and supplies, COVID-19 Infection Prevention and Control (IPC) and Personal Protective Equipment (PPE), COVID-19 case management at lower levels, COVID-19 vaccine readiness, and delivery and utilization of essential health services.

The findings show that half of the available COVID-19 beds were occupied during the assessment, and almost a third of them were set aside for critical care while a fifth of the available beds for surge capacity had the potential to be converted into Intensive Care Unit (ICU) beds. One in seven of clinical staff had history of COVID-19 infections, and the infection rate was higher among rural facility staff. COVID-19 related absence of health workers from their workplace was mainly due to psychosocial and medical reasons. In general, training and other capacity building activities on COVID-19 prevention and management were provided to forty-six (46%) percent of the facilities.

On average, seventy-two percent (72%) of the facilities had basic laboratory diagnostics. However, diagnostic tests for tuberculosis, blood glucose, haemoglobin, blood typing & cross matching, blood sugar, and blood creatinine were available only few of the facilities. Most of the case management centres were collecting COVID-19 specimens and conducted PCR or RDT testing on site, while the turnaround time was less than 72 hours in less than a third of these facilities. Nearly three in five primary facilities collect COVID-19 specimens. X-ray was available in only forty-five percent of the

case management centres. Oxygen was supplied through Oxygen concentrators and external supply oxygen cylinders in almost all the case management centres.

Most of the COVID-19 case management centres had majority of the seventeen tracer medicines for COVID-19 management, and three quarters (75%) of these facilities had all seven of the assessed tracer supplies for COVID-19 case management. However, the average availability of the tracer medicines in primary health care facilities was lower, at 74%, and oxygen was only available in one fourth of the PHCs. On average, almost all the primary health facilities had availability of all five of the routine tracer vaccines assessed in this survey.

Furthermore, nearly half of the COVID-19 case management centres had majority of the hospital Infection Prevention & Control (IPC) tracer items, and most of these facilities had all the PPE tracer items. However, most of the primary health care facilities had majority of the nine IPC tracer items, while more than two fifth of these facilities had majority of the PPE tracer items.

Ninety percent of the primary care facilities had a designated referral facility, and fifty-six percent of these facilities had patient transport services, with most of the facilities instructing patients with mild symptoms to self-isolate at home. Almost all primary facilities reported receiving up-to-date information on COVID-19 case management from the Ministry of Health.

The number of primary health care facilities providing COVID-19 vaccines was higher than the number of facilities with cold chain equipment. More than three quarters of the facilities had functional refrigerators with temperature monitoring loggers. Cold chain capacity (fridges, cold boxes, and vaccine carriers) was available in most of the primary facilities, but cold chain boxes were available in more than three in five of these facilities. COVID-19 vaccine was available in 85% of COVID-19 case management centres, and two-third of these facilities had and were providing AstraZeneca/Oxford vaccine while Janssen/Johnson & Johnson and Sinopharm vaccines were available in less than ten percent of these facilities.

The survey also revealed that COVID-19 has caused fluctuations in utilization of routine and emergency health services (EHS) in the country. Almost all health facilities were open during the pandemic, and majority of them made changes in service hours, promoted self-care or targeted high-risk patients for essential health service provision. Overall, there was a reduction in the provision of EHSs during the pandemic relative to the pre-pandemic period. However, marked increases in inpatient admissions and NCD care services were observed after the pandemic started in Zambia.

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1. Introduction

The Zambian Government has declared the health care system as a priority sector and is committed to ensuring that people receive quality promotive, preventive, curative, rehabilitative, and palliative health services at all levels of service delivery. The COVID pandemic has continued to pose a serious threat on the health care delivery systems in the Country. Zambia has recently suffered a serious third wave of the pandemic, following recording of the first case on 18th March 2020. Three waves of the pandemic have been encountered with the third wave having been more aggressive in both morbidity and mortality. By end June 2021 when this assessment was conducted, a total of 154,948 confirmed COVID-19 cases and 2,199 COVID-19 deaths had been recorded with a case fatality rate of 1.4%. A total of 13,192 recoveries had been recorded [1].

Despite this pandemic, the country has still maintained its commitment to attain of the Universal Health Coverage (UHC). Currently, the government is ensuring that its people can receive quality promotive, preventive, curative, rehabilitative, and palliative health services at all levels of service delivery. Various interventions and measure have been applied to prevent, treat and halt COVID-19 infections, mitigate the effects of the pandemic and ensure uninterrupted provision of Essential Health Services (EHS) in Zambia [2].

Thus, it is important for the Ministry of Health to understand the readiness of facilities in fighting COVID-19 while providing other essential health services. This can be attained by conducting a complete assessment to determine the readiness and capacity of the services in the health system during the COVID 19 response and recovery phases of the pandemic in the country.

In this regard, with financial and technical support from the WHO Country and African Regional Office, the Ministry of Health conducted the first of four rounds of COVID-19 Frontline Health Services Readiness and Capacity Assessments (C19-FLHSRCA) in June 2021. This report presents findings from this first assessment, which was done in 53 COVID case management centres and 243 primary health facilities.

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[1] Zambia National Public Health Institute. 2021. Coronavirus disease 2019 (COVID-19) situation reports, August 19, 2021. From: http://znphi.co.zm/news/situation-reports-new-coronavirus-COVID-19-sitreps (Accessed online on 19August 2021).
[2] DMMU and ZNPHI. 2021. COVID-19 Multi-Sectoral Contingency Response and Preparedness Plan, January 2021. Disaster Management and Mitigation Unit (DMMU) and Zambia National Public Health Institute (ZNPHI), Lusaka, Zambia. (Draft document).

1.1 Aim of the assessment

To assess the demand and supply side of frontline health services at facility level and guide the delivery of COVID-19 related essential tools and services.

1.1.1 Specific objectives

The specific objectives of the assessment were to:

1. Collect information on facility readiness and capacity to manage health needs related to COVID-19 including provision of the COVID-19 vaccine.
2. Assess the readiness of facilities to continue offering essential health services amidst the COVID-19 pandemic.

2. Methodology

2.1 Study Design

The assessment was conducted from 21st June to 4th July 2021 with a focus on measuring the capacity of health facilities to manage COVID-19 patients as well as to continue offering essential health services in the context of the COVID-19 pandemic. Standardized WHO technical tools for health systems preparedness and performance monitoring during the COVID-19 pandemic guided the implementation of this assessment. This cross-sectional assessment was the first of its kind to be carried out in Zambia and it provides a snapshot of health systems preparedness to manage COVID-19 cases and the capacity to continue providing essential services amidst the COVID-19 pandemic. The frontline health service readiness assessments are planned to be conducted on a quarterly basis to give an in-depth understanding of the changing scenario in health facilities as the COVID-19 pandemic persists. To undertake the assessment, WHO provided generic tools for the frontline health service readiness and capacity assessment. These standardized tools include modules on:

- COVID-19 Case Management Capacities
- Continuity of Essential Health Services
- Community needs, perceptions, and demand
- Non-specific (Inherent) system resilience capacity assessment

The above-mentioned four tools or modules were adapted to suit the Zambian setting through a process of country adaptation. However, the implementation for this first phase assessment was assessed using only two modules namely:

1. COVID-19 Case Management Capacities Module
2. Continuity of Essential Health Services (CEHS) Module

The **COVID-19 case management tool –** Eight (8) sections were adapted and these are: Health facility identification and description, Staffing and Facility Incident Management Support Team

(IMST), case management and bed capacity for COVID-19 patients, selected medicines and supplies for COVID-19 case management, Personal Protective Equipment (PPEs) and infection prevention and control, COVID-19 laboratory diagnostics, medical equipment for diagnosis, patient monitoring and case management and COVID-19 vaccination readiness.

The **Continuity of Essential Services (CEHS) tool** – Eight (8) sections were adapted, and these are: health facility identification and description, staffing, service delivery and utilization, COVID-19 infection prevention and control measures and PPEs, management of suspected and confirmed COVID-19 cases in primary health facilities, availability of selected tracer therapeutics, availability of diagnostics and COVID-19 vaccination availability and readiness.

Routine Service Statistics: Data from the Zambian DHIS2 was analysed to assess the impact of COVID-19 on service provision. For this purpose, trends of selected indicators were assessed around utilization of key essential services including outpatient services, RMNCAH, communicable and non-communicable conditions for the periods before and during the COVID-19 Pandemic (Feb 2019 – May 2021.

2.2 Sampling and sample size determination

The study was structured as a sentinel assessment where a select number of health facilities sampled will constitute a set of sentinel sites that will be assessed every round of the assessment. Facilities included in the sentinel sample were based on the computation of a nationally representative sample. For the COVID-19 Case Management module, a census of all designated COVID-19 treatment centres was used. The approach used for the module on continuity of essential health services is described below:

Continuity of essential health services sampling approach:

A two-stage sample scheme with proportional-to-size (PPS) unequal inclusion probabilities was carried out. The target population consisted of approximately 2,776 health facilities distributed across 116 districts located in the 10 provinces of the country obtained from the Master Facility List which was used as a sampling frame. The aim was to select a probability sample of the target population to estimate the desired population parameters using survey sampling methodology. In stage 1, a Conditional Poisson Sampling (CPS) design was used to select 35 districts, out of 116, with inclusion probabilities proportional to the number of health facilities in the districts. In stage 2, a Pareto Proportional Probability Sample (PPS)PS sampling design was used to select the final sample of 250 health facilities with inclusion probabilities proportional to their catchment population. These methods maximize the entropy of the sample, a desirable condition to ensure a good representation of the target population.

Table 1. Sampling strategy for the three frontline health services assessment modules for Zambia

Module	Aim	Facility type /Respondents	Sample Size	Sampling strategy
COVID19 case management capacities	To assess present and surge capacities for the treatment of COVID-19 in health facilities, with a focus on the availability of diagnostics, therapeutics and other health products, vaccine readiness, availability of beds and space capacities.	COVID19 designated health facilities	All 57 COVID-19 designated facilities in Zambia	Census
Continuity of essential health services	To help identify health systems bottlenecks so as to monitor and track the continuity of essential health services.	Multiple types of health facilities, from health posts/centres, levels 1, 2 & 3 hospitals	N=250 selected to ensure at least 200 facilities would be enrolled	Probability sample generated using CPS and Pareto sampling

A 2017 Master Facility List (MFL) consisting of 2,776 facilities countrywide was used as the sampling frame. The MFL covers all the 116 Districts in the ten provinces of the country. The MFL is the most recent and updated list of facilities, obtained from the National Health Facility Census (2017). Some of the facility characteristics included facility type, managing authority (public, private, military/police and NGO) and geography (rural versus urban).

Distribution of facilities in the MFL is as; Rural health centres (42%, 1,102), Health Posts (39%, 1,029), Urban Health Centres (14%, 360) and 6% (147) of Hospitals (mainly Level 1 but also L2 and L3).

The 1,085 facilities in the randomly selected 35 districts were representative of all the 2,776 facilities in the MFL in terms of facility type, ownership, and location (rural versus urban) although for the facility type, there was a slightly higher representation of urban health centres (21% vs 14%) than rural health centres. This is also reflected in the sample whose representation is larger for urban (38%) versus rural (23%).

Stage 2 sampling involved selecting a random sample of facilities from the 35 districts in Stage 1 selection using the Pareto PPS sampling scheme with unequal inclusion probabilities proportional to the facilities' catchment population. This method has many attractive properties notably simple to select, good estimation accuracy and simple procedures for coordination of samples by permanent random numbers suitable for carrying out longitudinal surveys (Rosén, 1997). A sample of 250 facilities were selected including a buffer to account for non-response.

Characteristics of the 250 selected facilities

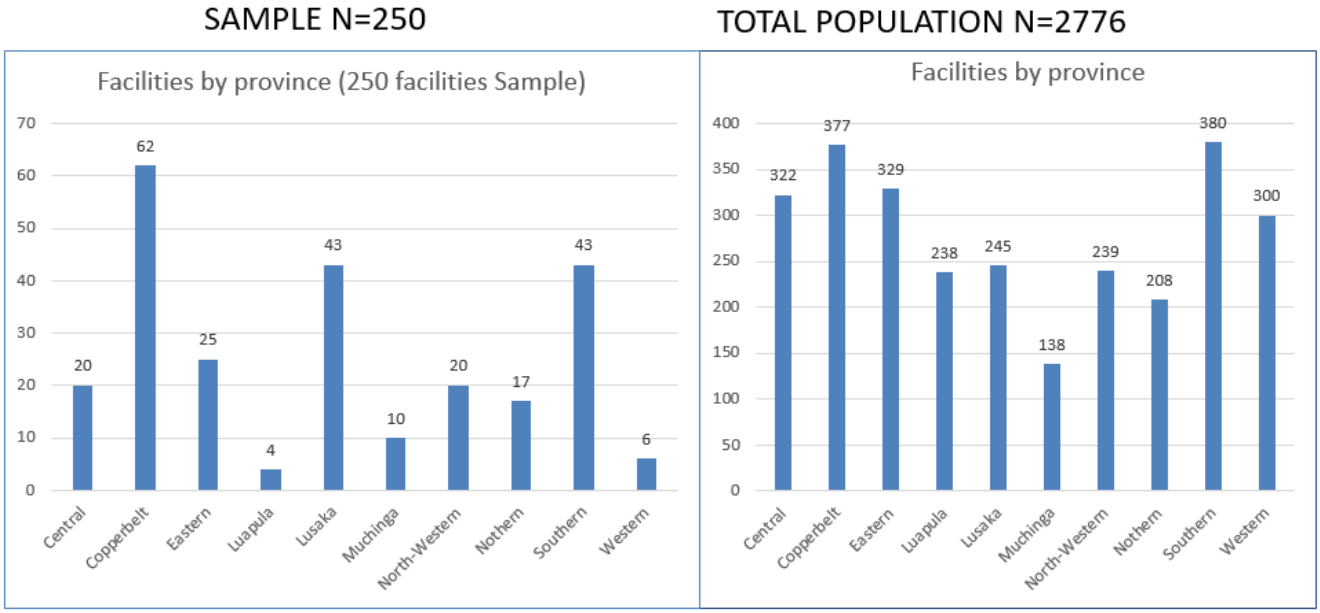
A probability sample of 250 facilities was used for the continuity of essential health services module. All the ten provinces in Zambia were represented, with the majority of the facilities being from Copperbelt (24.8%), Lusaka (17.2%), Southern (17.2%), and Northern (16.8%) provinces while the

least were from Eastern (10%), Central (8%), Northwestern (8%), Muchinga (4%), Western (2.4%) and Luapula (1.6%). Table 2 shows the comparison of the facility distribution by Province.

Table 2. The distribution of the 250 randomly selected facilities, by province.

Province	Number	Percent
Central	20	8.0
Copperbelt	62	24.8
Eastern	25	10.0
Luapula	4	1.6
Lusaka	43	17.2
Muchinga	10	4.0
Northern	17	16.8
Northwestern	20	8.0
Southern	43	17.2
Western	6	2.4
Total	**250**	**100.0**

Figure 1. Comparison of the distribution of facilities by province between the 250 randomly selected facilities with the total population of 2,776 facilities in the MFL used in the sampling.



2.3 Data Collection

Prior to the data collection exercise, clearance to conduct the assessment was sought from the office of the Permanent Secretary, Technical Services at the Ministry of Health Headquarters. Twenty data collectors were identified across the provinces and oriented in the two modules i.e., Continuity of Essential Health Services and COVID-19 Case Management.

A pilot exercise preceded the data collection activity to test the tools and identify any key issues that needed adjustment and improvement before implementing the survey. A total of 20 facilities not included in the sample (2 facilities per province), were selected for the pilot. Both tools, i.e., COVID-19 Case Management and the Continuity of Essential Services were piloted appropriately in these facilities.

Data was collected via phone interviews and captured using an online data collection tool (Lime Survey) for each of the two modules. The data collection tools were shared prior to the phone interview to enable the respondents collate the required data in advance. The respondents were facility in-charges or their nominees, (a knowledgeable person within the health facility) using the standardized modules. The assessment's phone-based data collection approach allowed adherence with the COVID-19 guidelines by reducing in person interactions.

Interviews for the continuity of essential services tool lasted about 45 minutes while the Case management tool interviews lasted for about 45 to 50 minutes, with higher level facilities generally taking longer to interview. The data was automatically transmitted online and stored into a central database. The data collection period lasted for three weeks.

2.4 Mechanisms for data quality assurance

To assure adequate response rate, data collection teams sent soft copies of the questionnaires to facilities that were difficult to reach due to poor or lacking phone network coverage. The tools would then be filled in and sent back to data collectors via email. In addition, hard to reach facilities in terms of network or email were physically visited and a questionnaire administered at the facility. Further, to preserve a sequential skip pattern, validation checks were included in the data collection tools to ensure completion of all questions.

2.5 Data analysis and report writing

Data management and analysis were conducted using Microsoft (MS) Excel and STATA 16. The Chartbooks were created in Microsoft Excel based on the indicators collected in the assessment. Indicator analysis was done by computing indicator estimates for all the key performance indicators assessed as part of the data collection process.

The outputs of the chartbooks were subjected to a validation process by a technical team prior to commencement of the report writing exercise. This was done to ensure consistency of the results from the analysis with collected data.

A report writing exercise was conducted over a two-week period by a team comprised officers from the Ministry of Health in various programme areas, hospitals and the provincial levels under the guidance and support of staff from the World Health Organization at country and regional levels.

3. Findings

This section describes the findings of the assessment. It is divided into three subsections. The first part is the general survey response, the second part describes findings linked to the module on COVID-19 case management and the final part describes the findings related to continuity of essential health services, ranging from service statistics on essential service to changes related to availability and readiness of primary care facilities in the context of the pandemic. For each of the sub sections, conclusions and recommendations are provided.

3.1 Response Rate

Response rate for this survey was high. Fifty-three (53) out of 54 sampled hospitals for the case management module responded to assessment giving a response rate of 98% while out of the 250 primary facilities randomly sampled for the continuity of essential services module (CEHS), a total of 243 facilities completed the assessment giving a response rate of 97%. The results described in this section are from the 53 and 243 facilities for the case management and continuity of essential services modules respectively. Data was collected from all the ten provinces in Zambia with response rate per province for the case management being 100% in all provinces apart from Lusaka while for the CEHS module, majority of responding facilities were from the Copperbelt Province (n=62, 25%) followed by Southern (n=43, 18.6%) and Lusaka Province (n=43, 16.9%). Luapula province had the lowest facilities (n=4, 1.7%). These numbers are proportional to the sampled facilities per province and consequently to the total number of health facilities in these provinces.

Table 3.Response rate for CEHS and Case Management

Province	Number interviewed by assessment module					
	Sample for COVID-19 case management capacity	Response COVID-19 case management capacity	%	Sample for Continuity of essential health services	Continuity of essential health services	%
Central	3	3	**100**	20	19	**95**
Copperbelt	9	9	**100**	62	59	**95**
Eastern	6	6	**100**	25	23	**92**
Luapula	2	2	**100**	4	4	**100**
Lusaka	12	11	**92**	43	43	**100**
Muchinga	3	3	**100**	10	10	**100**
North- Western	5	5	**100**	17	17	**100**
Northern	3	3	**100**	20	19	**95**

Southern	9	9	**100**	43	43	**100**
Western	2	2	**100**	6	6	**100**
Total	**54**	**53**	**98**	**250**	**243**	**97**

* Distribution of assessed facilities by province.

Table 4. Level of type of facility for Continuity of Essential Services (CEHS) Module

Facility level	Number	Percent (%)
Health Post	48	20
Health Centre	164	67
Hospital (L1, L2, L3)	21	9
Private Hospital	10	4

Health centres formed the majority of primary facilities (67%) followed by Health Posts (20%). Public private Hospitals at 9% and the least were Private Hospitals at 4%.

3.2 Facilities readiness for COVID-19 Case Management

Key Findings

Most primary care facilities (85%) had incident management support teams

Adequate COVID beds were available in case management centres including beds with oxygen and ICU beds; 15% of all beds were designated for COVID-19 management.

74% of COVID beds were designated for treating severe COVID-19 cases while 30% of all COVID-19 beds were meant for the critically ill patients

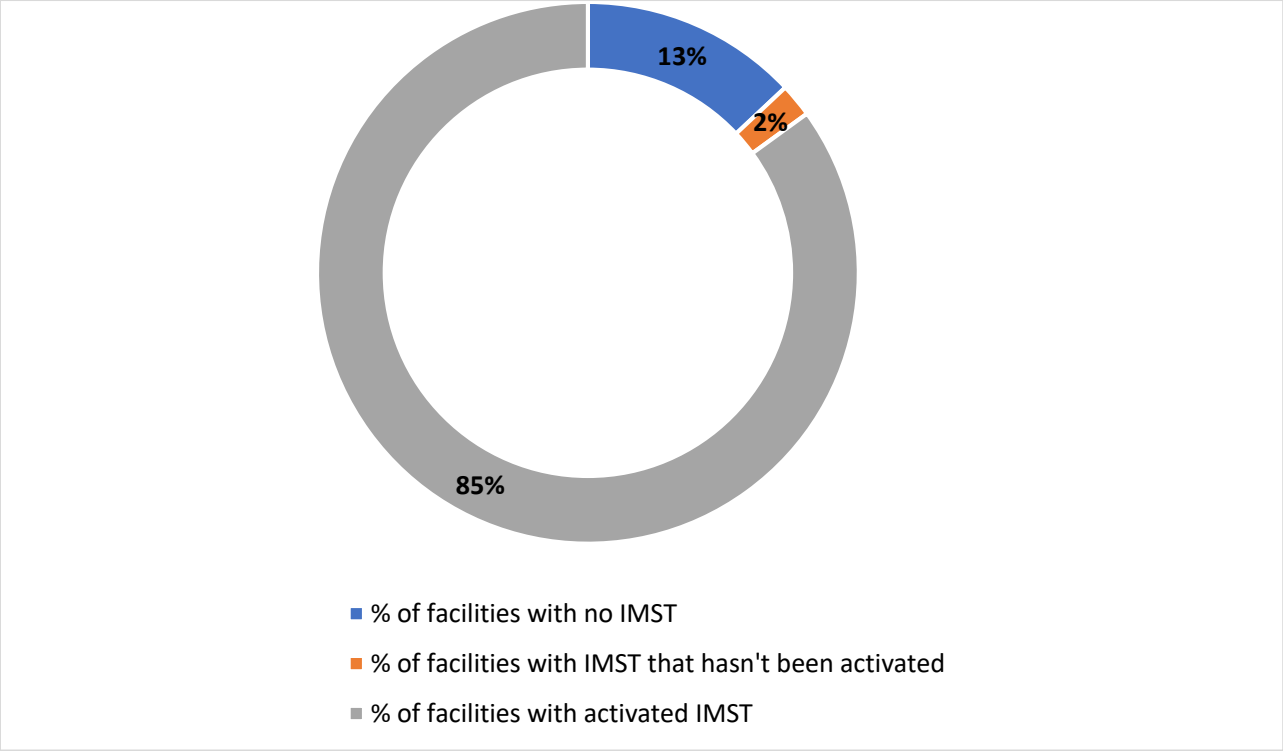
Half of the available COVID-19 beds were occupied at the time of the assessment.

The proportion of all beds that were set aside for COVID critical care was 30% while 20% of beds available for possible surge capacity had the potential to be converted into ICU beds.

3.2.1 Incident/emergency management support teams (IMST) in COVID-19 Case Management facilities

Incident Management support teams are very important in providing support and strategic guidance to local teams as they coordinate and monitor the facility response activities to emergency situations such as COVID-19 pandemic. Existence of these teams was assessed in all the 53 health facilities that were managing COVID-19 cases.

Figure 2. Proportion of COVID-19 Case Management facilities with Incident/emergency management support teams (IMST)



3.2.2 Proportional distribution of IMST in COVID-19 Case management facilities. (n=53)

Most facilities (85%) had incident management support teams, while 13 percent did not have an incident management support team. Two percent (2%) of facilities had IMST that were not activated at the time of the survey.

3.2.3 Bed Capacity for COVID-19 Cases

Availability of beds

Hospital bed capacity is core in the case management for COVID-19 as severely and critically ill patients need in patient services. It therefore important to keep track of the available bed capacity and occupancy for COVID-19 beds. Bed capacity is a good indicator of the capacity of a country to respond to the pandemic; assessing and documenting bed capacity is key for planning response to COVID patents needs.

Data from the 53 COVID-19 treatment centres assessed showed that total in-patient beds in these facilities were 9128. The assessment further revealed that of these beds, 1405 (15%) were designated for COVID-19 management. A total of 1045 (74%) beds were designated for treating severe COVID-19 cases while beds meant for the critically ill were 471 (30%) of all the COVID-19 beds. Of the 53

facilities, 96% had inpatient and ICU services signifying that the facilities had enough capacity to admit critically ill COVID-19 cases.

Figure 3. Total number of beds versus COVID beds

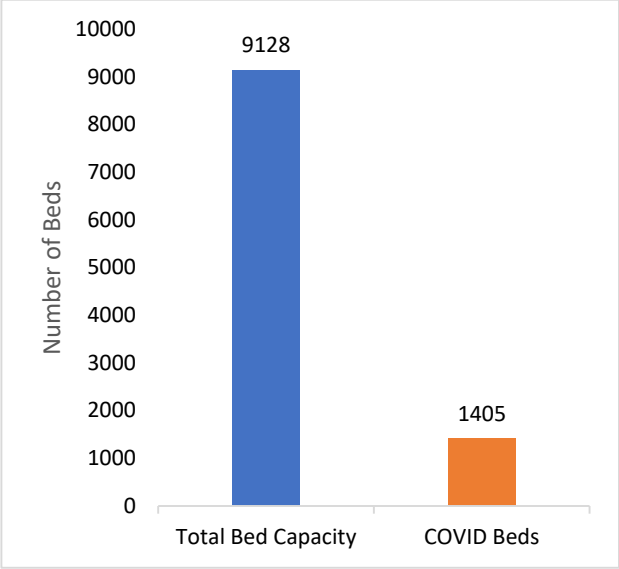
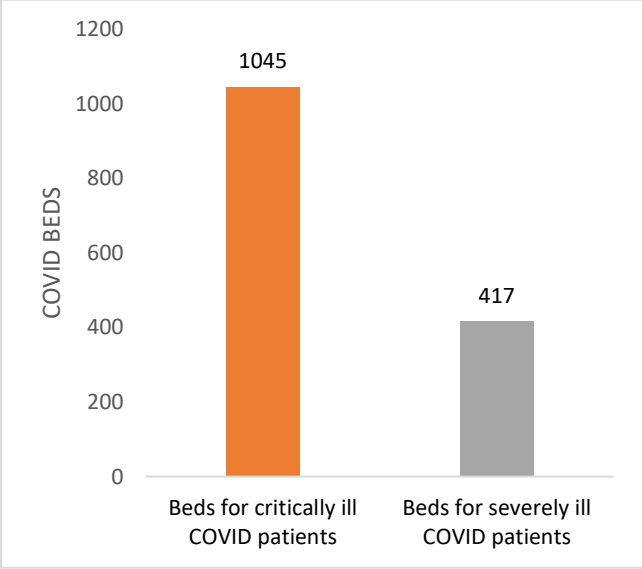


Figure 4. COVID beds by severity of COVID cases



3.2.4 Bed occupancy

Thirty eight percent (38%) of beds were occupied in the assessed facilities with 9% of them occupied by COVID-19 patients. Further, 50 percent of the COVID beds were occupied the previous night. This indicates that there was capacity to admit more COVID patients in health facilities.

Figure 5. Bed occupancy in COVID management centres

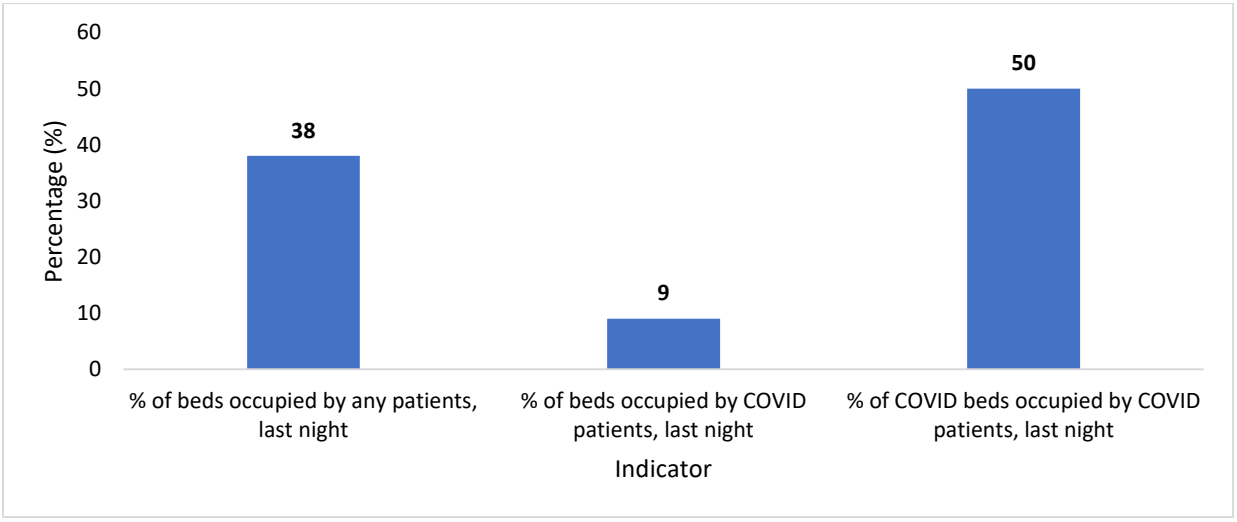


Table 5. Distribution of bed occupancy across facility types, location, and ownership

The distribution of the bed occupancy rate is as shown in the table below:

		% of beds occupied by any patients, last night	% of beds occupied by COVID patients, last night	% of COVID beds occupied by COVID patients, last night	Number of facilities with inpatient
All		38	9	50	53
Location	Rural	25	5	26	15
	Urban	43	11	59	38
Level	Primary/Secondary	0	0	0	2
	Tertiary	39	10	52	51
Ownership	Non-public	35	16	50	17
	Public	39	6	50	36

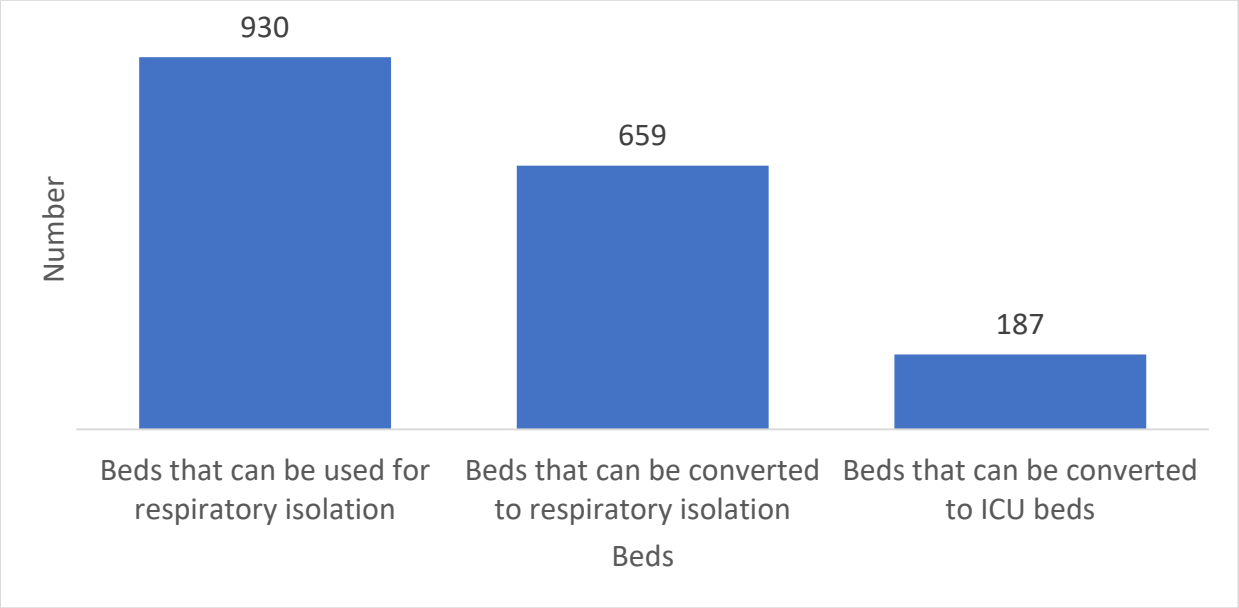
Analysis by location shows that urban facilities had a high bed occupancy rate across all the indicators including occupancy by COVID patients. Tertiary health facilities recorded high bed occupancy rate compared to Primary/Secondary health facilities. However, a comparison by ownership showed that the percentage of beds occupied by COVID-19 patients in the previous night was high in non-public facilities compared to public facilities.

3.2.5 Surge Capacity

Capacity to respond to a surge was measured by the number of beds that facilities can mobilize and convert to be used for COVID-19 response. From the 53 facilities sampled for COVID 19 management, it was revealed that 930 beds could be used for respiratory isolation, 659 beds could be converted to respiratory isolation and 187 beds could be converted to ICU beds; meaning that, 20% of all beds had the potential to be converted into ICU beds.

Total number of beds available for surge

Figure 6. Number of beds available for surge capacity



Conclusion

COVID beds were available in case management centres including beds with oxygen and ICU beds.

Half of the available COVID-19 beds were occupied at the time of the assessment.

The proportion of all beds that were set aside for critical care was 30% while 20% of the beds available for surge capacity had the potential to be converted into ICU beds.

This has several implications in capacity for COVID response;

- **Burden:** Facilities have set aside a specific number of beds for COVID-19 patients. While this increases the capacity for COVID-19 response across the country, the burden of COVID-19 has been shown to be highest in urban facilities and more cases are attended in higher/tertiary levels as compared to primary/secondary level.
- **Functionality:** Three quarters of the beds set aside can be converted to respiratory isolation which indicates adequate capacity to admit symptomatic patients who almost always require oxygen therapy.
- Some COVID-19 case management centres had either inactive IMST teams or were completely lacking these teams, indicating a gap in adequate planning for COVID-19 response.

Recommendations

- Burden and projections assessment – Provinces should use the epidemic distribution data to plan for response.
- Surveillance mechanisms should collect data on average length of stay (ALOS to provide more insights on the occupancy and utilization of beds for COVID-19 patients.
- There is a need to activate inactive IMSTs in all COVID-19 Case management centres and establish them in facilities lacking these teams.

3.3 Human resources

Key Findings

- Out of the 243 primary care facilities, the overall COVID-19 infection among all the staff stood at 8%, ranging from 3% among medical doctors to 14% among clinical officers.
- In COVID-19 case management centres, the positivity rate also ranged similarly from 3% among medical doctors to 10% among laboratory workers, with nurses, midwifery, and pharmacists around 6%.
- Three in four primary care facilities (n=186, 77%) had staff on leave in the past three months, of which the reasons were mostly vocational (78%), followed by COVID-19 related (38%) or not (26%).
- Most COVID-19 treatment centres (n=50, 94%) had some staff on leave or absent in the past 3 months, of which the reasons were mostly vacation or personal (82%), followed by sick leave either due to COVID-19 (60%) or non-COVID-19-related (62%).
- Two out of three primary care facilities (n=158, 66%) trained on COVID-19, which was mostly on infection prevention and control (91%) and use of PPEs (89%).
- Most COVID-19 treatment centres (n=46, 87%) received COVID-19 trainings, of which majority were trained on infection prevention and control, use of PPEs, and others; however only four in ten facilities were trained in mental health and psychosocial support as well as provision of remote health care.

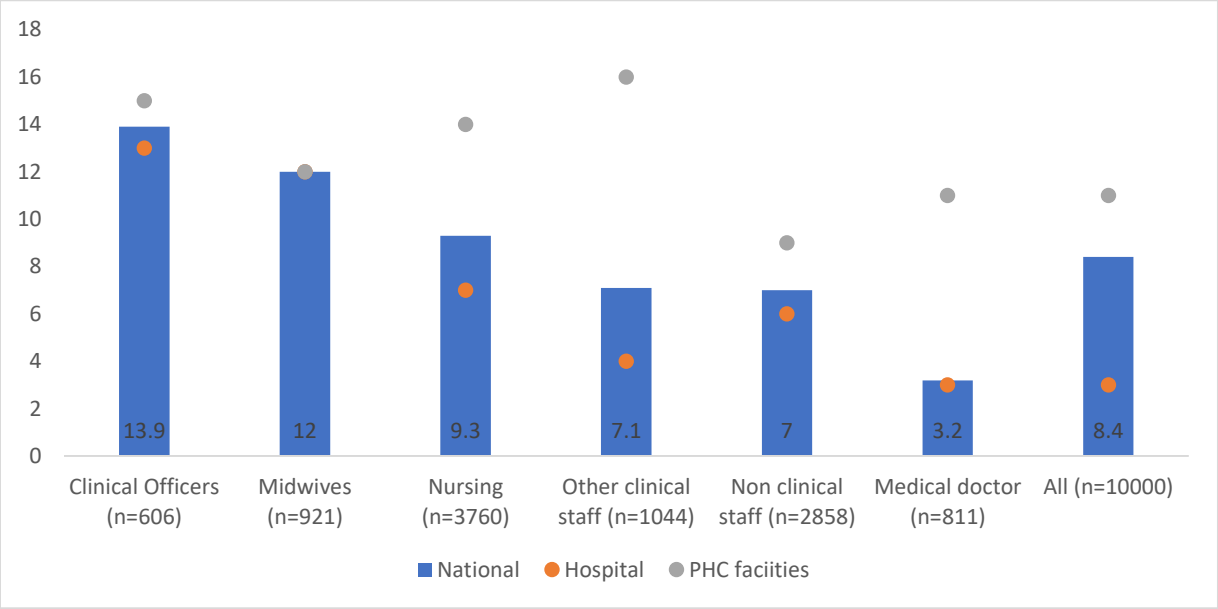
Human Resources is a critical building block in the delivery of health services. Health Workforce should be well capacity built and must have adequate numbers. Further, fair distribution of the workforce is critical to the attainment of quality healthcare. Therefore, an adequately trained and supported health workforce is critical in not only managing of COVID-19 patients but also ensuring continuity of provision of other health services. Given that the health workforce is at a higher risk of contracting COVID-19, this assessment evaluated the effects of COVID-19 on the health workforce. The survey also assessed the effect of COVID-19 on staff absence at all levels which, if any, would

affect the continuity of essential health services. The support provided to staff in terms of training and support supervision was also assessed.

3.3.1 COVID-19 Infections Among Health Facility Staff

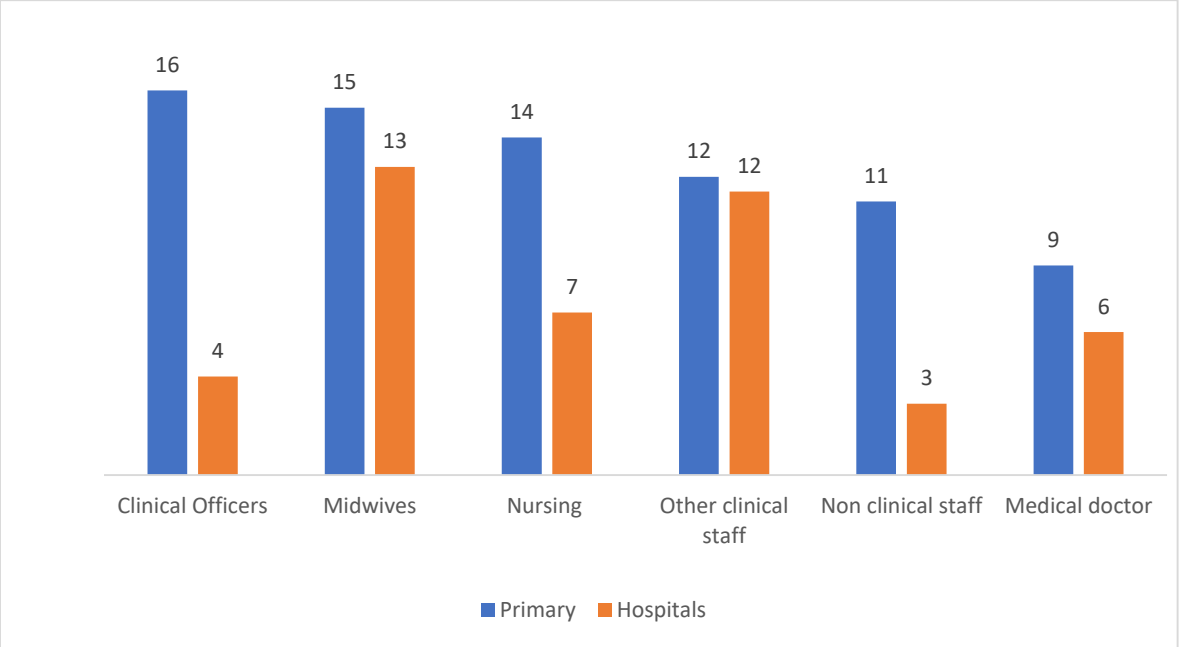
The survey assessed COVID-19 infections among healthcare workers and non- healthcare workers and staff. Clinical officers, nurses and midwives interact with patients and clients on a daily basis. Further, they work on direct patient care and management and processing the patient specimen. Other health care workers assessed include: Medical doctors, nurses and midwives, clinical officers, pharmacists, laboratory workers, radiographers. Nonclinical staff comprise of support and administrative staff.

Figure 7.Percentage of staff who had been diagnosed with COVID-19 in the past three months in primary facilities



The overall COVID-19 infection among all the staff stood at 8% with Clinical Officer being the highest at 14%, while non-clinical stood at 7% as shown in the chart above.

Figure 8. Comparison of Percent Staff who had been diagnosed with COVID 19 in the past three months by level of care



COVID-19 infections were higher among staff in the primary facilities across all the health care workers compared to the hospitals.

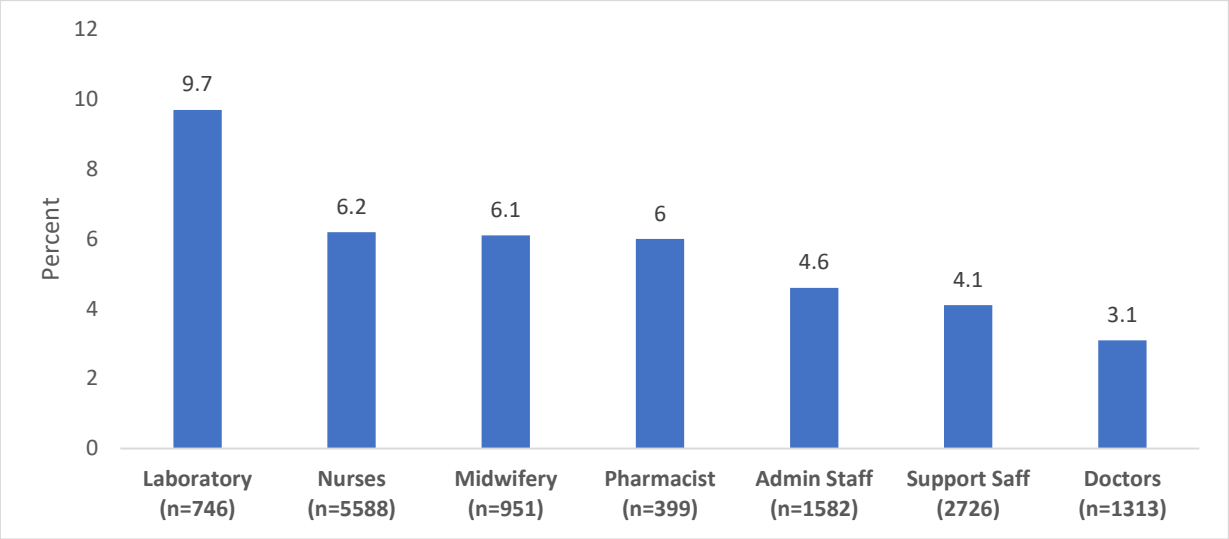
3.3.2 Staffing in case management centres

Table 6 shows the total number for each personnel and the number who tested COVID19 positive in the previous 3 months (as well as % COVID19). The highest positivity rate of 9.7% were among laboratory workers, followed by nurses, midwifery and pharmacists which were all around 6%; the least positivity rate was 3.1% among medical doctors.

Table 6.Personnel who tested COVID 19 positive in the previous 3 months

Personnel	Total	Testing Positive for COVID	% COVID
Doctors	1313	41	3.1
Nurses	5588	345	6.2
Midwifery	951	58	6.1
Laboratory	746	72	9.7
Pharmacist	399	24	6
Admin Staff	1582	73	4.6
Support Staff	2726	111	4.1

Figure 9. COVID-19 positivity among Staff in COVID-19 case management centres

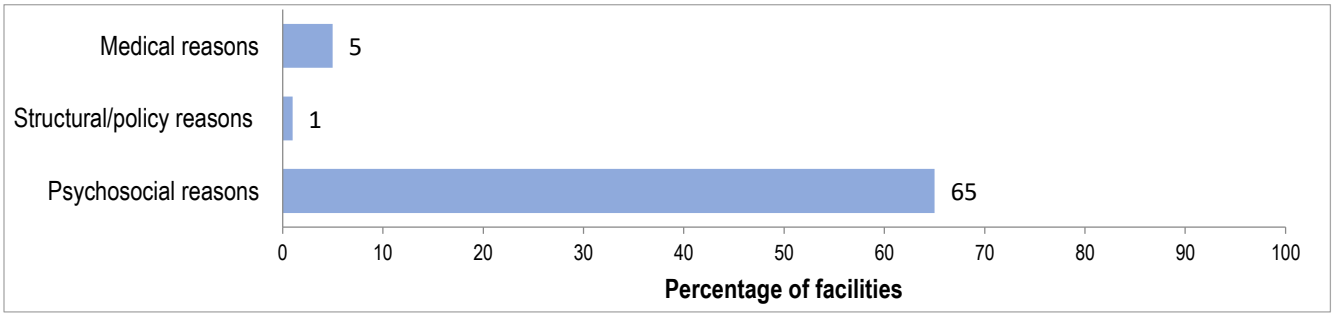


3.3.3 Staff Absence in case management centres

The survey assessed staff absence by asking the respondent if there was any staff absent from work in the last 3 months and to give all the reasons that resulted in the staff absence. The question was multiple choice and could therefore have had staff absent for multiple reasons.

Among the reasons given for staff absence in Primary Health Care facilities were due to COVID-19 related reasons which include psychosocial, medical, and structural/policy reasons.

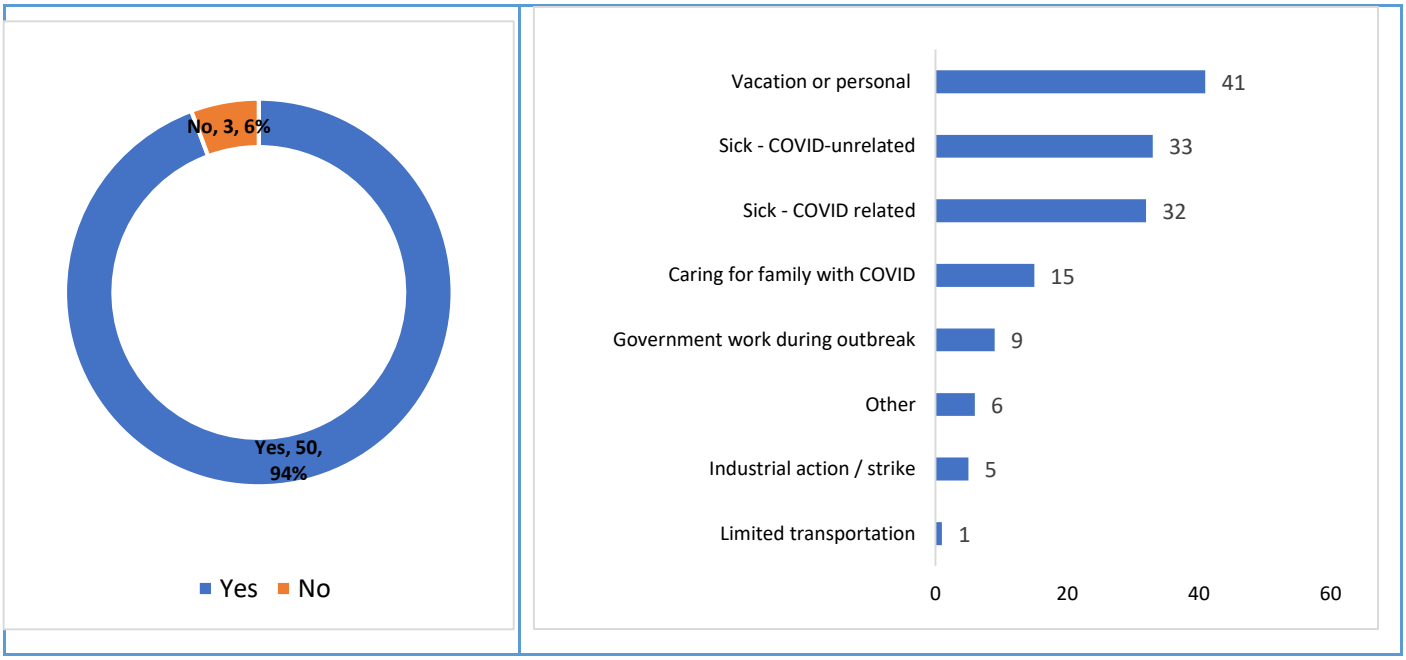
Figure 10. Percentage of facilities with staff on leave or absence related with COVID-19 in the past three months in primary facilities



Almost all facilities in COVID case management had some staff on leave in the past 3 months (n=50, 94%).

Figure 11. Number and percent of facilities with staff on leave or absent in the past 3 months (N=53)

Figure 12.Number of facilities with the following reasons for leave or absence



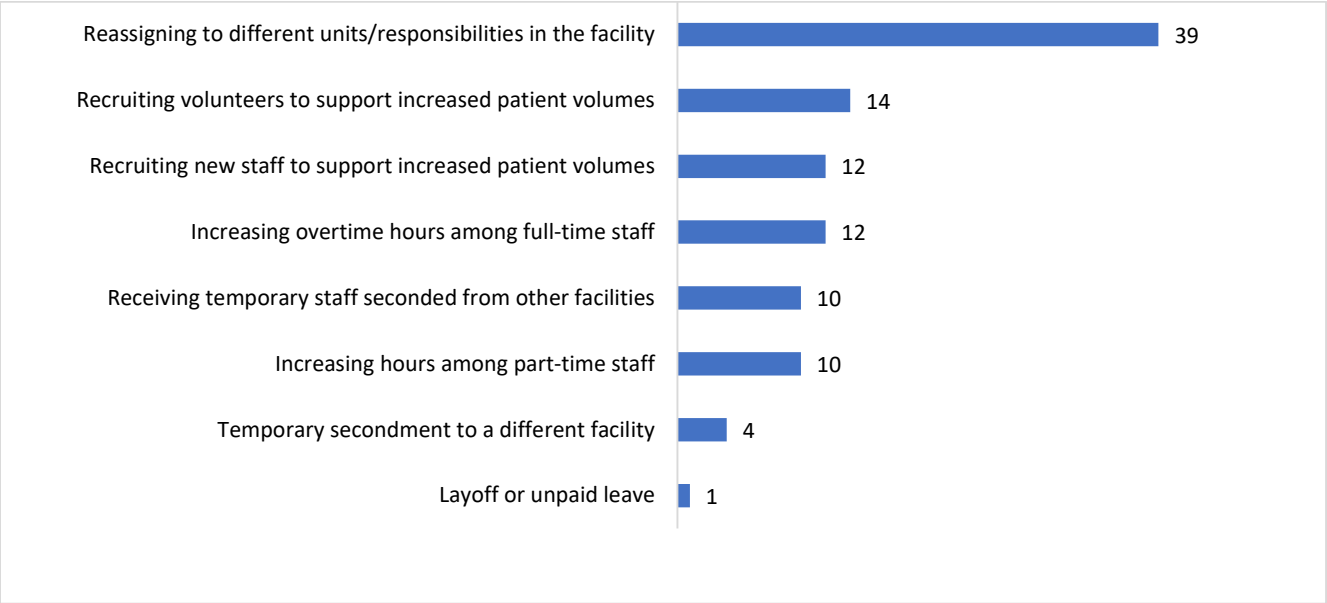
The reasons for leave were mostly vacation or personal (n=41, 82%) followed by sick leave either due to COVID (33%) or non-COVID-related (32%), as shown in Figure 12.

3.3.4 Changes in management of health workers in COVID case management centres

During the preceding 3 months to this assessment, more than three quarters of the facilities (n=41, 77%) had made changes in how health workers are managed in a bid to cope with COVID management.

The main changes were in regard to reassigning staff to different units/responsibilities in the facilities which comprised of 95% (39/41) of all changes. Other changes included recruiting volunteers (34%) and new staff (29%) to support increased patient volumes as well as increasing overtime hours among full time staff (29%). (Figure 13)

Figure 13.Number of facilities with changes made in case management centres to respond to increased COVID cases



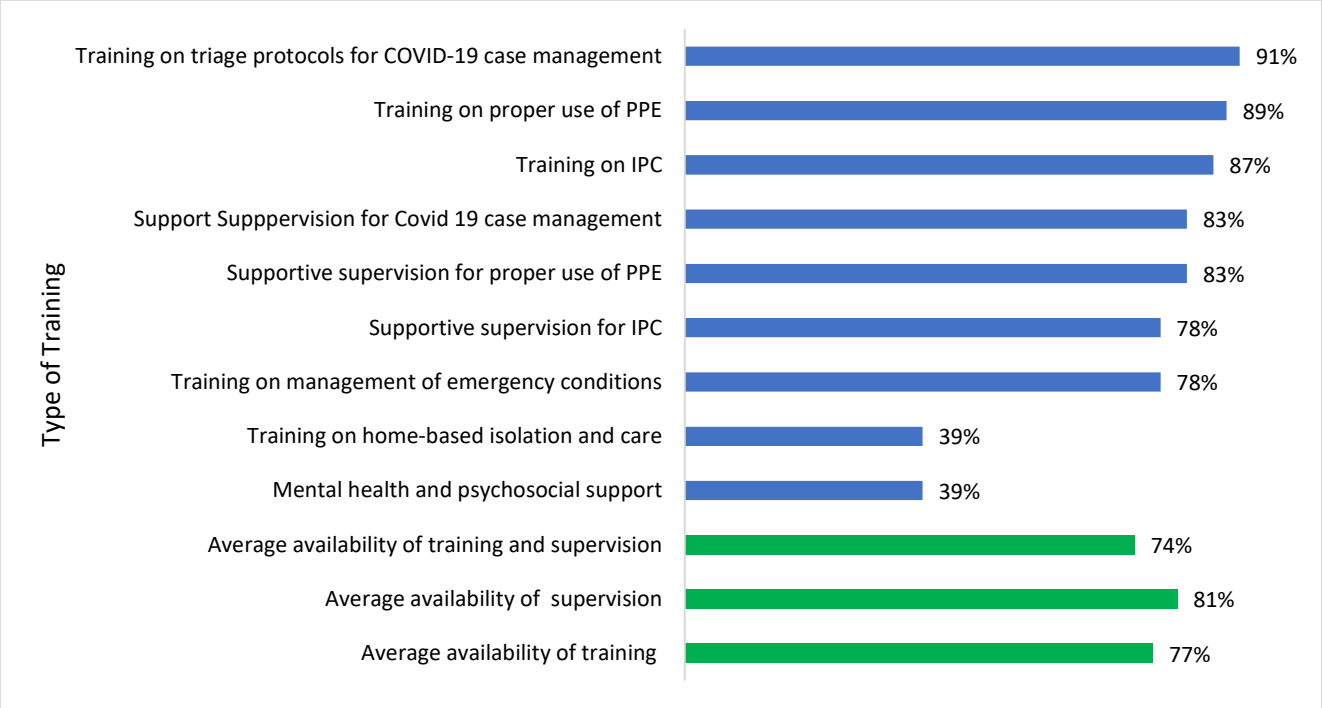
3.3.4 Staff Training and Support Supervision in Health facilities

The survey assessed staff training and support supervision in all case management centres as well as primary facilities. The findings are summarized in figures 14 and 15.

Two out of three primary care facilities (n=158, 66%) trained on COVID-19, which was mostly on infection prevention and control (91%) and use of PPEs (89%).

Staff Training and Support Supervision in case management centres

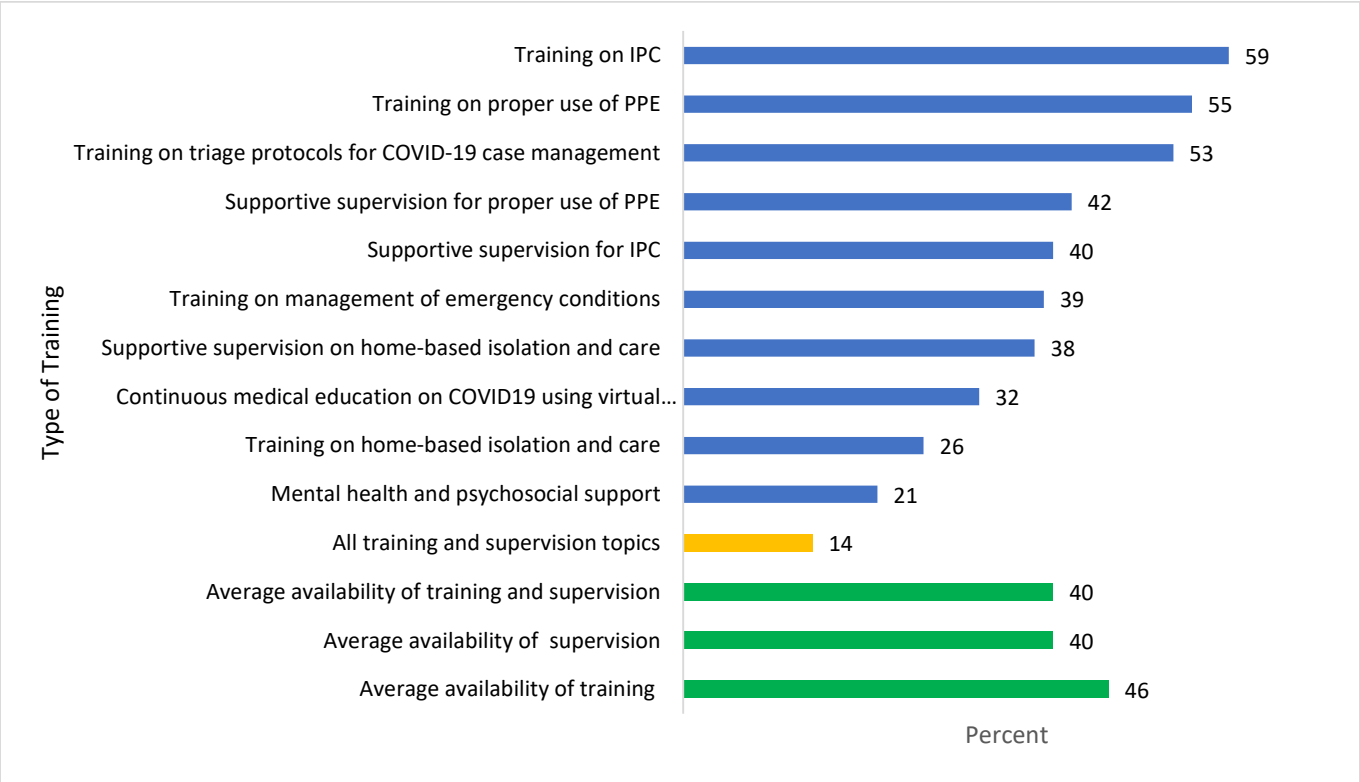
Figure 14. Percent of facilities with Staff trained and Support Supervision done in case management centres



3.3.5 Staff Training and Support Supervision in COVID 19 case management facilities.

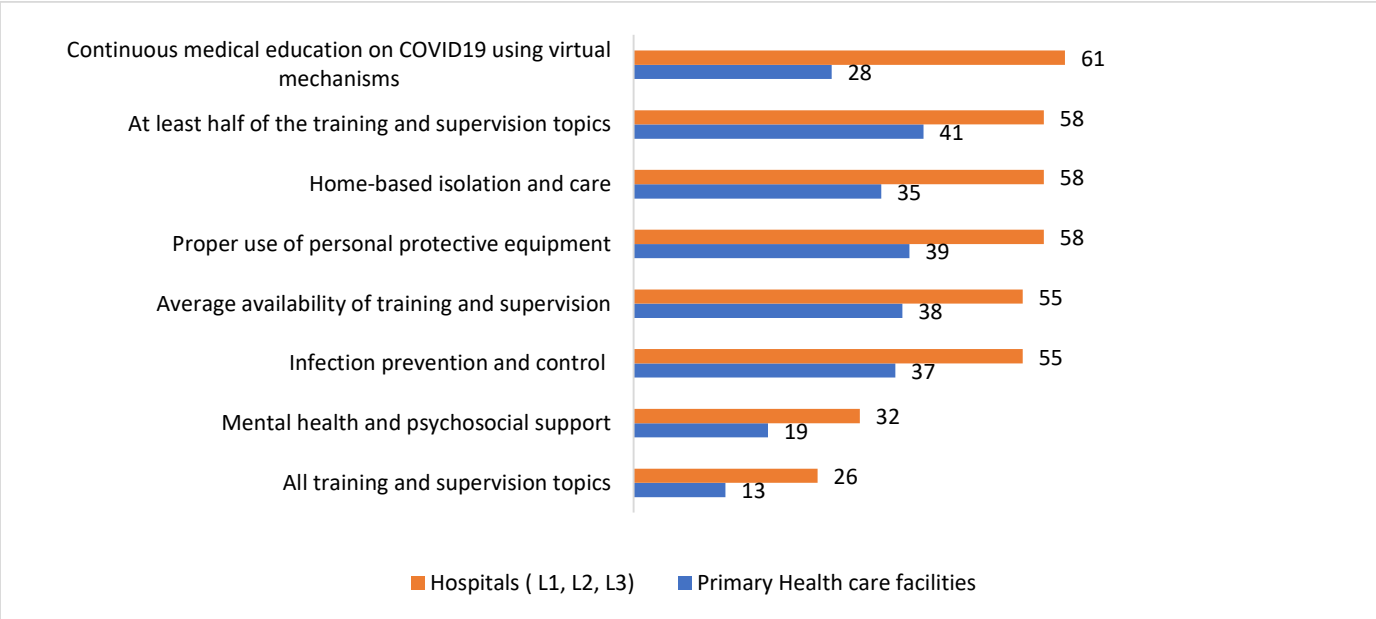
More hospitals received the training on COVID-19 related topics and support supervision as these were the facilities ear-marked to manage COVID-19 patients. Hospitals received more trainings and support as compared to the Primary Health care facilities as shown in Figure 15.

Figure 15. Percent of facilities with Staff Training and Support Supervision in Primary Health facilities



Among primary facilities, fifty-nine percent of the facilities were trained on infection prevention and control, 55% trained on use of PPEs with only 21% being trained in mental health and psychosocial support. 14% were trained on all five training items as shown in figure 15.

Figure 16. Percentage of facilities trained on and given supportive supervision on topics related to COVID-19 by geographical location and facility level (n=243)



Conclusion

- Infections among clinical staff were higher than that in non-clinical staff in health facilities.
- COVID-19 infections were higher among staff in the rural facilities across all the health care workers compared to the Urban facilities.
- Absence of health workers due to COVID-19 from the onset of the pandemic was mainly due to psychosocial and medical reasons which takes away from the capacity to manage COVID-19 patients and ensure continuity of essential health services.
- Training and support supervision on COVID-19 related topics was low especially in PHC and in rural facilities.

Key recommendations

- Provide all staff with necessary PPE material and training to observe all IPC protocols to avoid infection.
- PPEs should be equitably distributed even in rural health facilities
- Emphasis on proper use of PPEs should not only be among clinicians directly managing the patients but also all who come into contact with a patient's specimen.
- There is a need to plan for training for COVID-19 related topics in the lower-level facilities especially if there are plans to increase COVID-19 management capacity in the primary care facilities.

3.4 Diagnostics: Laboratory and Radiological

Key Findings

- Four out of every five primary care facilities were undertaking basic laboratory tests; of which malaria (95%), HIV testing (86%), urine dipstick for glucose (79%), blood glucose (49%), Blood creatinine testing (12%), and Blood grouping and cross-matching (7%).
- Most facilities (87%) collected COVID-19 specimens and conducted PCR or RDT testing on site while only 5% of all facilities collected COVID-19 specimens for further testing in another facility.
- Almost half of the 32 COVID19 treatment centres conducting RDTs or PCR diagnostic tests for COVID-19 (47%) received results after 7 days or longer.

When a diagnosis is accurate and made in a timely manner, a patient has the best opportunity for a positive health outcome because clinical decision making will be tailored to a correct understanding of the patient's health problem[1].

Diagnostic tests have a crucial role in supporting clinical decisions and in-patient management where they are used to confirm or rule out a diagnosis in symptomatic patients. For asymptomatic cases or non-specific symptoms, diagnostic tests are used to screen individuals to prevent the spread of a disease in the community. Diagnostic tests are also often used in epidemiological studies and drug resistance surveillance.

3.4.1 Laboratory testing and diagnostics

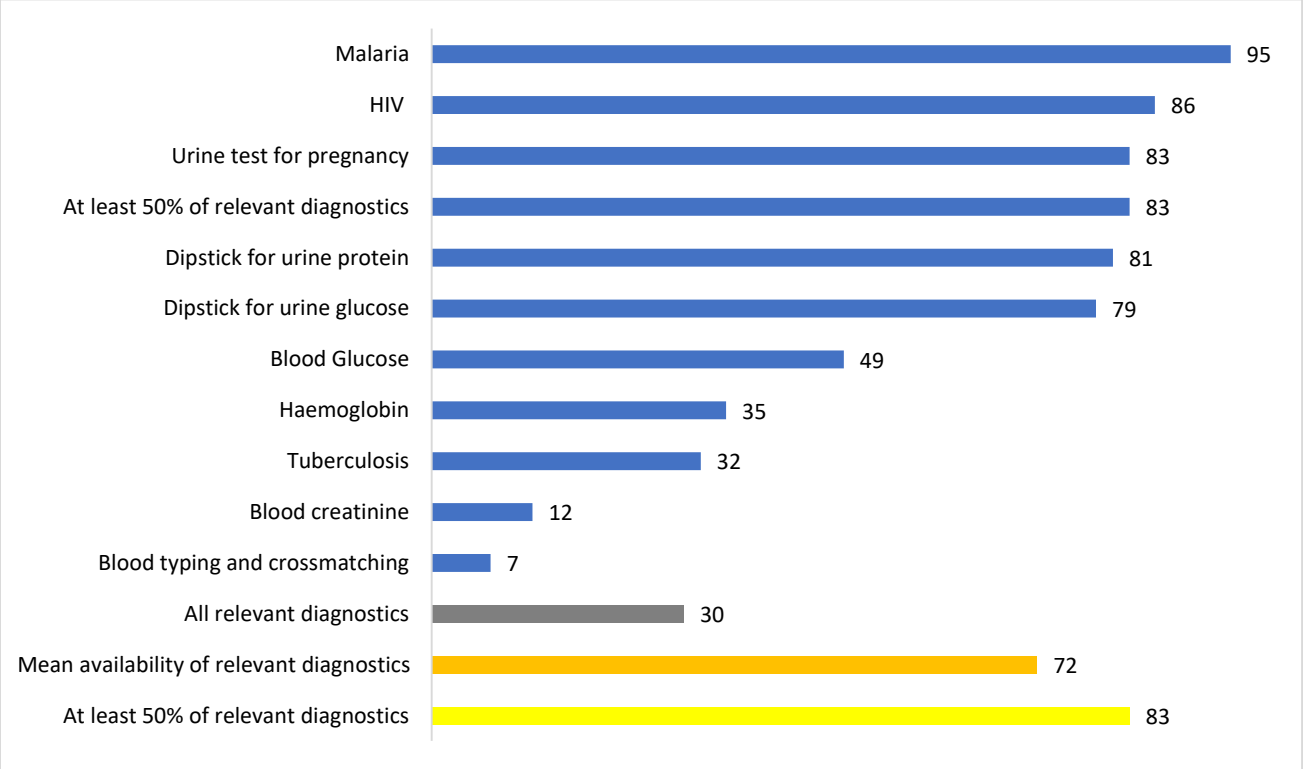
In this assessment, availability of laboratory diagnostic tests was done to determine facility capacity to:

1. Optimally carry out laboratory testing and diagnostics to continue providing essential health services in primary facilities
2. Support COVID-19 testing and diagnosis in both COVID treatment centres and primary facilities

Laboratory testing and diagnostics in primary facilities

Basic diagnostic capacity was determined using availability of rapid diagnostic tests for malaria, glucose, urinalysis and pregnancy and findings are summarized in figure 17.

Figure 17. Percentage of health facilities with basic diagnostics (n=243)



Over 80% of all the facilities assessed, reported that they were undertaking these five basic tests. The most available tests were malaria (95%) followed by HIV testing (86%). Eight of every 10 facilities

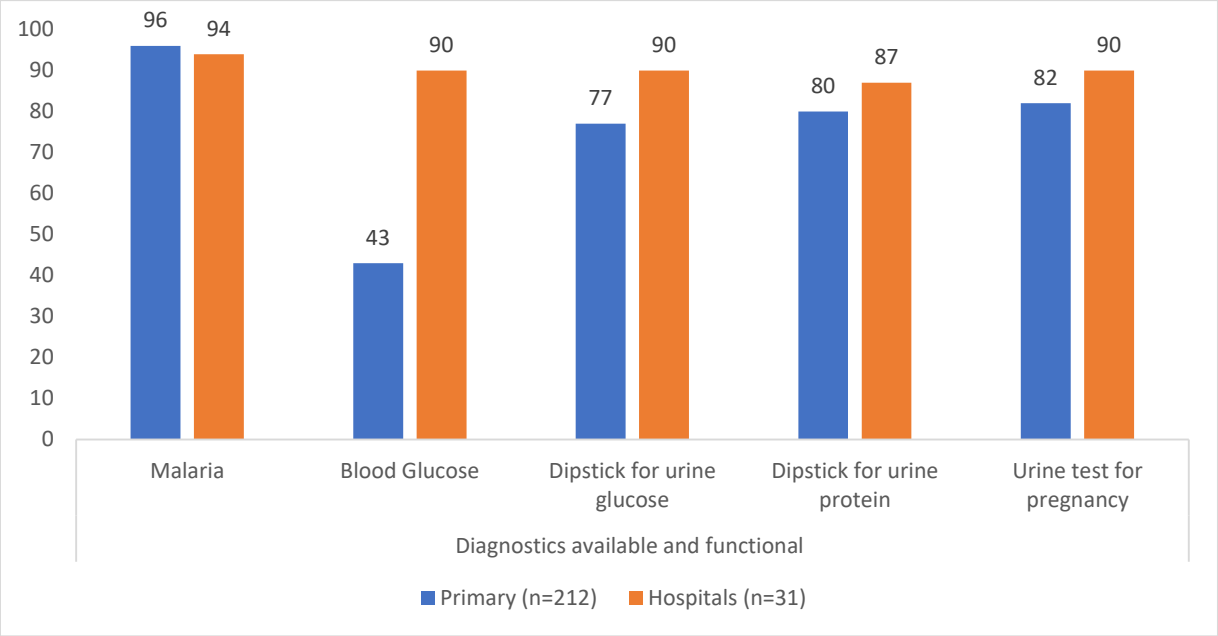
(79%) conducted urine dipstick for glucose while about half (49%) conducted blood glucose in Primary Health facilities. Blood creatinine testing was available in only 12% of facilities, while blood grouping and cross-matching was the least available test in only 7% of facilities.

In summary, this analysis shows that 3 of every 10 facilities had all assessed diagnostic services to provide comprehensive laboratory services.

On average, the capacity to conduct the 5 selected diagnostic tests was 57% in urban facilities while public facilities exhibited greater capacity (87%) to conduct these tests compared to the non-public counterparts (4%).

Blood glucose tests showed the highest variation between availability in primary health facilities as compared to the tertiary/ secondary facilities (43% versus 90%). However, other tests such as malaria, Dipstick for urine glucose, Dipsticks for urine protein and Urine test for pregnancy did not have much difference between the levels of care.

Figure 18. A comparison of diagnostics between Primary Health facilities and Hospitals



A comparison between Primary Health facilities and Hospitals shows that Blood glucose test low in Primary health facilities at 43% as compared to 90% in Hospitals. The availability of other tests was above 70% in both levels.

3.4.2 COVID-19 testing

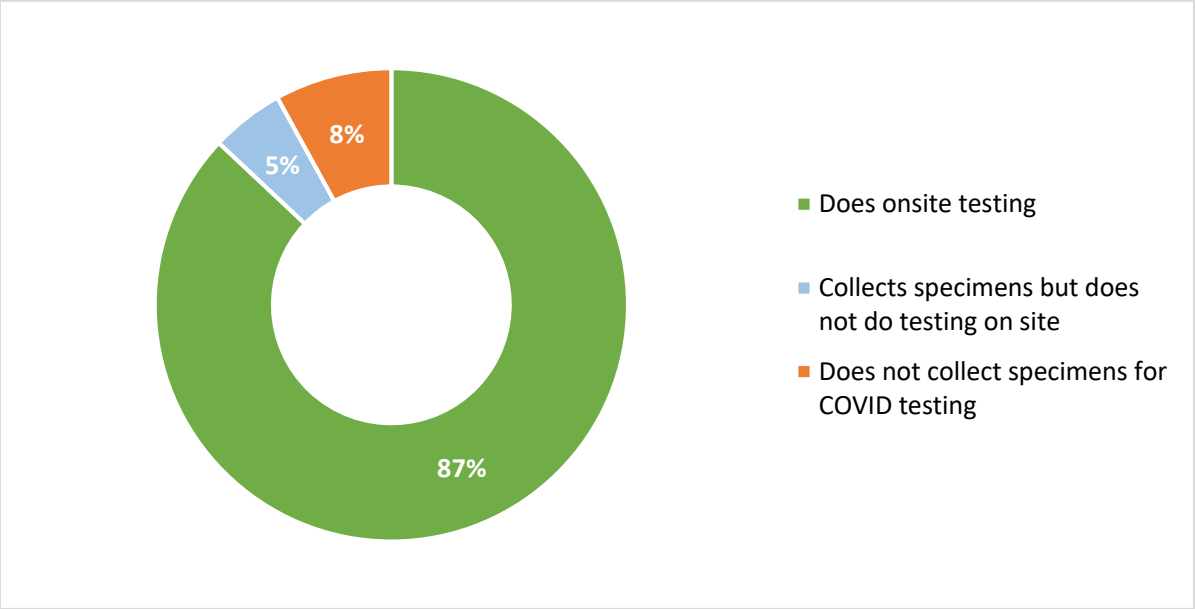
Capacity for health facilities to conduct or test is core in COVID-19 surveillance to support case identification, quarantine, management and contact tracing efforts.

Given the limited capacity in Zambia, there are two models currently in place for diagnosing COVID-19:

- A facility that collects samples and conducts testing on site – this is common in hospitals and in selected Private laboratories.
- Satellite facilities that collect samples and through a well-coordinated transport network, transport samples for processing by central laboratories

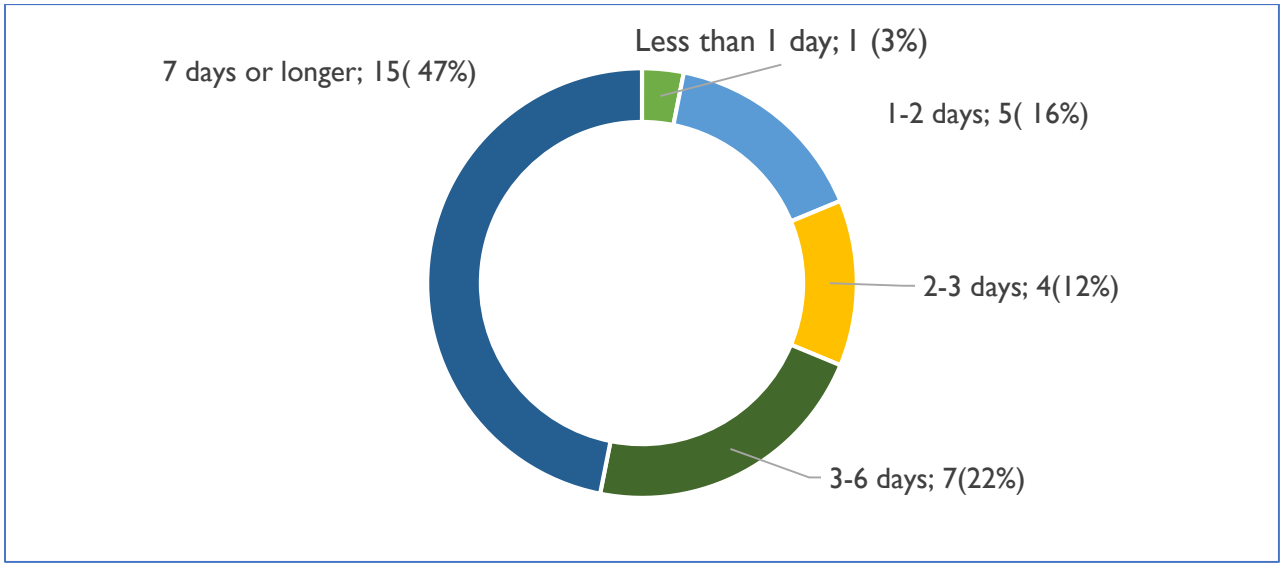
Based on these two models, an assessment of the percentage of facilities with capacity to provide COVID-19 testing services (e.g., collecting specimens for diagnosis, onsite testing, referrals) was undertaken.

Figure 19. Percentage of COVID treatment facilities with means to collect specimens for COVID testing (n=53)



Most facilities (87%) collected COVID-19 specimens and conducted PCR or RDT testing on site while only 5% of all facilities collected COVID-19 specimens for further testing in another facility. Eight (8) percent of the facilities assessed did not collect specimens for COVID-19 diagnosis as shown in figure 19

Figure 20. COVID-19 Testing Turnaround Time (from external testing facilities) (n=32)



The recommended time for getting COVID results once a sample is collected is a maximum of 72 hours for PCR and 30 minutes for RDT. Long testing turnaround times were reported when testing was done outside the facility; almost half of the facilities (47%) received results in 7 days or longer. This long turnaround time carries a risk of COVID patients transmitting the virus while waiting for results.

Key recommendations

- Ministry of Health to supply testing kits for Blood glucose to primary health facilities to facilitate comprehensive diagnostics services.
- Ministry of Health to enhance courier system to facilitate referral of specimens to reference laboratories thereby reducing turnaround period.
- Ministry of Health through hospitals to supply Rapid Testing Kits to ensure that all eligible clients are tested within a facility.

3.5 Medical equipment for diagnosis, patient monitoring and case management

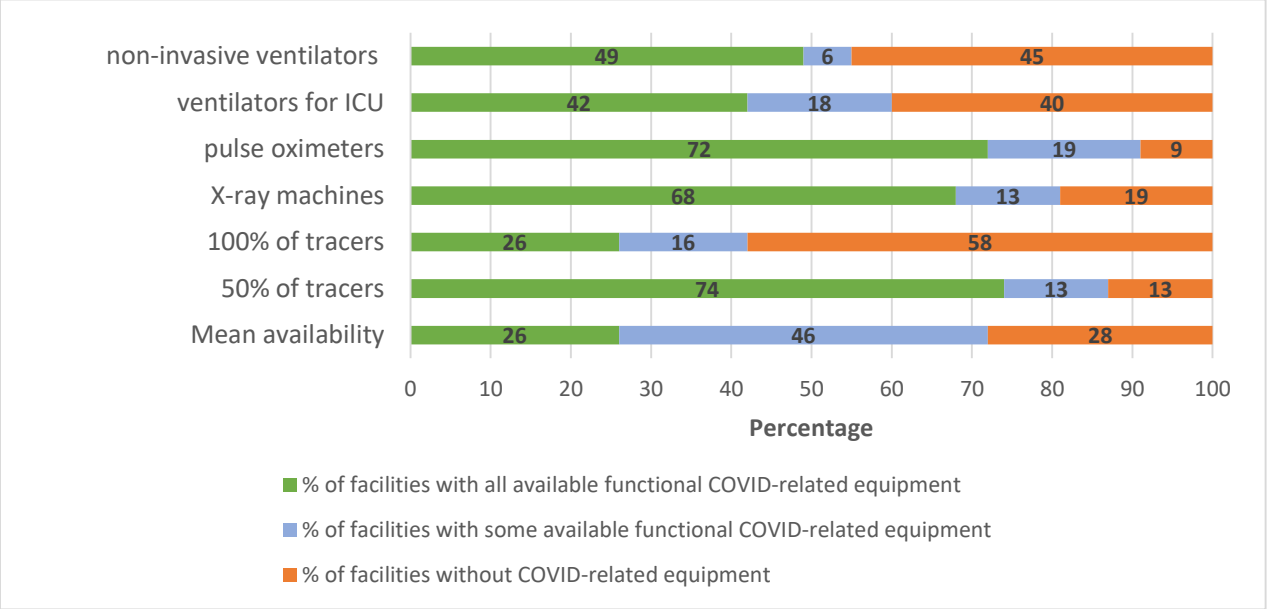
Medical equipment plays an important role in healthcare delivery. It ranges from small and simple devices such as sphygmomanometer to complex and big devices such as Magnetic Resonance Imaging

(MRI) machines. The functionality of X-ray machines remains critical even as more COVID-19 cases present with viral pneumonia and this capacity needs to be improved especially at the facilities.

3.5.1 Selected medical equipment for COVID-19 case management

The survey assessed availability of select medical equipment that is used in management of COVID-19. These included availability of pulse oximeters that are used in ascertaining the level of oxygen saturation and availability of ventilators that are useful in management of severe – critical COVID-19. Functional pulse oximeters were found in 72% (38/53) facilities that were assessed. Functional non-invasive ventilators were available in approximately half of assessed facilities (49%).

Figure 21. Percent of facilities with all or some available functional selected COVID related equipment (N=53)



Availability of select medical equipment for COVID-19 management varied between specific equipment; about half of facilities reported availability of functional non-invasive ventilators and 42% had ICU ventilators. A similar proportion of COVID treatment facilities did not have ventilators. Most facilities had functional Pulse Oximeters (72%) and functional of X-ray (68%). The average availability of functional equipment was 26% indicating a challenge in monitoring and diagnosis of the patient.

Almost all the assessed medical equipment used for COVID-19 case management were more available in urban based facilities compared to rural. However, it was encouraging to observe that pulse oximeters were mostly available in both urban and rural facilities with minimal disparity.

Figure 22. Percent of facilities with all available functional selected COVID related equipment by location

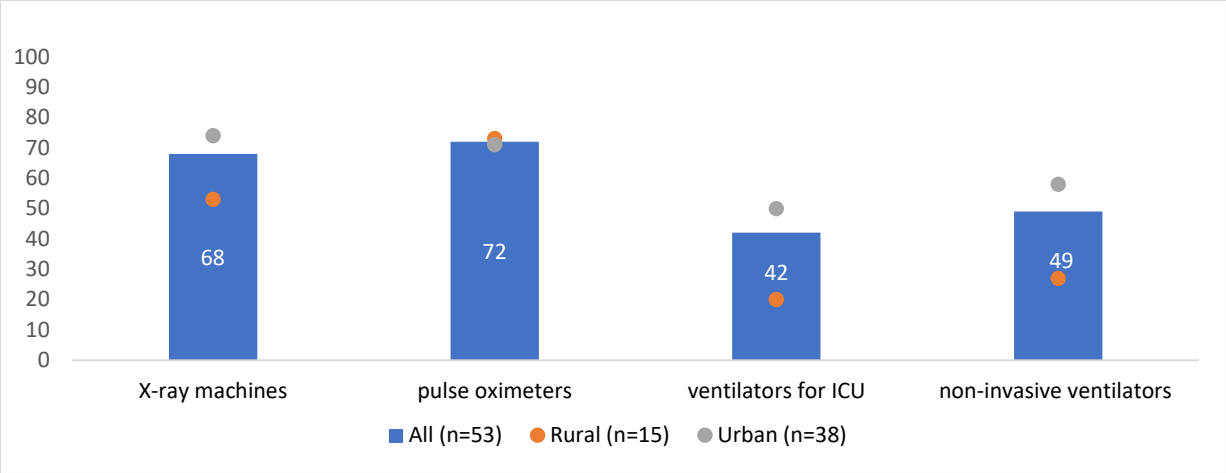
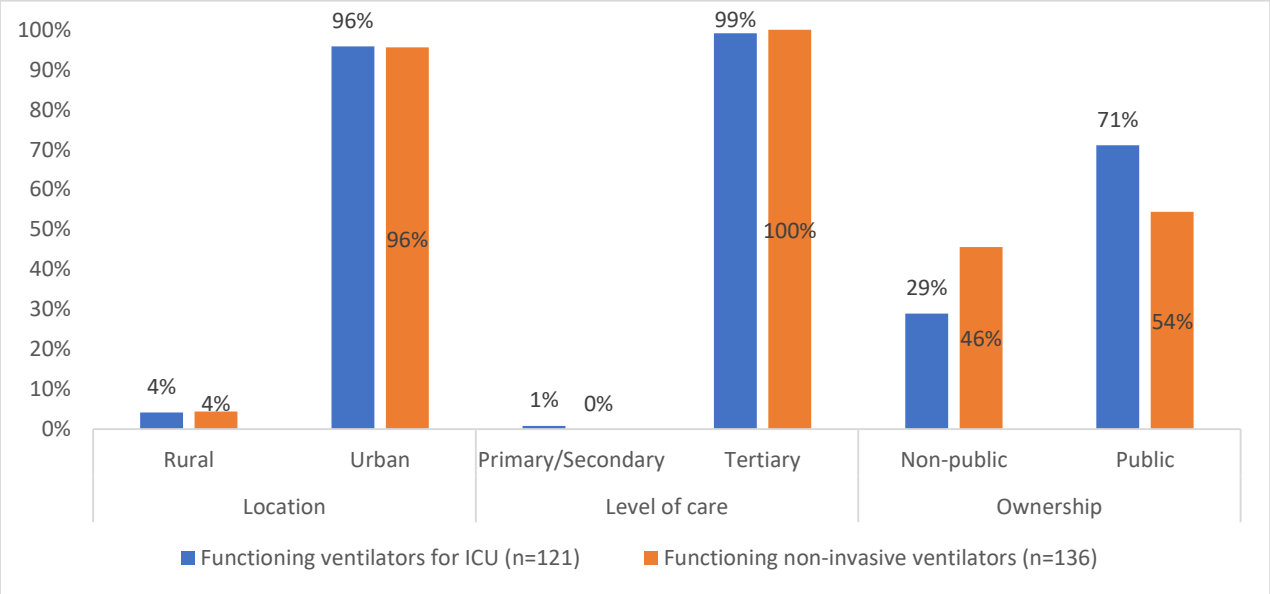


Figure 23. Proportion of facilities functioning ventilators for ICU and functioning non-invasive ventilators.



Ventilators for ICU and non-invasive ventilators were almost universally available in urban facilities (96%) while rural facilities hardly had any ventilators at 4% of facilities. Similarly, urban and tertiary health facilities had almost all the available ventilators in the assessed facilities while primary and secondary facilities had virtually none. On the other hand, assessment by ownership levels showed that non-invasive ventilators were similarly distributed across private and public facilities while ICU ventilators were slightly more available in public facilities compared to the private ones

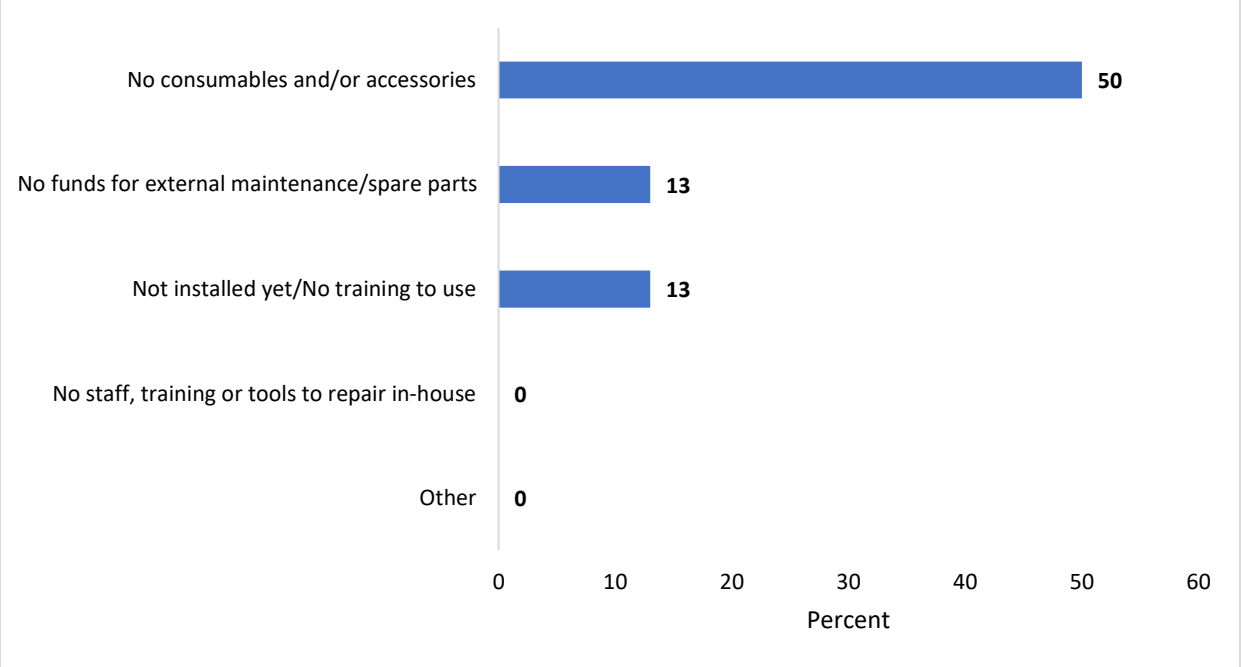
This may indicate that lower-level hospitals could be having mostly oxygen concentrators which do not require the use of the ventilators; hence the coverage is high in urban and tertiary hospitals which may have the oxygen plants.

3.5.2 Functionality of medical equipment

Where select equipment for COVID-19 case management were non-functional, the main reason given was non-availability of consumables and/or accessories which was reported by half of the assessed facilities. Capacity issues (no training/no installation) and inadequate funding for maintenance and spare parts contributed 13% each to non-functionality of equipment.

Other reasons given are shown in figure 24 below:

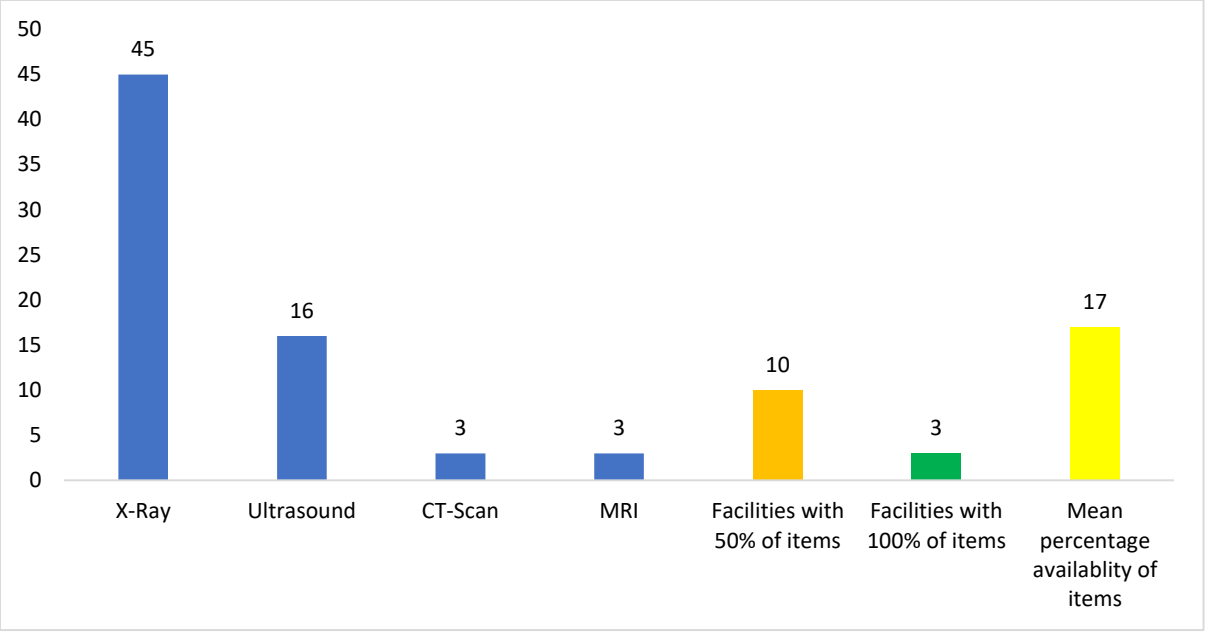
Figure 24. Reasons for malfunction of equipment in COVID treatment facilities with malfunctioning COVID related equipment (n=15)



3.5.3 Selected medical equipment for essential services

The survey assessed the availability of radiological diagnostic services (X-Ray, MRI, CT scan and Ultrasound). Of all the facilities, 45% had X-ray, Ultrasound equipment was at 16%. while CT scan and MRI were at 3% each which is shown to be more important in COVID-19 diagnostics. Facilities with 50% of the items were 10% of those assessed while only 3% had all the items available as shown in figure 25 below.

Figure 25. Percent of hospitals with select imaging test (n=53)



Availability of radiological diagnostic equipment (n=243)

The survey assessed the availability of radiological diagnostic services (X-Ray, MRI, CT scan and Ultrasound). Of all the facilities, 45% had X-ray, Ultrasound and MRI equipment were available in 16% and 3% of facilities respectively. The radiological equipment assessed was available only in tertiary/secondary facilities and non was available in primary health facilities.

Key recommendations

- All Health facilities should plan for procurement of consumables and maintenance for medical equipment on a routine basis.
- Ministry of Health should equip all COVID-19 case management facilities with ventilators for ICU and non-invasive.
- Ministry of Health should improve on the supply of both tracer supplies and medical equipment.

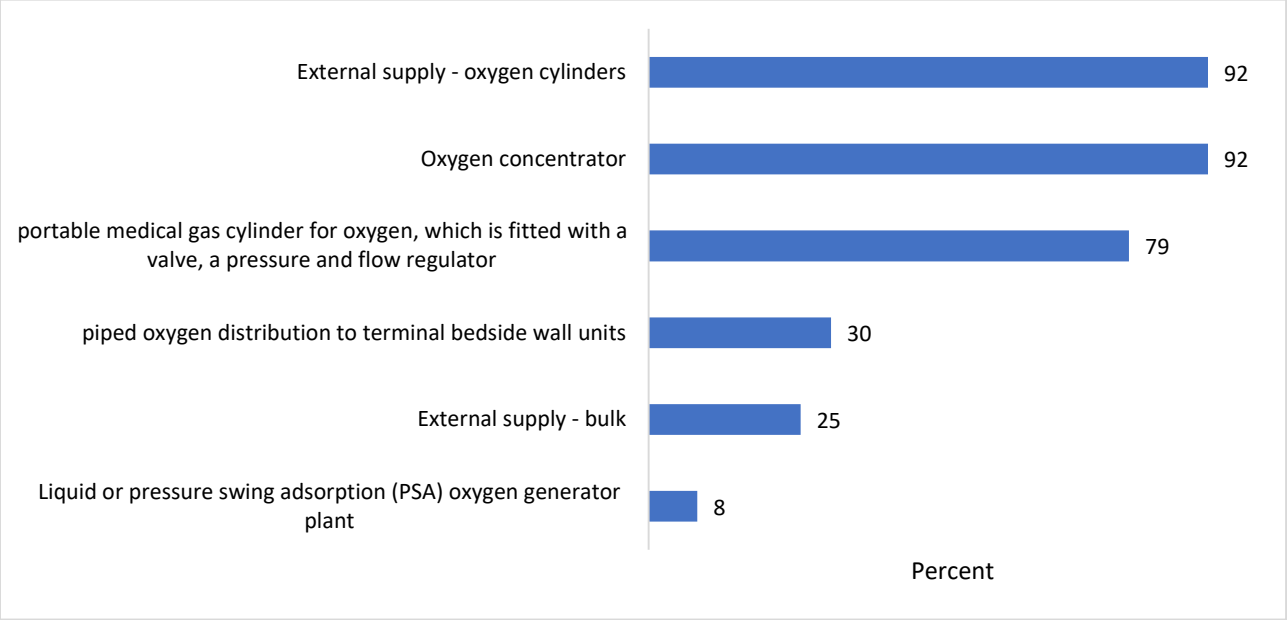
3.6 Oxygen availability

Key Findings
Almost all (96%) of case management facilities had oxygen
Oxygen concentrators and oxygen cylinders were the main supply method for oxygen in most facilities; These are not sustainable especially with a high case load of COVID patients
Oxygen generating plants, the most sustainable source of oxygen was available in only 8 % of facilities

COVID-19 primarily affects the respiratory system with symptoms ranging from mild infection to severe infection which results in a severe viral pneumonia that could then progress to life threatening

acute respiratory distress syndrome. Oxygen therapy is therefore a key component of management of COVID-19 through monitoring of oxygen saturation levels to actual provision of oxygen. It is vital to ensure that the medical oxygen supply system provides a safe and reliable supply of oxygen to healthcare facilities and patients as end users. In a pandemic setting such as the COVID-19 one, setting up of robust oxygen systems for optimal patient management takes time. It is therefore important to routinely assess the status. This assessment reviewed oxygen sources in COVID treatment hospitals that include oxygen cylinders, oxygen concentrators, bulk oxygen cylinders and oxygen plants on site; as well as and supply systems within the hospitals to the patient including availability of piped oxygen, which has been shown to be effective in management of COVID patients.

Figure 26. Proportion of COVID 19 Case management health facilities with availability of oxygen (n=53)



3.6.1 Oxygen sources

Oxygen concentrators and oxygen cylinders (external supply) were the most common modality through which oxygen was supplied in the assessed facilities at 92% each**. It is important to note that this was based on availability of reported oxygen delivery modalities such as oxygen cylinders and not actual amount of oxygen that was available.** Liquid or pressure swing adsorption (PSA) oxygen generator plant was the least available at 8% followed by bulk external supply at 25%.

Key recommendations

- The Ministry of Health should construct oxygen plants in strategic hospitals.
- All beds for the critically and severely ill patients should be connected to the oxygen plant.
- The Ministry of Health should improve on the availability of ventilators for ICU and non-invasive in rural and primary health facilities.

3.7 Essential medicines and supplies for hospitals and primary health facilities

Key Findings

In COVID case management facilities:
Oxygen was available in almost all facilities (96%) while intravenous fluids were available in all facilities

The least available medicine was Ampicillin injectable; Just about a half of facilities (49%) had Rocuronium injectable or any other neuromuscular blocker, indicating limited capacity for manual ventilation in COVID treatment centres

The **average availability** of medicines was 68%

In primary facilities:
IV fluids were the most available item followed by Artemether Lumefantrine; The least available items were Heparin at 18% while Oxygen was available in 25% of the facilities
The **average availability** of tracer medicines was 74% while only 4% of facilities had all tracer medicines
Oxygen was available in a quarter of the facilities

Routine vaccines and non-pharmaceutical supplies are adequately available in most facilities

Zambia has identified essential medicines that have been designated as tracer drugs and are used as the basis for determining the availability of medicines in health facilities. It is important that essential medicines and supplies of proven quality and safety are accessible and that they are properly used to save lives, reduce suffering, and improve health.

3.7.1 Availability of tracer medicines in COVID treatment centres

Two (2) main tracer indicators were assessed in COVID-19 case management facilities, the percentage of facilities with available tracer medicines and the percentage of facilities with available tracer supplies.

Tracer medicines and supplies for hospitals

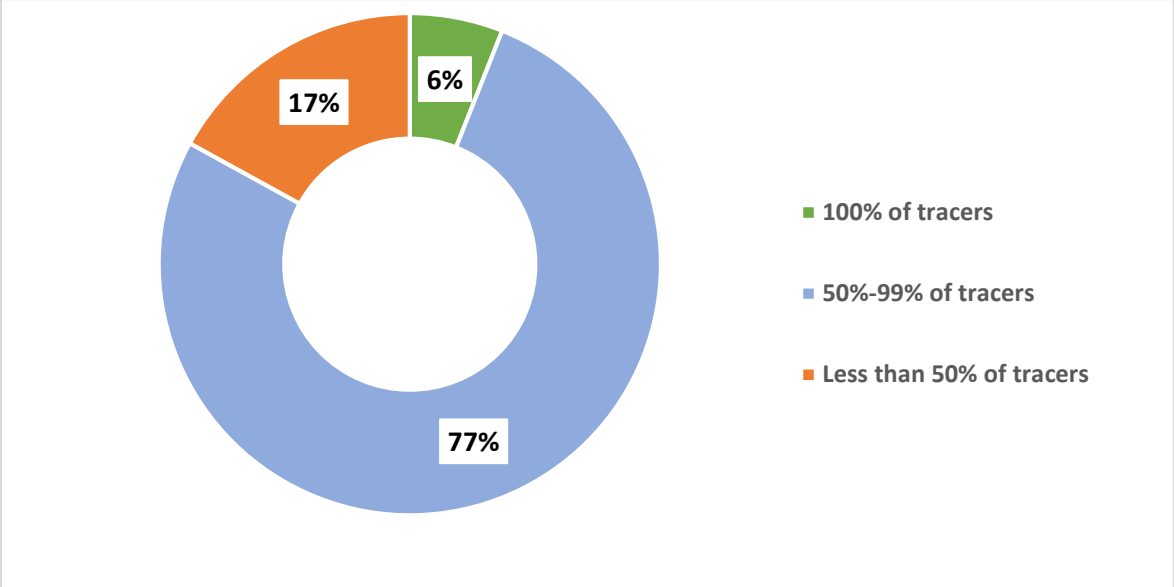
Figure 27. Tracer medicines and supplies for hospitals

Tracer medicines	Tracer supplies
1. Chlorhexidine + cetrimide (solution) 2. Chlorine High Test Hypochlorite (HTH) 70 3. Epinephrine or noradrenaline (injectable) 4. Ceftriaxone (injectable) 5. Ampicillin (injectable) 6. Azithromycin (for oral administration) 7. Rocuronium (injectable) or other neuromuscular blocker 8. Haloperidol (injectable) 9. Morphine (injectable) or other opiate 10. Paracetamol (for oral administration) 11. Hydrocortisone or dexamethasone (injectable)	1. Syringes and needles 2.Intravenous cannulas and giving sets 3.Gauze 4. 5% chlorhexidine gluconate 5. Sodium hypochlorite 4-6% chlorine

12. Heparin (injectable) 13. Intravenous fluids: normal saline or Ringer's lactate 14. Oxygen	

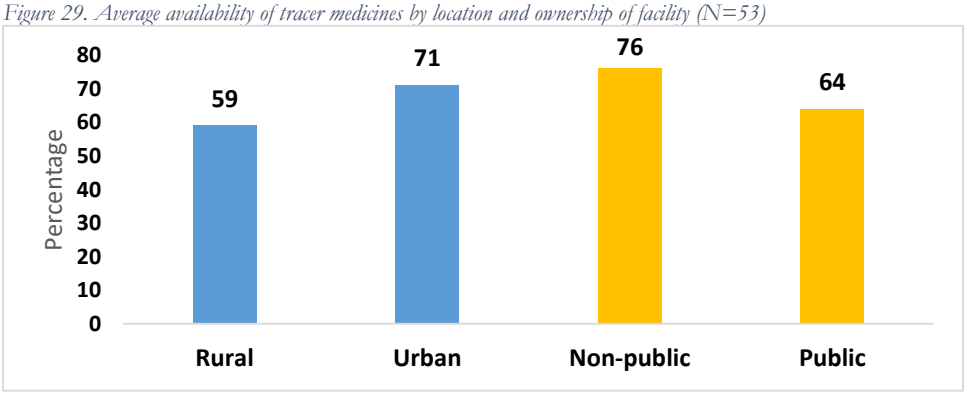
Of the 53 COVID-19 case management facilities assessed, only 3(6%) had all tracer medicines available while 41 (77%) of the facilities had tracer medicines ranging between 50% and 99%; 9 (17%) of the facilities had less than 50% of the tracer medicines as indicated in figure 28.

Figure 28. Availability of tracer medicines by percentage (N=53)



Average availability of tracer medicines by location indicate that rural facilities had a lower average availability of tracer medicines at 59% compared to the urban facilities which 79% on average. Further, comparison by ownership revealed that the private health facilities had on average 76% of tracer medicines available when compared with public which had on average 64% of the tracer medicines.

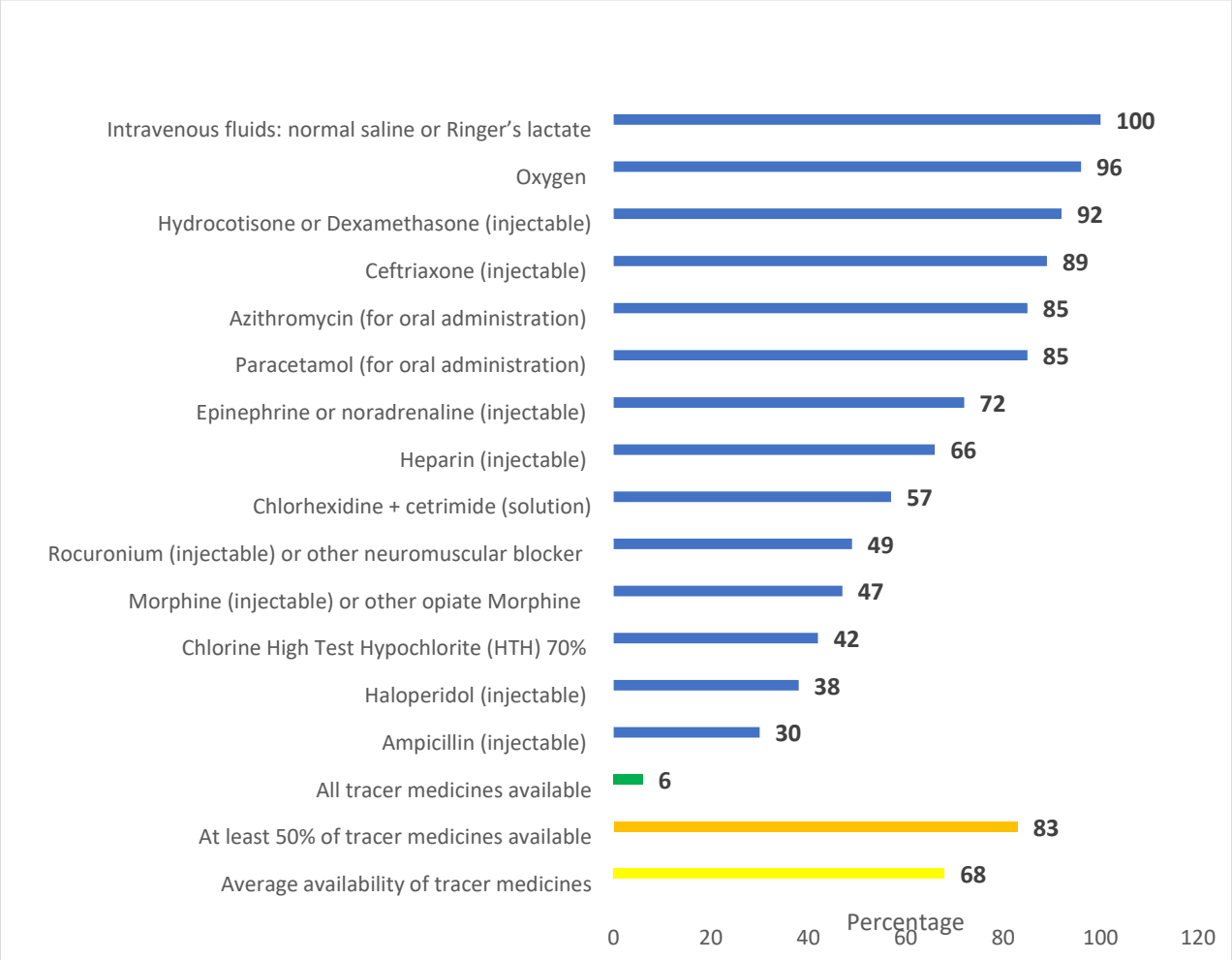
Figure 29. Average availability of tracer medicines by location and ownership of facility (N=53)



3.7.2 Availability of tracer medicines in COVID management centres by individual item; COVID Case management centres

Related to individual items, oxygen was available in almost all facilities (96%) while intravenous fluids were available in all facilities. The least available medicine was Ampicillin injectable (30%) and only about half of facilities (49%) had Rocuronium injectable or any other neuromuscular blocker, indicating limited capacity for manual ventilation in COVID treatment centres.

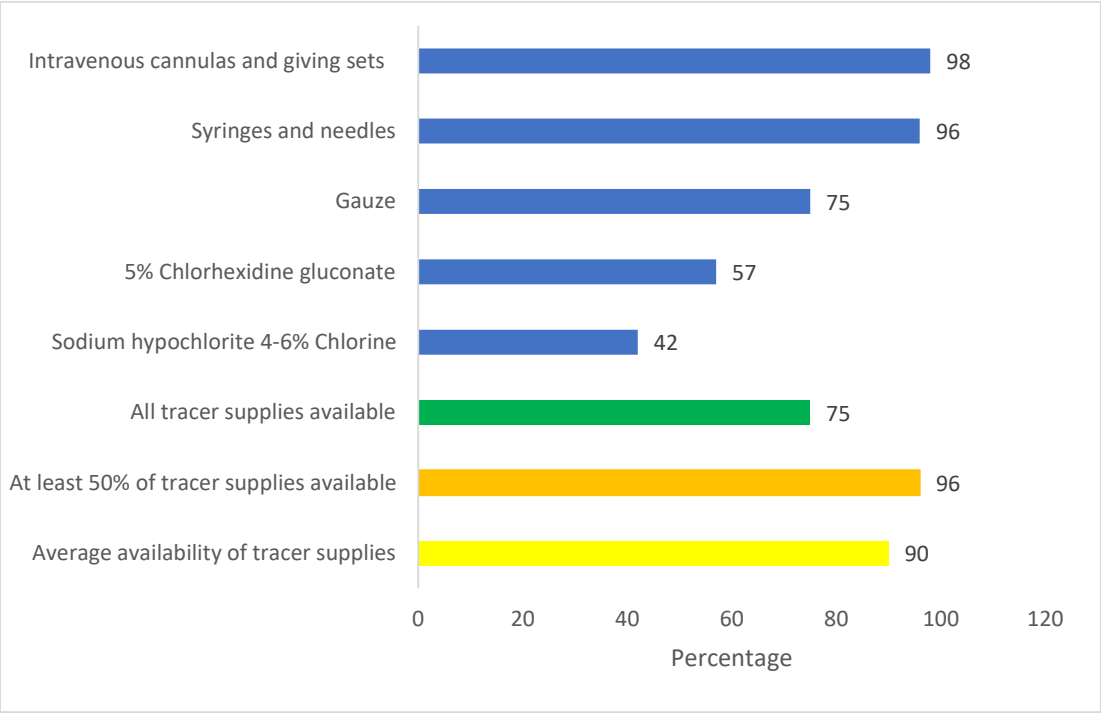
Figure 30. Availability of tracer medicines (N=53)



3.7.3 Availability of tracer supplies by individual item; COVID Case management centres

In terms of tracer supplies, most of the facilities (96%) had more than 50% of the tracer supplies available. Chlorine supplies was the least (42%). Overall, three quarters of all the 53 COVID-19 treatment centres had all the supplies available.

Figure 31. Availability of the tracer supplies (N=53)



3.7.4 Availability of medicines and supplies; primary health facilities

At the primary care level, Zambia has identified essential medicines that have been designated as tracer drugs and are used as the basis for determining the availability of medicines in health facilities. It is also important that essential medicines and supplies are accessible and are of proven quality and safety; and that they are properly used to save lives, reduce suffering and improve health.

The availability of medicines and supplies were assessed in 243 facilities and a total of 17 tracer medicines were assessed as shown in table 7:

Table 7. List of tracer medicines and supplies assessed

Tracer medicines	Tracer supplies
1. Salbutamol 2. Metformin 3. Hydrochlorothiazide 4. Paracetamol 5. Carbamazepine 6. Amoxicillin 7. Ethinylestradiol + levonorgestrel (or alternative combined oral contraceptive) 8. Oxytocin 9. Magnesium sulfate 10. Heparin 11. Hydrocortisone or dexamethasone 12. Epinephrine	1. Syringes and needles 2. IV cannulas and giving sets 3. Gauze 4. Bulk liquid oxygen 5. Nasal cannula 6. Face masks 7. Humidifier

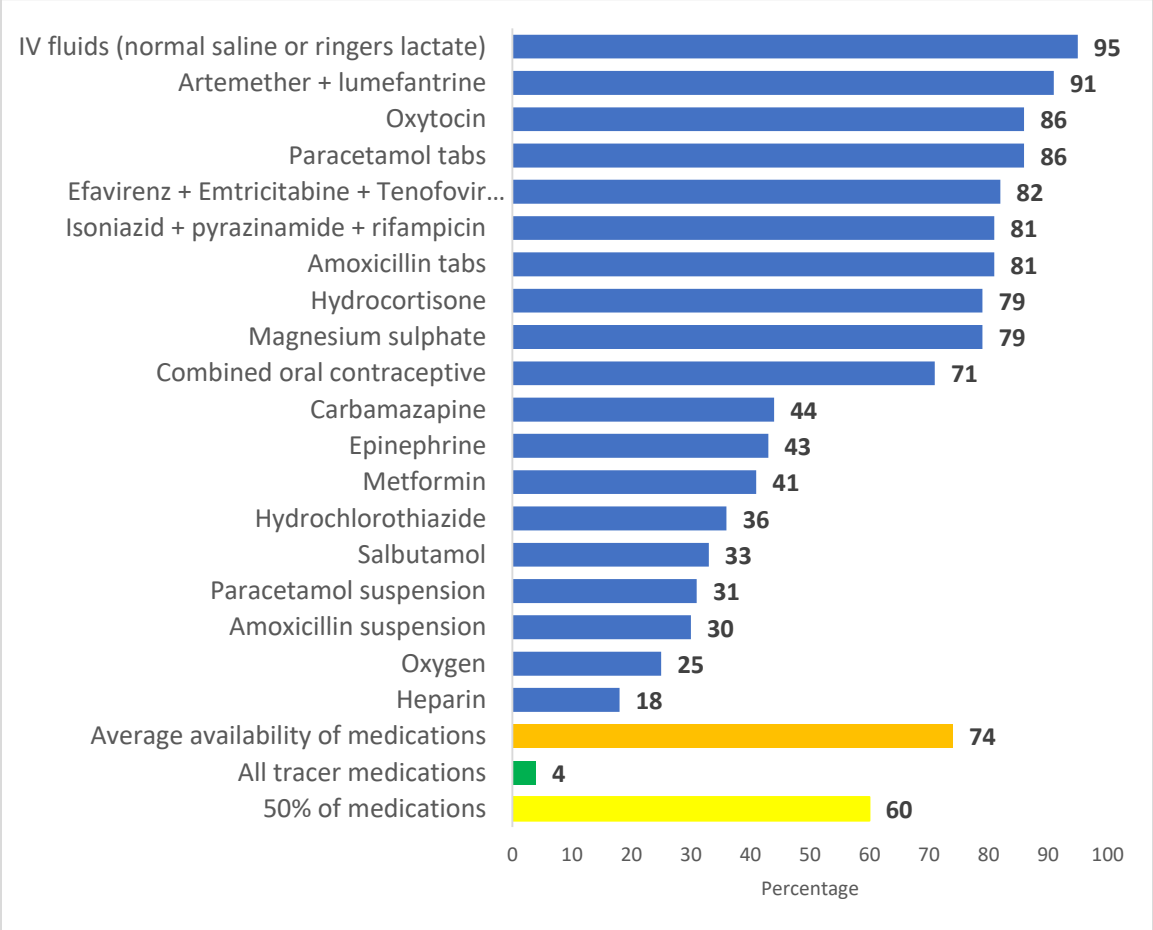
13. Artemether + lumefantrine (or other artemether combination medicine) 14. Efavirenz + emtricitabine + tenofovir disoproxil fumarate 15. Isoniazid + pyrazinamide + rifampicin 16. Intravenous (IV) fluids (normal saline or Ringer's lactate) 17. Oxygen	

3.7.5 Availability of tracer medicines in primary health facilities

In terms of availability of selected tracer medicines, most of the medicines are only available in less than 50% of facilities. IV fluids were the most available item (95%) followed by Artemether Lumefantrine while the least available was Heparin at 18%. Oxygen was only available in 25% of primary care facilities.

The average availability of tracer medicines was 74% with only 4% of facilities having all tracer medicines available.

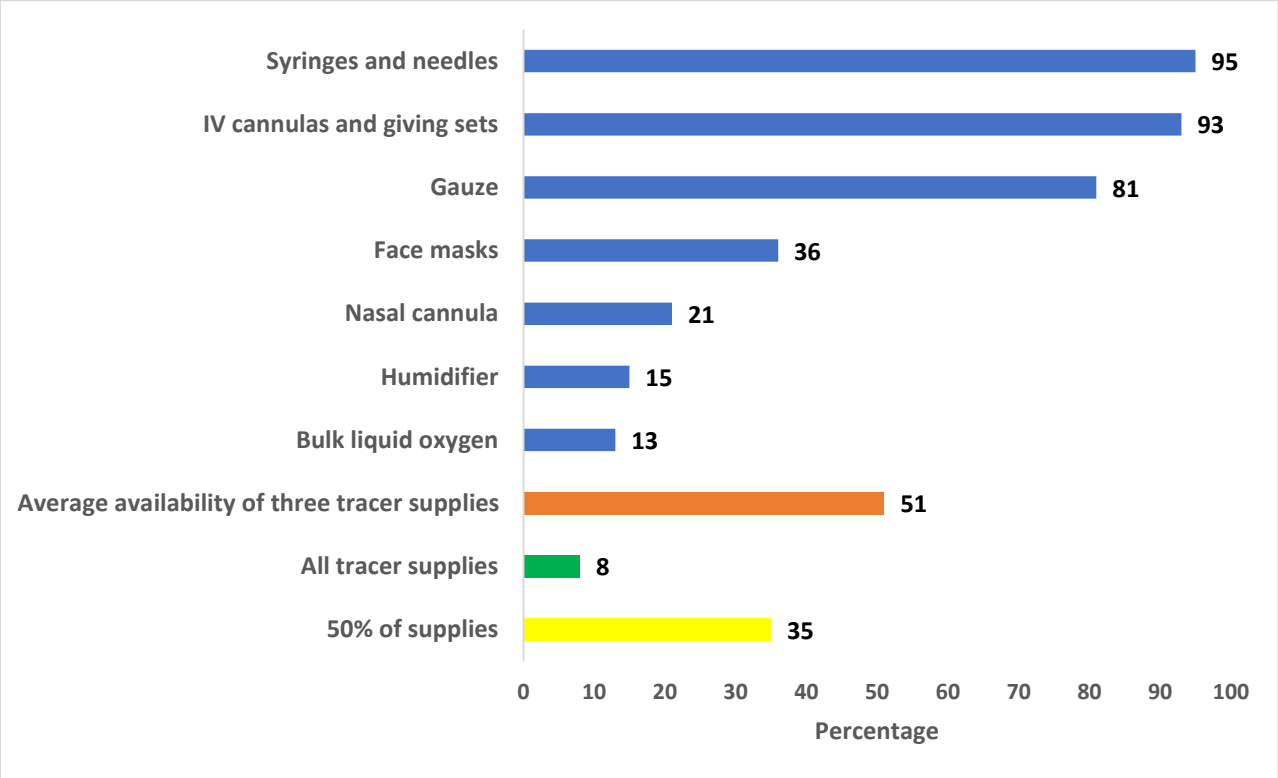
Figure 32. facilities that have selected tracer medicines (N=243)



3.7.6 Availability of tracer supplies in primary health facilities

In terms of supplies, syringes and needles were available in most of the facilities (95%) while bulk liquid oxygen was only available in 32 (13%) facilities. Very few facilities (8%) had all the tracer supplies available.

Figure 33. Percentage of facilities with selected supplies (N=243)

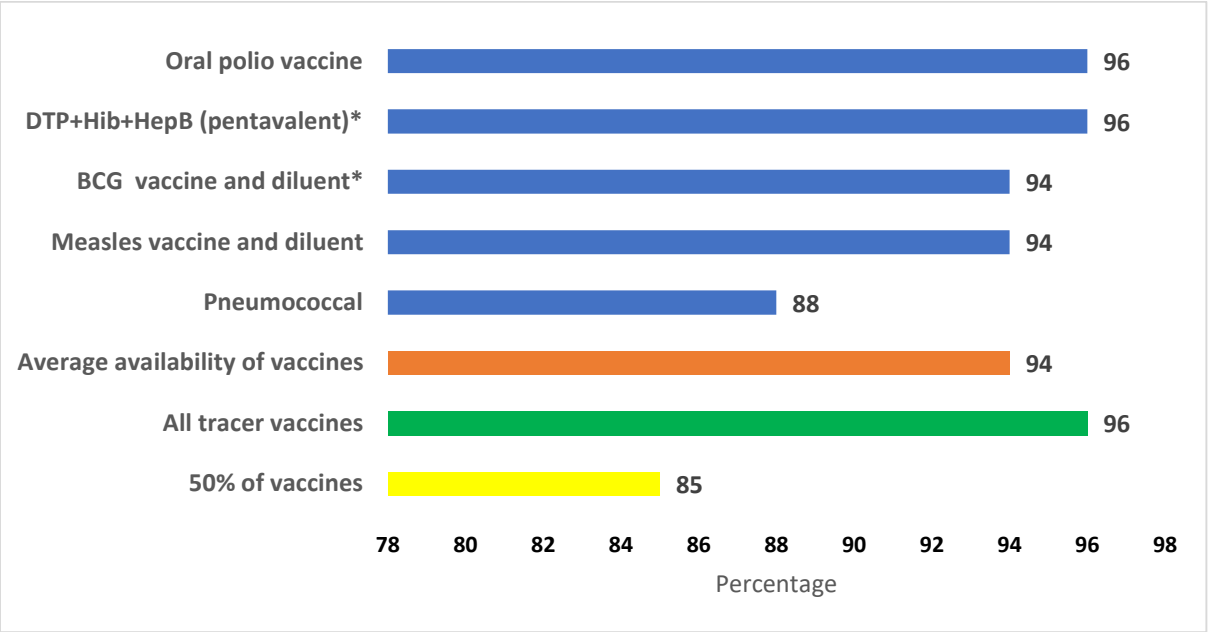


3.7.7 Availability of tracer vaccines in Primary care facilities

Most of the facilities had tracer vaccines available (96%) and 206 (85%) of the facilities had at least 50% of the tracer vaccines available.

Availability of vaccines by ownership showed that public health facilities had 95% of the tracer vaccines available while Private facilities had 87% on average. Routine vaccines were available in almost all facilities averaging at 94%.

Figure 34. facilities that have selected tracer vaccines (N=243)



Conclusions and recommendations for medicines and supplies

Conclusions

Case Management centres

- Oxygen was available in almost all facilities (96%) while intravenous fluids were available in all facilities
- The least available medicine was Ampicillin injectable
- Just about a half of facilities (49%) had Rocuronium injectable or any other neuromuscular blocker, indicating limited capacity for manual ventilation in COVID treatment centres
- The average availability of medicines was 68%

Primary Health Facilities

- Most of the medicines were only available in less than half of the facilities.
- Oxygen was available in a quarter of the facilities which is of great concern
- For supplies, almost all the facilities assessed had syringes and needles, IV cannulas and giving sets, as well as gauze. However, the following supplies were only available in a few facilities: bulk liquid oxygen, nasal cannula, face masks, and humidifiers.
- Routine vaccines and non-pharmaceutical supplies are adequately available in most facilities

Recommendations

Case Management centres

- Increasing the supply for all tracer medicines
- Chlorine for disinfection should be always available and in adequate quantities

Primary Health Facilities

- Increasing essential medicines that are in short supply in primary facilities.
- Oxygen was only available in a quarter of facilities, and it is recommended that oxygen supply be increased to cover all facilities especially the bulk liquid oxygen

3.8 COVID-19 Infection Prevention and Control (IPC) and Personal Protective Equipment (PPE)

Key Findings

In Case management centres

IPC items: 4 in every 10 facilities had all the IPC items assessed and a half of facilities had between 50 to 99% of the IPC items

PPE items: 9 in every 10 assessed facilities had all PPE items assessed for some or all staff who needed them

Medical masks were the most available PPE (85%) followed by examination gloves (79%)

On average, 2 of every 3 facilities had PPEs for all staff who needed them

In Primary Facilities

Measures to ensure a **COVID safe environment** were well implemented in primary facilities; Cleaning and disinfecting were the most implemented measures

Isolation and distancing were the least implemented measures in Primary facilities at 63% and 61% respectively

PPE items: Most facilities reported low availability of most PPE items; 21% of facilities did not have masks for all staff; among these, 13% did not have masks available; Examination gloves were reported available for all staff in only about a half of facilities

Less than a third (28%) of facilities reported having all needed PPE items for all staff

Infection Prevention and Control (IPC) in healthcare settings is one of the most important measures that can be used to prevent transmission of COVID-19 infection. Ensuring adequate IPC at healthcare facilities minimizes the risk of infections for patients and their families, health workers and surrounding communities.

Two (2) broad areas were assessed in COVID case management facilities; percentage of facilities with available personal protective equipment for staff (e.g., masks, gowns, googles) and % of facilities with available infection prevention and control supplies (e.g., soap, biohazard bags, sanitizer stations as shown in table 8. Under the primary health facilities, three (3) tracer indicators were assessed:

percentage of facilities with safe environment measures, percentage of facilities with IPC guidelines in place and percentage of facilities with adequate PPE for staff.

The following were the IPC and PPE supplies being assessed for availability:

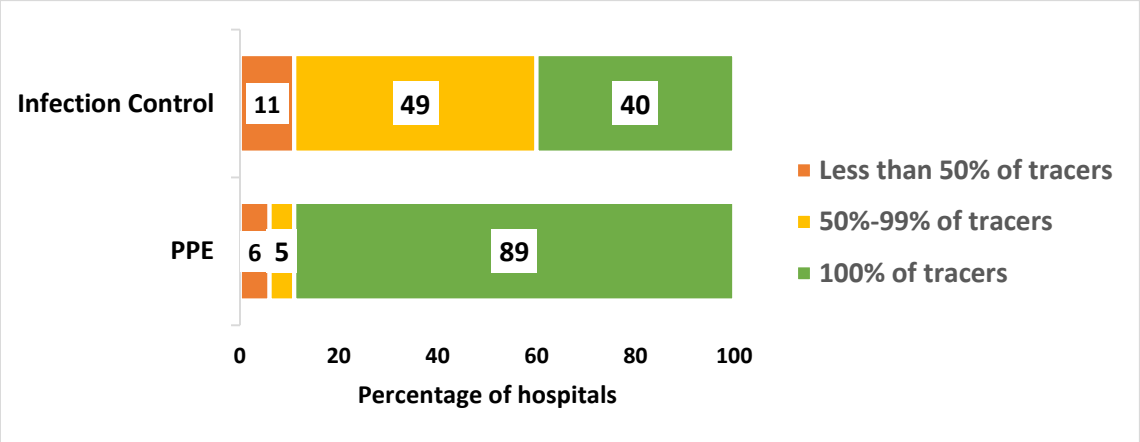
Table 8.Tracer IPC and PPE supplies assessed

Level of facility	IPC items	PPE supplies
Hospitals	1. Liquid soap 2. Hand sanitizer 3. Biohazard bags 4. Safety boxes 5. Body bags	1. Protective gowns 2. Examination gloves 3. Protective goggles 4. Face shield 5. Respirator masks (N95 or FFP2) 6. Medical/surgical mask
Primary health facilities	1. Screening 2. Distancing 3. Instructions displayed 4. Screening and triage 5. Isolation 6. Staff screening 7. Hand hygiene for staff 8. PPE for staff 9. Cleaning and disinfecting	1. Protective gowns 2. Examination gloves 3. Protective goggles 4. Face shield 5. Respirator masks (N95 or FFP2) 6. Medical/surgical mask

PPE items were available in most of the case management facilities with 9 in every 10 assessed facilities reporting to have all the PPE items for some or all staff as required and only 6% of the selected facilities had less than half of the PPE items.

In terms of IPC items, the availability in selected facilities was generally low as only 4 in every 10 facilities had all the IPC items assessed and a half of facilities had between 50 to 99% of the IPC items.

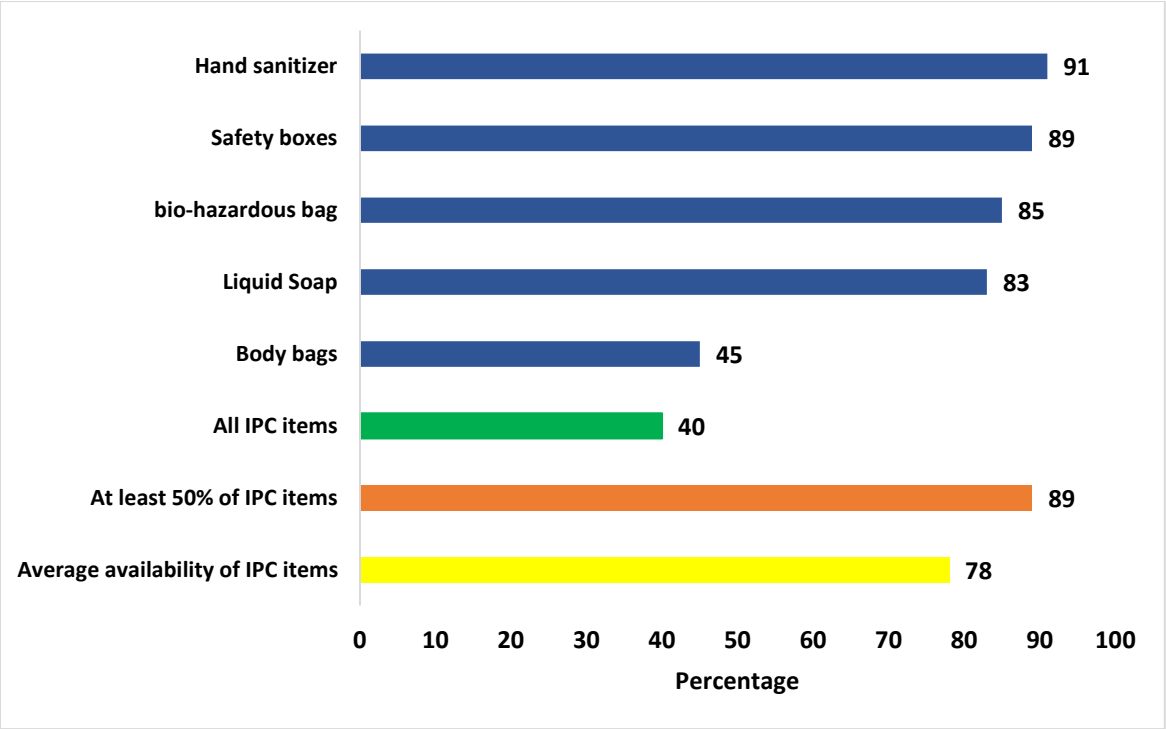
Figure 35.Percent of facilities that have selected IPC and PPE items (N=53)



3.8.1 Availability of Infection Prevention (IPC) items in Case Management centres

Availability of all the IPC items were reported by only 40% of the facilities. While on average, the facilities reported having four of the five items, with hand sanitizer as the most available (91%). Body bags were the least available IPC items as only 45% of the facilities.

Figure 36. Percentage of facilities with selected IPC supplies (N=53)

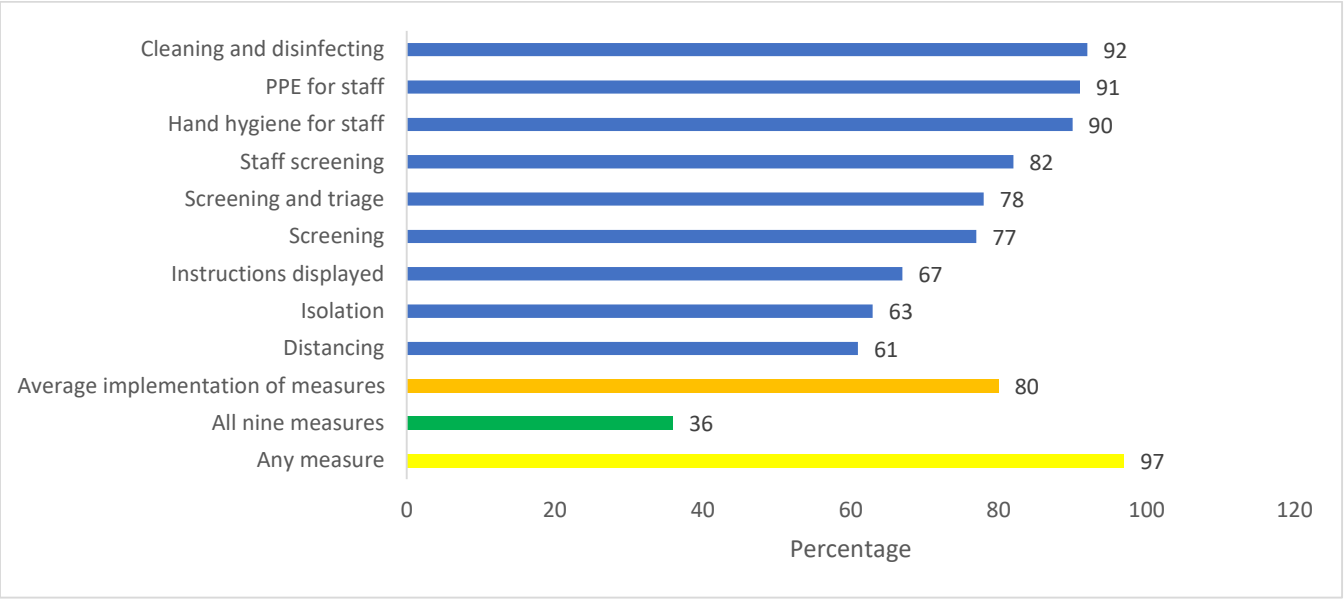


3.8.2 Availability of Infection Prevention (IPC) items in primary care facilities

Most primary facilities implemented at least one of the IPC measures (97%) with environmental cleaning and disinfection being the most implemented among the measures (92%). The least implemented measure was social distancing at 61%.

In summary, 36% of the facilities implemented all the measures to create a COVID-19 safe environment.

Figure 37. Percent of facilities that have implemented measures to create COVID-19 safe environment

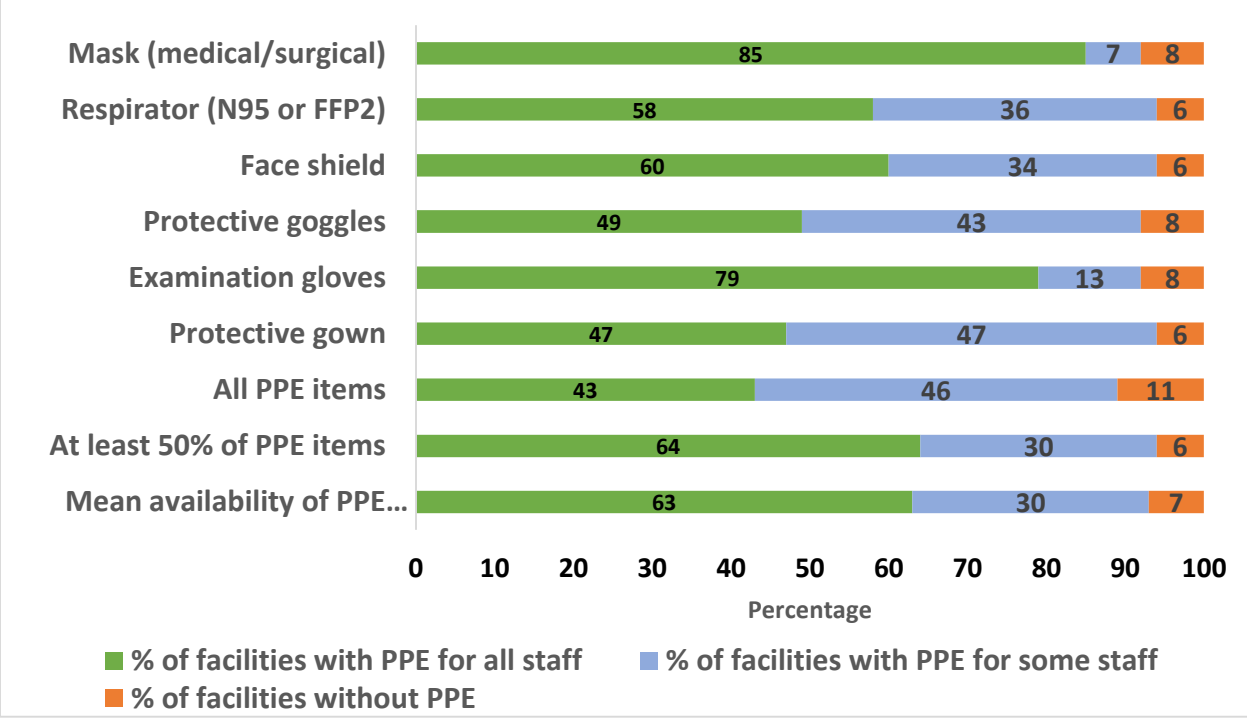


3.8.3 Availability of PPE items in Case Management centres

Availability of PPE items at all facilities assessed was at 43% with the least available PPE item being protective gown (47%) and medical masks being the most available PPE (85%).

The mean availability of PPE in the facilities was 63%.

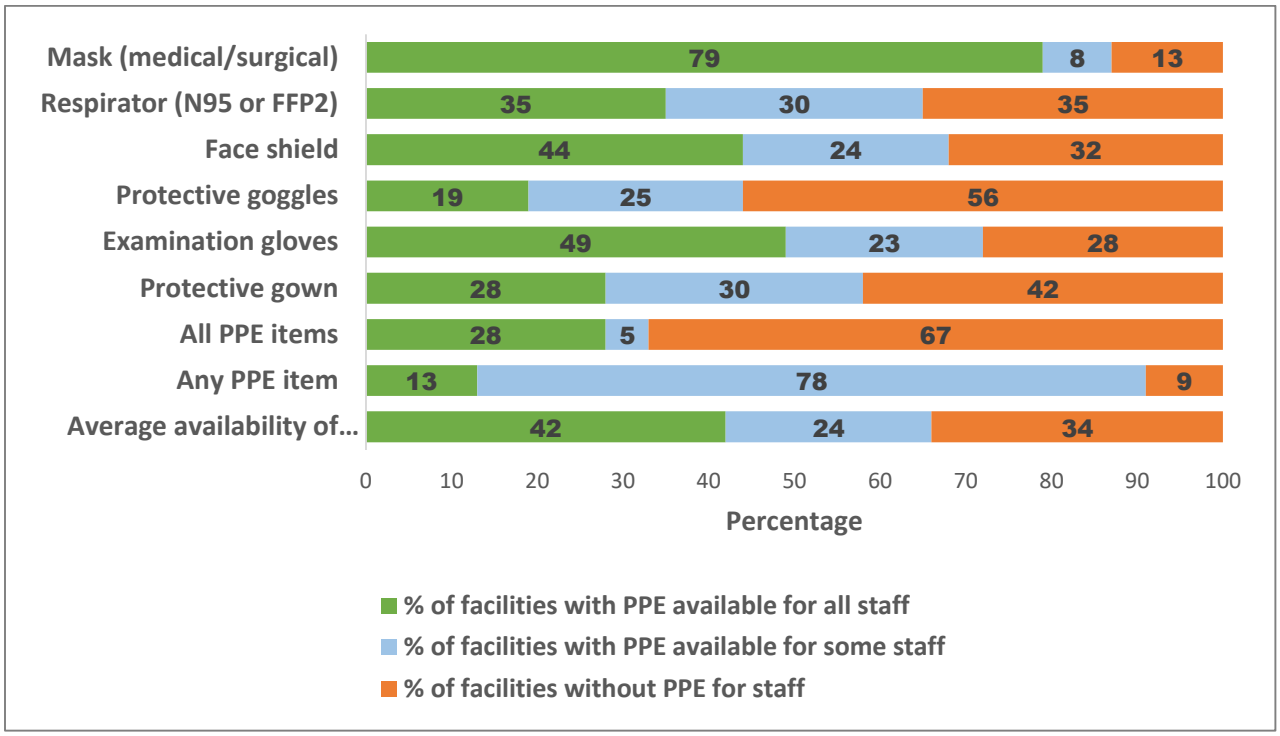
Figure 38. Availability of PPE for staff (N=53)



3.8.4 Availability of PPE items in primary facilities

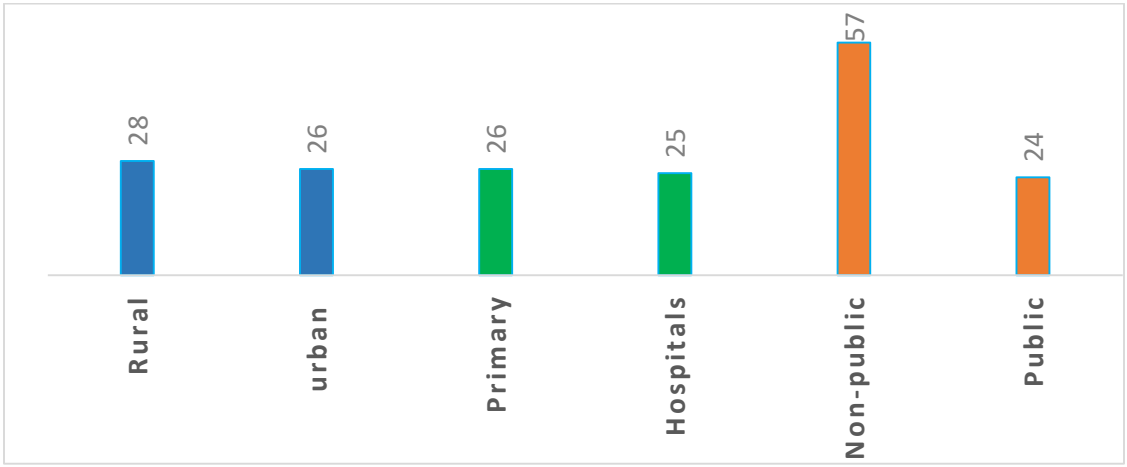
Most facilities reported low availability of most PPE items, as only 28% had all PPE available. Medical masks were the most available to all staff at 79% while protective goggles were the least at 19%. Overall average availability of PPE items was all health workers 42%, available for some staff 24%, available and 34% of the facilities where without PPEs.

Figure 39. Percentage of facilities with PPE for staff (N=243)



Further analysis by ownership shows that availability of PPE for staff in private facilities was at 57% while in public facilities it was at 24%. In addition, PPE availability by type and location revealed that there was no significant difference between rural and urban and primary and tertiary hospitals.

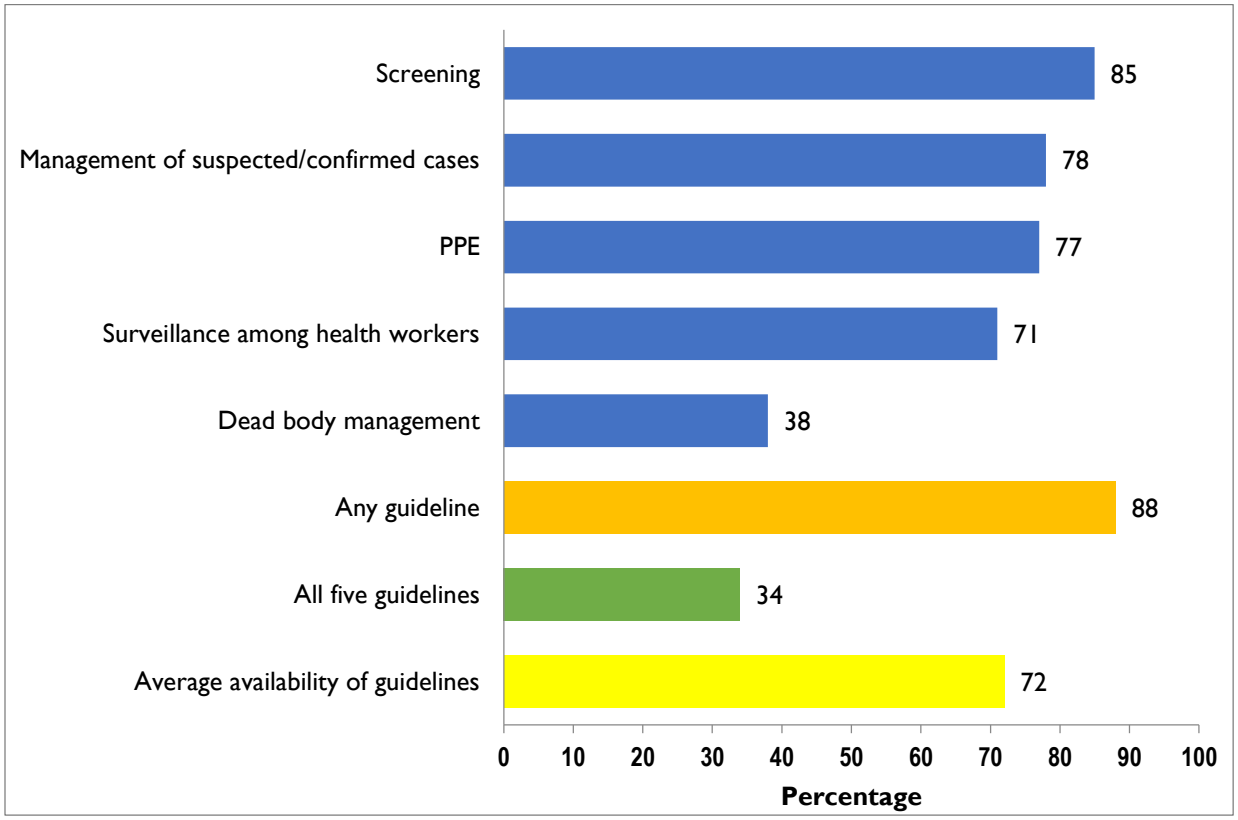
Figure 40. Availability of PPE by location, type, and ownership (N=243)



3.8.5 Availability of COVID-19 IPC guidelines

In terms of COVID-19 IPC guidelines, most facilities had guidelines available with those for screening being the highest (85%) while those for dead body management were the least available (38%). Overall, 88% had any guidelines which is a third of all the facilities and 34% had all the five guidelines.

Figure 41. Percentage of facilities with available IPC guideline (N=243)



Conclusions and recommendations

Conclusions

- Less than half of the facilities provided at least half of the required COVID19 trainings; IPC, proper use of PPE, and triage protocols for COVID19 case management
- Almost all the facilities implemented infection prevention and control (IPC) measures for COVID-19, especially with regards to environmental cleaning and disinfection and provision of PPE for all staff.
- Most facilities had COVID-19 IPC guidelines, especially for screening for signs and symptoms of COVID-19, management of suspected/confirmed COVID-19 cases, and for PPE use
- Few facilities had IPC guidelines for management of dead bodies.

- Although most health facilities had medical/surgical masks for all staff, less than half of the facilities had sufficient respirators (N95 or FFP2), face shields, protective goggles, and examination gloves, for all staff
- Public health facilities had fewer PPE than the non-public facilities

Recommendations

- Providing adequate PPEs (all types) for all staff and train them on proper use for both hospitals and primary health facilities
- Provide adequate guidelines for the management of dead bodies
- Provide further COVID-19 trainings to the staff on IPC, PPE usage and triaging

3.9 COVID-19 case management at lower-level facilities

Key Findings

Specimen collection: 59% collect specimens from patients to diagnose COVID-19. Of the facilities that collect specimens, 42% conduct rapid diagnostic tests (RDTs) and 6% transport collected samples to other facilities with the capacity to test 11% collect specimens and conduct PCR tests on site.

Referral: 191 (90%) of the 212 primary care facilities have designated referral facilities. Of these facilities, 56% are provided with transport services while 34% have no access to transport.

Management: 84% of the 212 health facilities advised the patients with mild symptoms to isolate at home. Only 10% of the primary health facilities were measuring oxygen saturation in patients

155 (73%) of the health facilities received up to date information/guidelines on how to manage COVID-19 cases

Health service delivery and utilization is the use of healthcare services by persons/patients for promotion, prevention, and restoration of health. COVID-19 has significantly influenced the utilization of routine and emergency health services due to several reasons. Among them being the limitations in services provided at the facility either through the reduction in the scope of the services or availability due to reduced number of health care workers to provide the services. Thus, the management of COVID-19 cases was assessed in 243 primary health care facilities.

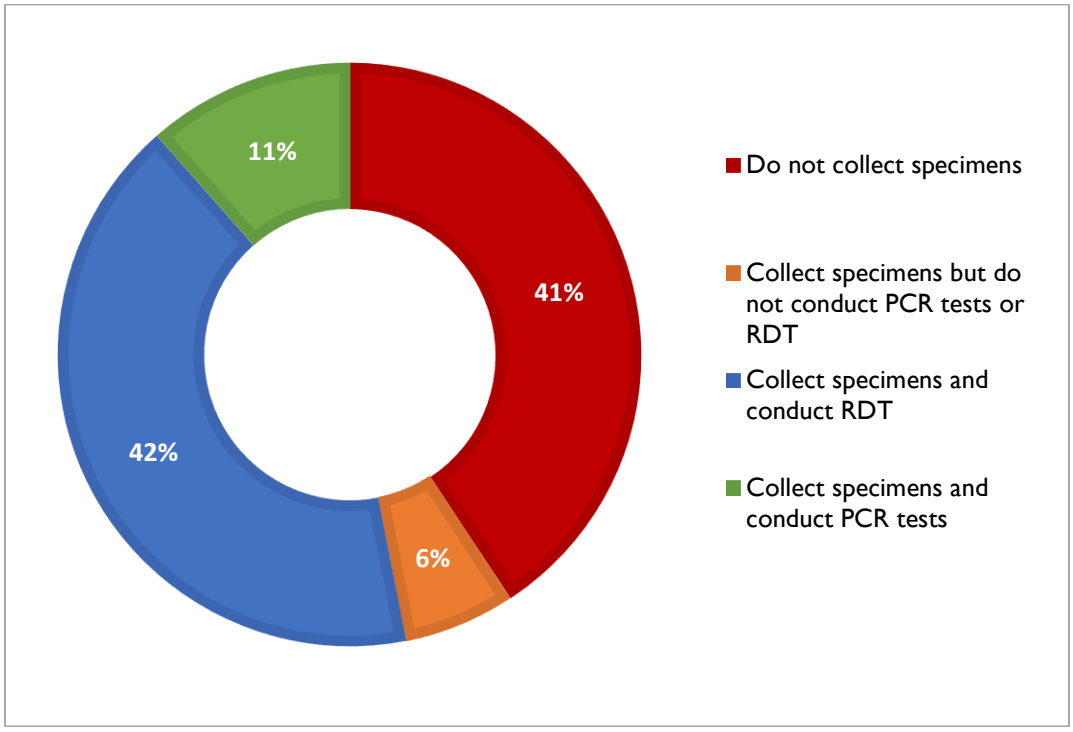
Among the key elements assessed were the management of patients with mild signs and symptoms, those with severe conditions, contact tracing, and COVID-19 surveillance.

Tracer indicators were used in assessing the percentage of facilities with capacity to provide COVID-19 services in primary care (e.g., collecting specimens for diagnosis, onsite testing, and referrals).

3.9.1 COVID testing in primary level facilities

Among the 212 primary healthcare facilities reporting capacity for COVID-19 testing, as shown in figure 42 below, 59% reported that they collect specimens from patients to diagnose COVID-19. Of the facilities that collect specimens, 42% conduct rapid diagnostic tests (RDTs) and 6% transport collected samples to other facilities with the capacity to test, while only 11% collect specimens and conduct PCR tests on site.

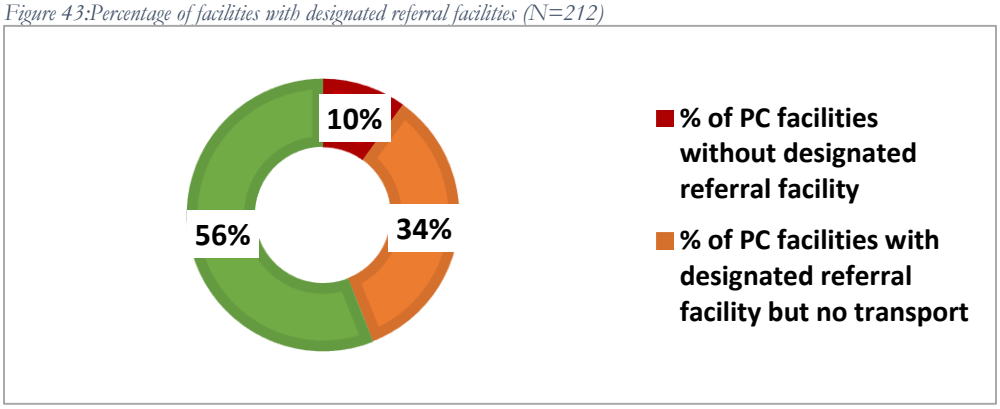
Figure 42:Percentage of facilities collecting specimen and conducting COVID-19 tests (N=212)



3.9.2 Facilities with designated referral facilities

In terms of capacity to refer COVID-19 patients, 191 (90%) of the 212 primary care facilities have designated referral facilities. Of these facilities, 56% are provided with transport services while 34% have no access to transport. Of concern are the 10% care facilities with no designated referral facilities.

Figure 43:Percentage of facilities with designated referral facilities (N=212)

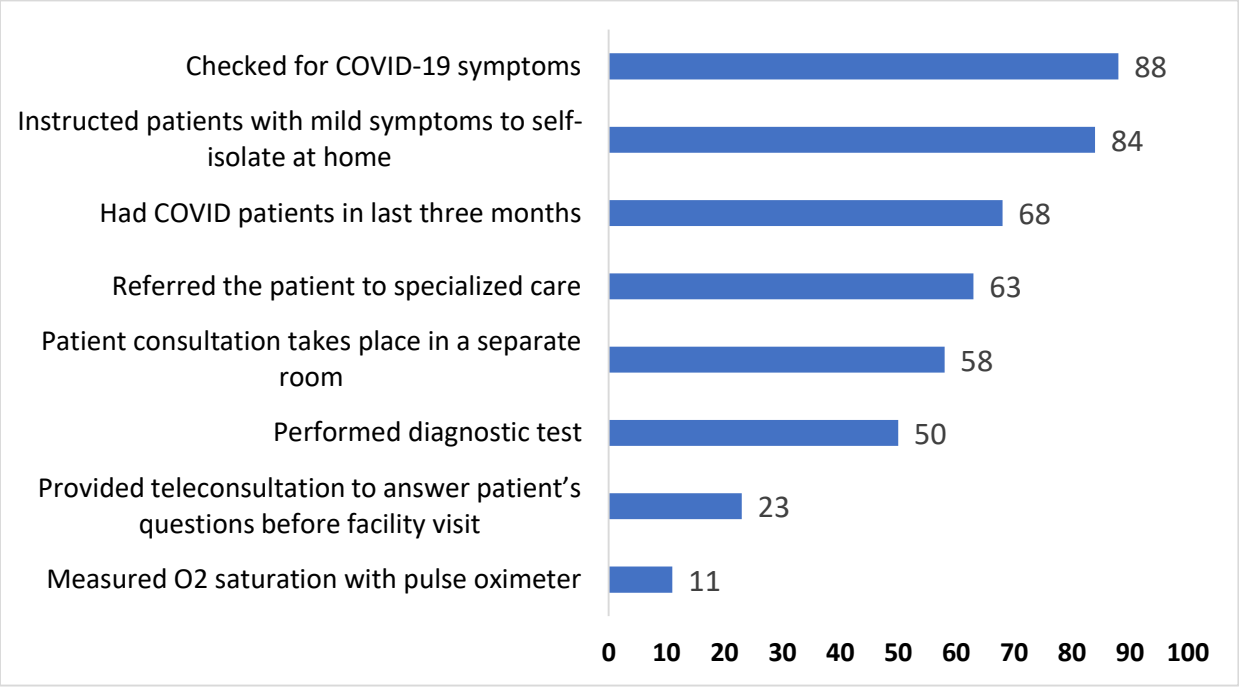


3.9.3 Management of COVID-19 in Primary care facilities

Management practices for COVID-19 were generally inadequate in the primary care facilities. 84% of the health facilities advised patients with mild symptoms to self-isolate at home.

Only one in ten Primary health facilities were measuring oxygen saturation in patients, and teleconsultations were not widely implemented as only 23% of facilities indicated having provided the service.

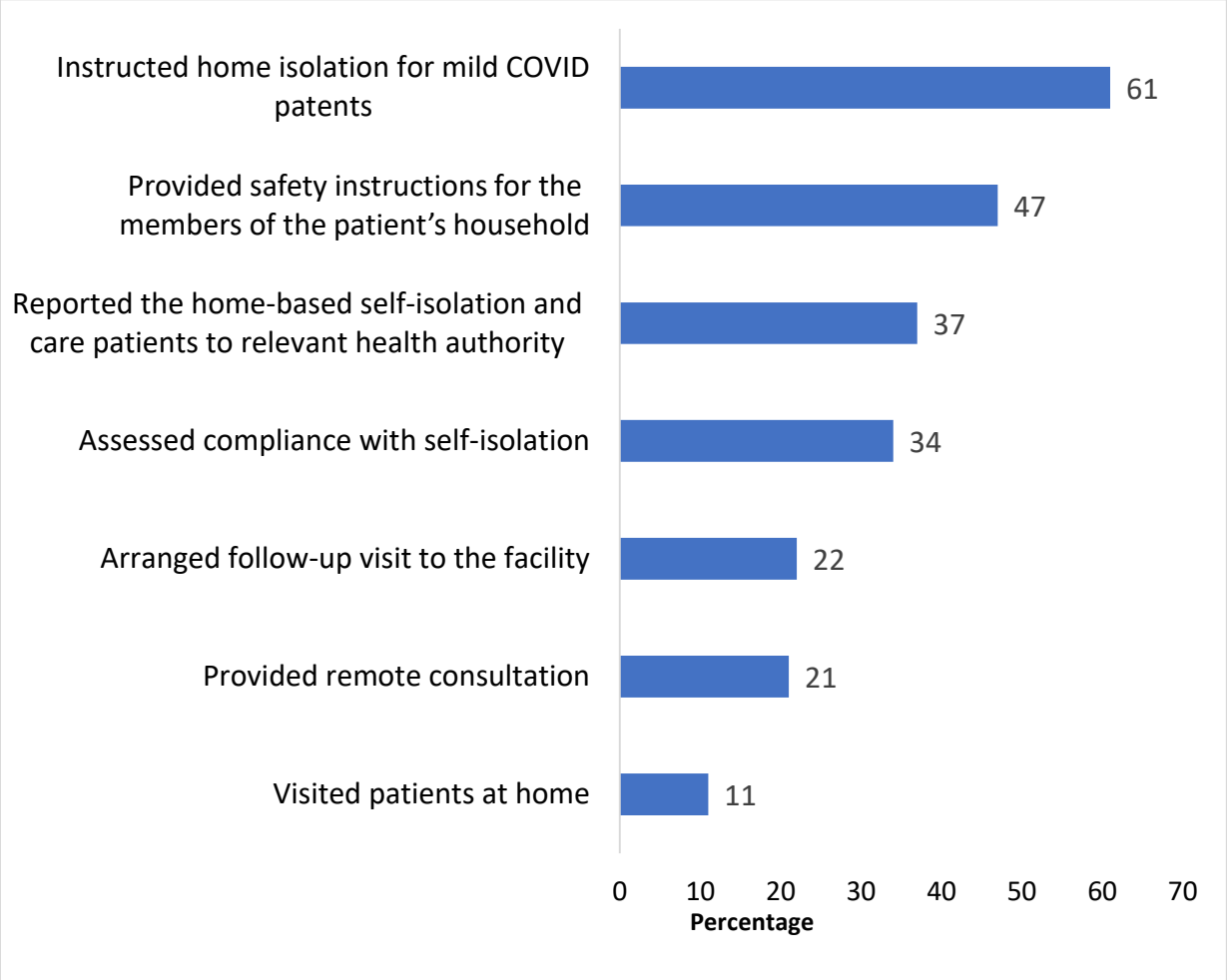
Figure 44:Percentage of primary care facilities with measures to manage COVID-19 (mild cases) (N=212)



3.9.4 Implementation of home isolation for mild COVID patients in Primary care facilities

In terms of the home management of suspected and confirmed COVID 19 cases, more than half of the facilities instructed patients with mild COVID-19 to home isolation (61%) of which 22% arranged follow-up visits to the facility. Only 11% of the patients were visited at home by health care providers.

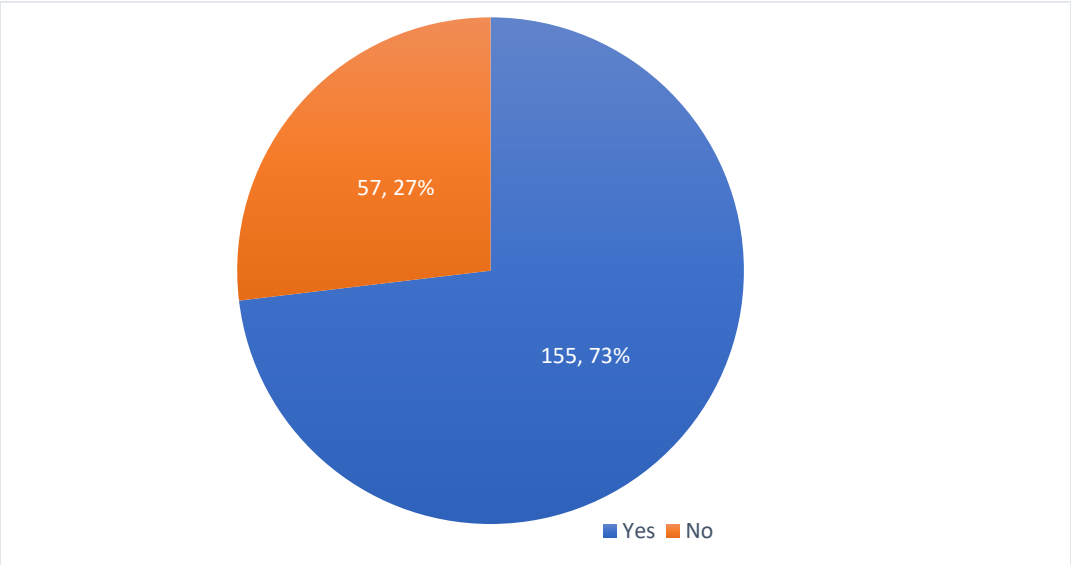
Figure 45:Percentage of primary care facilities that instructed home isolation for mild COVID patients (N=212)



3.9.5 Availability of guidelines for COVID-19 case management at primary level facilities

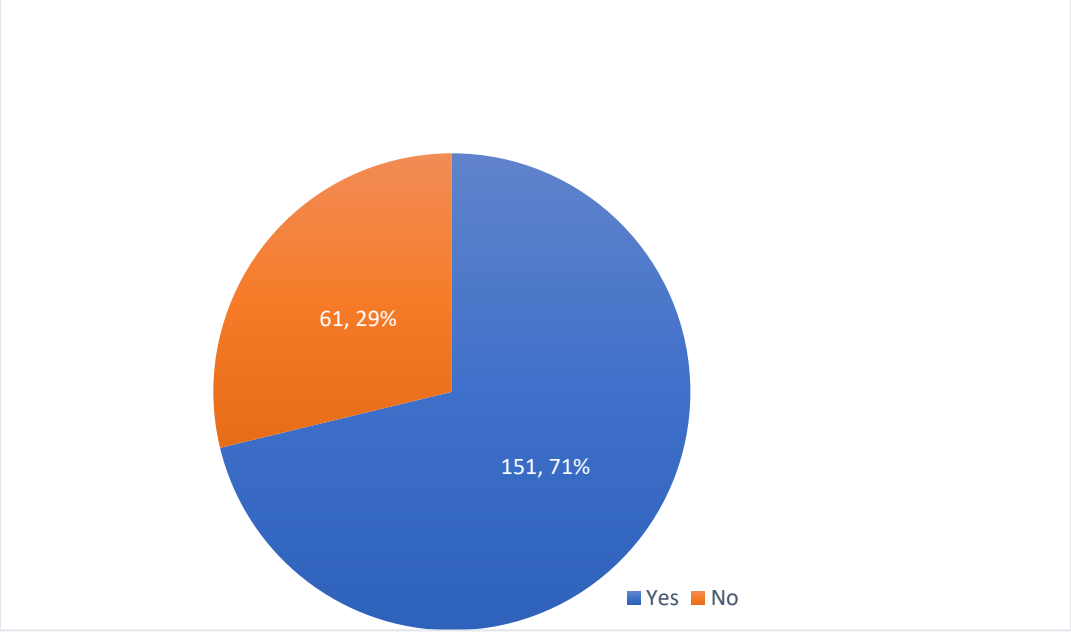
Most of the primary facilities assessed (155, 73%) indicated having received up to date information/guidelines on how to manage COVID-19 cases, while 57 (27%) did not, as shown in Figure 46

Figure 46:Percentage of facilities with up-to-date COVID-19 guidelines (N=212)



Most of the facilities (71%) indicated that they had received information on COVID-19 from other sources beyond the Ministry of Health and WHO.

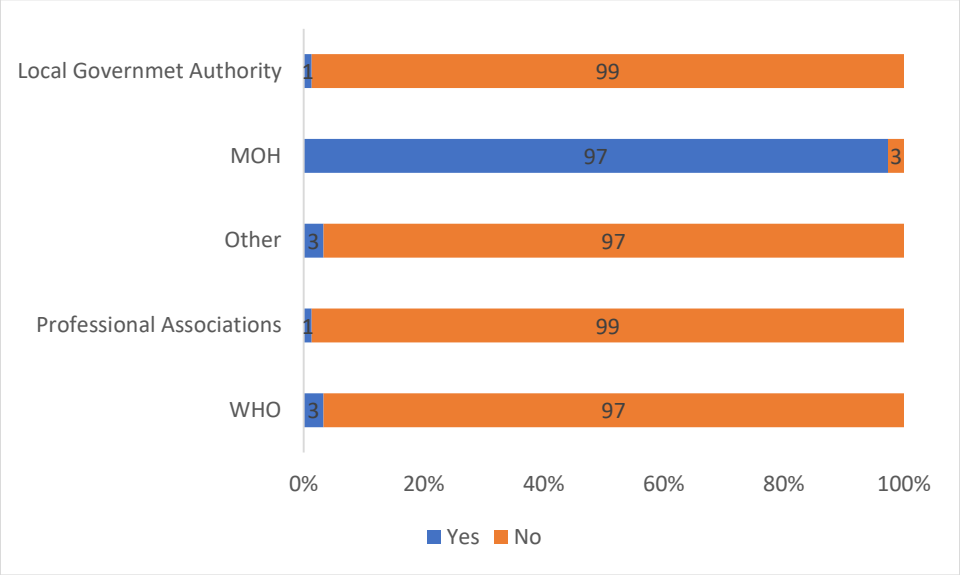
Figure 47:Percentage of facilities that received up to date information from other sources



3.9.6 Sources of information to manage COVID-19 cases in Primary level facilities

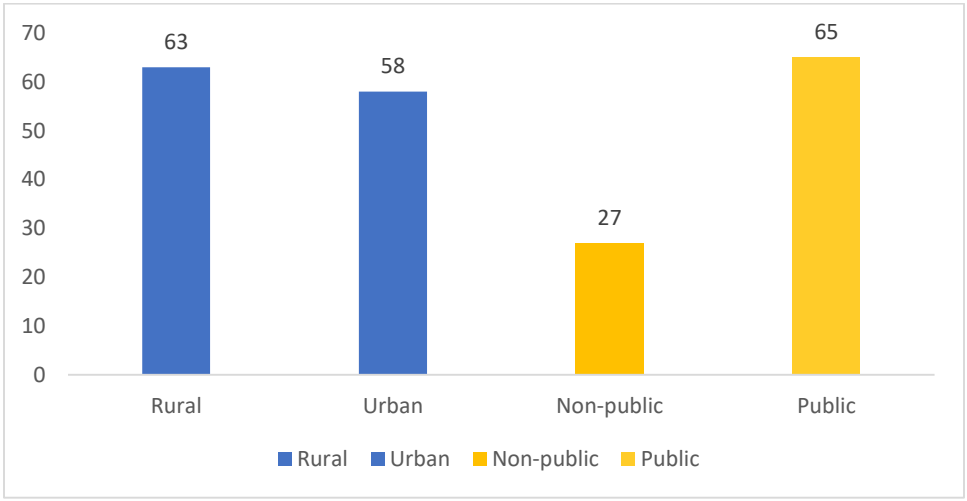
Most of the facilities obtained up to date information on COVID-19 patients management from the Ministry of Health (97%) with minor sources being WHO, Professional Associations and the Local Government Authority and others.

Figure 48:Additional sources of up-to-date information on COVID-19 case management



Further analysis on information to manage COVID 19 cases, by facility ownership, shows that public facilities received more information (65%) than non-public (27%). In addition, information availability by location revealed that there was little difference between rural and urban.

Figure 49:Analysis by location and ownership of facilities on COVID-19 information received (N=212)



Conclusions and recommendations for COVID-19 management at primary health care facilities

Conclusions

- Management capacity for COVID 19 varied widely across primary health facilities but was generally inadequate
- Services for patients under home isolation were low
- COVID-19 testing capacities were inadequate

Recommendations

- Strengthening home based isolation and care for mild COVID cases
- Strengthen mechanisms to support recovery of essential health services
- Mentor, train and support Primary facilities in COVID -19 management as per guidelines
- Strengthen the testing capacities at the primary health facilities

3.10 COVID-19 Vaccine readiness

This section addresses the country's readiness for the COVID-19 vaccination campaigns as well as the uptake of the vaccines in the facilities that had commenced vaccination.

Availability of functional vaccine cold chain equipment across all facilities was assessed by determining availability of a functional fridge, temperature recorder and temperature ranges for the cold chain provision. The country received AstraZeneca/Oxford as the first vaccine which was supposed to be offered after 10 weeks for someone to be considered fully vaccinated. Thereafter, Johnson & Johnson, a single-dose vaccine, was later received by the country. At the time of assessment, SinoPharm was also being used, though restricted to the Chinese population. The availability of vaccines and vaccine supplies were assessed as indicated in table 9:

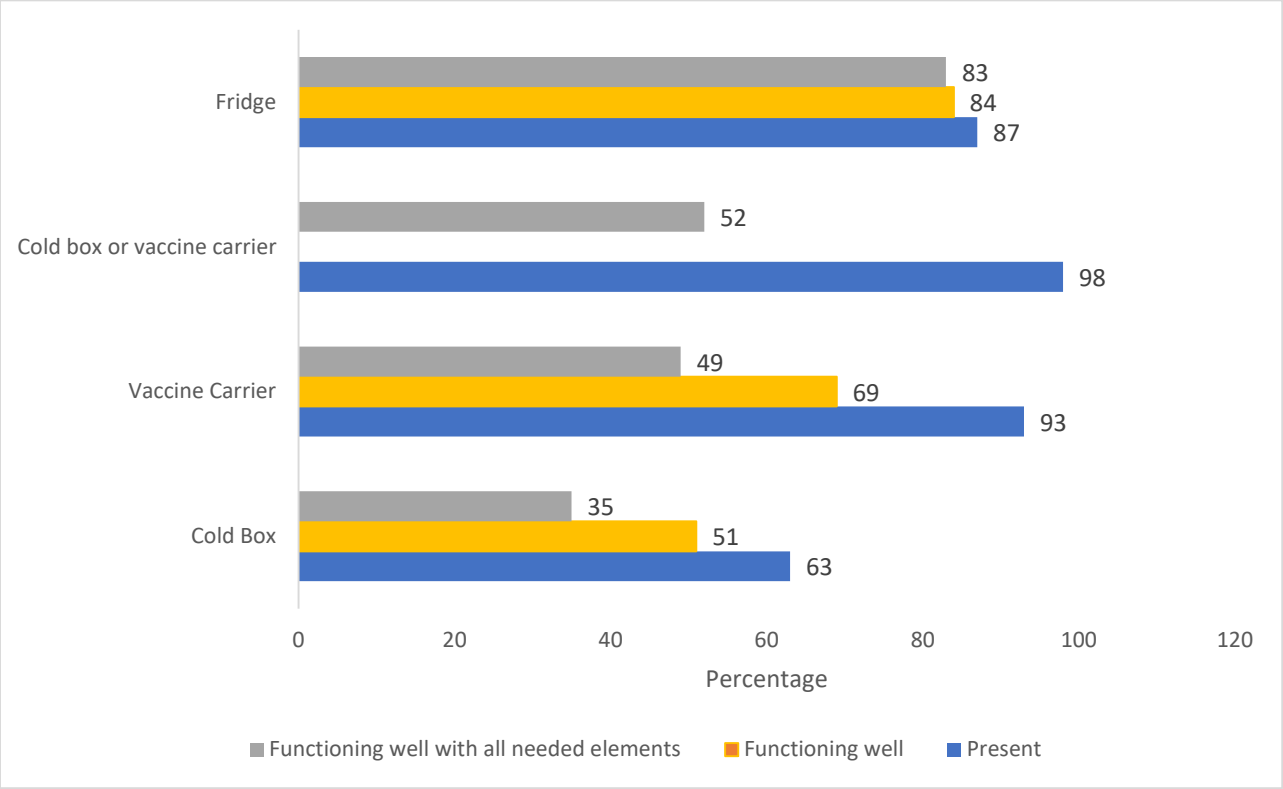
Table 9. Availability of vaccines and vaccine supplies

Level of facility	Vaccines assessed	Vaccine supplies
Hospitals	1. Pfizer-BioNTech 2. Moderna 3. AstraZeneca/Oxford 4. Janssen/Johnson & Johnson 5. Sinopharm 6. Sinovac	1. Fridge 2. Cold Box 3. Vaccine Carrier
Primary health facilities	1. Pfizer-BioNTech 2. Moderna 3. AstraZeneca/Oxford 4. Janssen/Johnson & Johnson 5. Sinopharm 6. Sinovac	1. Fridge 2. Cold Box 3. Vaccine Carrier 4. Cold box or vaccine carrier

3.10.1 Cold chain readiness in Primary Care Facilities

Across the primary care facilities, 236 of the facilities had refrigerators and other cold chain equipment for COVID-19 vaccines. In most of the primary health facilities, cold chain capacities with the vaccine carrier were at 93% with availability of fridges at 87%. Almost half of the facilities had cold chain capacities functioning well with all needed elements apart from the fridge.

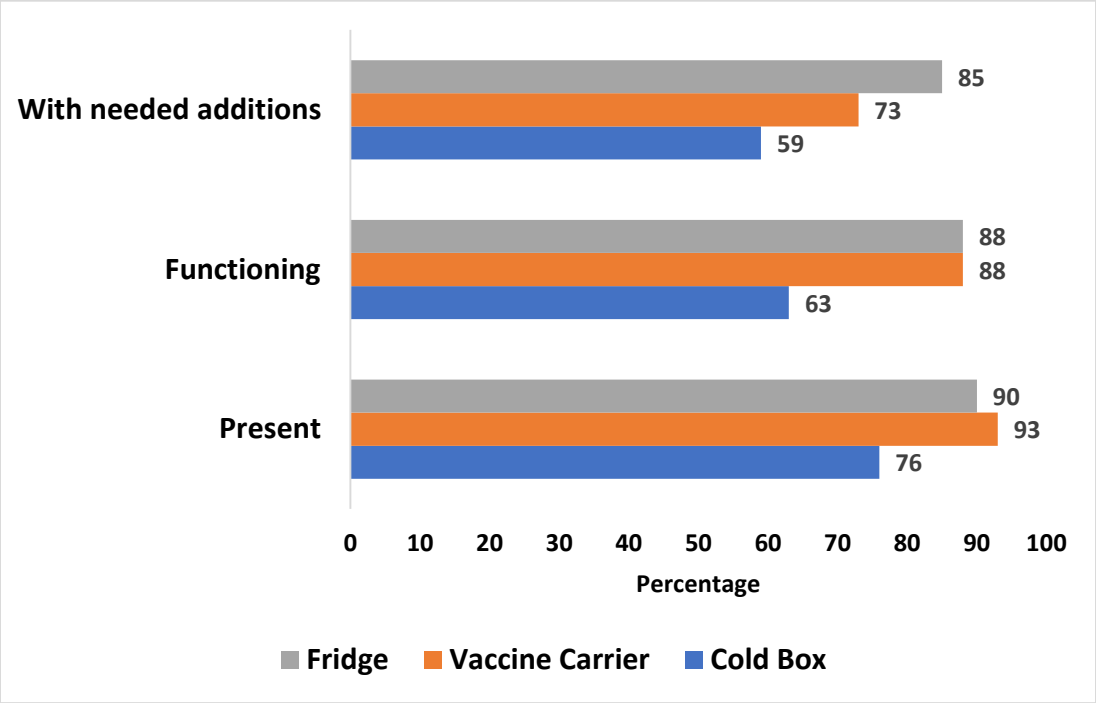
Figure 50:Percentage of facilities with cold chain supplies for COVID vaccine (N=236)



3.10.2 Cold chain readiness in COVID-19 Treatment Centres

Across the COVID-19 treatment centres, 41 (77%) of the treatment centres had refrigerators and other cold chain equipment for COVID-19 vaccines. Availability of functional refrigeration facilities and vaccine carriers was favourable at 88% for both. Most of them had temperature loggers (85%) while functional cold boxes were the least available at 63%.

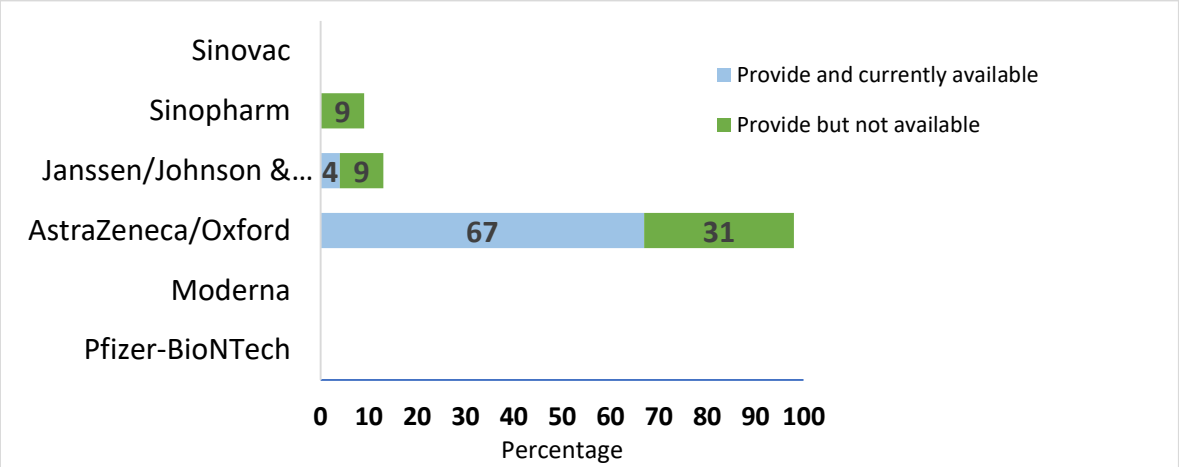
Figure 51:Percentage of COVID19 treatment centres with functional vaccine supplies (N=41)



3.10.3 Availability of COVID-19 vaccine in Treatment Centres

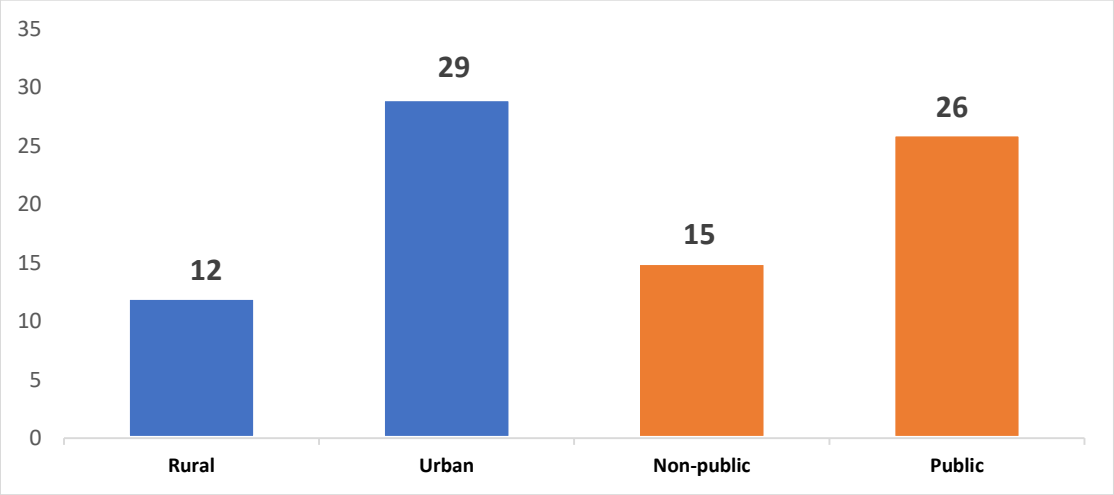
In terms of COVID-19 vaccine availability, 85% of COVID-19 designated treatment centres (N=45) offered the vaccine. AstraZeneca/Oxford vaccine was the most widely available vaccine. Only 31% of facilities who offered the AstraZeneca/ Oxford vaccine did not have it in stock on the day of the assessment.

Figure 52:Percentage of facilities with available vaccines and conducting vaccinations (N=45)



Further analysis was done by location, and it was observed that the urban facilities were offering more vaccination while under analysis by ownership, public facilities offered more services.

Figure 53: Percentage of COVID19 treatment centres offering vaccination services by location, type, and ownership (N=45)



3.10.4 Availability of COVID-19 vaccine in Primary facilities

At the Primary care level (N=243), COVID-19 vaccine availability was equally high, with 47% of primary care facilities offering COVID-19 vaccine services. Across these facilities, AstraZeneca was the most widely available with 99% availability. However, on the day of the assessment only 34% of these facilities had the AstraZeneca/ Oxford vaccine in stock.

Figure 54:Percentage of primary care facilities with available vaccines and conducting vaccinations (N=243)

Conclusions and recommendations for COVID-19 vaccine readiness for hospital and primary health care facilities

Conclusions

- The number of facilities providing the COVID-19 vaccines was higher than the number of facilities with cold chain equipment, indicating a need to strengthen the cold chain for optimal storage of the vaccines.
- More than three quarters of the facilities had functional refrigerators with temperature monitoring loggers.
- Cold chain capacity (fridges, cold boxes, and vaccine carriers) were moderately available but cold boxes had low availability
- Vaccines were not widely available in assessed facilities
- Two-thirds of the facilities had AstraZeneca/Oxford vaccine available with very few facilities indicating having Janssen/Johnson & Johnson Vaccine.

Recommendations

- Scale up availability of COVID vaccines in vaccinating centres
- Increase the availability of functional cold chain capacities

3.11 Service Delivery and Utilization

Key Findings

Service Delivery: 76% of facilities assessed changed the service hours, which could be an increase, or a decrease in hours

68% of facilities advised their clients on self-care for example self-check of blood pressure, oxygen saturation among others.

Nine out of every ten facilities (90%) reported to have a designated external facility to refer suspected or confirmed COVID-19 patients for treatment

There was a reduction in provision of EHSs in 2020 by 9% and 2021 by 20% with respect to the same period in the pre-pandemic year.

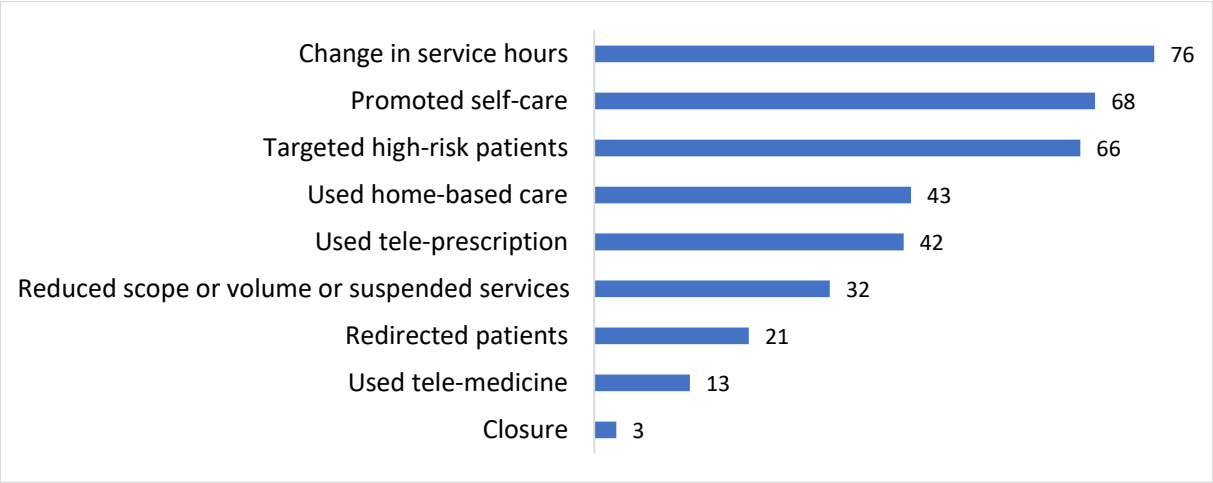
All major NCDs except Cancer Screening service decreased in the pandemic period relative to the four months in the pre-pandemic year. OPD visits for Asthma decreased by 20% in 2020 and 36% in 2021. Similarly, OPD visits for diabetes decreased by 25% in 2020 and 46% in 2021, while OPD visits for cardio-vascular diseases decreased by 26% in 2020.

Health service delivery and utilization is the use of healthcare services by persons/patients for promotion, prevention, and restoration of health. The COVID-19 pandemic has continued to shine a light on the fragility of health services and public health systems in Zambia. COVID-19 has caused fluctuations in utilization of routine and emergency health services due to several reasons, including fear of contracting the disease, reduced burden of diseases due to measures taken to curb the pandemic like washing of hands, or limitations in services provided at facility level in order to contain the numbers of clients visiting the facilities, among other reasons.

3.11.1 Service delivery strategies during the COVID-19 pandemic

This section highlights strategies put in place by the health facilities to respond to changes in utilization of some key healthcare services like maternal and child health (MCH), non-communicable diseases (NCD), Neglected tropical diseases (NTD), HIV and TB among others, during the pandemic.

Figure 55: Percent of facilities that modified the given service delivery strategies in the past three months (N-243)



An assessment of the health facilities that made changes in how they deliver health services revealed that 76% of facilities assessed changed the service hours, which could be an increase, or a decrease in hours, while 68% of facilities advised their clients on self-care for example self-check of blood pressure, oxygen saturation among others. Patients at a high risk of COVID-19, together with those eliciting COVID-19-like symptoms, were given priority in around 66% of health facilities. However, less than half of facilities made changes in using home-based care (43%) and using tele-prescription (42%).

Other strategies put in place included reducing the scope or suspending services offered at the facilities at 32%, whereas 21% redirected patients to other facilities. Approximately 13% of the facilities assessed used tele-medicine while only 2% of the facilities assessed closed due to the COVID-19 pandemic as shown in figure 55. These strategies cut across and were dependent on location, level of the facility and managing authority as shown in Table 10.

Table 10: Percent of facilities that modified the given service delivery strategies in the past three months

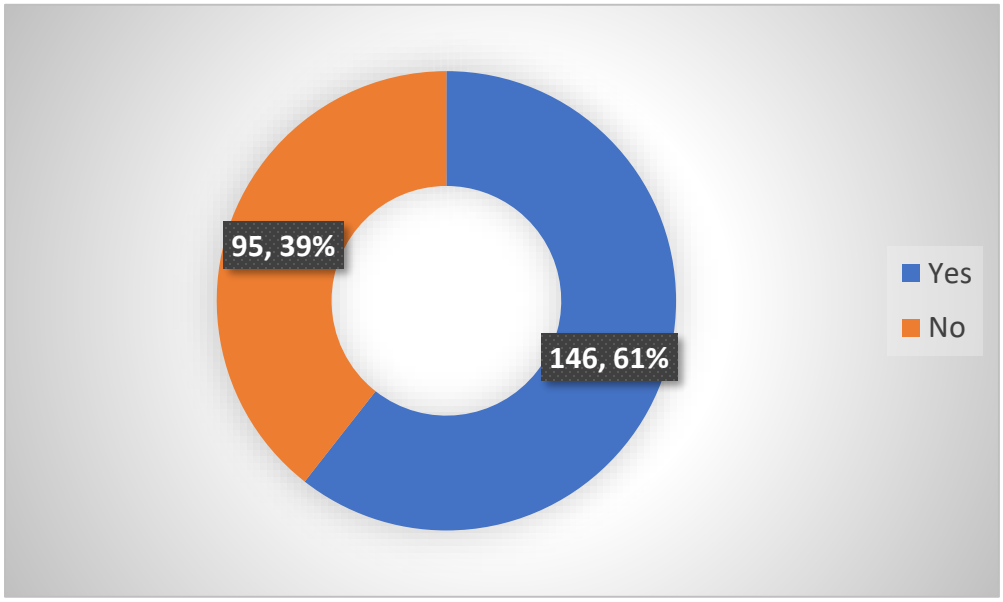
	Closure	Changes in service hours	Reduced scope, reduced volume, or suspended services	Redirecting patients	Provision to targeted high-risk patients	Promoting self-care	Home-based care	Tele-medicine	Tele-prescription or other changes in prescriptions	Number of facilities
All	3	76	32	21	66	68	43	13	42	243
Location										
Rural	2	76	30	19	67	66	41	7	43	104
Urban	4	76	33	22	65	69	44	17	41	139
Type										
Primary Facilities	3	76	31	19	65	67	42	11	40	212
Hospitals	78	0	5	5	11	14	4	9	4	31
Managing authority										
Non-public	0	80	37	30	63	70	47	23	57	30
Public	3	75	31	19	67	68	42	11	40	213

Table 10 presents information on the facilities that had modified service delivery strategies in the past three months by location, facility type and by managing authority. The average percentage (41%) of health facilities that made at least one modification in urban areas was similar to that of rural areas (39%). In general, a higher proposition of non-public health facilities modified service delivery strategies (average 45%), than the public health facilities (average 40%). This shows that there is a lot that needs to be done in the public health facilities in reducing the COVID-19 pandemic.

3.11.2 Referral of COVID- 19 patients

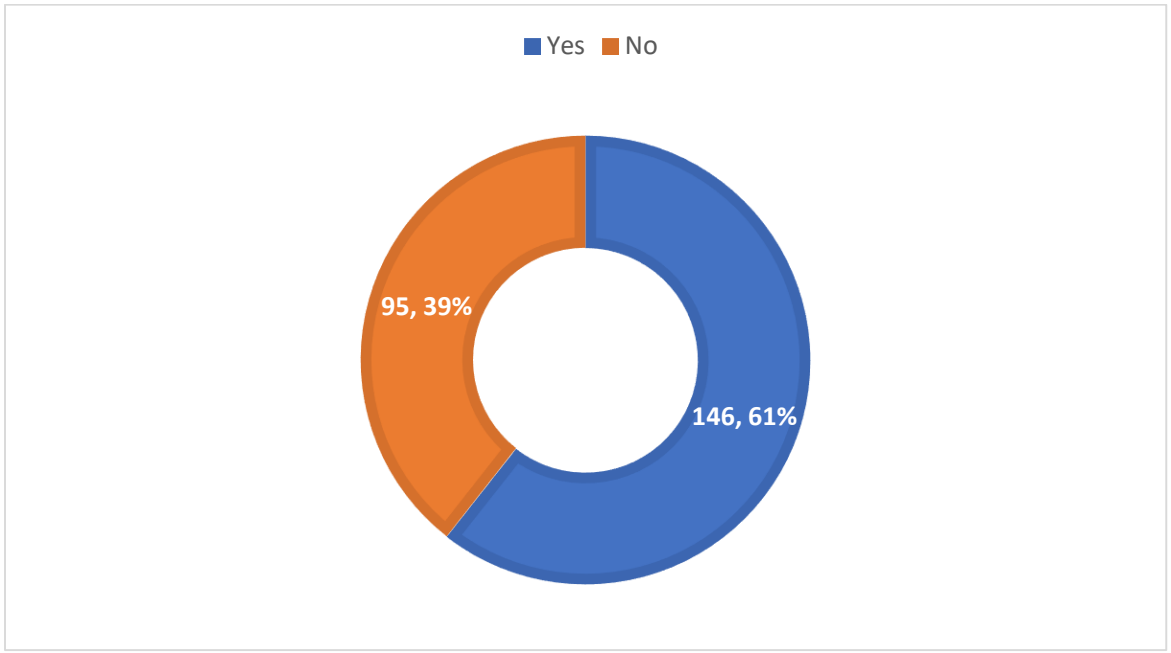
In the recent past, COVID-19 cases have been on an increase with more complicated cases being managed in tertiary facilities. Referral systems have since been put in place to have a smooth flow of patients needing specialized services. This section describes the referral systems that most public health facilities in Zambia have adapted, to easily transfer COVID-19 patients from one facility to another.

Figure 56:Percentage distribution of facilities for referral of patients with suspected or confirmed COVID-19



Nine out of every ten facilities (90%) reported to have a designated external facility to refer suspected or confirmed COVID-19 patients for treatment, with approximately three-fifths (61%) of them reporting to have access to safe/isolated transportation to transfer these patients following referral (Figure 57).

Figure 57: percentage of facilities with access to safe and isolated transportation to transfer patients following referral

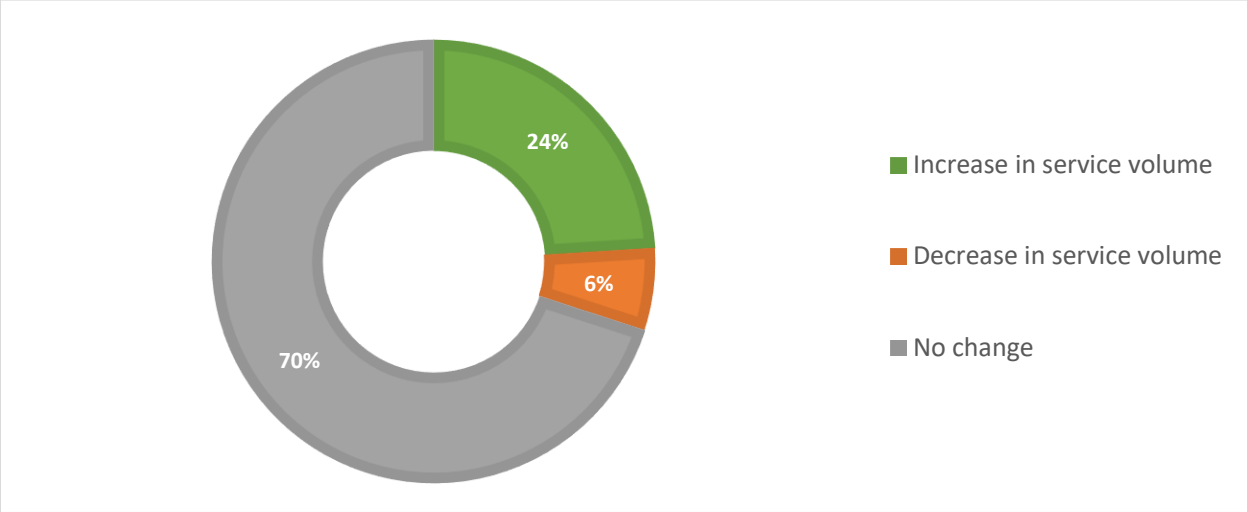


More than 60% had access to safe and isolated transportation to transfer referred patients (Figure 57).

3.11.3. Pre-Hospital Emergency Services

The observed change in ambulance transport services was used as a proxy to assess the changes in the number of prehospital emergency care services in the previous 3 months, compared to the same 3 months the previous year. The assessment looked at whether there was an increase, or a decrease in pre-hospital emergency services.

Figure 58: Percent of facilities providing pre-hospital emergency services that have had changes in the service volume (N=211)



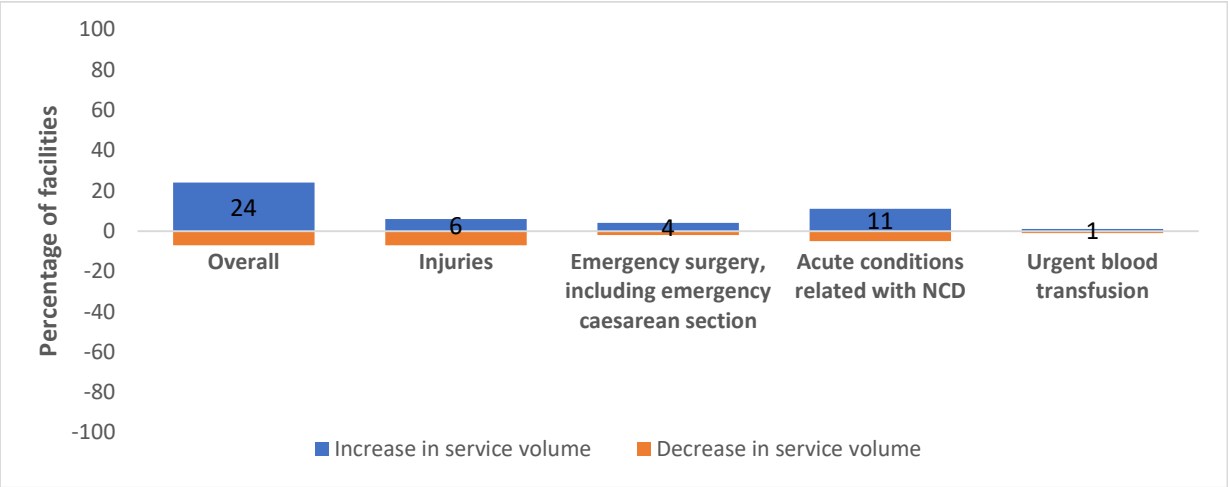
Among all the facilities providing pre-hospital emergency services, 24% reported an increase in service volume. However, most facilities (70%) reported no change while 6% had a decrease in the provision of these services as shown in the figure 58 above.

The inability to increase the pre-hospital emergency services, and in a few instances the reduction may be due to lack of capacity to do so by most facilities and therefore capacity building is recommended.

3.11.4 Emergency services

Observed changes in health facility emergency unit visits for non-COVID-19-related issues in the previous 3 months, compared to the same 3 months the previous year were looked at in this section.

Figure 59: Percent of facilities providing emergency unit services that have had changes in the service volume (N=243)



Overall, 1 in 4 facilities assessed reported an increase in emergency visits while 7% reported a decrease. More specifically, 6% of the facilities reported an increase in injuries while 7% reported a reduction. An increase in emergency surgery, including emergency caesarean section was reported by 4% of the facilities while 2% reported a decrease. Acute conditions related with NCDs, and urgent blood transfusions were reported to have increased by 11% and 1%, respectively, in the facilities assessed while 5% and 1% reported a decline in these services.

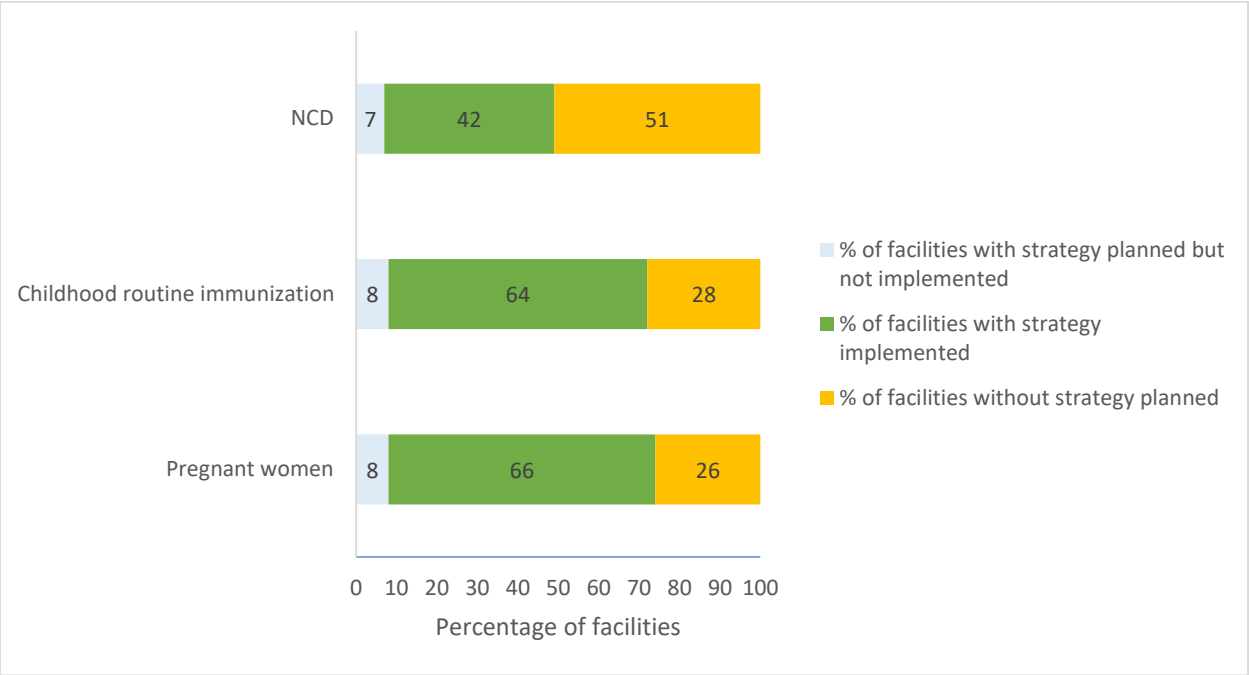
Most facilities (3 in 4) assessed either reported no change or a decline (7%) in non-COVID-19 related emergency hospital services which could be due to clients avoiding hospitals in order to avoid contracting SARS-CoV-2 infection. Community sensitization on the need for continuity in seeking emergency services is recommended to avoid an increase in non-hospital mortality and morbidity related to emergency medical conditions.

3.11.5 Strategies for missed appointments

This section looks at whether the facilities had strategies to reach out to clients who missed their appointments, and whether these strategies were implemented. Among facilities offering Non-Communicable Diseases (NCD) services, 51% reported having no strategies in place for missed appointments, while 42% reported to have had strategies planned and implemented. However, 7% of facilities that also reported to have had planned strategies did not implement them. Facilities implementing Childhood Routine Immunization services generally had strategies planned with 64% of the facilities reporting planned and implemented strategies while 8% had planned and not implemented their strategies. About 28% of facilities did not have any planned strategies.

In summary, about two thirds of facilities (66%) had made plans and implemented them for pregnant women, 64% for childhood immunization, and 42% for patients with chronic NCDs.

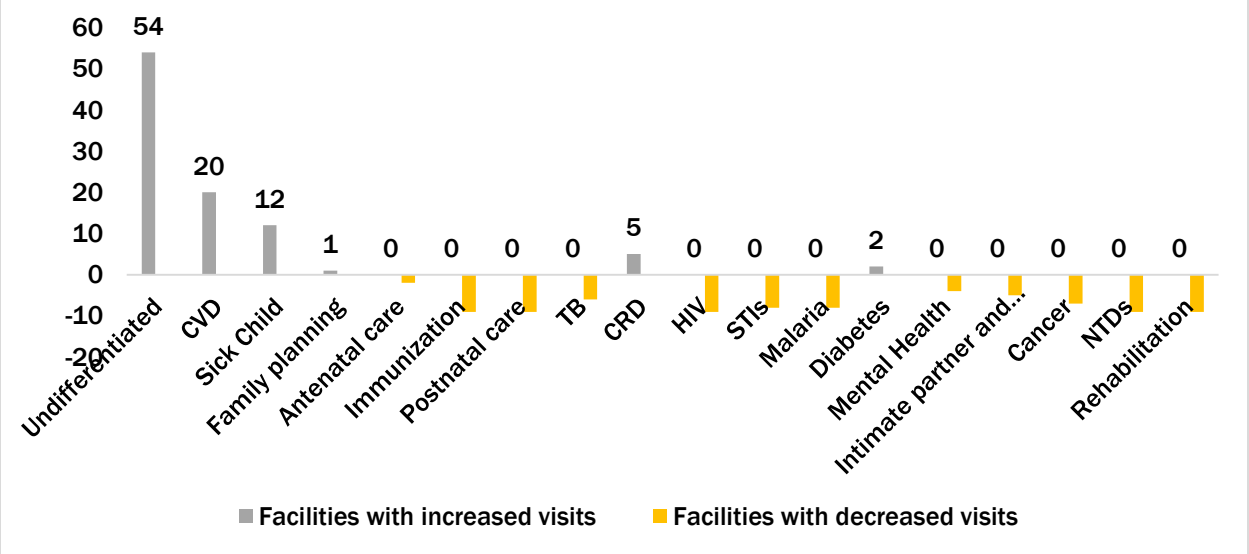
Figure 60:Facility Strategies for Addressing Missed Appointments (N=243)



3.11.6. Utilization of essential health services

Outpatient services are medical procedures or tests that can be done in a medical centre without an overnight stay. Many procedures and tests can be done in a few hours. Outpatient services include wellness and prevention, Diagnosis, Treatment, and Rehabilitation. This section looks at the utilization of outpatient services during the COVID-19 pandemic.

Figure 61:Difference in % of facilities with increase vs decrease in outpatient visits by service in the past three months (N=243)



As shown in Figure 61 above, outpatient visits increased in more than half of facilities with regards to undifferentiated symptoms (e.g., fever, pain, fatigue, and cough) services, 28% for chronic respiratory diseases (CRDs), 11% for sick child, but there were decreases in postnatal care, immunization, HIV, TB, STIs, cardiovascular diseases, mental health, intimate partner violence, neglected tropical diseases (NTDs) and rehabilitation.

Figure 63:Reasons for increased outpatient visits, percent of facilities (N=243)

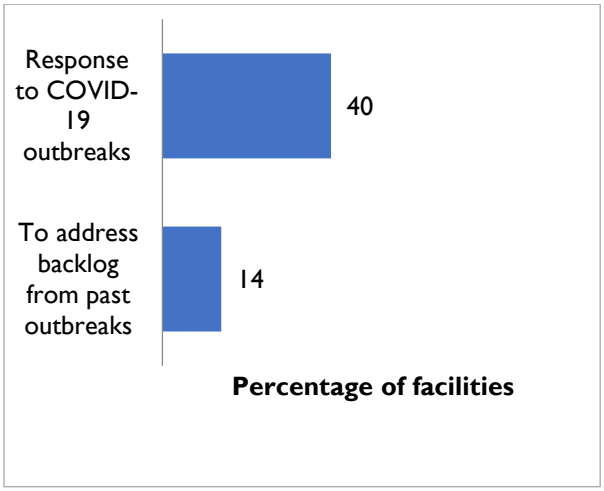
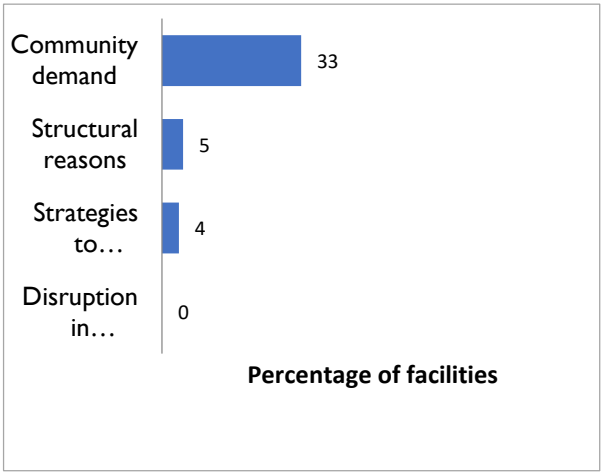


Figure 62: Reasons for decreased outpatient visits, percent of facilities (N=243)



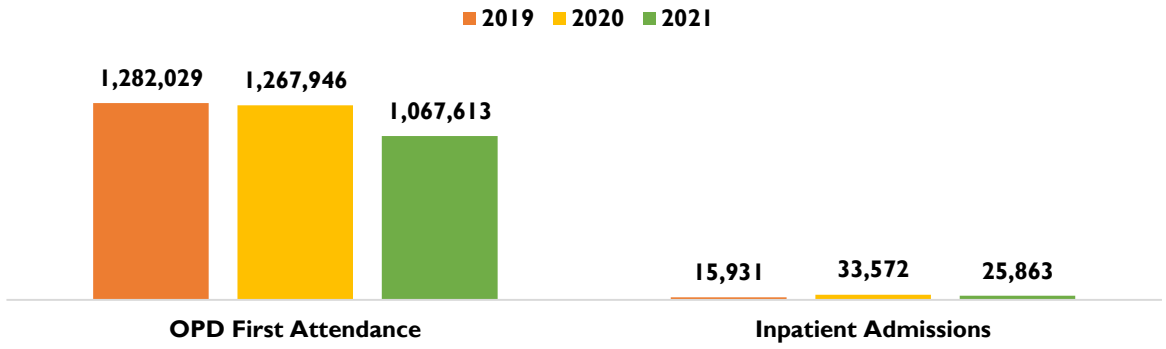
When the facilities were asked for reasons for increased outpatient visits, 40% indicated response to COVID-19 outbreaks and 14% of facilities indicated addressing backlogs from past outbreaks (Figure 62).

Table 11:Health Facility Level provision of Essential Health Services by Year (February-May, 2019-2021), DHIS-2, Zambia, 2021

	Year (February-May)		
Essential Health Services	**2019**	**2020**	**2021**
OPD First Attendance	1,282,029	1,267,946	1,067,613
Inpatient Admissions	15,931	33,572	25,863
Family Planning Attendances	170,594	139,200	144,539
Delivery	22,363	22,790	41,964
First Postnatal Contacts	45,138	41,964	40,623
Pentavalent 3 (<12 months)	31,957	29,531	32,108
Children weighed	633,372	480,816	503,223
Severe acute malnutrition	0	0	466
HIV Testing (HTS)	365,692	138,182	133,607
Tuberculosis Treatment	9,206	7,562	8,458
Malaria	269,714	415,327	285,843
Mental Health & Substance abuse	987	882	399
NCDs	76,902	95,638	88,416
NTDs	1,423	1,297	1,375
Total Essential Health Service Utilization	**2,893,739**	**2,644,355**	**2,324,075**

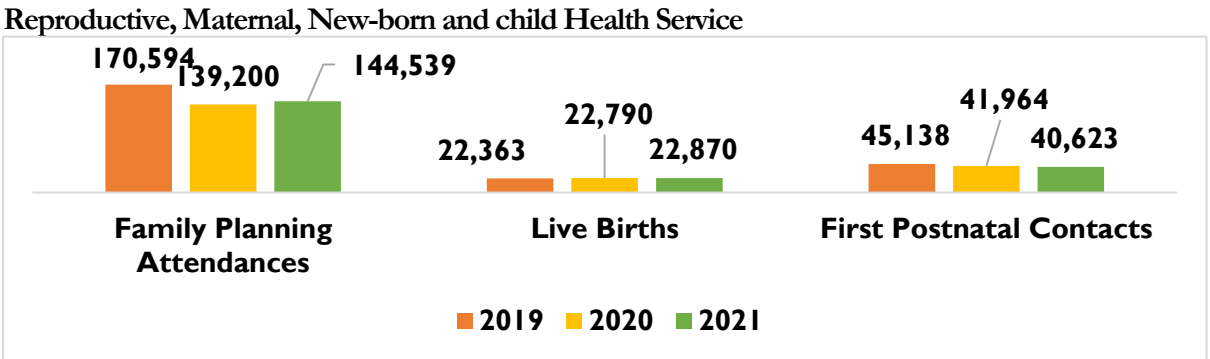
A total of twelve health services were tracked to see the continuity of essential health services in the country. Data was extracted from the DHIS-2 database of the Ministry of Health for four months that include February-May in each of the pre-pandemic (2019) and Pandemic (2020 & 2021) years. In general, there was a reduction in provision of EHSs in 2020 by 9% and 2021 by 20% with respect to the same period in the pre-pandemic year. There was a reduction in all RMNCH services apart from delivery service. Additionally, there was a decrease in OPD visits, HIV testing, Tuberculosis treatment, Malaria Diagnosis & treatment, services related to mental health & substance abuse, and NTDs. There was a marked increase in inpatient admissions (by more than 100% in 2020 and 62% in 2021) and NCDs (by 24% in 2020 and 15% in 2021) relative to a similar period in the pre-pandemic year. (Table-11)

Figure 64:Health Facility Outpatient visit and Inpatient admissions by Year (February-May 2019-2021) Zambia, 2021.



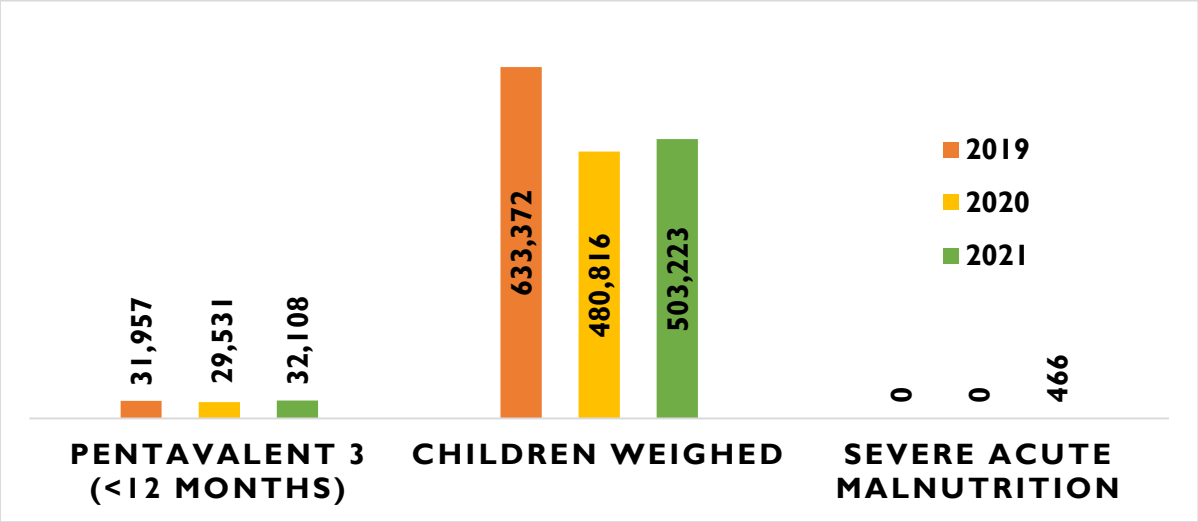
The load of outpatient services progressively decreased in the early months of the pandemic in 2020 (by approximately 1%) and in a similar period in 2021 (by 17%) compared to the service load in the pre-pandemic year (2019). Inpatient admissions increased by more than double in 2020 and more than two-thirds in 2021 relative to the pre-pandemic year. (Figure-65).

Figure 65:Facility Level Family Planning, Delivery and Postnatal service provision by year (February-May), Zambia 2021.



The attendance of women in the 243 sample health facilities in similar periods (February-May) across 2019, 2020 and 2021 was analysed for family planning, delivery, and postnatal care. Family planning and Postnatal service loads were lower in 2020 and 2021 (pandemic periods) compared to the 2019 (Pre-Pandemic period). However, the delivery load has slightly increased in the Pandemic periods (by 2%) relative to the pre-pandemic period. Family planning (by 4%) and Delivery service (<1%) loads have slightly increased in 2021 relative to the initial pandemic period in 2020. (Figure-65)

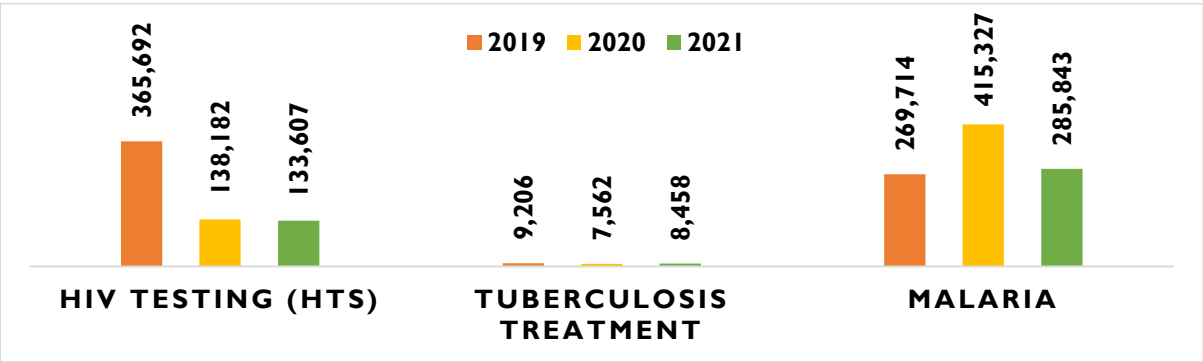
Figure 66:Facility Level Child Health Service Provision by Year (February-May), Zambia, 2021



Pentavalent-3 vaccination and anthropometric measurement were provided to a lesser number of children in the initial months of the pandemic in 2020 compared to a similar pre-pandemic period in 2019. However, the provision of both services was higher in the four pandemic months of 2021 relative to a similar pandemic period in 2020. On the other hand, 466 children with severe acute malnutrition were managed in the sample health facilities in 2021 while there was no record of cases with similar illness in 2019 and 2020. *(Figure-64).*

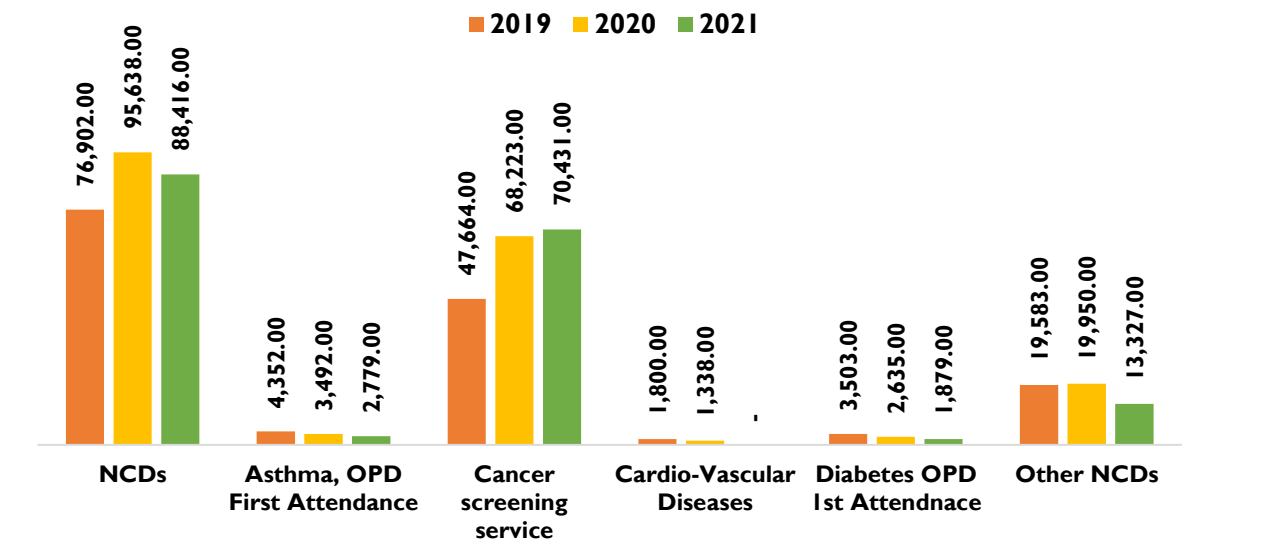
Figure 67:Facility Level HIV Testing and Malaria Treatment by Year (February-May), Zambia, 2021

Communicable Diseases: Diagnosis and Treatment Services



HIV testing service decreased progressively in the four months of the pandemic in 2020 (by 62%) and 2021 (by 63%) relative to a similar duration in the pre-pandemic period in 2019. There was also an 18% reduction in Tuberculosis treatment services in the early months of the pandemic in 2020 and 8% reduction in 2021 relative to the similar period in the pre-pandemic year. However, malaria diagnosis and treatment services increased in the four pandemic periods of both 2020 (by 54%) and 2021 (6%) relative to the four pre-pandemic months in 2019, and the service was especially higher in the early pandemic months of 2020. (Figure 64).

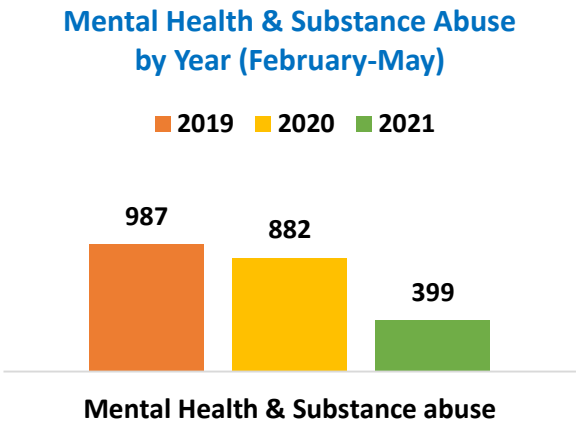
Figure 68: Facility Level Non-Communicable Diseases related service provision by year (February-May), Zambia, 2021.



In general, diagnosis and treatment of NCDs has increased during the early months of the pandemic in 2020, and this was mainly due to an increase in cancer screening service. All major NCDs except Cancer Screening service decreased in the pandemic period relative to the four months in the pre-pandemic year. OPD visits for Asthma decreased by 20% in 2020 and 36% in 2021. Similarly, OPD visits for diabetes decreased by 25% in 2020 and 46% in 2021, while OPD visits for cardio-vascular diseases decreased by 26% in 2020. (Figure-68)

Figure 69: Facility Level Mental Health and Substance Abuse related service provision by year (February-May), Zambia, 2021.

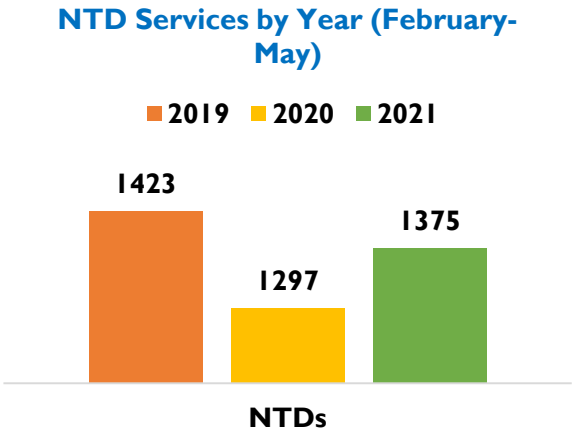
Mental Health and Substance Abuse



Health services related to mental health and substance abuse were progressively decreasing in the pandemic periods of 2020 and 2021 relative to the pre-pandemic period in 2019 (Figure-69).

Figure 70. Facility Level Neglected Tropical Disease service provision by year (February-May), Zambia, 2021.

Neglected Tropical Diseases (NTDs)



The provision of health services related to the diagnosis and treatment of Neglected Tropical Diseases (NTDs) decreased by 9% in the early pandemic months of 2020 and 3% in a similar period in 2021 compared to the corresponding pre-pandemic months in 2019 (Figure-70).

Conclusion

- COVID-19 has caused fluctuations in utilization of routine and emergency health services in the country.
- Almost all health facilities were open during the pandemic and majority of them made changes in service hours, promoted self-care or targeted high-risk patients for essential health service

provision. Urban and non-public health facilities made more changes in service delivery strategies than rural and public ones.

- Most of the primary facilities had a designated external referral facility for COVID-19 case management, and access to safe transportation. Moreover, they had no change in pre-hospital and hospital non-COVID-19 emergency service load during the pandemic.
- Most facilities planned and implemented strategies to reach out to clients with missed appointments for maternal and childhood immunization services, but had no planned strategies to reach out to chronic NCD clients with missed appointments.
- Overall, there was a reduction in the provision of EHSs during the pandemic relative to the pre-pandemic period. However, marked increases in inpatient admissions and NCD care services were observed after the pandemic started in Zambia.

Recommendations

- The country needs a national strategy for building resilient health systems that can absorb shock and ensure the provision of uninterrupted, progressive and quality routine and emergency health services.
- Health service modifications should be equitably implemented in all health facility types as part of the public COVID-19 control while maintaining the provision of essential health services.
- Maintain and strengthen the functionality of the existing pre-hospital and hospital emergency services in all health care facilities during the pandemic.
- All facilities should have a plan to prevent and mitigate risks of missing patient appointments for all their routine out-patient services.
- Put all COVID-19 prevention mechanisms at community and facility levels and encourage communities to access facilities for routine health care services.
- Capacitate health facilities to strategize and continue providing essential health services during the pandemic.

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