Ukraine National Supply Chain Assessment Results

October 2016

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Ukraine National Supply Chain Assessment Results

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October 2016

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ACRONYMS

Alliance	“Alliance for Public Health” International Charitable Foundation
ARV	antiretroviral
CMM	Capability Maturity Model
Crown Agents	Crown Agents for Oversea Government and Administrations, Ltd.
DCFTA	Deep and Comprehensive Free Trade Area
EU	European Union
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HTA	health technology assessment
KPI	key performance indicator
MDR-TB	multidrug-resistant tuberculosis
MOH	Ministry of Health
Network	All-Ukrainian Charitable Organization “All-Ukrainian Network of People Living with HIV/AIDS”
NSCA	National Supply Chain Assessment
OOP	out of pocket
PR	principal recipient
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOP	standard operations procedure
STG	standard treatment guideline
TB	tuberculosis
UCDC	Ukrainian Center for Disease Control
UNDP	United Nations Development Program
UNICEF	United Nation Children Fund
USAID	US Agency for International Development

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EXECUTIVE SUMMARY

The medicine supply chain in Ukraine is a combination of centralized and decentralized systems. As a result, the Ministry of Health (MOH) is directly responsible for the management of only the 18 national programs, including tuberculosis (TB), HIV/AIDS, cardiovascular disease, and viral hepatitis. Both the TB and HIV/AIDS programs operate in coordination with Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) principal recipients in Ukraine. In addition, many health services are delivered by publicly owned facilities managed by the oblast or local authority, which covers all functions from forecasting and procurement to logistics management and patient services for commodities not supplied within the 18 national programs.

This report draws extensively on the National Supply Chain Assessment (NSCA), a toolkit that utilizes the Capability Maturity Model (CMM) diagnostic tool in combination with a set of supply chain key performance indicators (KPIs). Together, these enable the assessment of both the maturity and the performance of various elements of the health care supply chain from February 2015 to January 2016. The CMM tool assesses five functional areas (product selection, procurement, forecasting and supply planning, warehousing and inventory management, and transportation) and takes into account the contribution of cross-cutting enablers such as processes and tools, management information, infrastructure, strategic planning and oversight, and human resources. The KPIs include stock-out rate, order fill rate, percentage of international reference prices paid, and stock accuracy. Ninety-eight sites across the country were selected for data collection based on a stratified cluster sampling of facilities at each of the three levels of the supply chain: central, intermediate, and local.[1]

In 2015, the MOH asked the Systems for Improved Access for Pharmaceuticals and Services (SIAPS) Program to carry out the NSCA and provide information on the maturity and performance of the public-sector supply chain in Ukraine.

Findings

Overall, the performance of the Ukraine health care supply chain was significantly poorer than might be expected for a lower middle-income country, with results in all functional areas falling below the “qualified” threshold (a score of 3 out of 5, with 5 being the most qualified). Scores for maturity were generally higher at the central level, reflecting operations undertaken by government bodies, Global Fund principal recipients, and state-owned and private contracted logistic companies. Results at the intermediate and municipal levels were significantly lower, with scores signifying only “marginal” levels of maturity.

Capabilities that directly affect the availability of stock include product selection and procurement, both of which scored an average of only 2. With respect to product selection, an analysis of 2014 procurements with public funds found that approximately 4,630 products were procured across all levels of the supply chain. This highlights the urgent need for rationalization of those medicines that should be provided with public funds, as it is impossible to cover 100% of the need for 4,630 products.

[1] State Statistics Service of Ukraine

Not surprisingly, the availability of medicines was in part limited by cost, as highlighted by the KPI Percentage of the International Reference Price. Average prices ranged from 178% to 547% of international reference prices, further limiting the quantity of medicines that could be made available to patients.[2] An exception was the highly discounted price for a few tracer medicines, which can be attributed to civil society efforts to increase access to treatment for patients.[3] In relation to prices paid, the findings reinforce the need for rationalizing product selection as previously identified.

With the notable exception of the national HIV and TB programs, there was no consistent methodology (based on either consumption or burden of disease) for forecasting demand from within the national programs.

Stock-out rates were measured as the proportion of facilities dispensing tracer commodities that experienced a stock-out of one or more tracer commodities on at least one day. The results showed that 72% of oblast-level facilities, 81% of rayon-level facilities, and 100% of municipal facilities experienced a stock-out of one or more tracer commodities in the 12-month period covered by the assessment. While these figures are concerning, they do not accurately reflect the gravity of the issue, nor do they explain why such stock-outs are occurring.

While funding constraints are often highlighted as the reason for a paucity of supplies, this issue is not unique to Ukraine. All governments face funding constraints, and countries with mature supply chains nevertheless manage within this limitation. In Ukraine, a key issue is the underlying procurement process that only procures and distributes to sites once a year, thus necessitating large and prolonged stockholding and giving rise to unpredictable lead times for delivery. Mandatory distribution of stock through the supply chain—as opposed to central warehousing—encourages inflated quantification and over-ordering in an effort to avoid stock outs. Moreover, because stock held at the oblast level becomes the property of the oblast, flexible redistribution to address unanticipated demand in other locations is extremely challenging.

Recommendations

Assessment Results Point Strongly to the Need for Reform in Many Areas

Overall, there is an urgent need for procurement reform. Steps are already under way to develop a professional and transparent procurement entity that can eventually take over procurement from international organizations. Establishing this entity will require initial investment by either the government or donors, and the success of the initiative will depend on maintaining a high degree of political support as a priority reform initiative.

Under the new entity, procurement should continue to be handled centrally but with decentralized ordering and flexible delivery. If stock is not stored in a central warehouse, framework contracts established nationally should include contractual terms that enable entities at the oblast level (and perhaps below) to order more frequently at fixed prices and with specified delivery lead times (including suitable penalties for failure to deliver). This

[2] It should be noted that the assessment only reviewed data from government and Global Fund procurements, and did not consider those from UNICEF, UNDP, or Crown Agents, who began some procurement on behalf of the government in late 2015.

[3] See http://www.theglobalfund.org/en/blog/2013-10-08_Hepatitis_C_Treatment_in_Ukraine_A_Victory_For_Patients/

would go a long way toward avoiding stock-outs, and would also reduce incentives for ordering in excess of requirements.

The extremely high proportion of medicines being paid for out of pocket highlights the fact that current supplies address only a fraction of the total need. Future arrangements must allow for some stock to be held centrally to enable rapid and efficient redistribution of medicines when unanticipated spikes in demand occur. This would require the implementation of a common information management strategy, supported by suitable software tools such as a logistics management information system, as well as better electronic data collection methods to monitor stock levels and locations.

To achieve better value in procurement, there is also an urgent need for rationalizing the commodities being procured, including:

- Establishment of a National Medicines Policy framework that defines the priority diseases and/or patient groups that will be supported with public funds

- A revised, consolidated Essential Medicines List to set the scope and limits of the medicines that may be sourced via public procurement

- Updated evidenced-based treatment protocols to set guidelines for rational medicine procurement

Other reforms that would enhance the system's efficiency include the development and implementation of standard operating procedures (SOPs) in all functional areas. Also, the management of different programs could be better coordinate, or integrated where possible to improve efficiency.

INTRODUCTION

Ukraine has a population of approximately 42.7 million,[4] which has declined over the past 22 years.[5] During the 21st century, Ukraine has been moving toward a greater convergence with the West and agreed in principle to a Deep and Comprehensive Free Trade Area (DCFTA) with the European Union by 2012. The ratification would have translated to rejecting the alternative—the Eurasian Customs Union with Belarus, Kazakhstan, and Russia, with all of its political implications. A sudden refusal to support DCFTA in 2013 by the Ukrainian government and then-President Yanukovych ignited a civil protest in Kyiv on Maidan at the end of 2013 (known as Euromaidan), followed by the Revolution of Dignity that started at the beginning of 2014. This was followed by Russia's annexation of Crimea in February 2014[6]and invasion of the east of the country in April 2014.

The economic part of the Ukraine-European Union (EU) Association Agreement was signed in June 2014 and as of January 2016, the Agreement has been applied provisionally. The EU-Ukraine DCFTA, being a part of Association Agreement, has been provisionally applied as of January 1, 2016. These moves toward closer integration with the EU are seen as conditions for modernization and development.

Between 2010 and 2015, the country suffered a significant cumulative economic contraction (minus 10%),[7] accompanied by its currency losing two-thirds of its value against the US dollar.[8] The situation was compounded by the political and economic instability associated with Russian military aggression against Ukraine.

These factors partly contributed to a rise in pharmaceutical product prices reaching a 29% yearly increase in 2014, while real wages decreased.[9] In 2016, positive GDP growth was expected to return based on private consumption and investments. However, the approved budget for the MOH has seen a year-to-year reduction of approximately 4%.[10] That was a consequence of the fiscal consolidation, which was a required condition for the International Monetary Fund bailout deal and is expected to ultimately limit growth, while active conflict in the East makes the forecast less certain.[11]

The war on the East has resulted in more than 5 million people living in conflict areas and the internal displacement of an estimated 1.2 million citizens, creating additional pressure on the health system. The latest figures show that in terms of the number of years of life lost, premature death, ischemic heart disease, cerebrovascular disease, and self-harm were the highest-ranking causes in 2013 in Ukraine.[12] As a result, Ukraine's health landscape is depressed compared to not only Western Europe, but also surrounding neighbors.[13] The MOH is well aware of these facts, and has been taking steps to reverse the deterioration trend on Ukrainians' health. The results of this assessment will be used to develop an action plan for the MOH to improve access to medicines through improved supply chain function.

[4] State Statistics Service of Ukraine http://www.ukrstat.gov.ua/operativ/operativ2016/ds/kn/kn_e/kn0416_e.html
[5] According to State Statistics Service of Ukraine, population growth was negative since 1994, averaging -0.65% annually.
[6] http://www.huffingtonpost.com/2014/03/18/crimea-annexation-into-russia-putin-approves-treaty_ n_4983534.html
[7] Ukraine country profile, World Bank, 2014. http://data.worldbank.org/country/ukraine
[8] https://www.oanda.com/
[9] Ukrainian Pharmaceutical Market, SMD Analytics and Country Survey, August 2014 review; http://www.smd.net.ua/files/149_smd_aug_2014_eng_sokr.pdf
[10]http://www.fairobserver.com/region/europe/ukraines-imaginary-patients-health-care-reform-long-overdue-42302/
[11] Explainer: Ukraine's debt crisis [Financial Times July 23, 2015]
[12] http://www.healthdata.org/ukraine
[13] http://www.worldbank.org/en/country/ukraine/overview

BACKGROUND

Publicly (government) owned facilities provided the majority (51%) of health care services in Ukraine in 2014.

The bulk of the government expenditure goes to the inpatient sector, where it is spent mostly on maintaining infrastructure and on salaries, leaving a relatively small amount for medicines and other commodities.

An even smaller proportion (approximately 20%) of funding is available for the outpatient sector (Lekhan 2015). While funding is limited, medicine prices in Ukraine are relatively high compared to standardized international procurement prices (Conesa 2015). This leads to a high private expenditure including out-of-pocket (OOP) costs and limits equitable access to and rational use of medicines.[14]

Although the MOH is responsible for health policy, its influence is limited because Ukraine follows a partially decentralized model, so that only the so-called national programs are directly managed. These programs include treatment for HIV and AIDS, TB, oncological diseases, cardiovascular diseases, cerebrovascular diseases, viral hepatitis, hemophilia, autism, Gaucher's disease, and others. All of the treatment programs depend on the parliament voting to fund them and the subsequent availability of funds.

The political instability and related population displacement described in the Introduction have created acute problems for all national programs requiring continuous treatment, and particularly TB treatment.

A recent study found the following distribution of issues faced by patients when visiting a public health facility (figure 1):

[14] Who makes money on epidemics of HIV/AIDS in Ukraine. Anticorruption Action Centre, 2013. Available at : http://network.org.ua/upload/novosti/zvit_Who%20makes%20money_eng.pdf.

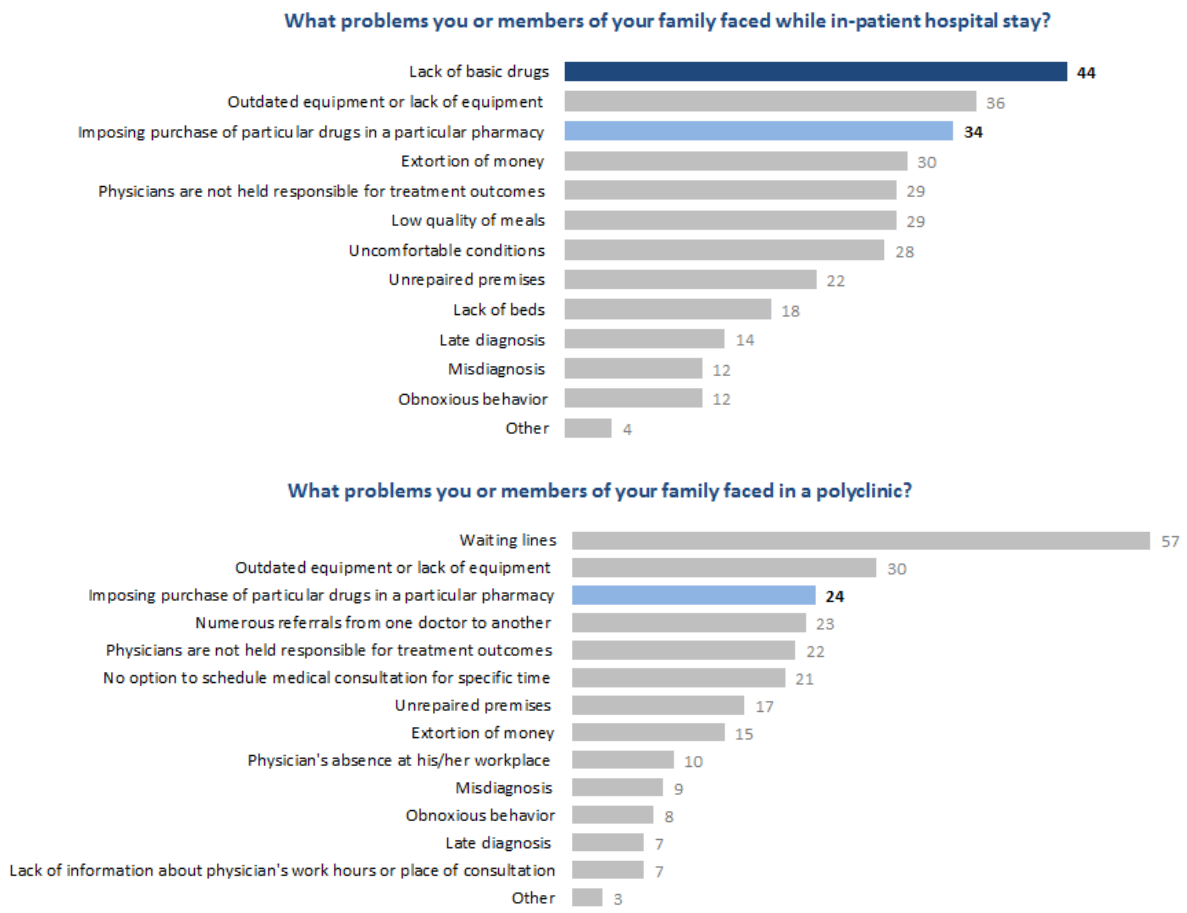


*Figure assumptions based on data from Ratingpro.org

Figure 1. Problems faced by patients in health facilities in Ukraine

It is important to note that the lack of basic medicines and the demand for medicines in certain pharmacies (along with a lack of equipment and long lines) constitute the most significant barriers to treatment for patients in both in- and out-patient facilities.

Poor availability of medicines is due to three co-existing factors: shortage of funds, inefficient use of allocated funds, and underperforming operations. Of those issues not directly covered in this report, it is again due to the fact that the economic and financial situation of Ukraine has forced the government to reduce the budget, and health care has not been an exception.

According to Ukraine's National Health Accounts, in 2014, the absolute value of public expenditures in national currency declined for the first time since 2003, while household expenditures (OOP payments) continued to grow (figure 2).

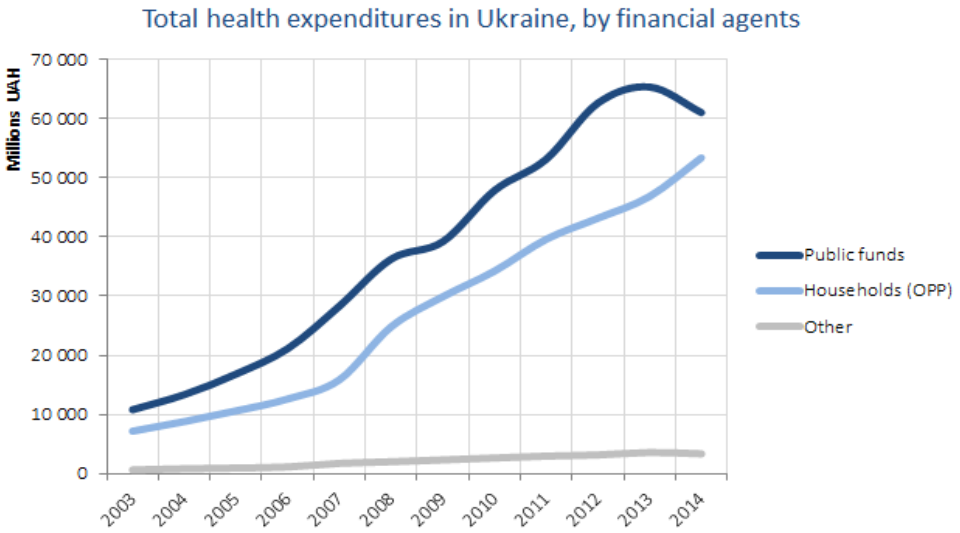


Figure 2. Total health expenditures in Ukraine (data from National Health Accounts)

Multiple reports[15,16] have shown high prices of medicines in Ukraine, including those procured with public funds. Corruption in the procurement process has led to overpayments for pharmaceuticals. Previous examples of corrupt procurement practices include staged competition among tenders, collusion among "cartel" companies to raise bid prices, and intentional overestimation of tender prices through the Register of Bulk Release Prices. Lack of transparency in selecting which pharmaceutical products to procure has also negatively affected pharmaceutical procurement prices and subsequent OOP expenses.

Traditionally, the impact that procurement has over the availability of medicines has been the government's main focus, with less attention being paid to the impact of overall supply chain functioning. This assessment looks beyond procurement and provides the government with information to improve the overall operations of the supply chain, resulting in increased access to medicines for patients.

In response to pressure from civil society and international development agencies, the MOH devised a plan to redesign the procurement function. This required approval of the Parliament (Verkhovna Rada) of Ukraine to enable the temporary transfer of public procurement of medicines to international agencies such as the United Nations Children's Fund (UNICEF), United Nations Development Program (UNDP), and Crown Agents for Oversea Governments and Administrations Ltd (Crown Agents).

The new legislation provided for the abolition of a 7% value added tax (VAT) and 5% customs duty for medicines procured for public use, and allowed the transfer of 60% of the planned purchases to the chosen organizations in 2015 and 100% in 2016. UNDP, UNICEF, and Crown Agents will support the Ministry with other technical agencies to redesign the procurement processes, with the objective of greater transparency, accountability, cost-effectiveness, equity, and sustainability.[17]
Meanwhile, the immediate reduction in tender-related costs as a result of improved efficiencies and accountability was estimated to be approximately 40%, resulting in about 1.5

[15] http://jurnal.md/en/economic/2016/4/15/[not accessible in English]
[16] Who makes money on epidemics of HIV/AIDS in Ukraine Anti-Corruption Action Centre, 2013. http://network.org.ua/upload/novosti/zvit_Who%20makes%20money_eng.pdf
[17] http://www.ua.undp.org/content/ukraine/en/home/presscenter/speeches/2015/12/10/undp-s- medicine-procurement-support-services-for-the-government-and-people-of-ukraine.html

million Ukrainians who will get access to treatment and vaccination due to the savings.[18] As of September 1, 2016, international agencies managed to procure 55% more medicines with less money as compared to MOH procurements a year before.[19]

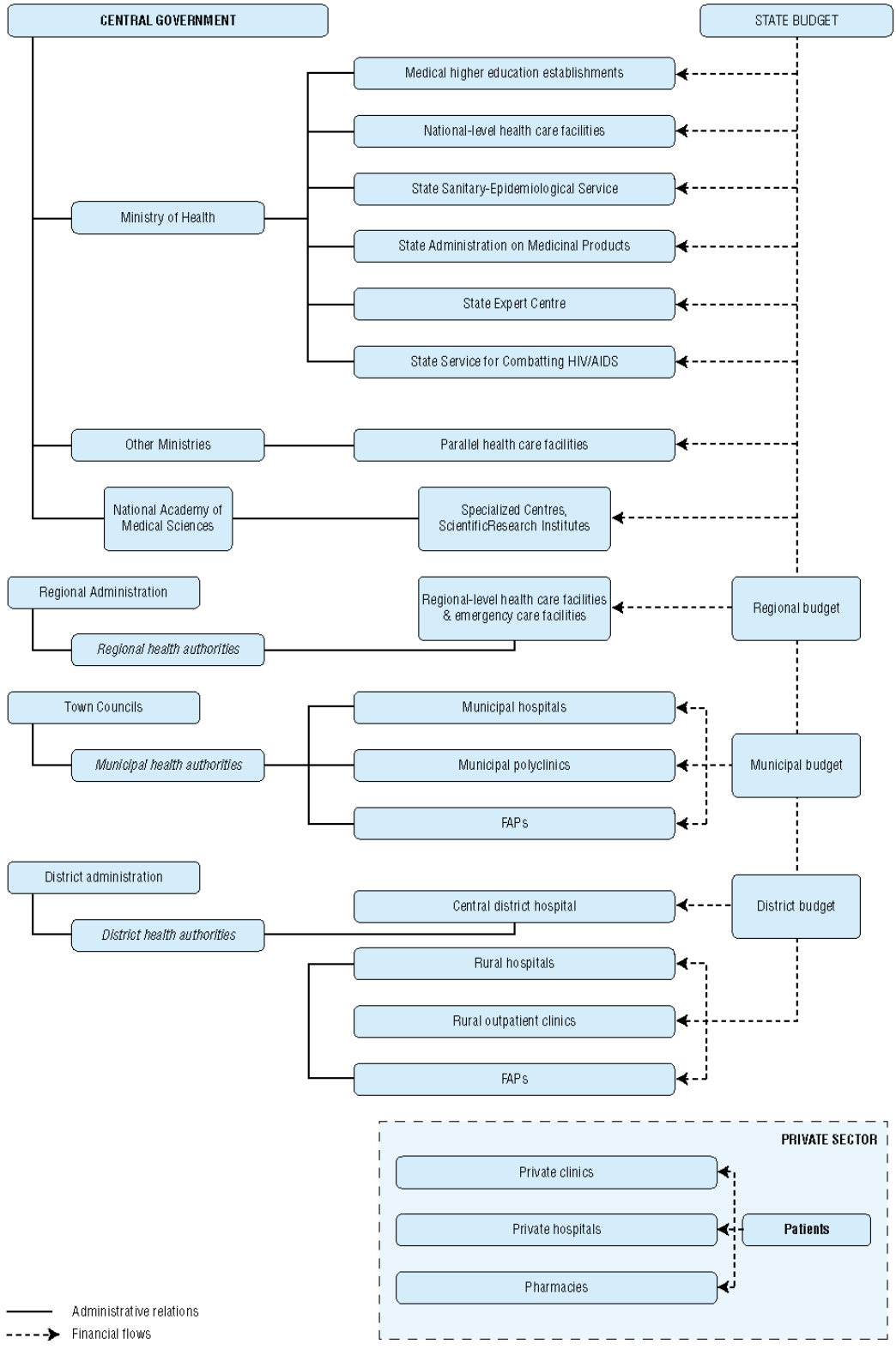
In Ukraine, a significant proportion of health services are delivered in facilities owned and managed by local authorities at the subnational level. As a rule, these facilities are responsible for the procurement and management of all medicines and medical products that are not supplied within national programs. The exception is when medicines and medical products under national programs are delayed or cancelled, in which case facilities may procure them in part to cover critical needs. Sometimes the procurement is made by Oblast Health Authorities and health facilities are the final recipients of the procured medicines.

The MOH's essential role is to set health and pharmaceutical policies and to offer guidance and norms for health care facilities. MOH's involvement in procurement and distribution is limited to medicines provided to patients via national programs.

Figure 3 (Lekhan 2015) depicts the structure of the health care sector in Ukraine, including the information and financial flows for both public and private systems. The graph does not show the role played by the State Expert Center as the agency responsible for registration of medicines. This essential health system function is fully funded through fees and charges for service and receives no contribution from the state budget.

[18] http://patients.org.ua/en/2015/04/09/the-price-for-the-medicines-procured-by-the-international- organizations-for-state-programs-will-decrease-by-42/

[19] http://patients.org.ua/2016/08/16/groshej-menshe-likiv-bilshe-abo-skilky-koshtuyut-shemy-na- zakupivlyah-likiv/



Note: FAP = *feldsher*-midwife [*akusher*] point

Figure 3. Overview of Ukrainian health care sector

Consequently, with the structure and funding described, the supply chain for medicines and medical supplies is not monolithic and may be described as three subsystems working in parallel.

The funds allocation process for pharmaceuticals and supplies starts with an estimated budget constructed by the MOH. The budget is established using the previous year's figures with adjustments for the current budget cycle and specific health initiatives that must be accompanied by reasonable justifications.

When the Ukrainian national budget is approved, the Ministry of Finance allocates a total budget figure for the MOH; a working group led by the deputy minister of health converts that figure to an itemized budget. The itemized budget must abide by all funds earmarked for specific programs and must incorporate those initiatives that have been determined worth funding after factoring in the availability of funds.

The partially decentralized health system is supported by separate allocations from the state budget, which are transferred to the appropriate local entities and allocated according to their estimates and criteria.

National Programs (Centralized) Supply Chain

The centralized supply chain supports the national programs (figure 4). Red arrows represent information flows and black arrows represent the physical flow of commodities.

In this assessment, the procurement function is described as it was before the temporary transfer of the function to international organizations (UNDP, UNICEF, and Crown Agents) to establish a more useful baseline to compare the performance of the future redesigned procurement subsystems.

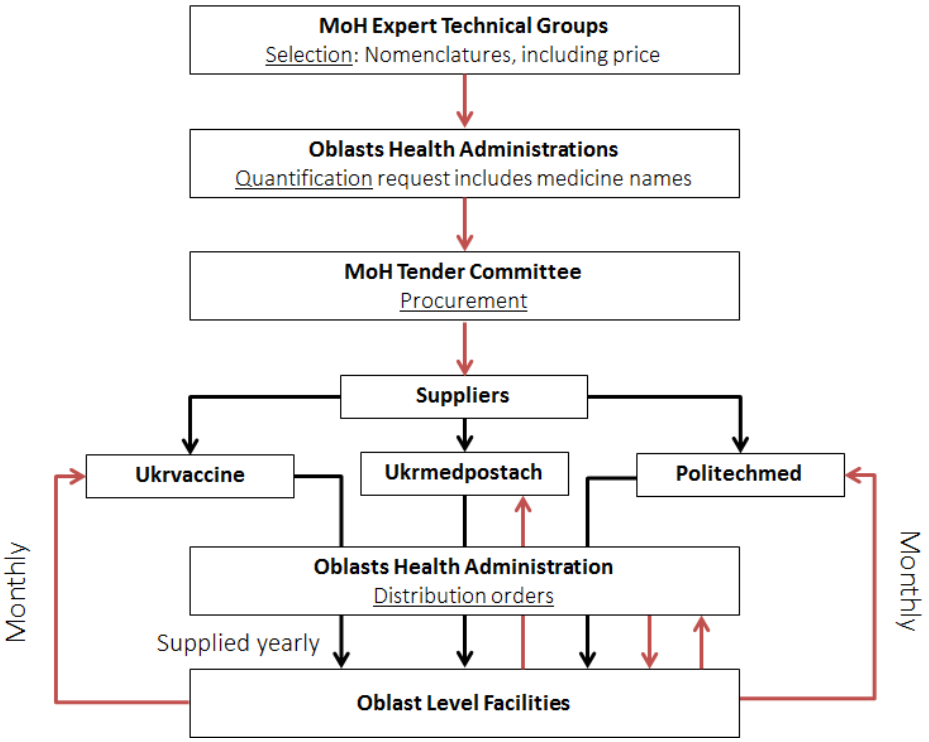


Figure 4. Centralized supply chain for national programs in Ukraine

Decentralized (Sub-national) Supply Chain

In addition to the medicines provided via national programs, regional health care facilities are responsible for procuring and managing medicines that fall under scope of their own service delivery (figure 5). There are different models at the oblast level for undertaking procurement—some models following a central regional procurement mechanism carried out by Oblast Health Administrations or by facilities acting as general procurement entities under framework agreements; others procure on an independent, single facility basis. The models depicted below represent typical configurations.

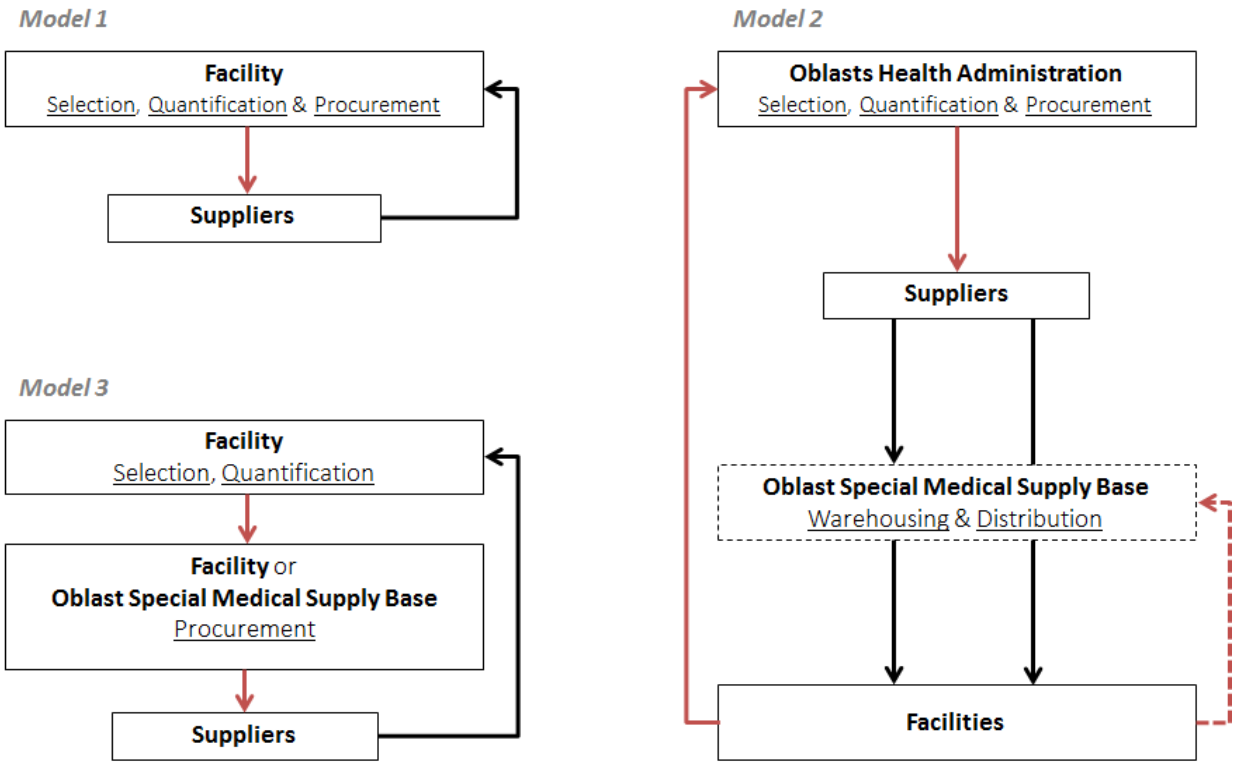


Figure 5. Different procurement models of decentralized supply chain in Ukraine

Global Fund Supply Chain

The Global Fund is a major player in health care sector in Ukraine, having invested more than USD 503 million in the fight against TB and HIV as of 2016.[20] Use of these funds is coordinated with the MOH through the work of three principal recipients: the Ukrainian Center for Socially Dangerous Disease Control of the Ministry of Health of Ukraine (UCDC); International Charitable Foundation "Alliance for Public Health," previously known as International Charitable Foundation "International HIV/AIDS Alliance in Ukraine" (Alliance); and All-Ukrainian Charitable Organization "All-Ukrainian Network of People Living with HIV/AIDS" (network).

[20] http://www.theglobalfund.org/en/portfolio/country/?loc=UKR&k=c0959d2a-326e-472a-a375- b8e70640560a

The UCDC is a state entity subordinated to and coordinated by the MOH. It provides leadership and governance for national TB and HIV programs, including the implementation of substitution maintenance therapy financially supported by Global Fund[21] and, along with Alliance, piloting a hepatitis C treatment program since 2015 (Public Health Alliance 2016).

The UCDC is also responsible for supply management of all commodities associated with national TB and HIV programs and for providing forecasts for future commodity needs to inform procurement. Other principal recipients receiving Global Fund aid (Network and Alliance) are responsible for procuring commodities in agreement with the national TB and HIV programs, as well as storing and distributing the commodities.

The supply chain of commodities procured with Global Fund money can therefore be considered as another parallel supply chain subsystem that is well-coordinated with national programs. The following figure depicts the structure of the subsystem. Red arrows represent information flows, gray arrows represent the physical flow of HIV/AIDS commodities, and green arrows represent the flow of TB commodities (figure 6).

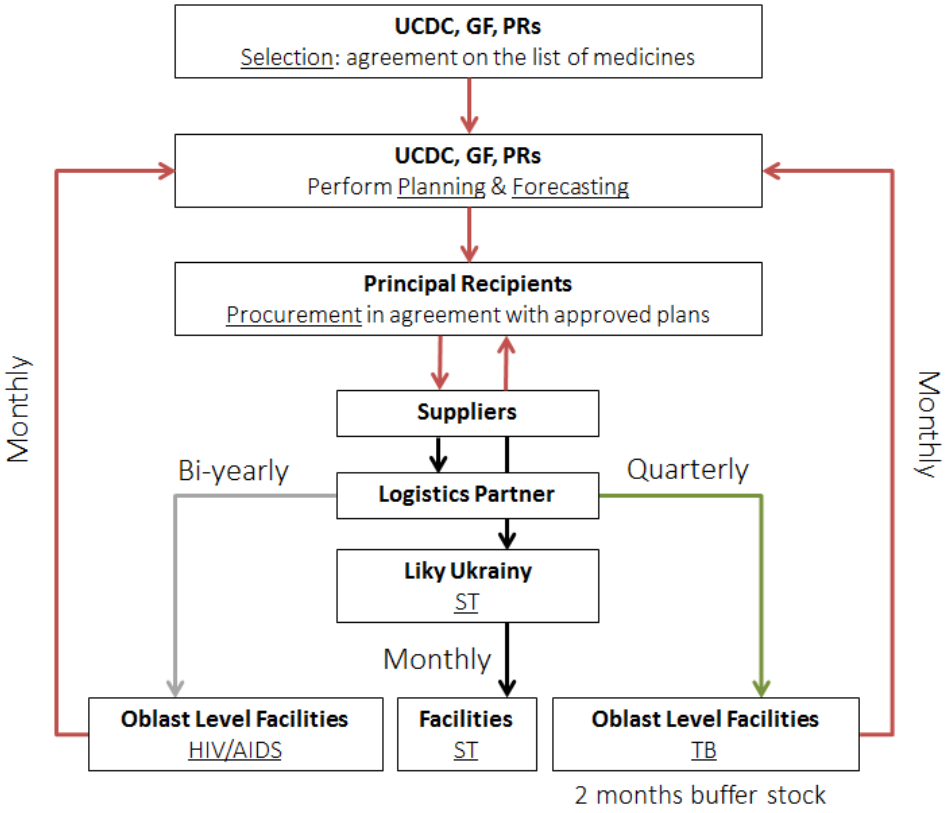


Figure 6. Global Fund supply chain in Ukraine

[21] http://uacrisis.org/ua/42448-drug_policy

METHODOLOGY

NSCA Toolkit

The NSCA is a comprehensive toolkit developed collaboratively by SCMS, USAID|DELIVER, and SIAPS. The kit provides tools for assessing the capability, maturity, and performance of all levels of a health supply chain. Assessment results help supply chain managers develop their strategic and operational plans and monitor whether activities are achieving their expected outcomes

The NSCA toolkit includes two components:

- CMM: a diagnostic tool that assesses the capability maturity of a supply chain
- KPIs: a set of indicators that comprehensively measure the performance of the supply chain

CMM Diagnostic Tool

CMM Matrix

The CMM tool covers the supply chain's key functional areas[22] and cross-cutting enablers that impact supply chain across all functional areas (figure 7).

All capabilities of the system are located on those intersections of functional areas and cross-cutting enablers. See the example of the list of capabilities located at intersection of the warehousing and inventory management functional area with process and tools cross-cutting enabler (figure 8).

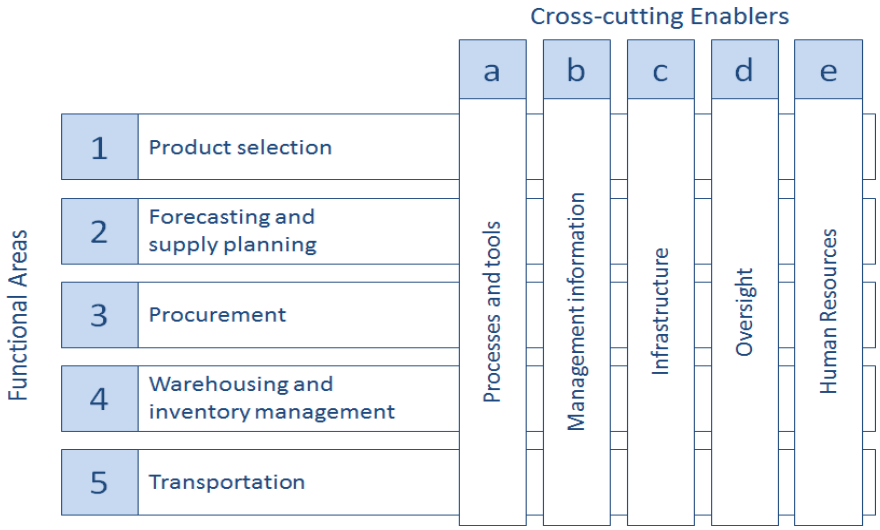


Figure 7. The CMM supply chain matrix

[22] Another functional area — *Waste management* — originally present in NSCA toolkit, was not assessed in Ukraine. The reason is that in Ukraine this functional area is outsourced to third parties that have relevant licenses, and it seemed impossible for NSCA data collection teams to get access to those facilities.

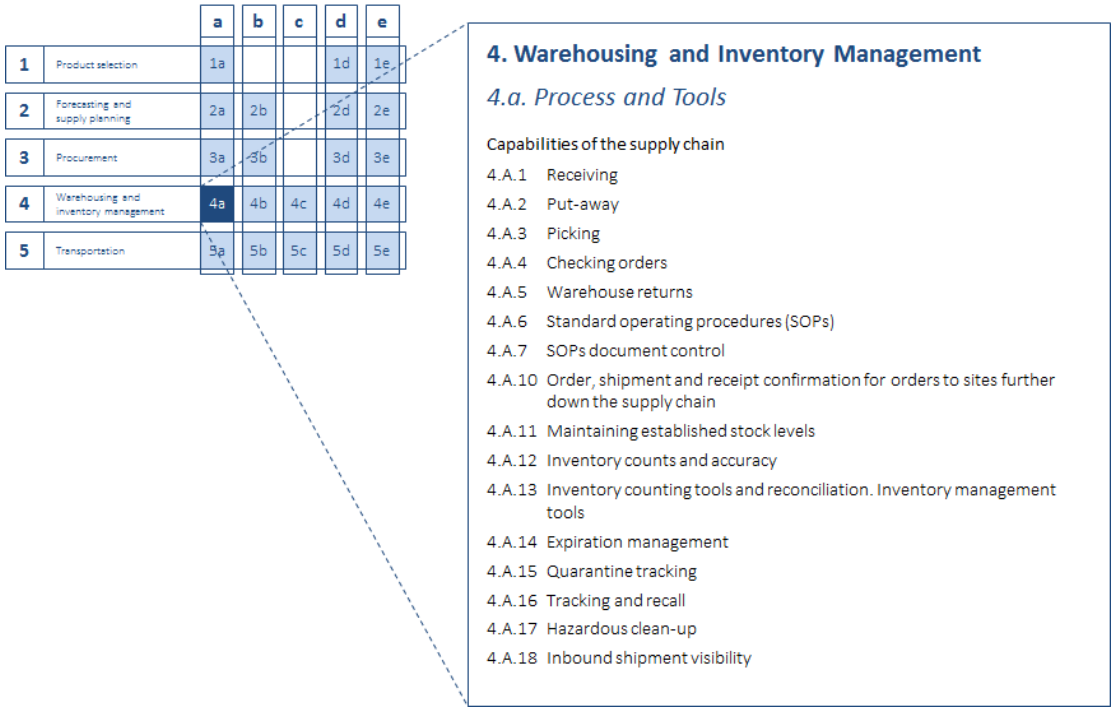
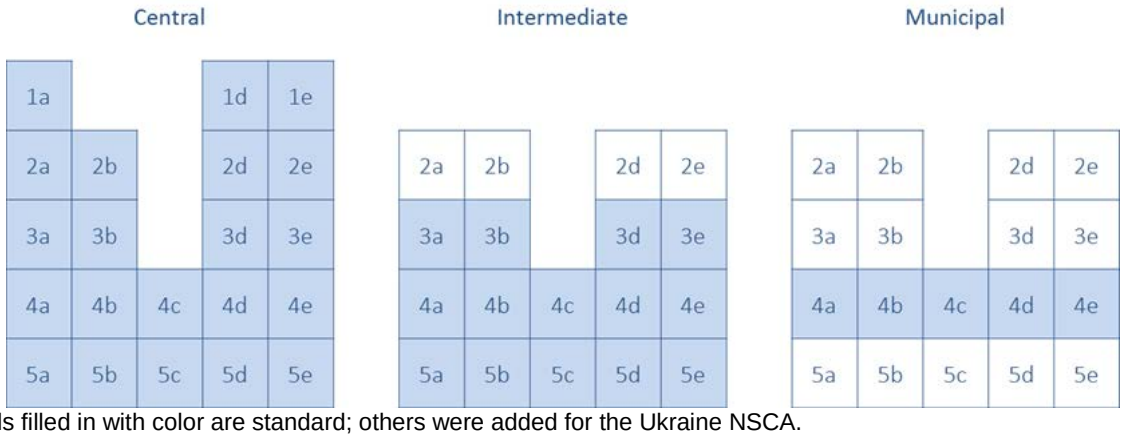


Figure 8. Capabilities of the system on intersection of functional areas and cross-cutting enablers

Levels of Supply Chain

There are intersections that hold no capabilities. Furthermore, there are capabilities that are not relevant at certain levels of the supply chain. During the adaptation of the NSCA methodology to the Ukrainian context, the relevance of those capabilities was reviewed, and more capabilities were assigned for intermediate and municipal levels, as compared to standard NSCA methodology (figure 9).



Cells filled in with color are standard; others were added for the Ukraine NSCA.

Figure 9. Application of CMM supply chain matrix on different levels of the supply chain

The supply chain levels referred above are distinctive levels of operation and are traditional to the Ukrainian health care system (figure 10).

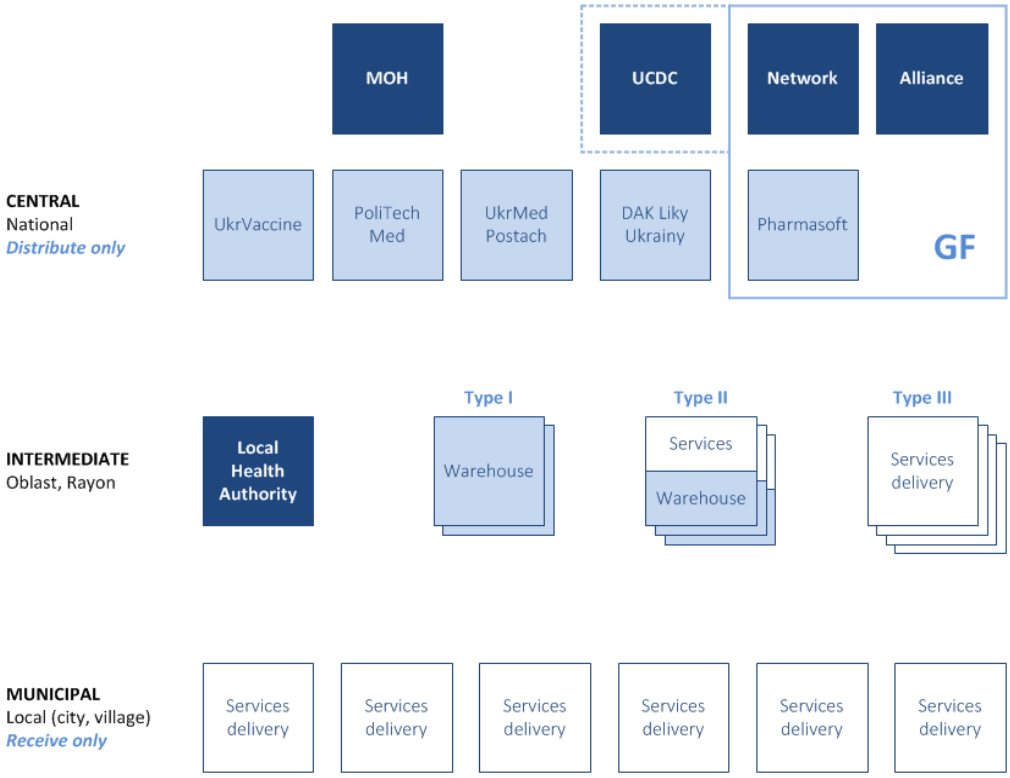


Figure 10. Levels of supply chain

The central level is made up of administrative and logistics institutions—government bodies, Global Fund primary recipients, and national logistic companies. Network and Alliance along with their logistics partner Farmasoft represent the Global Fund side of the supply chain at the central level.

The intermediate level is a combination of Ukraine's oblast and rayon administrative divisions. This includes Oblast Health Authorities, defined as administrative and logistics institutions, and three types of service delivery facilities identified for the assessment needs:

- Type I is a facility that only serves as a warehouse and does not provide health care services directly to patients.
- Type II is a health care facility (usually a major oblast-level hospital) that provides health care services directly to patients and whose warehouse capacity allows the storage of medicines for other facilities along the supply chain. These facilities serve as a receiving point for national logistics companies[23] that do not deliver medicines below this level.
- Type III is a facility that has a warehouse capable of holding medicines intended for use only in that facility.

The municipal level (small city or village) comprises service delivery facilities that provide services directly to patients. These are only Type III facilities.

[23] All Type II facilities in the sample were officially assigned to receive one or more tracer commodities in 2015.

Maturity Criteria and Measuring Scale

For every system capability, there are defined criteria to measure their maturity. A maturity scale broadly describes each grade of capability (from 1 to 5) to guide specific criteria for every capability within the CMM tool (figure 11).

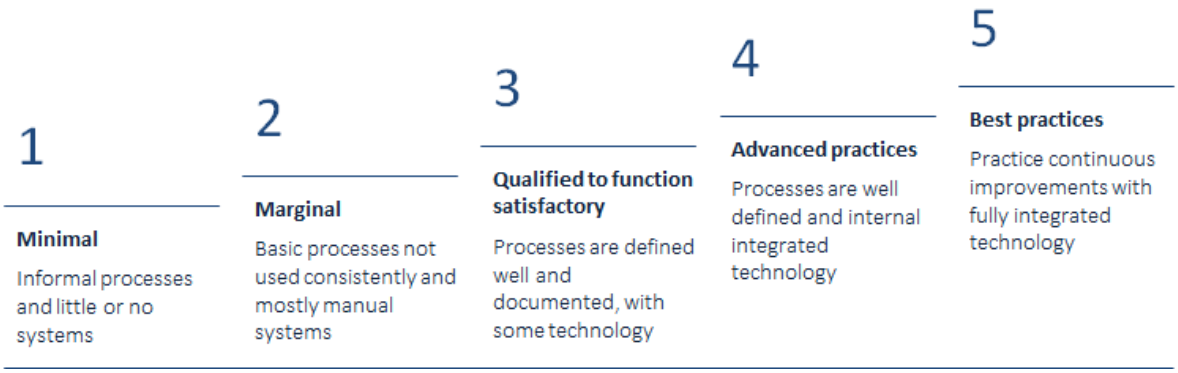


Figure 11. Description of capability maturity grades

These defined grades of maturity are the basis for a precise definition of grades for each specific capability. Figure 12 illustrates the capability "Measuring forecast accuracy."

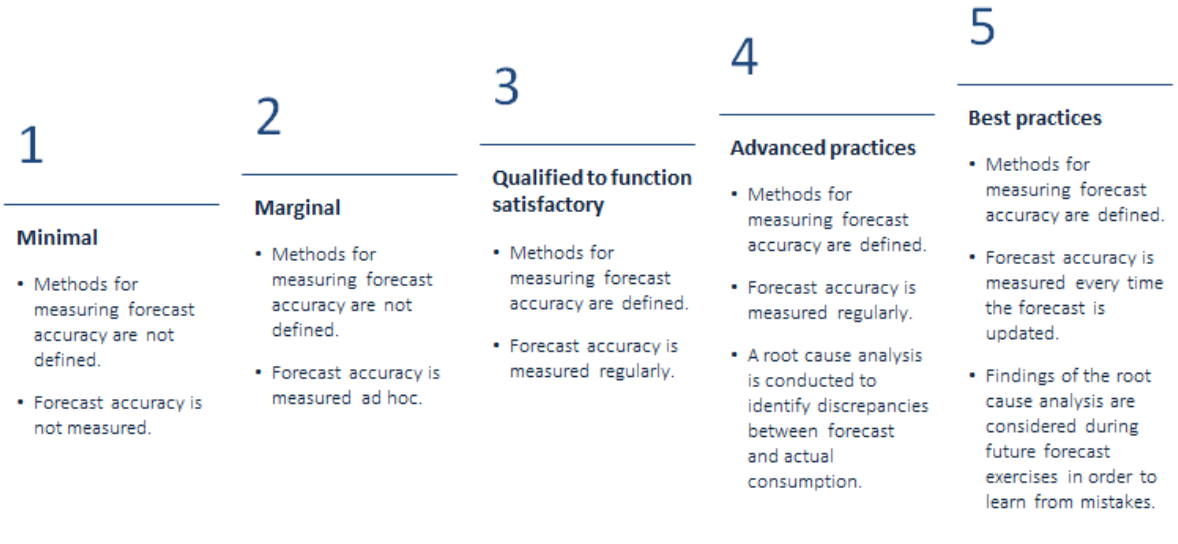


Figure 12. Description of capability maturity grades for "Measuring forecast accuracy"

Key Performance Indicators

NSCA methodology offers a wide range of indicators, from which a smaller number must be selected to reflect the local context each time the assessment is implemented.

The preliminary KPI selection was completed during the initial stakeholders' workshop in June 2015 to define the assessment's parameters.[24] Sixteen KPIs were tested for five criteria,

[24] The key objective of that workshop was to provide national stakeholders with an overview of the NSCA. The workshop closed with a clearer understanding of the scope of the assessment and with input from stakeholders to start planning the assessment.

including strategic priority, useful for decision making, data availability, feasibility of implementation, and data quality. National stakeholders at the workshop reached consensus on the list of KPIs to be included in assessment.

Table 1. Selected KPIs for Ukraine

Functional Areas	Key Performance Indicators
Overarching	Stock-out rates
Forecasting and supply planning	Forecast accuracy
Procurement	Percentage of international reference price paid
Warehousing and inventory management	Order fill rate
	Stock accuracy
Transportation	On-time delivery

For results on each KPI, please refer to relevant sections of this report, and for detailed KPI definitions and the methodology of calculation, see annex A.

All KPIs were assessed in relation to tracer commodities. The list of tracer commodities is discussed in a relevant section of this report.

Assessment Methodology and Scope

Sampling Data Collection Sites

Selecting Regions

Regions were selected based on a stratified random sampling method. Regions of Ukraine occupied by Russia were excluded from the sampling process, including Donetsk and Luhansk oblasts, Autonomous Republic of Crimea, and Sevastopol city.

Size of population was considered an important factor in the sampling. The more populated a region, the more complex the supply chain and the more challenging are the problems we may expect to identify.

The remaining 22 regions were allocated in four buckets based on population. From each bucket, two regions were randomly selected.[25] As a capitol, Kyiv city was considered "preselected" because all central-level facilities are located there. The random selection was done using a specially designed Excel tool (figure 13).

The final sample was eight regions (figure 14):

- Two were selected from the bucket with highest populated regions (more than 2 million people):
  - Kyiv city
  - Dnipropetrovsk oblast

[25] One-third of all regions were randomly chosen to geographically limit the sample of data collection sites (health facilities) to ensure feasibility of data collection in the allotted time period with available resources.

- Two were selected from the bucket with lowest populated regions (less than 2 million people):
  - Kirovohrad oblast
  - Chernivtsi oblast

- The remaining four regions were selected from the bucket with mid-sized populations:
  - Kyiv oblast
  - Poltava oblast
  - Zakarpattia oblast
  - Sumy oblast

Randomly selecting regions

Region	# of population	Size bucket	Random #	
			Formula	Pasted values
Kyiv city	2 888 470	4	Preselected	
Dnipropetrovsk	3 263 209	4	0,1973	0,9069
Kharkiv	2 719 069	4	0,8934	0,5662
Lviv	2 533 631	4	0,4293	0,6479
Odesa	2 390 531	4	0,2731	0,6436
Zaporizhia	1 758 509	4	0,7542	0,5644
Kyiv oblast	1 730 911	3	0,1279	0,7863
Vinnytsia	1 605 544	3	0,0764	0,4812
Poltava	1 443 239	3	0,2937	0,9247
Ivano-Frankivsk	1 382 730	3	0,4199	0,6352
Khmelnytsky	1 298 112	3	0,3581	0,4897
Zakarpattia	1 258 973	2	0,2357	0,5948
Zhytomyr	1 251 836	2	0,6982	0,1135
Cherkasy	1 247 373	2	0,5136	0,4191
Rivne	1 161 622	2	0,2031	0,1054
Mykolaiv	1 161 285	2	0,1745	0,1464
Sumy	1 117 608	2	0,8205	0,6779
Ternopil	1 067 448	1	0,3066	0,2253
Kherson	1 065 083	1	0,0340	0,4466
Chernihiv	1 050 017	1	0,9900	0,5502
Volyn	1 043 215	1	0,7621	0,6757
Kirovohrad	976 965	1	0,7706	0,7524
Chernivtsi	908 920	1	0,8384	0,6758
Donetsk	4 277 923			
Luhansk	2 211 334			
AR Crimea				
Sevastopol city				

Highlight selection by

- ○ Formula (press F9 to refresh numbers)
- ◉ Pasted values (numbers do not change)

Select Formula to highlight a set of randomly picked oblasts. The set will be different each time you press F9 or otherwise refresh this page.

Select Pasted values any time to highlight **the final SAMPLE**, i.e. the set of oblasts, which were initially selected at first draw. These values were copy-pasted to prevent them from changing each time this page is refreshed.

THE SAMPLE — initially selected regions

1	Kyiv city
2	Dnipropetrovsk
3	Kyiv oblast
4	Poltava
5	Zakarpattia
6	Sumy
7	Kirovohrad
8	Chernivtsi

Defining the size buckets

Size bucket	Number of population	
	min	*max*
4	1 744 711	3 263 209
3	1 258 974	1 744 710
2	1 092 529	1 258 973
1	908 920	1 092 528

Figure 13. Random selection tool

Figure 14. Final sample of regions

Selecting Health Facilities (Data Collection Sites)

According to MOH records,[26] there were 1,149 health facilities in the sampled regions as of October 1, 2015. The list of facilities provided to the assessment team by the MOH was carefully reviewed. As a result, 218 facilities were excluded before proceeding with sampling. Of those excluded, 61 were found to be not part of the medicines supply chain, and the remaining 157 did not use any of the tracer medicines.

The remaining 913 facilities were assigned key attributes that were later used for sampling:

- Type (I, II, or III)
- Level (central, oblast, rayon, municipal)
- Profile (e.g., AIDS center, TB facility, general hospital, outpatient clinic)

With a confidence level of 90%, a margin of error of 5%, and a total of 931 facilities (general population size), the calculated sample size was 64 facilities.[27]

The initial intent was to have the number of different types of facilities (I, II, and III) in the sample reflect their representation in the total number of facilities. However, keeping this proportion would result in a very small number of type I and II facilities in the sample, so a manual correction was made to ensure that the sample included sufficient numbers of facilities of each type (figure 15).

To accommodate for at least one type I facility and to ensure that the sample includes enough AIDS and TB facilities (at least one in each oblast) and that there is a backup to account for

[26] Database managed by State Enterprise "UkrMedReyestr".
[27] Raosoft® Sample size calculator was used at http://www.raosoft.com/samplesize.html

potential problems that might have hinder data collectors' access to selected facilities, the following steps were taken to shape the final sample:

- A single type I facility was randomly selected.
- One AIDS and one TB facility (oblast level, type II) were included for each of eight regions.
- Eight type II facilities were randomly selected for other tracer commodities—excluding ARVs, TB medicines, and methadone. Conditions were set that in each region only one facility is allocated, and that no more than two facilities represent each tracer group (hepatitis, vaccines, oncology, and diabetes).
- At this point, the sample size (64) was too small to accommodate a sufficient number of type III facilities, so it was increased to 81 by inclusion of 56 type III facilities instead of 39. These 56 facilities were randomly selected for each region. The number of type III facilities selected in each region reflects the population of the region. Therefore, more facilities were selected for regions with greater populations than for those with smaller ones.

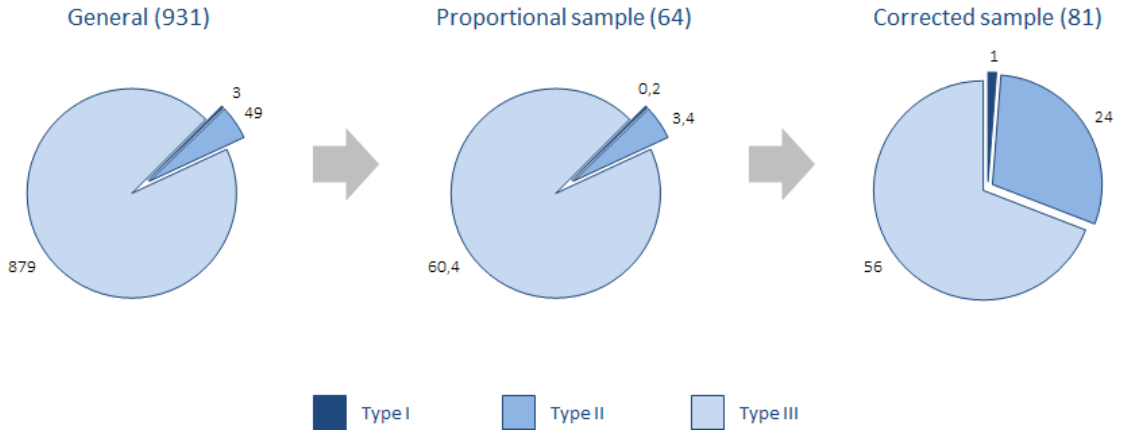


Figure 15. Defining the size of a sample and proportion of facility types within it

After balancing out facility types, the final sample is shown in table 2.

Table 2. Final Sample and Proportion of Facility Types

Region	Health Facilities, total	Population, %	Sample	Type I	Type II	Type III
Dnipropetrovsk	174	24	17	1	3	13
Kyiv city	106	21	15		3	12
Kyiv oblast	116	13	10		3	7
Poltava	99	11	9		3	6
Zakarpattia	194	9	8		3	5
Sumy	115	8	8		3	5
Kirovohrad	74	7	7		3	4
Chernivtsi	53	7	7		3	4
Total	931	100	81	1	24	56

In addition to 81 health care facilities, other data collection sites included 8 Local Health Authorities and 9 central level entities, including the MOH, Global Fund principal recipients, and their logistic partners.

Tracer Commodities

The list of tracer commodities was agreed upon during the initial NSCA workshop in June 2015 (table 3). The main criteria for selecting tracers were:

- Representation from diverse product groups with an emphasis on HIV and TB medicines
- High-use products, which are likely to be found on the assessment sites
- Relevant to country-specific priority health objectives

This list was later refined following discussions among key national stakeholders.

Table 3. List of Tracer Commodities

Product name (international nonproprietary name)	Presentation (form, dosage)	Type
lopinavir + ritonavir	oral solution, 80 mg/20 mg	HIV, pediatric
zidovudine + lamivudine	tablets, 300 mg/150 mg	HIV
efavirenz	tablets, 600 mg	HIV
abacavir	tablets, 300 mg	HIV
capreomycin	vial, 1 g	TB
kanamycin	vial, 1 g	TB
pyrazinamide	tablets, 500 mg	TB
rifampicin	capsules, 150 mg	TB
ceftriaxone	vial, 1 g	Opportunistic Infection
clindamycin	vial, 300 mg/2 mL	Opportunistic Infection
fluconazole	capsules, 100 mg	Opportunistic Infection
sulfamethoxazole + trimethoprim	tablets, 400 mg/80 mg	Opportunistic Infection
BCG vaccine	vial, 500 mg	Vaccines
Pertussis, Diphtheria, Tetanus (vaccines)	vial, 1 mL	Vaccines
Poliomyelitis, trivalent, inactivated, whole virus	suspension for injection, 0.5 mL	Vaccines
Hepatitis B, purified antigen	suspension for injection, 0.5 mL	Vaccines
imatinib	tablets, 100 mg	Oncology
peginterferon alfa-2a/alfa-2b	syringe	Hepatitis C
metformin	500 mg	Diabetes
methadone	tablets, 25 mg	Medicine assisted treatment

This list of tracers was used to collect data on KPIs. This means, for example, that stock accuracy at any given assessment site was measured only for tracers found at that site (if any), and stock accuracy for other medicines and health commodities was not examined.

Data Collection Process

The collection of data was a two-component process that included data collection at the central level carried out by a joint team of international and national experts and data collection at the intermediate and municipal levels by specially trained teams.

Data Collector Selection and Training

The largest segment of the NSCA data came from health care facilities at the intermediate and municipal levels. These data were collected by 10 collection teams, each comprising a team leader and two data collectors. The data collection teams were selected via a transparent and competitive process that used specially developed ranking schema. There were 79 online applications received and 30 applicants were approved for further training and contracting.

Selected data collectors were trained to perform their duties consistently during the assessment. The training involved five days of full-time tutorials and practical experience. The agenda for training included background material, case studies, and group work. One day was dedicated to a real-life application of learned material in the form of a test data collection in six health care facilities in Odessa city and oblast.

Data Collection at the Intermediate and Municipal Levels

Each data collection team had a list of assessment sites assigned to them, and a schedule was developed to ensure good logistics and efficient use of time. On average, each team worked in a single health facility for one day. Access to these facilities was arranged through close collaboration with the MOH (Department of Pharmaceutical Activity and Quality of Medicines) and NSCA regional coordinators (usually the officials of Local Health Authorities).

Data collection teams utilized the CMM questionnaire and KPI data collection forms. Teams were supplied with necessary tools and accessories to:

- Conduct semi-structured interviews with relevant personnel using the CMM questionnaire
- Directly observe the processes/assets within facilities (such as a storeroom or warehouse), thereby verifying interview results
- Collect data required to inform KPIs by interviewing staff, physically counting stock, reviewing paper and electronic records, etc.

Each data collection team was equipped with a tablet computer with customized software installed. Teams used this software to record data and upload it to cloud storage.

Each day during the two-week data collection period, the data received from the data collection teams were retrieved from cloud storage and transferred to the NSCA dataset, a specially designed electronic spreadsheet. All data were checked for consistency and stored for further cleaning and verification. NSCA coordinators provided technical and administrative support to the teams to ensure the timeliness, completeness, and accuracy of data collection.

Data Collection at the Central Level

Close collaboration with the MOH allowed meetings to be arranged with principal state institutions that, together with Global Fund principal recipients and their logistic partners, make up the health supply chain central level in Ukraine. International experts conducted interviews with key informants and contributed valuable data to the common NSCA dataset.

Electronic Tool for Data Collection

For the purpose of collecting CMM data at the intermediate and municipal levels, the software-as-a-service solution was used.[28] This product was selected based on multiple criteria, including ease of use, tech support, and price.

Building the questionnaires and collecting data were undertaken via an online QuickTapSurvey computer account. User applications were installed on android tablet computers. Separate questionnaires were developed for local health authorities and health care facilities. These questionnaires were then uploaded to tablets, allowing the data to be collected offline and sent to cloud storage when a Wi-Fi connection was available.

[28] http://www.quicktapsurvey.com

RESULTS OF THE ASSESSMENT

Overview of the Assessments Results

The evaluation of Ukraine's supply chain revealed several opportunities for improving both maturity and performance. Detailed results are presented in this section, and recommendations for systems strengthening are discussed in the Options Analysis section of this report.

Capability

Overall capability of the supply chain in Ukraine is poorer than expected from a lower middle-income country, with all functional areas falling below grade 3 (figure 16), which is an unsatisfactory or marginal level of maturity.

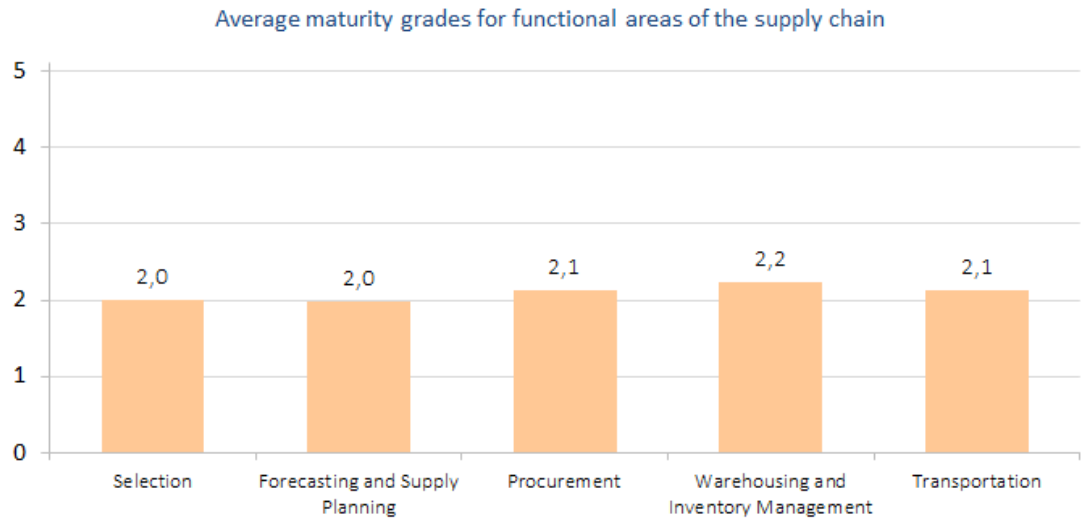


Figure 16. Overall capability of the supply chain in Ukraine

The grades of capability maturity are generally higher at the central level because the aggregates are of operations performed by government bodies, Global Fund principal recipients, and contracted logistic companies, both state-owned and private (figure 17). At this level, the depicted averages show qualified maturity level except for one capability at the marginal maturity level. However, these averages need to be unfolded to see that for all functional areas, the Global Fund supply chain demonstrates higher maturity, being graded at advanced or best-practice level. This is an example of what may be achieved in Ukraine when resources are efficiently allocated and sufficient attention is paid to implementing a well-designed system.

The difference between the intermediate and municipal levels is insignificant and all are at the marginal maturity level.

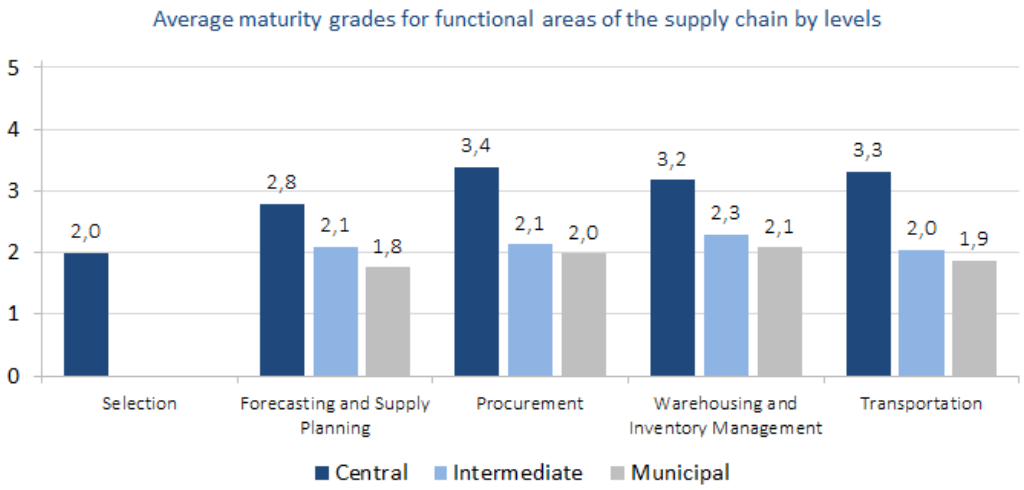


Figure 17. Overall capability of the supply chain in Ukraine by level

Performance

Performance varied by functional areas with evident challenges, such as approximately 270% of international prices paid, but with very good order fill rates and almost impeccable stock accuracy (figure 18).

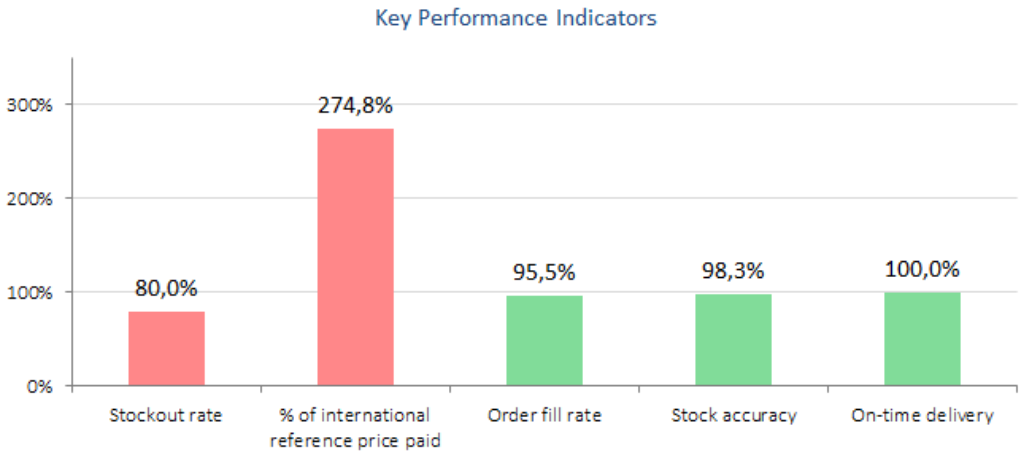


Figure 18. Values of KPIs

KPI: Stock-out Rates

Stock-out is defined as the absence of any tracer commodity in a facility that operates such tracer during at least one day within the assessment period (February 2015–January 2016).

Stock-out rate is measured as a percentage of facilities experiencing a stock-out of one or more tracer commodities out of all facilities dispensing tracer commodities.

Stock-out rates were found to have different values at different levels of the supply chain for different medicines (figures 19, 20)

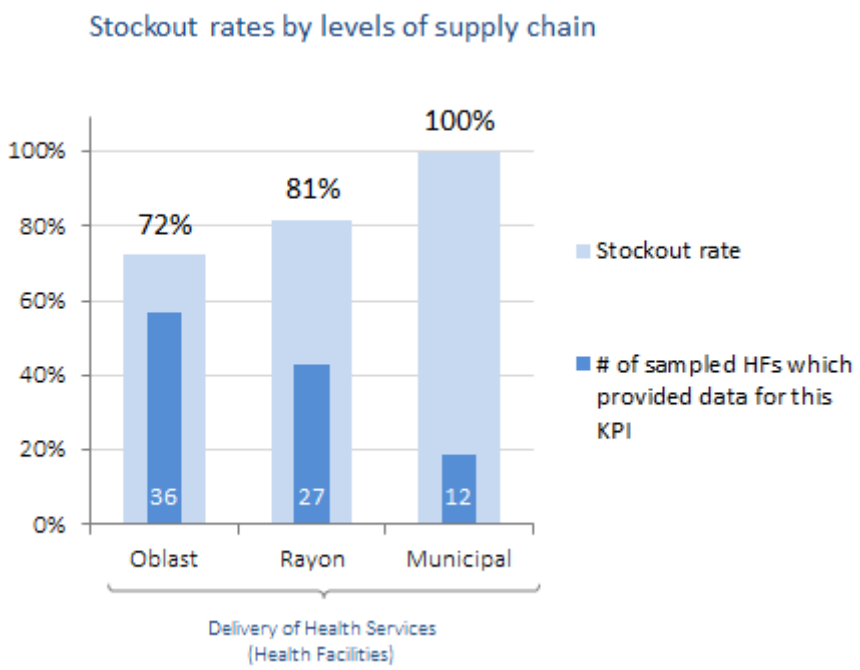


Figure 19. Stock-out rates by levels of supply chain

While at times there were reasonable explanations of why medicines were unavailable in a facility, these explanations could not obviate the reality of the stock-out.

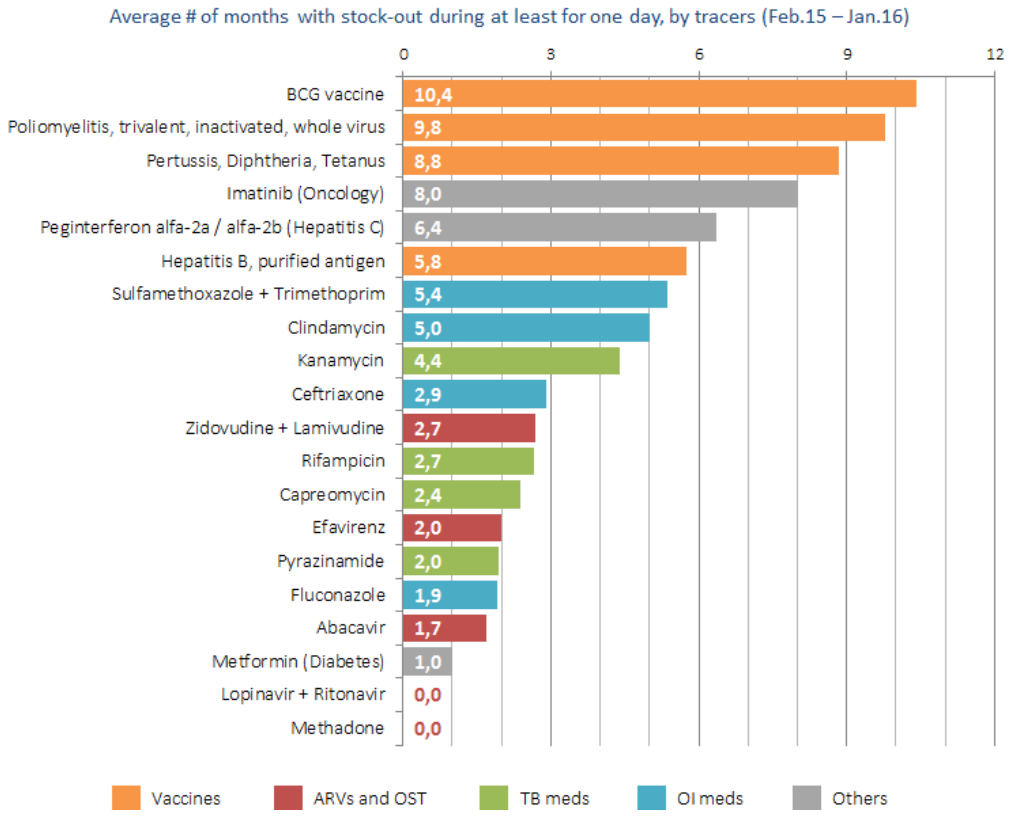


Figure 20. Stock-out rates by tracer commodities

For ARVs and TB medicines, a stock-out was recorded only if medicines from both sources—the state budget and the Global Fund—were absent. In other words, if there was only "national" medicines out of stock while "Global Fund" medicines remained in stock (or vice versa), the situation was not recorded as a stock-out.

Oher issues to note:

1. A stock-out does not necessarily mean a treatment interruption. Medicines might be unavailable in the facility, but all patients currently on treatment in the facility may have received several months' worth of medicines (e.g., for ARVs, one month is the norm, but patients with high adherence to treatment may receive a three-month supply). This situation still carries a high risk that treatment will not be available if a patient with medicine on hand loses it or if a new patient arrives at the facility.

2. A stock-out at a lower level of the supply chain does not mean that medicines are not available at higher levels. It takes time to deliver medicines from one place to another, and it is important that medicines are available somewhere in a country. However, medicines in a warehouse on a higher level of supply chain have no value for a patient who needs them at a service delivery point.

3. A stock-out in one facility doesn't mean that treatment is not available at all, as the medicine may be in stock in another facility. Although a stock-out does not necessary mean no access to treatment, it still constitutes a considerable barrier and dramatically decreases treatment accessibility.

Data show that stock-out rates are nearly identical for commodities operated by the Global Fund supply chain and national programs supply chain, calculated at approximately 80% of health facilities experiencing a stock-out of one or more tracer commodities for at least one day during the assessed period (February 2015–January 2016).

The Global Fund's operating procedures were established to serve all enrolled patients in both HIV and TB programs without interruption. However, for reasons noted above, there may be no stock available, while at the same time patients have not suffered any treatment interruption.

Nevertheless, the responsiveness of the health system is considerably weakened by leaving no capacity to accommodate for uncertainty. In the case of medicines used for first-line treatment, the system remains incapable of serving new patients as they are diagnosed.

Legend for the CMM Figures

The following sections contain graphs (figures) that share some generic details.

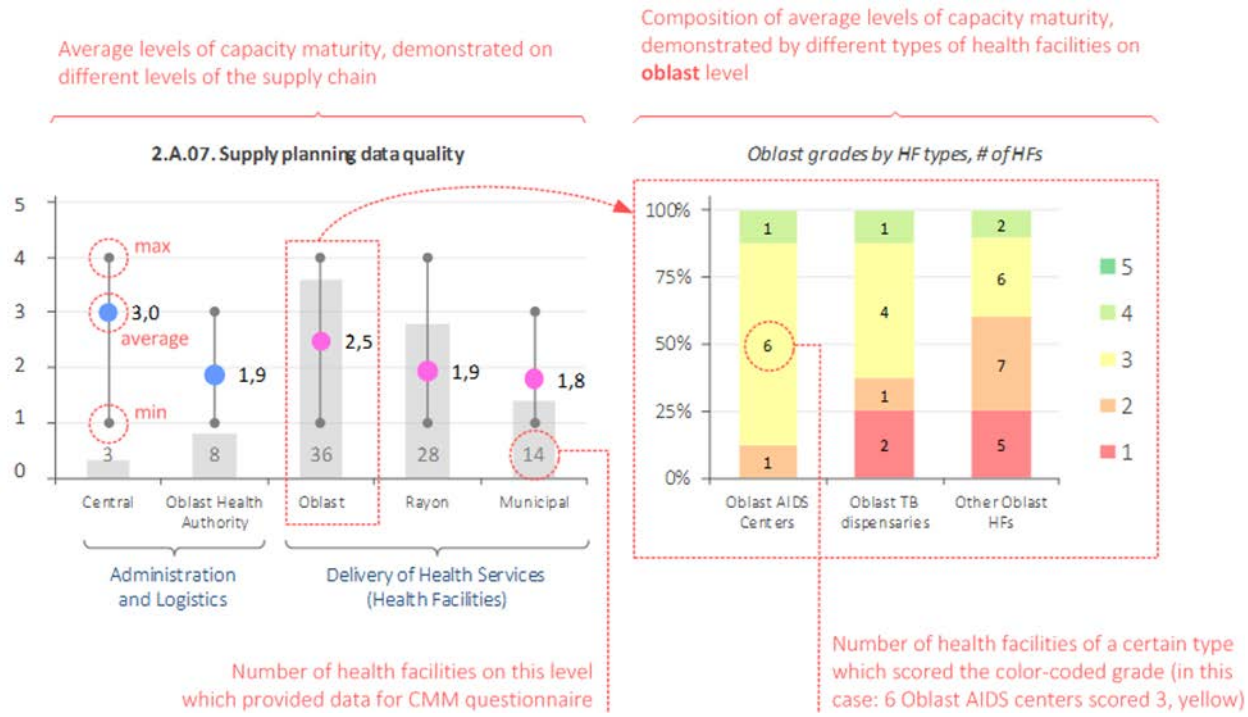


Figure 21. Legend for the CMM figures

Figure 21 (left) shows the average grades of capability maturity, which were derived from responses to the CMM questionnaire used in health facilities at different levels of the supply chain. Average values (arithmetic means) are shown along with minimum and maximum data points and number of data collection sites observed and graded at each level.

The levels include:

- Central level: administrative and logistics institutions (e.g., government bodies, Global Fund principal recipients, logistic companies)

- Intermediate level
  - Oblast Health Authorities (administrative and logistics institutions)
  - Oblast-level health facilities
  - Rayon-level health facilities

- Municipal-level health facilities

The right part of figure 21 provides details at the oblast level that help to explain capability maturity of oblast AIDS and TB facilities as compared to other oblast-level health facilities. The shares of grades found in each group (AIDS, TB, and other facilities) are displayed in five colors, and number of facilities within each share is provided.

Product Selection and Procurement

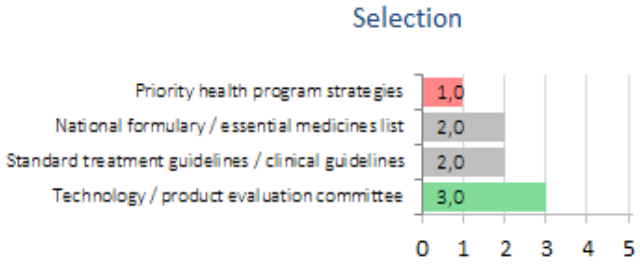


Figure 22. Product selection functional area

Overall Summary

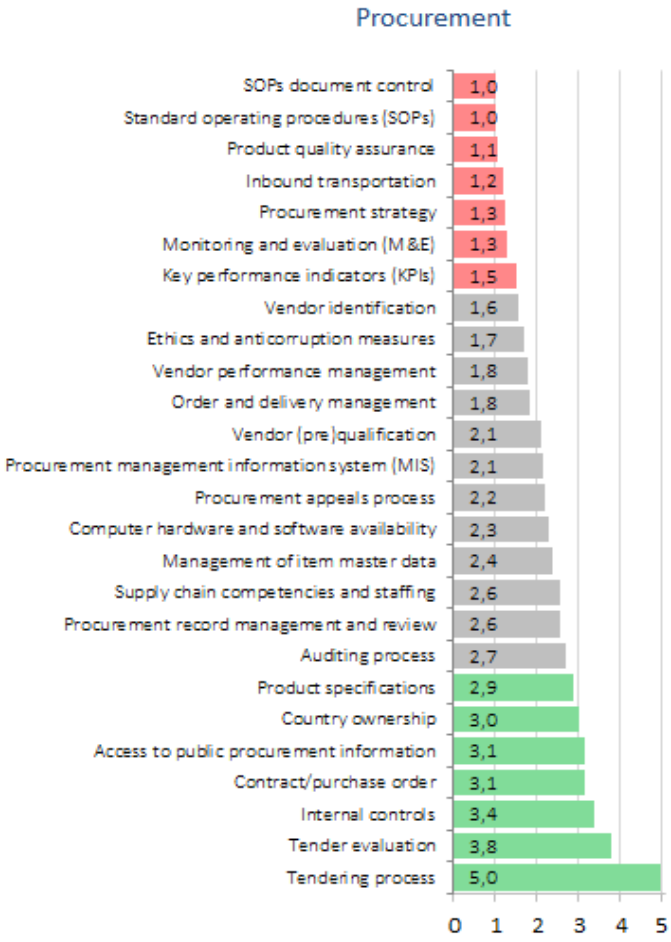


Figure 23. Procurement functional area

For selection, only one of the four capabilities in this functional area (figure 22), the technology/product evaluation committee, is performing at a satisfactory level (shown in green), while two others are at a less-than-ideal marginal level. The last (in red) indicates the absence of a strategy for priority health programs. There is evidence that those shown in grey are under revision, and it is expected that these capabilities will be significantly strengthened in the near future.

As described in the background section, UNDP, UNICEF, and Crown Agents have been requested to temporarily take over the procurement function between 2015 and 2019 until a new procurement unit is designed and ready to operate.[29]

The immediate effect is that the procurement of medicines has been temporarily substituted for a more transparent and open system that offers value for money and emphasizes safety and quality.

As shown in the Findings section, at the central level all capabilities have significantly higher grades than the intermediate and municipal levels. In most cases, this is because the Global Fund supply chain has well-established, consistently used processes.[30]

However, service delivery facilities at the intermediate and municipal levels demonstrate lower average maturity than those at the central level, even when such facilities receive commodities through the Global Fund supply chain. This is significant as 55% of public procurement by value is carried out at the sub-national level.

KPI: Percentage of International Reference Price Paid

The KPI for the procurement functional area is the percentage of international reference price paid, which indicates how efficiently public money is spent for the procurement of medicines. As seen at all levels of the supply chain, the percentage exceeds 100%[31] except for Oblast Health Authority (figure 24).

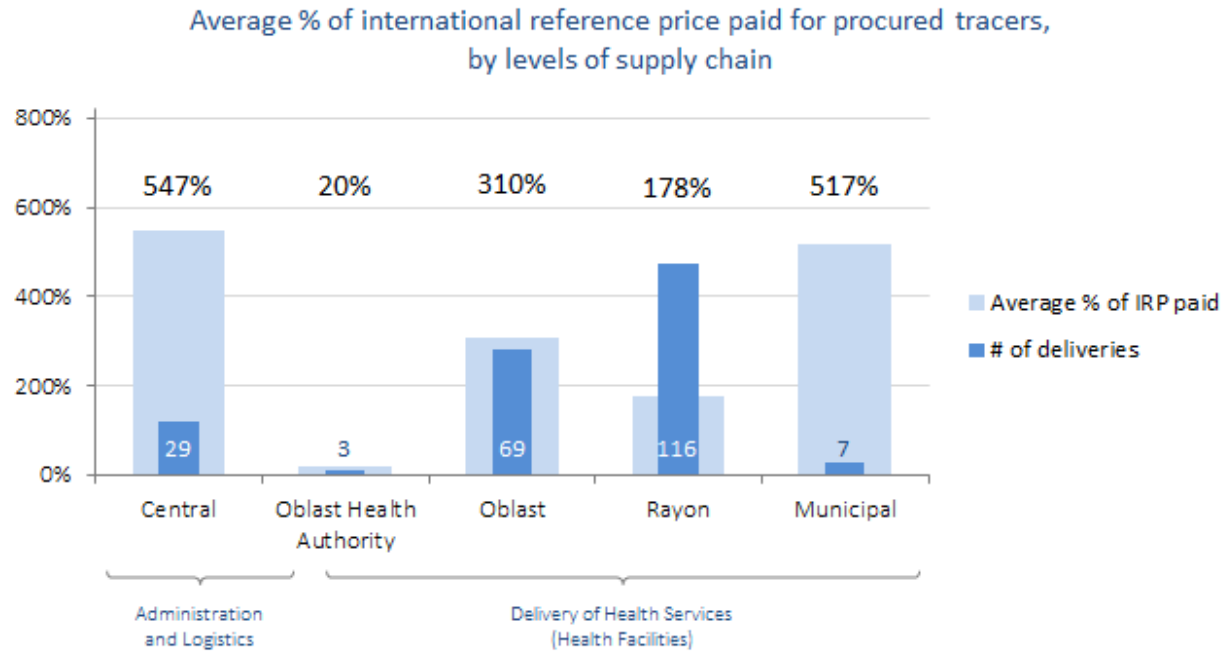


Figure 24. Key performance indicator for the procurement functional area

[29] http://www.ua.undp.org/content/ukraine/en/home/presscenter/speeches/2015/12/10/undp-s- medicine-procurement-support-services-for-the-government-and-people-of-ukraine.html
[30] http://www.theglobalfund.org/documents/corporate/Corporate_Procurement_Regulation_en/
[31] If not stated otherwise, data on international prices were taken from Management Sciences for Health database International Drug Price Indicator Guide, 2014. http://erc.msh.org

Figure 24 shows the significant excess in the prices paid at the central and municipal levels and, to a lesser extent, at the oblast level, over those values at the rayon level. This figure doesn't seem to correspond with the expectation to see lower prices resulting from large volumes procured centrally. However, only three tracer drugs are procured across all levels (table 4) and for those three drugs, the price of the central level procurement is significantly lower than the prices for the same drug at the oblast, rayon, and municipal levels (even though for one drug the price paid at all levels is significantly over the international price reference).

Prices at the oblast level are somewhere between the central and rayon levels. It should be noted that facilities at this level include TB dispensaries that often procure sulfamethoxazole + trimethoprim. The price of this medicine exceeds the average by a minimum of 2.5 times, unlike another popular drug among almost all facilities medicine—ceftriaxone—and therefore it greatly influenced the final results. At municipal-level facilities, the exceptionally high prices for sulfamethoxazole + trimethoprim and metformin can be justified in the same way and have a decisive impact on the overall picture.

Table 4. Average Percentage of International Reference Price Paid by Levels of Supply Chain

Tracer	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Vaccines					
Hepatitis B, purified antigen	74%				
BCG vaccine				204%	
Antiretrovirals (ARV)					
Abacavir	191%				
Efavirenz	34%				
Lopinavir + Ritonavir	419%				
Zidovudine + Lamivudine	76%				
Opioid Substitution Therapy (OST)					
Methadone	42%				
Medicines for treatment of tuberculosis (TB)					
Capreomycin	66%				
Kanamycin	2708%			57%	
Pyrazinamide	79%				
Rifampicin	20%				
Medicines for treatment of opportunistic infections (OI)					
Ceftriaxone (#1)			118%	179%	
Ceftriaxone (#5)			181%	182%	
Ceftriaxone (#10)	13%		166%	164%	
Fluconazole	17%		524%		272%
Sulfamethoxazole + Trimethoprim	292%		663%	336%	701%
Medicine for treatment of diabetes					
Metformin (#30)				158%	
Metformin (#60)				220%	
Medicines for treatment of hepatitis C					
Peginterferon alfa-2a / alfa-2b	12%	20%	13%		

Although the data in table 4 are examined later in the document, a few provisos should be made:

- With some minor exclusions (ceftriaxone and fluconazole are FCA provisions and delivery is made at the buyer's expenses), all tracers in the database of the International Drug Price Indicator Guide that fell within the scope of assessment were procured on INCOTERMS 2010 rules according to delivered duty paid provisions (delivery is made at the seller's expenses).

- The volume of medicines procured at both the central and regional levels was several times less than the volume of medicines reflected in the MSH International Price Reference

- Only the international nonproprietary name of a medicine was taken from the reference.

- Within the time period covered by assessment, the exchange rate of national currency against the US dollar changed from 16 Ukraine Hryvnia (UAH) per USD 1 (as of February 2, 2015) to 30 UAH per USD 1 (February 26, 2015). This could also have affected this KPI value. Most likely, the suppliers passed along these risks to the value of goods, resulting in a price increase that potentially could have exceeded the increase in the exchange rate. However, the share of goods supplied within this one-month period was fairly low, and starting from the beginning of March 2015, the exchange rate became more stable.

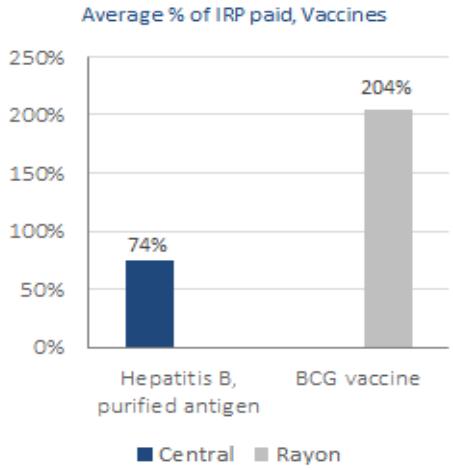


Figure 25. Vaccines prices

Vaccines

The hepatitis B vaccine price in figure 25 shows a good KPI value, implying efficient tendering. However, this is not applicable for the BCG vaccine, which is almost double the international price. This calls for taking measures to get more favorable prices because of permanent underfunding of MOH procurement and the significant societal impact of vaccination.

Antiretrovirals (ARVs)

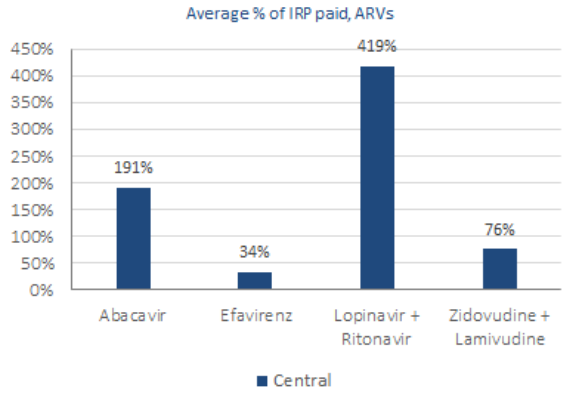


Figure 26. ARVs prices

Figure 26 shows substantial distinction in price among ARVs. It should be noted that much higher priced ARVs (abacavir and lopinavir/ritonavir) are patent protected. As a result, the prices are not generally determined by the free market but largely depend on companies' price policies. The fact that the reference price was found for these medicines supplied exactly to African countries which are considered as low-income (Anderson) may also justify this assumption.

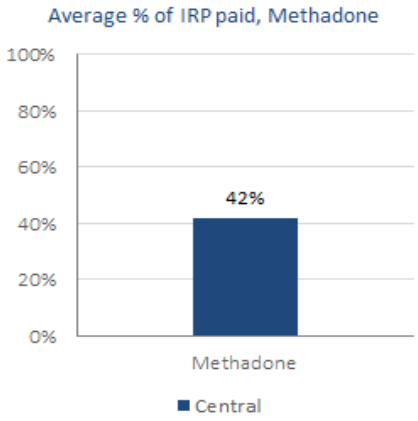


Figure 27. Methadone prices

The prices of efavirenz and lamivudine/zidovudine are low, possibly because of the significant number of registered generic medicines in Ukraine[32] and the high volumes procured centrally.

Methadone

Cost efficiency for centrally procured methadone is indisputable (figure 27), showing great economy achieved through direct procurement from foreign and local manufacturers.[33]

[32] http://www.drlz.com.ua/
[33] Source: http://medicprix.sante.gouv.fr/medicprix/welcome.do

TB medicines

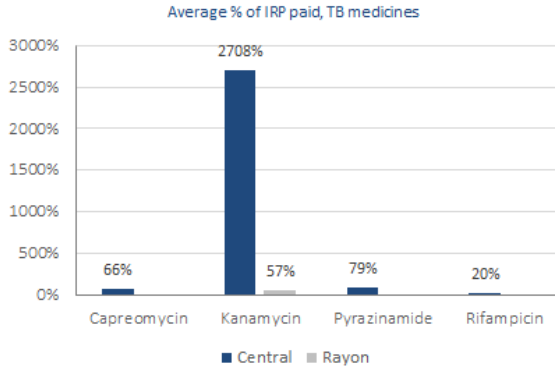


Figure 28. TB medicine prices

The very high price of kanamycin is a result of Global Fund policies [34] regarding procurement of TB medicines (figure 28). According to these policies, in addition to national requirements, all ARV, antimalarial, and TB medicines shall be prequalified under the WHO Prequalification Program and/or authorized for use by a Stringent Regulatory Authority. At the time of procurement, there was only one source that met these conditions. The implementation of this requirement has resulted in the price we observed. However, the quality of WHO-prequalified medicines is hard to dispute.

The prices for capreomycin, pyrazinamide, and rifampicin illustrate what could be achieved through procurement of both locally and internationally produced generic medicines.

Medicines for OI treatment

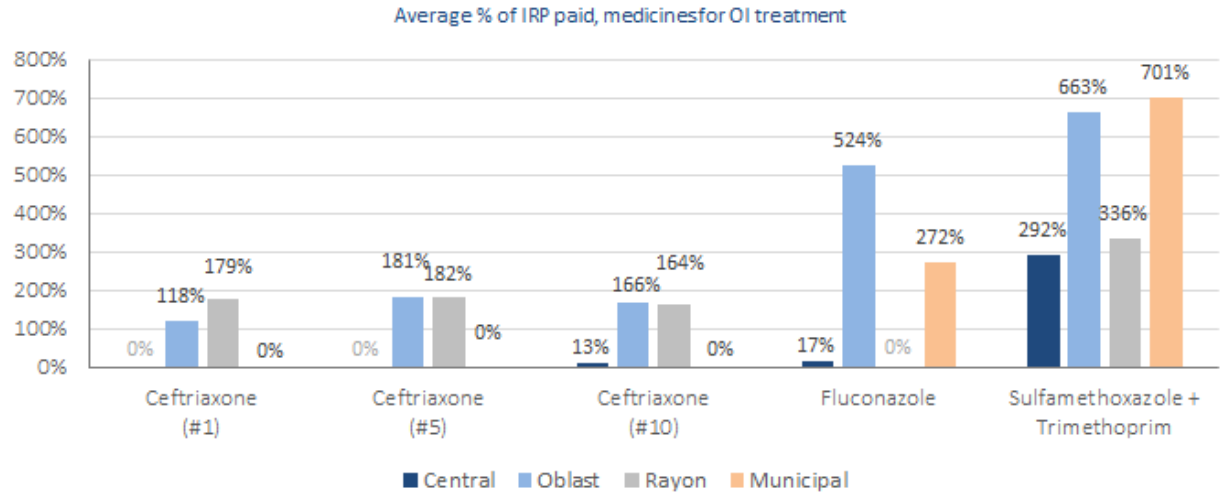


Figure 29. Medicines for OI treatment prices

The ceftriaxone price was almost identical at the oblast and rayon levels for all package sizes (#1, #5, and #10, indicating number of pills in a pack).

[34] https://www.theglobalfund.org/media/5873/psm_procurementsupplymanagement_guidelines_en.pdf

More interesting is the price paid for ceftriaxone (#10) procured centrally, which is 13% of the international price that was paid. This clearly shows the potential impact of pooled procurement for the sake of economy. Fluconazole is similar at 17% of the international price (figure 29).

It was determined that the lowest price for sulfamethoxazole + trimethoprim was found for the centrally procured product, but this price is still three times the international price. At the oblast, rayon, and municipal levels, the prices are even higher and the only reasonable justification that can be seen is that some part of the total volume of sulfamethoxazole + trimethoprim is of international origin, while other parts are locally produced. Other factors that affect pricing are the lack of competition among suppliers and small numbers of registered products with similar dosage and strength.

Diabetes Medicine

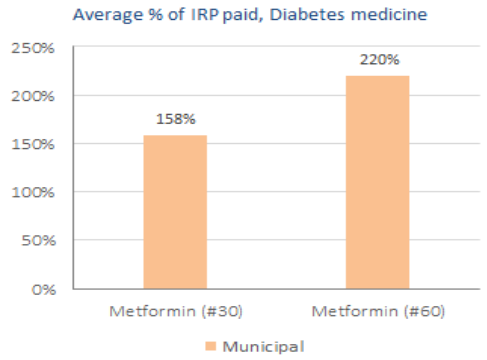


Figure 30. Diabetes medicine prices

In 2014, the MOH didn't procure metformin as part of the national program, and therefore the prices only reflect municipal procurements in relatively small quantities. In addition, the highly constrained registration status of this medicine, which leads to limited offerings on the local market, also may contribute to the unsatisfactory price (figure 30).

Hepatitis C Medicine

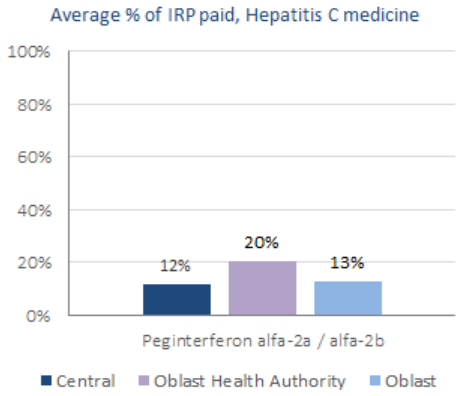


Figure 31. Hepatitis C medicine prices

The highly discounted price for peginterferon shown in figure 31 is the result of efforts to increase access to treatment for patients.[35] The introduction of completely new medicine for the treatment of hepatitis C to the Ukrainian market in fall 2015[36,37]—sofosbuvir—also may also have affected the pricing policy for peginterferon.

The Global Fund supply chain has:

- Mature capability, with a CMM grade of 5 in 3 of the 6 highlighted capabilities (see below).
- The maturity of in-country Product Quality Assurance capability and Percentage of International Reference Price Paid, which are both less than adequate.
- CMM grades that are higher for most procurement capabilities of administrative and logistics institutions compared to service delivery facilities. With few exceptions, procurement capabilities of the service delivery facilities are all in the poor maturity range.

National programs and decentralized supply chains show a lack of formal processes in most capabilities, except for contract order/purchasing, procurement information management, and supply chain competencies and staffing, indicating the need for capacity building.

Findings

Procurement Strategy

The Global Fund supply chain grade at the central level represents best practice for procurement strategy. Below the central level, however, facilities receive an average CMM score of well below 2, indicating that there is no basic strategy (i.e., no procurement strategy beyond approving annual procurement plans). The national programs and decentralized supply chain grades are equally low for the administrative and logistics institutions and for the service delivery facilities (figure 32).

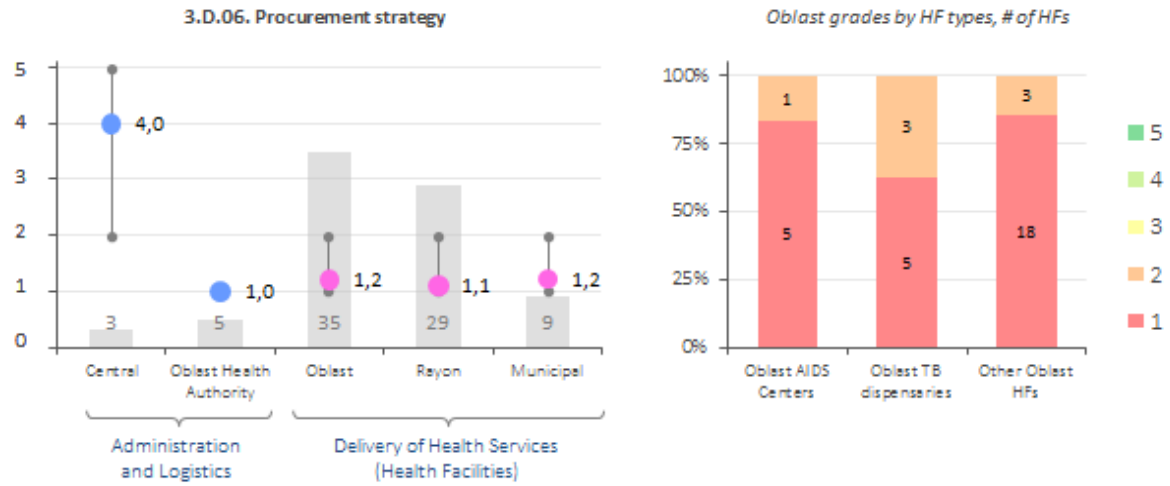


Figure 32. Procurement strategy

[35] http://www.theglobalfund.org/en/blog/2013-10-08_Hepatitis_C_Treatment_in_Ukraine_A_Victory_For_Patients/
[36] http://www.drlz.com.ua/ibp/ddsite.nsf/all/shlist?opendocument
[37] http://ayapharma.com/uk/konferentsiya-gratetsiano-ua

Vendor Performance Management

This capability relates to activities on monitoring how well a vendor performs over time, and can be used to better inform decisions during future procurement processes as well as for emergency procurement. CMM grades were, on average, 2 at the central level and below 2 at every other level (figure 33). This showed that the national programs and decentralized supply chains evaluate vendor performance only when there is a problem with the vendor and do not routinely collect vendor performance data on a regular basis. However, five facilities at the rayon level had mature capability to manage vendors, being graded 3 and 4 for this capability.

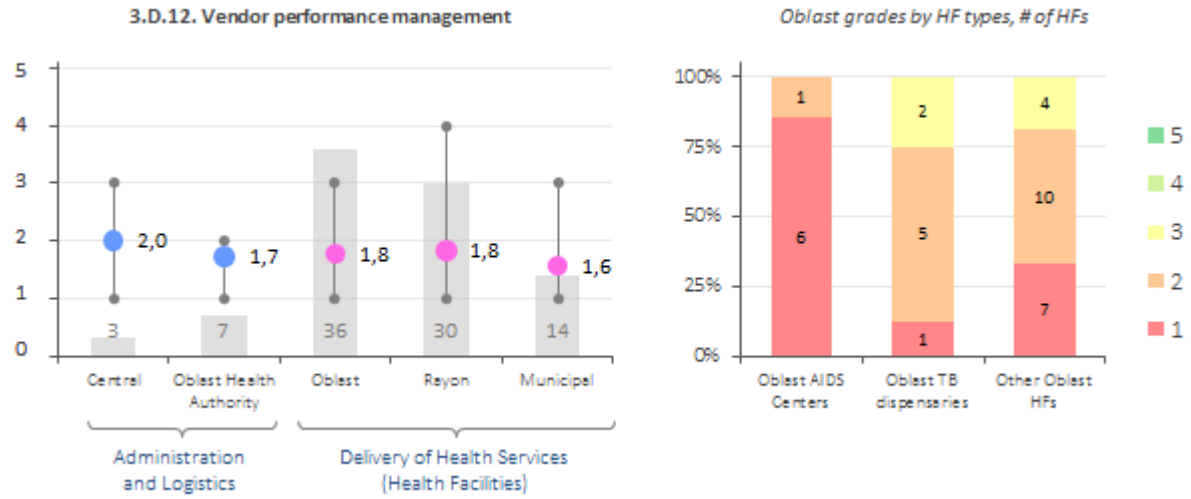


Figure 33. Vendor performance management

Contract/Purchase Order

All supply chains scored high for this capability with scores of 3 or higher, indicating that order forms are used and include all relevant information. Scores for the national programs and decentralized supply chains are virtually identical except for the municipal level, where there is a significant variation in capability maturity among facilities (figure 34).

Global Fund supply chain grades for service delivery facilities are similar to those of national programs and decentralized supply chains, while the administrative and logistics institutions scored 5.

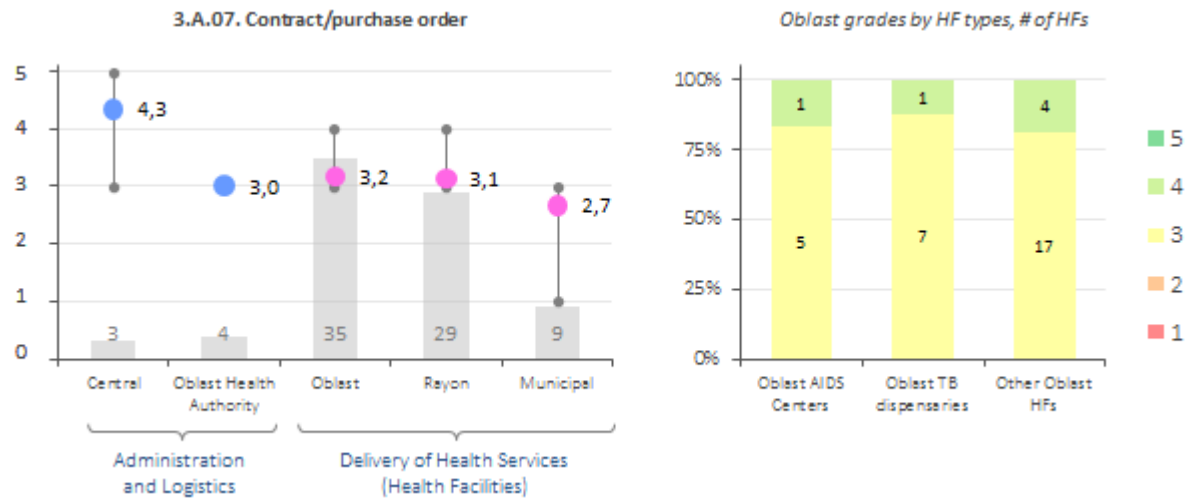


Figure 34. Contract/purchase order

Ethics and Anticorruption Measures

Ethics and anticorruption grades indicate a low capability of service delivery facilities in all supply chains, as well as of the administrative and logistics institutions in all but the Global Fund supply chain (figure 35). These scores indicate that ethics and anticorruption policies or programs are simply not in place for the national programs or for the decentralized supply chains. Conversely, the Global Fund supply chain scored the top-ranking 5 for the administrative and logistics institutions, indicating that there are working ethics programs in place that adequately address potential fraud and corruption.

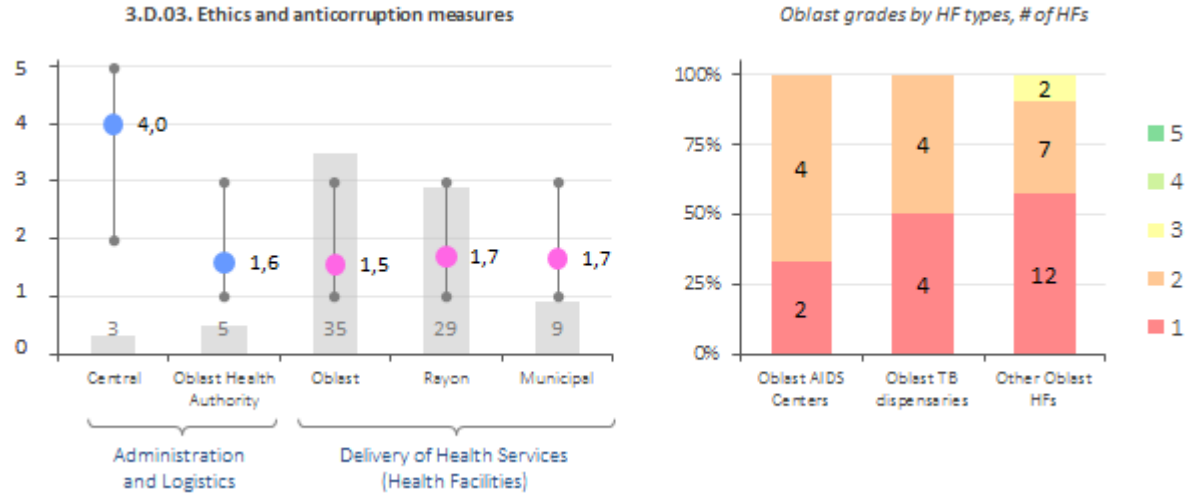


Figure 35. Ethics and anticorruption measures

Procurement Management Information System (MIS)

For this capability, the administrative and logistics institutions scored close to qualified level, with all supply chains using some type of software. For example, accounting software (e.g., 1C: Bookkeeping) is often used in administrative and logistics institutions. Spreadsheet-based tools are used in service delivery facilities, often in parallel with paper-based systems (figure 36).

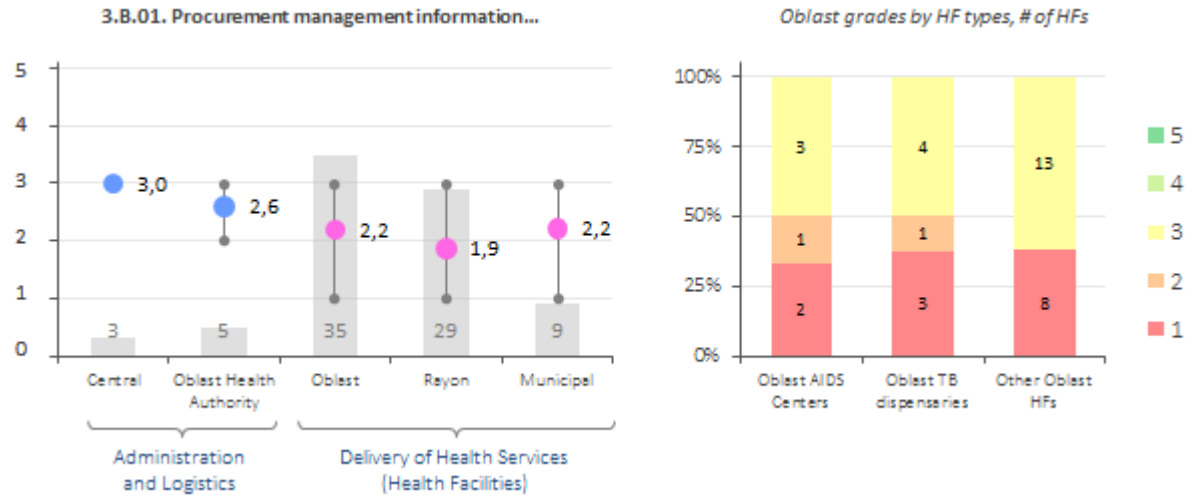


Figure 36. Procurement management information system

Product Quality Assurance

Grades for this capability are very low for all supply chains and at all levels, indicating that there are no quality control measures taken beyond those done by the manufacturers and/or suppliers (figure 37).

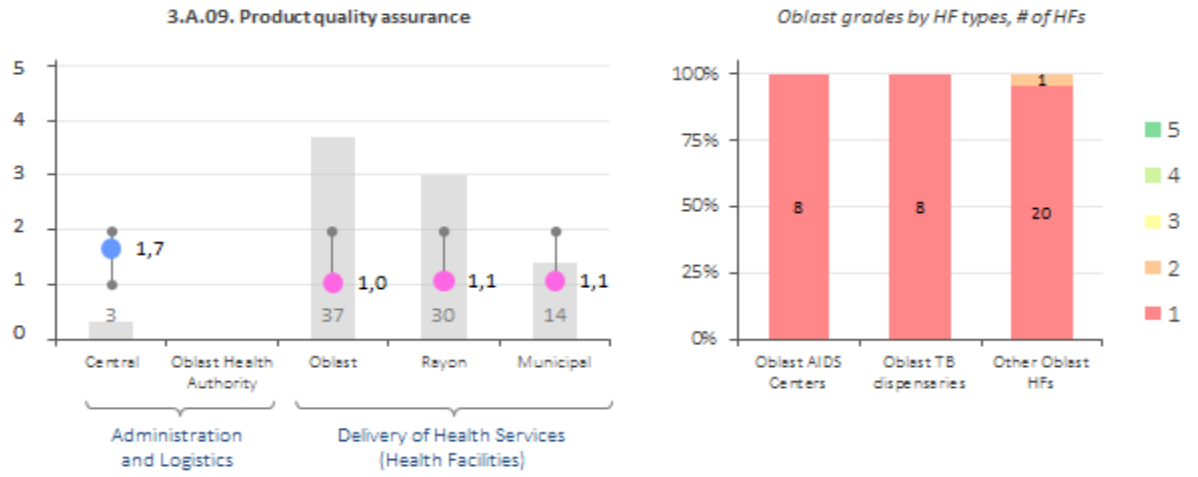


Figure 37. Product quality assurance

Forecasting and Supply Planning

Overall Summary

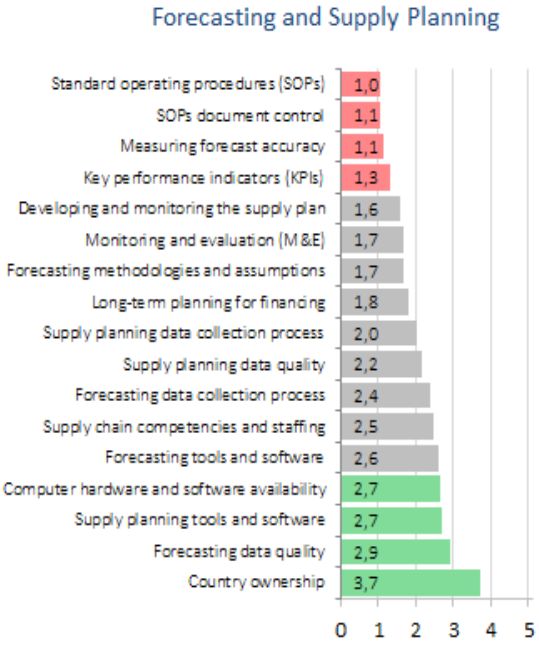


Figure 38. Forecasting and supply planning capabilities

Forecasting and supply planning are essential for ensuring product availability within the supply chain. Forecasts are used to determine supply, inform procurement decisions, and help plan the shipment and distribution of commodities to ultimately ensure consistent product availability within a supply chain while minimizing costs.

The capabilities shown at the top of figure 38 are the least mature. In general, all capabilities with a grade of less than 3 should be considered as those most in need of improvement. Some of these capabilities are discussed below.

KPI: Forecast Accuracy

Forecast accuracy is one of the key indicators that will allow an assessment of supply chain performance. This indicator measures how accurate forecasts of demand or forecasted consumption (FC) are compared with the actual consumption (AC) of the product:

$$\left(\frac{1 - (FC - AC)}{AC}\right) \times 100$$

To be calculated, the indicator requires two data points: forecasted consumption and actual consumption. Unfortunately, these data points were found to be unavailable, discredited, or both.

First, no real forecasts are made, with exceptions for HIV and TB medicines.

In general, identifying the quantity of medicines to be procured with public funds requires a multistage procedure with back and forth communications among the MOH, Ministry of Finance, local health authorities, and health facilities. In this process, numbers from health

facilities representing their medicine needs (aggregated several times on different levels) are adjusted to budget constraints and sizes of financial quotas per region. An additional complication is that those "needs" are rarely a result of a quantification based on morbidity statistics, consumption rates, and standard treatment guidelines (STGs). More likely, they are last year's numbers with some corrections that are usually not documented. Moreover, anticipating substantial cuts, health care facilities tend to increase their needs in advance so that after the "adjustment", they receive more than they would have without such increases. This quantity is much smaller than that needed to serve the clinical demand, which is partially covered with out-of-pocket purchases by those patients who have access and enough disposable income to do so.

Due to a lack of sufficient and efficient financing, the amounts of consumed medicines are always equal to what was procured minus what has expired (if any). Utilization of expired products requires additional scarce resources, while expiration of medicines may be interpreted by auditing authorities as a misuse of public funds. Therefore, health care facilities and local health administrations try to redistribute as many close-to-expiry products as they can to other facilities and regions where those commodities are needed. This redistribution process is typical only for products procured centrally. As a result, consumed volumes are very close or equal to procured volumes of medicines, which represents a small portion (<10%) of the overall clinical need.

These statements are backed up by evidence collected at the assessment sites, most of which are at the lowest levels of supply chain. Doctors and nurses at these levels have determined that because amounts of medicines delivered to a facility are so small, there is no practical reason to utilize any forecasting technique or to measure forecasting accuracy. It should be noted that Ukraine MOH Order # 829, dated September 29, 2013, contains methodological recommendations on forecasting of medicines procured using state or local funds. However, these recommendations only cover 18 diseases.

The maturity of capability forecasting methodologies and assumptions barely exceeds grade 2 (figure 39). Generally, only a single forecasting methodology (if any) is used inconsistently and is only partially applied with not fully documented methodology, data sources, and assumptions. This leads to results that can only be partially replicated from the information available.

The capability to measure forecasting accuracy is noticeably underdeveloped as well (grade 1), with a few AIDS and TB facilities being the exceptions. This low maturity level means that methods for measuring forecast accuracy are not defined, and forecast accuracy is not measured.

To summarize, not being able to find data to calculate this key performance indicator is a finding in itself. It highlights the need for significant improvement that the system can make in being more efficient in spending public money as well as using more and accurate data in decision making.

Global Fund and HIV/TB National Program Supply Chain

In three of the four capabilities in forecasting and supply planning highlighted below, CMM grades indicate that qualified or advanced practices are used by the administrative and logistics institutions and more than one grade above those of the service delivery facilities.

National Programs and Decentralized Supply Chains

Similarly to the procurement functional area, CMM grades in forecasting and supply planning of both the national programs and decentralized supply chains are lower than the corresponding Global Fund supply chain grades for the administrative and logistics institutions.

Findings

Forecasting Methodologies and Assumptions

CMM grades for this capability are lower than ideal. Exceptions are the Global Fund supply chain and national programs at the central level and at two oblast-level facilities that scored 3, indicating that a single methodology is used consistently, with data appropriately sourced and documented (figure 39). Grade 2 indicates that a single methodology is used that is based upon the available data, but assumptions in forecasting are not fully documented and the forecasting method is not used consistently.

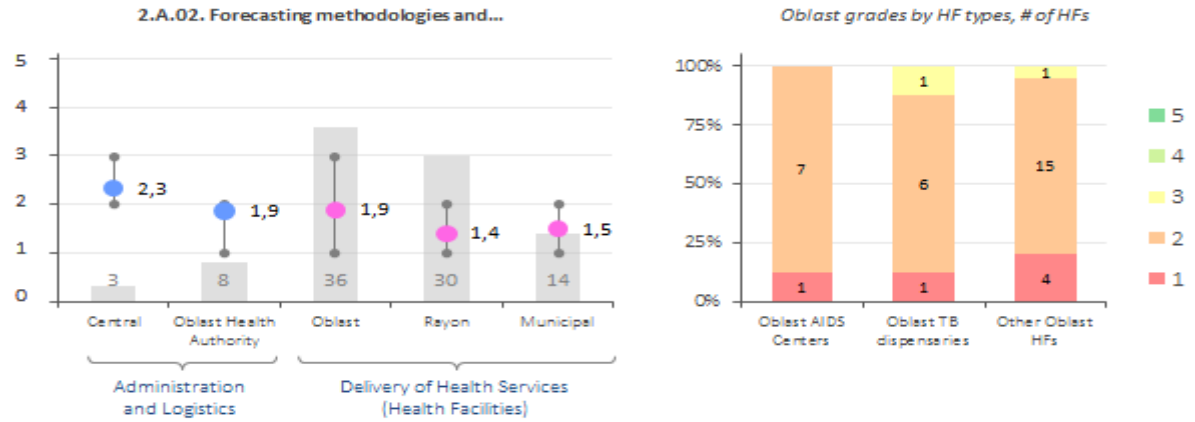


Figure 39. Forecasting methodologies and assumptions

CMM grades for this capability are all very low except for two outliers—HIV facilities that seem to be actively engaged in measuring the accuracy of their forecasts. However, these same facilities were graded 2 for forecasting methods and assumptions, which calls into question their ability to measure accuracy (figure 40). Overall, there is an indication that no attention is paid to the level of accuracy achieved during forecasting.

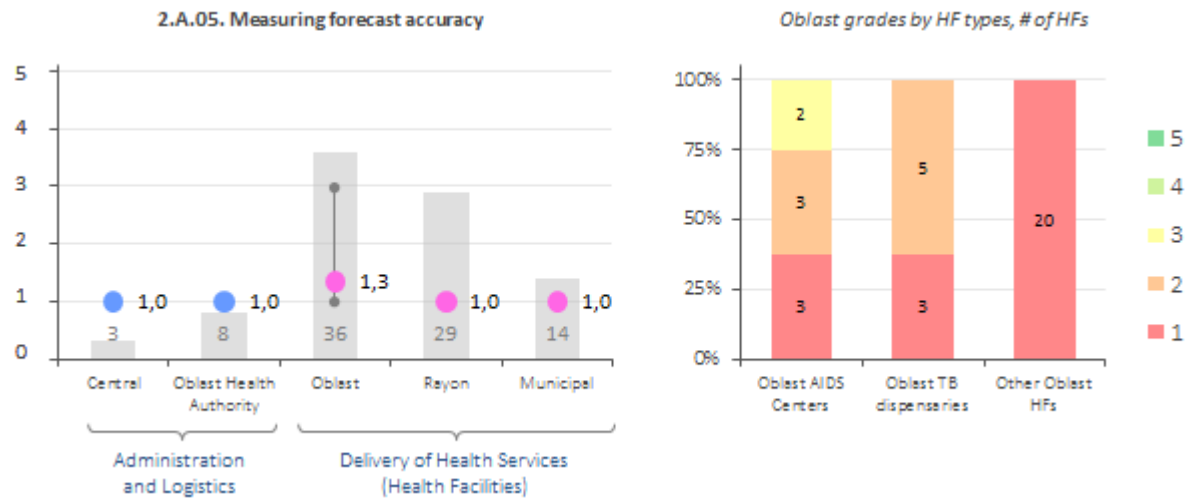


Figure 40. Measuring forecast accuracy

Supply Planning Data Collection Process

National and regional supply chains scored 2 on average, indicating that basic processes exist for obtaining forecasting, stock on hand, consumption, and shipment data. However, the data collection process is time consuming and is based on manual reporting. Grades of service delivery facilities within the national programs supply chain were generally below 2, indicating that formal processes are not defined or used and that data for supply planning are largely unavailable. The Global Fund supply chain and National HIV/TB program scored advanced CMM grades for administrative and logistics institutions. This indicates consistently used processes based on electronic data capture with some manual processes remaining in data entry. Grades of service delivery facilities within the Global Fund supply chain and National HIV/TB Program indicate a maturity grade in the range of 3, which is better than both national programs and decentralized supply chains (figure 41).

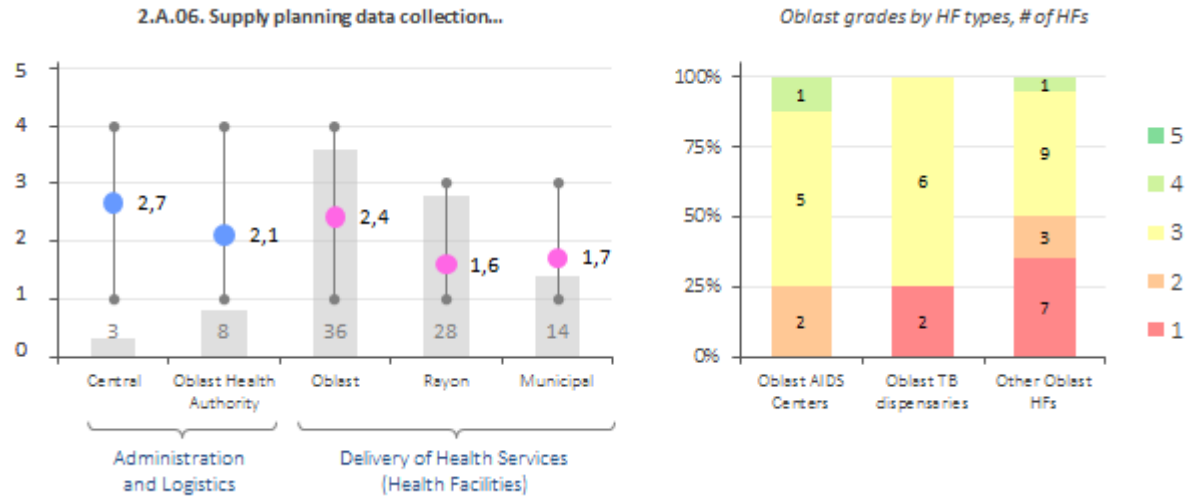


Figure 41. Supply planning data collection process

Developing and Monitoring the Supply Plan

CMM grades show that relevant forecast, consumption, and stock-on-hand data efficiently inform the supply plan at the central level for both the Global Fund supply chain and National HIV/TB program, earning a grade of 4. All other national programs, excluding National HIV/TB program and decentralized supply chains, only achieve a grade of 2, showing that the associated processes are not well institutionalized in those cases. There are definitely outliers (5 oblasts, 4 rayons) that achieve a maturity level of 3 or higher; however, the majority of health service facilities scored 2 or lower. This highlights the need to look further into why some facilities are able to achieve high maturity levels while others are not (figure 42).

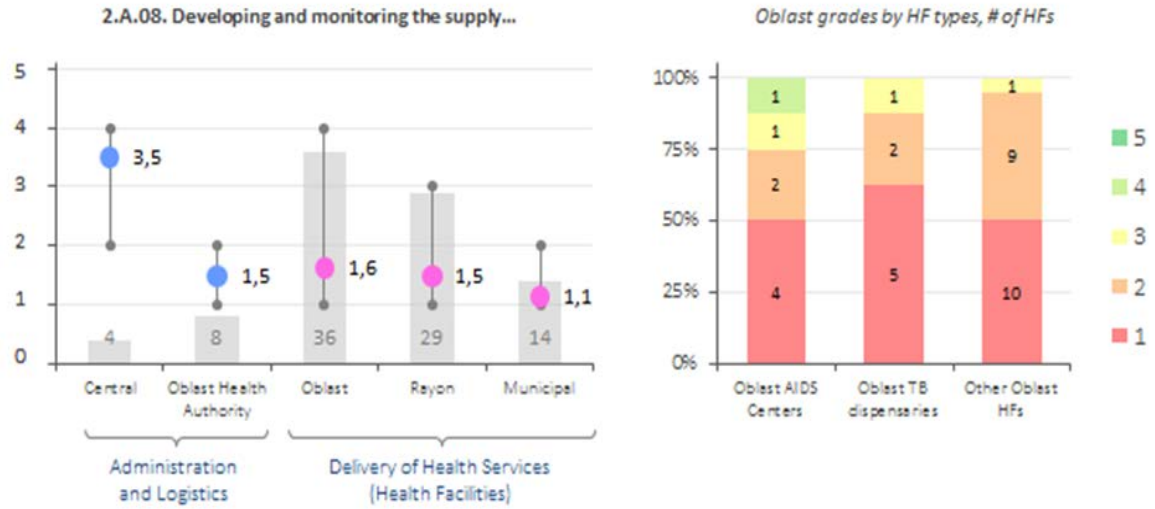


Figure 42. Developing and monitoring the supply plan in administration facilities

Warehousing and Inventory Management

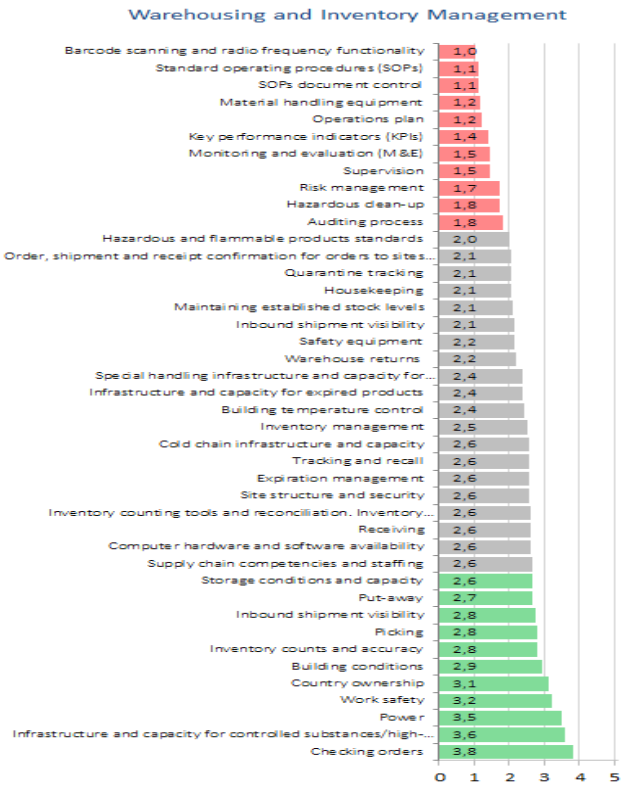


Figure 43. Warehousing and inventory management capabilities

Summary

Warehouses are planned spaces for the storage and handling of goods and material. The cost of inventory is compounded by the cost of the commodities plus the transportation, management, and holding costs. It is typically only second to human resources costs, and inventory management is used to minimize it while meeting the necessary service level to treat patients.

As mentioned previously, all capabilities with a grade of below 3 should be considered in greatest need of improvement. Figure 43 depicts the least developed capabilities (top quarter, in red) and most developed capabilities (lower quarter, in green). Some of these capabilities are further described below.

Capability maturity of all supply chains is generally higher in warehousing and inventory management than in the forecasting and supply planning and procurement functional areas.

KPI: Stock Accuracy

This indicator compares the stock quantity on record (stock card or inventory management software) with the quantity of a physical inventory count conducted during a data collection visit to a facility. Stock accuracy is measured as a percentage of facilities demonstrating a 100% match between stock records and physical inventory counts for all tracers at all facilities dispensing tracer commodities (figure 44).

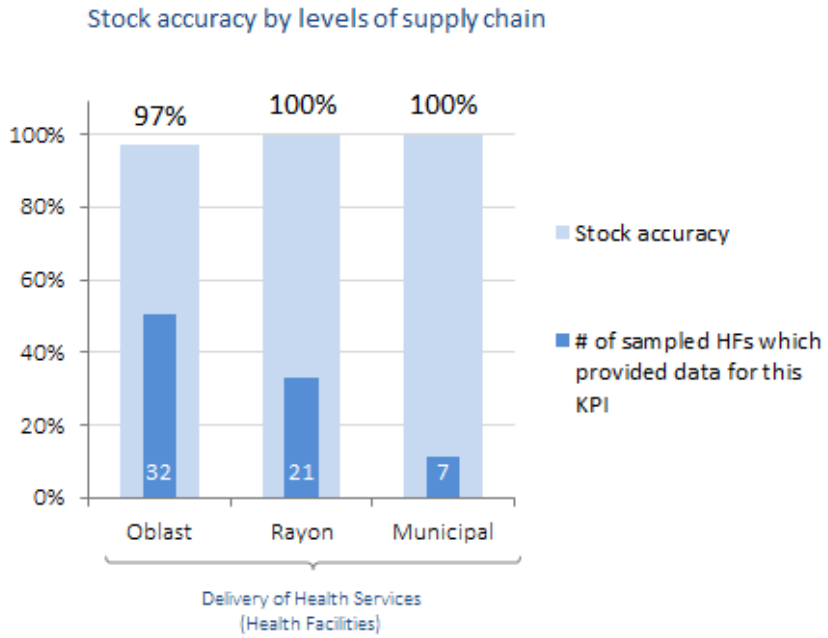


Figure 44. KPI: Stock accuracy by levels of supply chain

The calculated value of this KPI shows very high stock accuracy that is nearly identical on all levels.

KPI: Order Fill Rate

This indicator compares the quantity ordered to the quantity received. The order fill rate is measured as a percentage of facilities at which all tracers received is greater than or equal to what they ordered out of all facilities dispensing tracer commodities (figure 45).

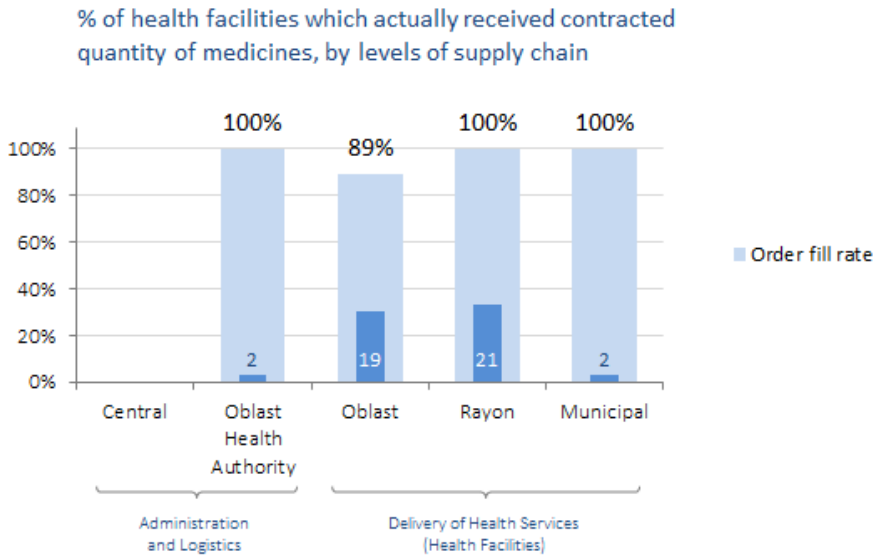


Figure 45. KPI: Order fill rate by levels of supply chain

Data show that order fill rates are relatively high at all levels.

Order fill rates are affected by different factors. For example, insufficiently developed information gathering and sharing will translate to inaccurate forecasts and even with full funding, placed orders will never be properly filled with the calculated stock on hand. Alternatively, any delays in delivery by the supplier will result in delivered quantities to service delivery facilities that are less than the ordered quantities.

Global Fund Supply Chain

- CMM grades indicate that administrative and logistics institutions of this supply chain have achieved maximum maturity in most warehousing and inventory management capabilities.

- Service delivery facilities lag behind the administrative and logistics institutions.

National Programs and Decentralized Supply Chains

- In five highlighted capabilities of the warehousing and inventory management functional area, national program supply chains score at least 3 for the administrative and logistics institutions, indicating qualified practices and processes, while most CMM grades for service delivery facilities are in the mid-to-high 2 range.

- Grades indicate exceptional maturity of administrative and logistics institutions for controlled substances and high-value commodities.

Findings

Inventory Management

For all supply chains, there is a little variation in grades of service delivery facilities, indicating that this capability ranges from using paper-based inventory systems to simple spreadsheet-based tools. Facilities at the oblast and rayon levels have been reported as having a warehouse management system (stand-alone desktop application) that is not integrated with an enterprise resource planning (ERP) system or other financial or accounting system.

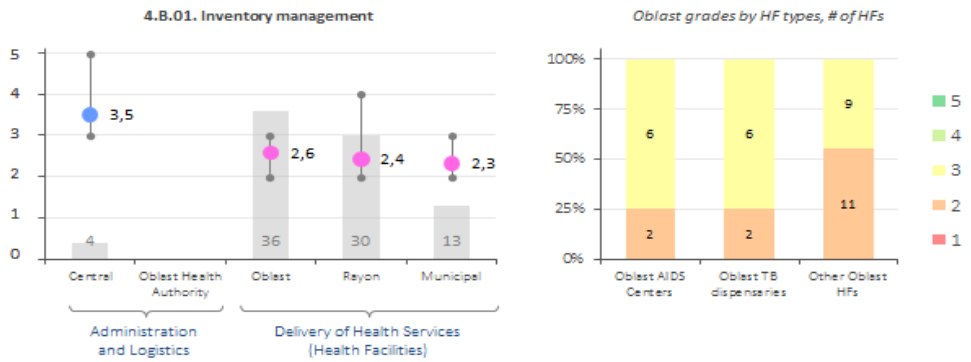


Figure 46. Inventory management

Administrative and logistics institutions of the national program supply chains scored 3, which indicates the use of an accounting system that cannot be considered a dedicated Warehousing Management System (WMS) with relevant functionalities, including receiving, tracking, and picking (figure 46). The Global Fund supply chain scored 5, indicating that its WMS is integrated with resource and financial planning systems.

Storage Conditions and Capacity

The Global Fund supply chain scored 5 at the central level, showing that its dedicated WMS is used to track warehouse utilization, and capacity is maintained at or below 85% to accommodate necessary additions. Other supply chains scored above 2 on average (except the municipal level), corresponding to well-organized storerooms with adequate capacity to store fluctuating inventory levels and reasonable accommodations for overflow supplies, which are stored on floor pallets (figure 47).

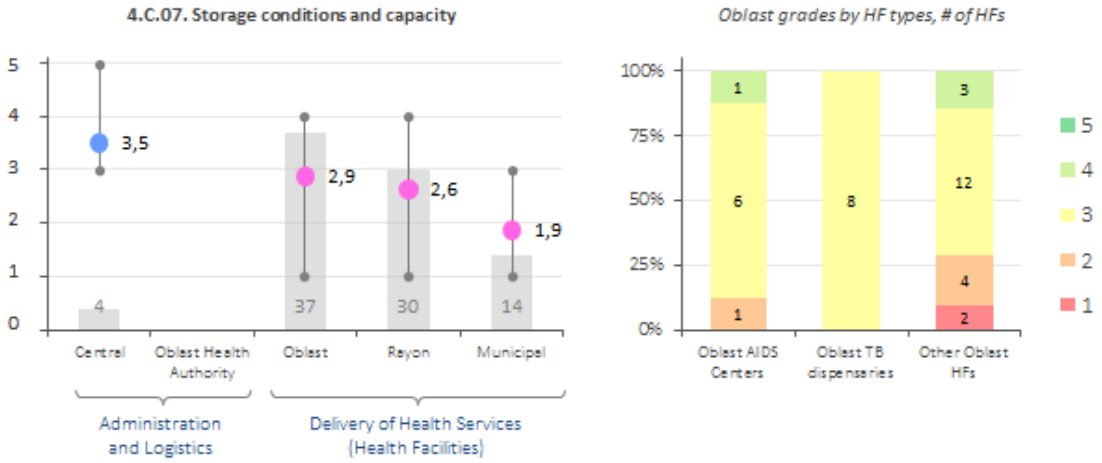


Figure 47. Storage conditions and capacity

Operations Plan

This is generally a badly developed capability, with only the Global Fund supply chain at the central level using an operations plan that includes general short- and mid-term performance goals, such as stock-out rates, stocked according to plan, and percent of expired products. Other supply chains have lower maturity on all levels, and most lack clear KPIs and mid-term goals (figure 48).

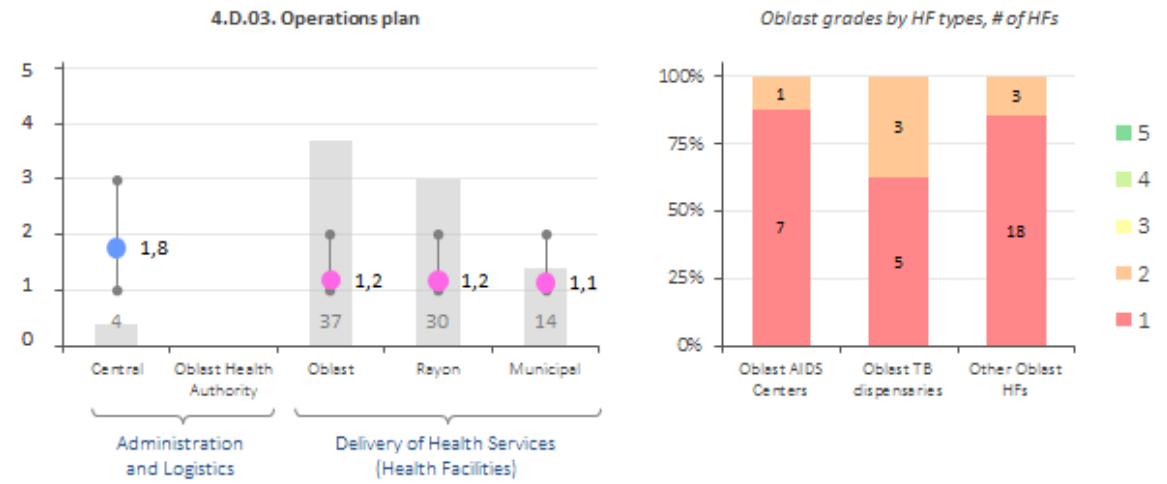


Figure 48. Operations plan

Risk Management

Risk management has been found to be another poorly developed capability, with only the Global Fund supply chain receiving a grade of 4 at the central level. At this grade, stakeholder input is incorporated to devise strategies and allocate resources to minimize, monitor, and control the probability and impact of risk. Formal processes are in place to reconsider priorities annually. Other levels show insufficient maturity, scoring grades of 2 or less, which indicates that there are no clear contingency plans and that supply chains are only reacting to try and resolve issues as they develop (figure 49).

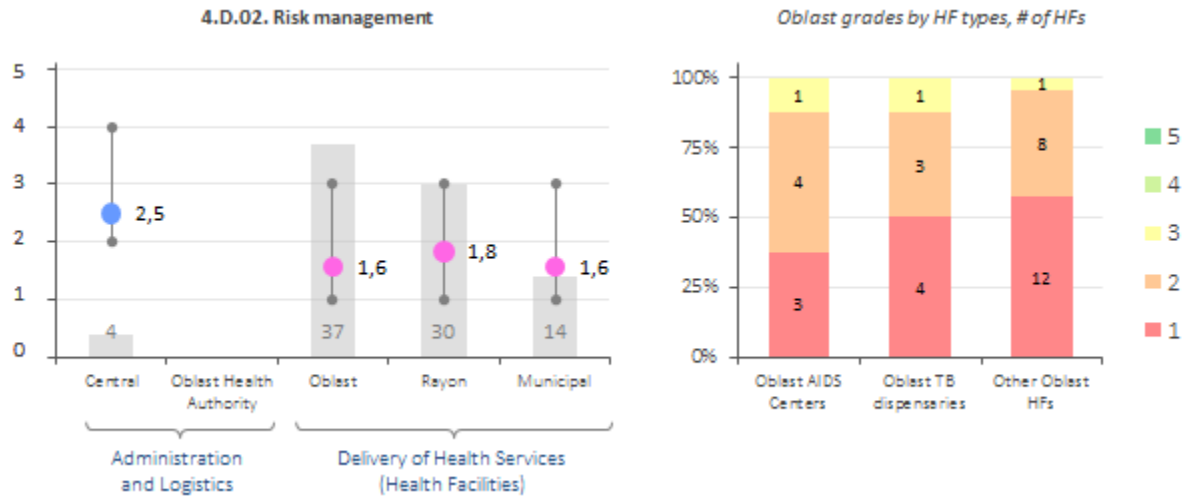


Figure 49. Risk management

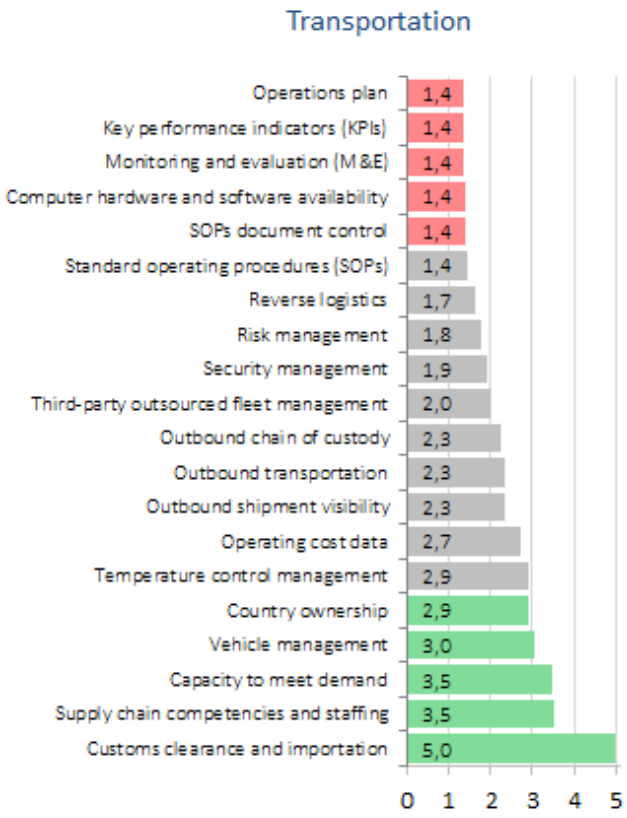


Figure 50. Transportation capabilities

Transportation

Overall Summary

Transporting health commodities in the most developed systems is reliable, efficient, safe, accountable, and timely.

This level of performance is not easy to achieve, and the operating mode will depend on the type, volume, frequency, and duration of transport services required as well as the available resources and infrastructures.[38]

All capabilities with a grade below 3 should be considered a priority for improvement. Figure 50 shows the least developed capabilities at the top (in red) and the most developed at the bottom (in green). Some of these capabilities are explored in more detail below.

KPI: On-time Delivery

This indicator measures the percentage of international nonproprietary names that arrived on or before the scheduled delivery date from central warehouses to oblast warehouses, as reported by waybills (figure 51).

[38] Transport Management. (MDS-3: Managing Access to Medicines and Health Technologies, Chapter 25) (2012; 18 pages)

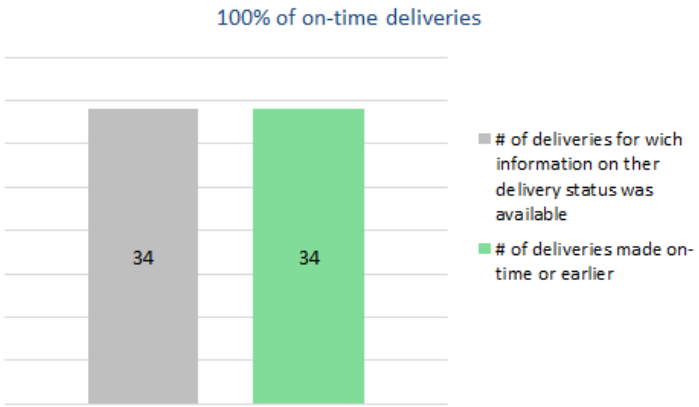


Figure 51. KPI: On-time delivery

The data for this indicator were gathered from state distribution companies and Global Fund Principal Recipients.

When making deliveries to the regions, state distribution companies act on the basis of agreements between those companies and the MOH and distribution plans approved by the MOH. According to these agreements, companies are given one month to distribute medicines to the regions. Upon arrival of goods at the central warehouse, inventory and data entry are executed. The readiness of regional recipients to accept goods (e.g., relevant staff availability, warehouse capacity, expiration dates) is checked manually. The waybills are then completed according to the distribution plan, and the goods are loaded into transport for further distribution. As a rule, distribution takes one to three weeks after the goods arrive at the warehouse. However, this period could be prolonged if the distribution plan is not signed, as it is not possible to start distribution without an approved distribution plan.

In case of deliveries made by state distribution companies, schedule compliance for the purpose of this KPI was calculated in the following way:

- Companies are given one month from the date when the relevant order of the MOH is signed.

- If the delivery to the central warehouse was made by the supplier after the relevant MOH order was signed, companies are given one month to deliver to regions, starting from the date the medicines arrived at the central warehouse.

In the case of Global Fund Principal Recipients, the algorithm of distribution is similar, with some exceptions. A distribution schedule is provided by the UCDC to Alliance and Network as part of the purchase request. However, the dates of distribution stipulated in the purchase request are flexible and can be changed, for example, when it is feasible to achieve cost efficiency by delivering several nomenclature positions (received by central warehouse within a short time frame) in one shipment. In this case, this should be agreed to by stakeholders before making such a shipment to meet regional needs in a timely manner.

Distribution plans for the Global Fund supply chain do not need to be approved by the MOH. The distribution starts when Alliance and Network receive a letter or email from the UCDC. Alliance and Network are then given 30 days to complete those deliveries. In 2015, there were urgent deliveries made by Alliance and Network to cover gaps in the supply of

medicines purchased by the National HIV program. These deliveries were not counted in this KPI because deliveries were made as quickly as possible.

The KPI values show overall good performance of central warehouses that delivered medicines to oblast warehouses on time. However, the shortcoming this KPI highlights is that data were not available to measure on-time delivery from the oblast level to end users. One reason for this lack of data is that there are no delivery schedules for lower-level health facilities, which must and pick up their own stock.

Global Fund Supply Chain

- The central level scored a 5 in the capabilities highlighted below, indicating that the Global Fund supply chain has high capability maturity in this functional area.

- The service delivery facilities scored up to 3, indicating partially satisfactory maturity.

National Programs and Decentralized Supply Chains

- The administrative and logistics institutions scored in the 3 to 4 range, indicating some advance maturity of this capability for the national program supply chain.

- In most transportation capabilities, the service delivery facilities demonstrated a wide range of grades, showing a lack of consistency in processes and practices.

Findings

To better understand findings related to transportation, it is important to know how this functional area is implemented at different levels of supply chain. Many facilities reported that they do not transport medicines, and only a handful reported transporting medicines to other facilities down the supply chain below the oblast level. This explains why fewer facilities provided responses to the CMM questionnaire on transportation than did for other functional areas.

Each circle in figure 52 represents a single facility.

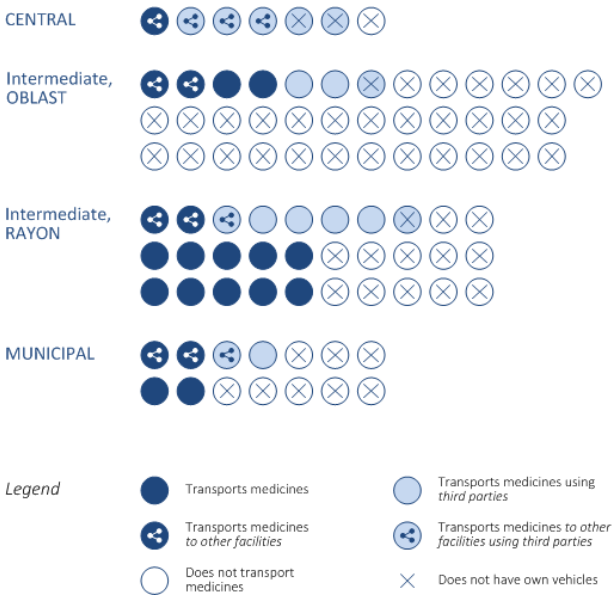


Figure 52. Transportation roles of health facilities at different levels of supply chain

Operating Cost Data

As with other capabilities, the administrative and logistics institutions have advanced maturity. Both the Global Fund and national program supply chains analyze cost data to make management decisions based on cost-benefit analyses. At service delivery facilities, the maturity of this capability is satisfactory when considering that these facilities are less complex and have a more limited decision-making scope (figure 53).

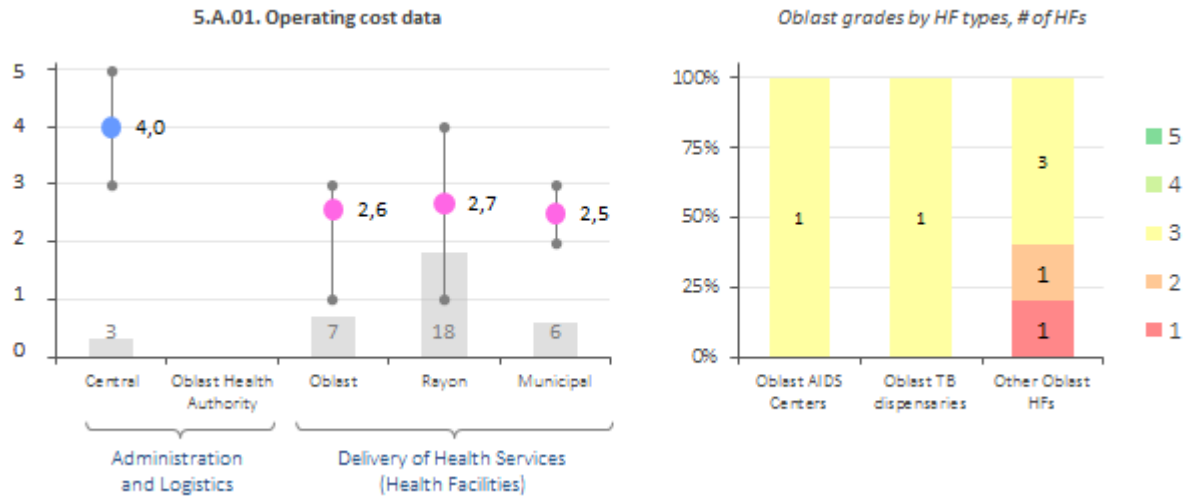


Figure 53. Operating cost data for administration facilities

Capacity to Meet Demand

Both the national programs and the Global Fund supply chain demonstrate advanced maturity for the administrative and logistics institutions, so demand for deliveries is consistently met. In the view of the managers, the service delivery facilities are properly staffed and rely on an adequate fleet. The Global Fund supply chain adds to those formal procedures to create contingency plans. Grades for this capability in the service delivery facilities are satisfactory, on average (figure 54).

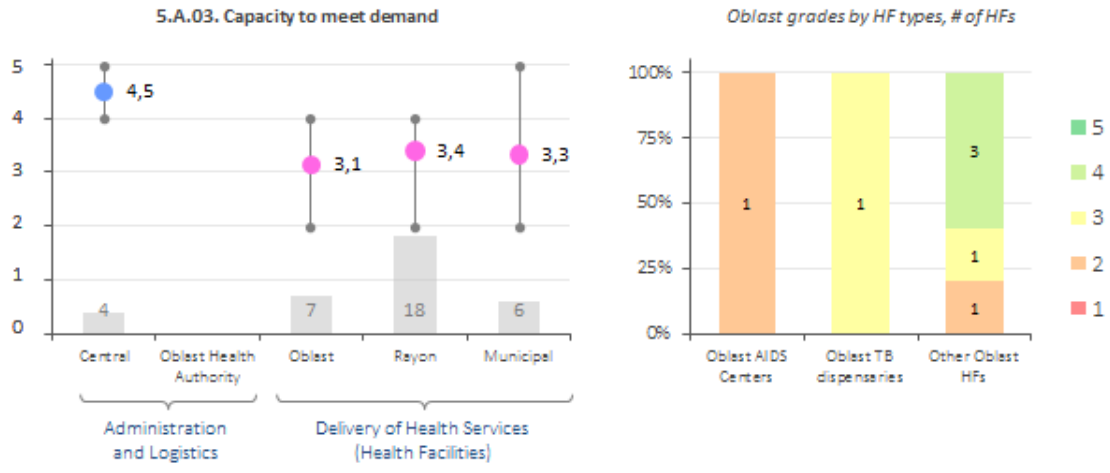


Figure 54. Capacity to meet demand

Outbound Chain of Custody

The outbound chain of custody is a good proxy for understanding the general security level of the supply chain. Following the trend seen in this assessment, the Global Fund administrative and logistics institutions operate at a higher level than others warehouses. They use fully automated processes that ensure that waybills are accessible and that information is shared with all relevant stakeholders, including account teams. By contrast, the national program supply chain uses manual processes for chain of custody, and details of stock loss are recorded but not used in administrative and logistics institutions to inform improvement measures, while these processes are followed ad hoc by service delivery facilities (figure 55).

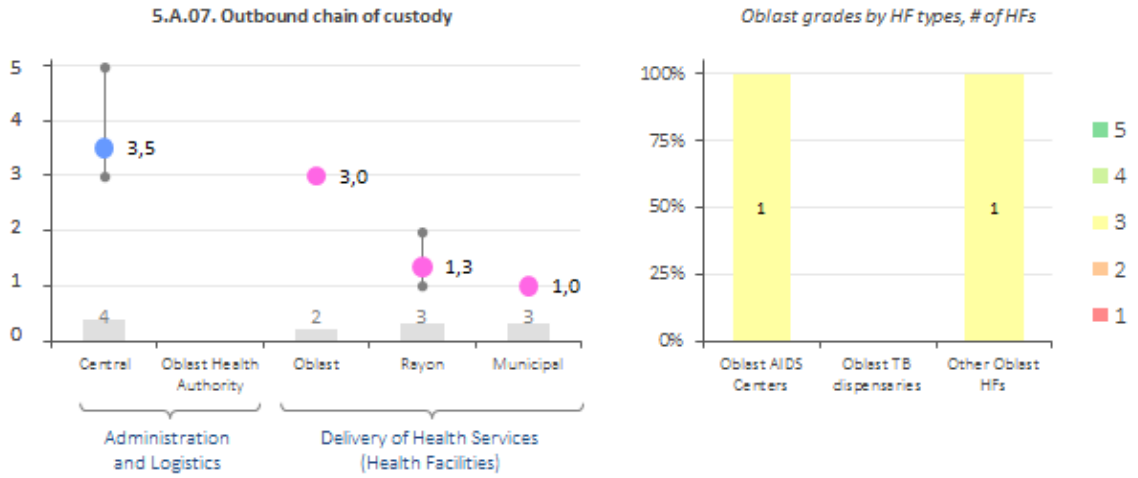


Figure 55. Outbound chain of custody

Cross-cutting Issues

There are certain capabilities that maturity can be better understood if reviewed across functional areas, as illustrated by the charts in this section. The two cross-cutting issues with the highest levels of maturity are supply chain competencies and staffing and computer hardware and software availability.

Human Resources

Supply Chain Competencies and Staffing

For human resources, it is important to highlight that while central level staff felt they had adequate staffing and training to carry out their supply chain functions, this drops dramatically at the intermediate and municipal levels. SIAPS did a study of the 2013–2014 public sector procurement that showed that 55% of all public-sector procurement by value happens at the regional or facility level (Konduri 2015). This means that the majority of medicines are actually flowing through these regional supply chains that are supported by staff who feel they have less capacity and fewer staff to carry out supply chain functions than at the central level (table 5).

Table 5. Supply Chain Competencies and Staffing

Supply chain competencies and staffing	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Forecasting and Supply Planning	4,7	2,4	2,4	2,5	2,1
Procurement	4,7	2,4	2,6	2,4	2,0
Warehousing and Inventory Management	4,5		2,5	2,7	2,2
Transportation	4,5		3,2	3,4	3,5

Computer Hardware and Software Availability

Looking at computer and software availability to carry out supply chain tasks, the highest level of maturity again appears to be at the central level and decreases as when moving to intermediate and municipal levels (table 6).

Table 6. Computer Hardware and Software Availability

Computer hardware and software availability	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Forecasting and Supply Planning	4,0	3,6	3,3	1,9	2,0
Procurement	3,7	2,4	2,7	1,7	2,4
Warehousing and Inventory Management	3,3		3,1	2,3	1,8
Transportation	3,0		1,3	1,2	1,0

Evidence-based Decision Making

The three remaining cross-cutting issues (monitoring and evaluation, key performance indicators, and SOPs) have the lowest maturity across all functional areas. The outliers are high maturity in the development and utilization of SOPs in the warehousing and inventory management and transportation functional areas at the central level (table 7). Two of the central-level facilities scored 5 in these areas, raising the overall average.

Table 7. Monitoring and Evaluation

Monitoring and evaluation (M&E)	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Forecasting and Supply Planning	2,3	1,9	1,8	1,5	1,4
Procurement	1,7	1,7	1,3	1,1	1,1
Warehousing and Inventory Management	2,8		1,5	1,4	1,1
Transportation	2,3		1,0	1,3	1,3

Information is vital to understanding issues that may arise in a supply chain as well as improving the efficiency and quality of services provided. Without information, money can be wasted on trying to improve a supply chain without achieving the desired outcomes. The lack of monitoring and evaluation systems and KPIs being monitored at all levels and across all functional areas is a real risk to the overall supply chain (table 8).

Table 8. Key Performance Indicators

Key performance indicators (KPIs)	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Forecasting and Supply Planning	1,7	1,3	1,5	1,2	1,0
Procurement	1,7	2,0	1,5	1,5	1,3
Warehousing and Inventory Management	2,0		1,4	1,4	1,1
Transportation	2,3		1,0	1,3	1,3

Documented SOPs that are reviewed and updated on a regular basis are seen as an international best practice in public health supply chains. It leads to clear and standardized understanding of processes and procedures to ensure their consistent implementation and replication across staff and facilities. A lack of SOPs can lead to confusion of roles and responsibilities as well as non-standardized and inefficient processes being implemented, which decreases the effectiveness of the supply chain (table 9).

Table 9. Standard Operating Procedures

Standard operating procedures (SOPs)	Central	Oblast Health Authority	Oblast	Rayon	Municipal
Forecasting and Supply Planning	1,0	1,0	1,1	1,0	1,1
Procurement	1,0	1,0	1,0	1,0	1,0
Warehousing and Inventory Management	3,0		1,0	1,0	1,1
Transportation	4,0		1,1	1,1	1,0

OPTIONS ANALYSIS

This section presents potential options for improving the overall system performance, looking at every capability based on the information revealed during this assessment.

Before going into details, a key point needs to be made. The hybrid of a partially centralized and partially decentralized supply chain model in Ukraine is not ideal, as both of these models are constricted in reaching their full potential. In a centralized model, economies of scale should translate to lower costs, while in a decentralized model, the agility should translate to health services that better match patient's needs.

Both models are equally capable of facilitating excellent health outcomes, but only when consistently implemented and properly managed. Well performing single-payer examples of a centralized health supply chain model can be found in England and New Zealand, and great examples of a single-payer decentralized health supply chain model are Australia (at levels above community health care) and Spain (Huffington Post) (Mossialos 2007).

For optimal performance, any health supply chain model requires effective mechanisms to ensure that proper alignment and coordination is maintained at the strategic and operational levels among all stakeholders. This is especially true for a decentralized model, but this has proven to be a major task. It is not surprising that a number of Scandinavian countries, as well as Poland and Slovakia, have moved back to the centralized supply chain model after experimenting with decentralization (Figueras 2007).

The challenges of managing such a hybrid system properly are compounded by the fact that both HIV and TB programs are partially supported by the Global Fund through a separate, vertical supply chain. This segregation allows for a higher performing supply chain for the commodities procured with Global Fund support, but complexity is added across the system, from the pharmacist managing stock at the service delivery facility through decision makers at the central level. The level of integration can be examined at both the structural and operational levels as follows (Rifat 2008):

- Structural integration seems effective in terms of governance, planning, and joint management under UCDC, but leaves some room for improvement in M&E capability.

- Operational integration is less developed, having been successful at the delivery of the service to the patient but not at other logistics functions.

The National Supply Chain Assessment investigates the maturity of different functional areas but also recognizes cross-cutting enablers, such as processes and tools, management information, infrastructure, oversight, and human resources.

A common trend has been identified in the low maturity of the strategic planning and oversight cross-cutting enabler across all functional areas. This is reflected in the sparse use of KPIs and, consequently, a very limited M&E process. This makes early detection of problems difficult and negates the possibility of tracking operating performance over time.

Furthermore, most operating procedures are informal and there is limited use of SOPs as a part of the processes and tools cross-cutting enabler. This results in inconsistent operations across the supply chain and no basis by which to measure staff performance.

Product Selection

The use of STGs allows for more accurate forecasting, cost containment, and more effective pharmacovigilance. In Ukraine, the data show that STGs only exist for some nosologies. In addition, priority health program strategies are not developed or are outdated, so there is no mechanism in place to ensure that the health care system is in line with the burden of disease.

A health technology assessment (HTA) is defined as "the application of organized knowledge and skills in the form of medicines, medical devices, vaccines, procedures and systems developed to solve a health problem and improve quality of life."[39] It is recommended to evaluate the adequacy of health interventions or technologies in Ukrainian context and will help in bridging this particular gap. The implementation of an HTA in Ukraine was ongoing under the MOH with technical assistance from SIAPS at the time of writing, and it is expected to have a significant positive impact in increasing the maturity of this functional area and overall health outcomes over time. While the HTA is one vital component in ensuring the availability of appropriate and cost effective treatment, it needs to work in conjunction with a national medicines policy that rationalizes and prioritizes the nosologies that the public sector will financially support.

Forecasting and Supply Planning

Forecasting encompasses all processes by which future health service needs can be predicted. These processes are fed by data, most notably funds available and historical consumption, with the latter being used as a proxy for future needs. Results are then adjusted for the current health priorities and expected costs and for available data on complementary services, demographics, morbidity, and epidemiological information. All data must be accurate to make the forecast as close as possible to the actual future consumption. Forecasting should not be considered a one-time exercise, but rather a system in which accuracy is monitored for continuous improvement in an iterative process that should be well documented and undertaken systematically.[40]

Currently, neither consumption nor shipment status data are available for forecasting or supply planning, seriously affecting the maturity of this functional area. A well-integrated, iterative process should be designed to gather information from all stakeholders, establish clear steps in the creation and adjustment of the forecast, and track its accuracy over time. This requires redesigning information systems so they are capable of gathering and sharing data in a more effective manner. Gathered data should be validated when possible, and data accuracy should be incorporated in the analysis. The supply planning must be based on forecast and also include periodic revisions to better adapt to changes in demand or supply. This is further complicated by multiple levels of procurement, meaning that multiple possible sources of data may be needed to obtain a complete picture.

[39] http://www.who.int/medical_devices/assessment/en/

[40] Forecasting in communicable diseases, World Health Organization, Regional Office for the Eastern Mediterranean, 1999.

Procurement

The basic requirements for public sector pharmaceutical procurement[41] include clear and explicit policies for selecting the most cost-effective medicines; pre-selecting potential suppliers; and effectively monitoring and managing information. Although the procurement function for the national programs has temporarily been handed over to UNDP, UNICEF, and Crown Agents, the results of this assessment are still useful for the redesign of the public procurement services because they highlight the weaknesses of the model preceding the handover.

In national programs and decentralized supply chains, the gathered data point at developed maturity related to the tender processes and contracting, but weak strategy and vendor management. Especially worrisome is the lack of transparency, reflected in the almost complete absence of ethics and anticorruption measures, to which inefficient procurement in the past can partially be attributed.[42]

None of supply chains conduct quality assurance in an effective manner, relying mostly on the quality control performed by vendors or suppliers. However, the maturity of the Global Fund supply chain in this functional area is remarkable. Well documented and implemented processes have proven to perform at a higher level while ensuring value that is in line with international benchmarks, partly as a result of initiatives such as the Price & Quality Reporting mechanism.[43]

As a final key consideration, procurement needs skilled and well trained staff for effective operations—and this is an even more challenging task for decentralized systems. Demand aggregating mechanisms, such as those possible when using framework contracting under Ukrainian laws and regulations, offer a potential solution to this problem as long as supportive information and communication channels are in place.

Two specific capabilities that can be improved are vendor prequalification and vendor performance management. Both indicate which suppliers provide quality-assured commodities at the best prices, consistently delivered on time and in good condition. Tracking this information over time can improve procurement decisions to ensure that funds are spent efficiently to provide adequate amounts of high-quality commodities that match the population's needs. As such, this information should be reviewed regularly in conjunction with the procurement strategy and plans.

In addition, there is no current legislative base to black list underperforming vendors. There is reluctance within the Ministry of Economic Development and Trade to institute such legislation, as it could be used as a mechanism to artificially minimize competition. However, strong and transparent vendor performance data could help strengthen the argument for such legislation and mitigate the impact that repeated underperforming vendors have on the availability of quality medicines for patients.

[41] Operational principles for good pharmaceutical procurement; Essential Drugs and Medicines Policy. Interagency Pharmaceutical Coordination Group. WHO/EDM/PAR/99.5
[42] Who makes money on epidemics of HIV/AIDS in Ukraine Anti-Corruption Action Centre, 2013. http://network.org.ua/upload/novosti/zvit_Who%20makes%20money_eng.pdf
[43] http://www.theglobalfund.org/en/pqr/

Warehousing and Inventory Management

This section covers both the infrastructures and processes designed and implemented to maintain a sufficient supply of medicines as they are needed (management sciences). The storage facilities must have enough capacity and be adequately designed to maintain medicines in good condition. From a systems perspective, the inventory management should use timely and accurate information so that actions can be taken to avoid both oversupply and stock-outs at every location. In the long run, this information can be used to redesign the logistic network to rationalize medicine storage points.

Volumetric capacity seems sufficient for normal operating conditions but is unprepared to face uncertainty in supply and demand. This may partly be the result of a system that has been chronically underfunded, so that there has never been the necessity or even incentive for proper capacity allocation. The warehousing facilities employed at the central level by the national program supply chain are not entirely adequate, but their grades are higher than expected because they are mainly used as cross-docking centers, which minimizes their actual storage time. The Global Fund supply chain has highlighted the advantage of maintaining some stock at the central level to mitigate unexpected changes in demand in different regions throughout the year, as well as minimizing the burden of maintaining large storage capacity at each health care facility to receive annual shipments.

In most facilities, stock recording is done using paper-based systems or simple inventory tracking software instead of a dedicated logistics management information system. The lack of accurate data impacts performance, as suggested by underdeveloped monitoring and evaluation practices, which consequently translates into low chances for making evidence-based supply chain decisions.

This functional area comprises a large set of operations (e.g., receiving, preparing shipments) and a systematic lack of operating guidelines or SOPs have been found in all supply chains and at all levels. The one exception is the administrative and logistics institutions of the Global Fund supply chain, due in part to their decision to outsource warehousing (and distribution) functions to private sector providers. For all others, it would be necessary to develop and implement SOPs (after facilitating appropriate training) for warehousing and inventory management based on best practices, including:

- SOPs should be developed for receiving, picking, packing, and warehouse returns as well as general housekeeping.
- There should be electronic data collection and coordination for shipment visibility and receiving.
- The preceding information should be regularly reviewed by warehouse managers and reported up the supply chain to the central level to inform supply planning decisions that accurately reflect needs throughout the supply chain. This will require improving computer access and decrease the reliance on paper-based records.
- Warehouse safety should be improved with functioning risk management plans to deal with hazards.
- Include signs for designated areas like expired products disposal, hazardous waste disposal instructions, and personal safety equipment locations and directions for use.

Transportation

This section focuses on the capabilities of the supply chains related to maintaining the quality and integrity of commodities throughout the distribution system, with the objective of consistently delivering quality medicines at the lowest possible cost. Similar to the previous section, there are infrastructure and procedural components that need to be in place to achieve these objectives.[44]

Results of the assessment are mixed. As in other functional areas, the Global Fund supply chain obtained mostly high grades for administrative and logistics institutions and satisfactory ones for service delivery facilities. This is to be expected, given that those facilities only require receiving shipments and sharing information about their consumption and stock status. The exceptions to this are weaker than expected operations and risk management capabilities.

Similarly, the national program supply chain is at a lower but still acceptable level of maturity. However, in line with the explanation provided for the previous functional area, the grades are higher than expected. This can be justified by the fact that under normal operations, the national programs receive all shipments centrally and distribute them once a year, minimizing actual operational requirements. This system has proven to be sufficiently successful given the chronic funding problems affecting the national programs, but it will be insufficient in a fully funded scenario.

As with other functional areas, one of the most significant gaps can be bridged by implementing an electronic data collection and coordination system for tracking stock levels and pipelines and rescheduling transportation as needed. The inclusion of shipping notifications and proof of delivery in electronic records, as well as establishing other relevant KPIs, would also facilitate better monitoring and accountability, enabling users to track performance over time and facilitate a continuous improvement process.

Once again, SOPs could be developed for all transportation activities, including inbound and outbound shipping, and data capture for visibility of stock and commodities.

Finally, a risk assessment plan should be developed and periodically updated to mitigate risks and help reduce the cost associated with their occurrence. Staff should be trained on risk management plans so that in the event that a hazard occurs, the plan can be enacted quickly and efficiently.

[44] http://www.who.int/medicines/areas/access/supply/en/index5.html

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ANNEX A. KPI DEFINITIONS AND CALCULATION

Stock-out rates	
Definition	This indicator measures whether facilities experienced a stock-out of one or more tracer commodities for at least one day at any point during the reporting period being assessed.
Formula	$\left(\frac{Number\ of\ facilities\ experiencing\ a\ stockout\ of\ one\ or\ more\ tracer\ commodities\ for\ at\ least\ one\ day}{Total\ number\ of\ facilities\ dispensing\ tracer\ commodities}\right) \times 100$
Required data	• Stock-out occurrence (yes/no) for each month in the identified reporting period. • Number of days for a stock-out.
Potential data sources	• Day of visit: Physical inspection/stock count. • Historical: inventory book, inventory journal.
Where to implement	• All facilities at intermediate and municipal levels.

Percentage of international reference price paid	
Definition	This indicator measures the percentage of the international reference prices paid for each product line procured.
Formula	$\left(\frac{Average\ price\ paid\ for\ a\ product}{International\ reference\ price\ of\ the\ same\ product}\right) \times 100$
Required data	• Unit price paid. • International reference prices (Global Price Reporting Mechanism for antiretrovirals and Management Sciences for Health (MSH) International Drug Price Indicator Guide).
Potential data sources	Price paid for procurements. • Historical data: vendor contracts, waybill. • Secondary data: procurement unit tracking records (summary tables in Word and Excel). International reference price paid. • MSH International Drug Price Indicator Guide.
Where to implement	• All facilities at the central, intermediate, and municipal levels.

Stock accuracy	
Definition	This indicator compares the stock quantity on a stock card and/or in an inventory management software with the quantity of a physical inventory conducted during a site visit.
Formula	$\left(\frac{Number\ of\ facilities\ demonstrating\ 100\%\ match\ between\ stock\ record\ and\ physical\ inventory\ count\ for\ all\ tracers}{Total\ number\ of\ facilities\ dispensing\ tracer\ commodities}\right) \times 100$
Required data	• Quantity according to inventory documents. • Quantity counted during physical inventory.
Potential data sources	Quantity according to inventory documents. • Day of visit: inventory book, inventory journal. Quantity counted during physical inventory. • Day of visit: physical inventory.
Where to implement	• All facilities at the intermediate and municipal levels.

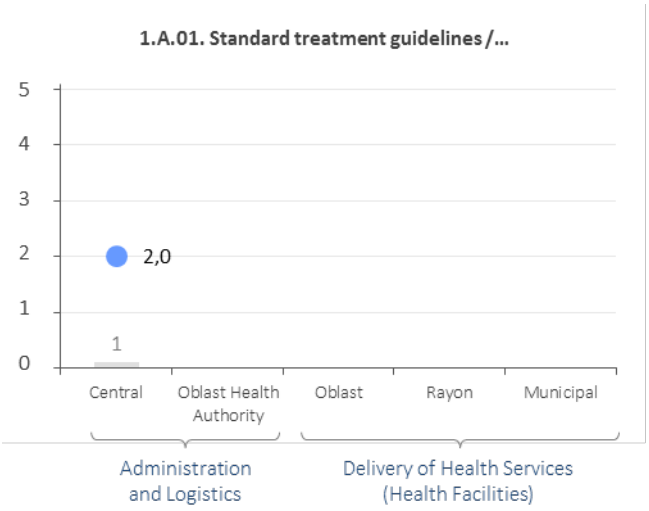
Order fill rate	
Definition	This indicator compares the quantity ordered to the quantity received.
Formula	$\left(\frac{Number\ of\ facilities\ at\ which\ all\ tracers\ received\ was\ greater\ than\ or\ equal\ to\ what\ was\ ordered}{Total\ number\ of\ facilities\ dispensing\ tracer\ commodities}\right) \times 100$
Required data	• Quantity ordered. • Quantity received.
Potential data sources	Quantity ordered: • Historical data: contract, annex to the contract, specification. Quantity received: • Historical data: waybill.
Where to implement	• All facilities at intermediate and municipal levels.

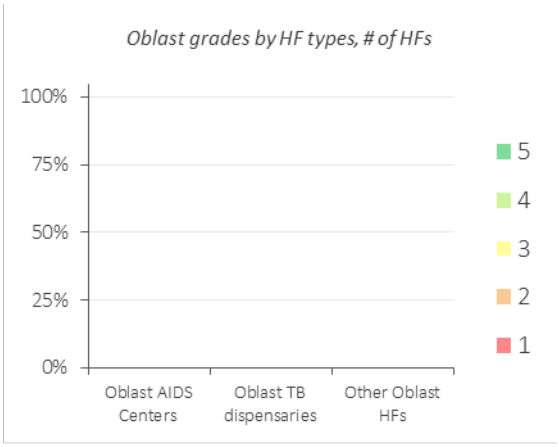
On-time delivery	
Definition	This indicator measures the percentage of shipments that arrive on or before the scheduled delivery date.
Formula	$\left(\frac{Number\ of\ facilities\ at\ which\ all\ tracers\ were\ received\ early\ or\ on\ time\ as\ per\ distribution\ plan}{Total\ number\ of\ facilities\ dispensing\ tracer\ commodities}\right) \times 100$
Required data	• Scheduled delivery date. • Actual delivery date.
Potential data sources	Scheduled delivery date. • Distribution plan, letter. Actual delivery date. • Waybill.
Where to implement	• All facilities at the central, intermediate, and municipal levels.

ANNEX B. COMPLETE SET OF CMM GRAPHS

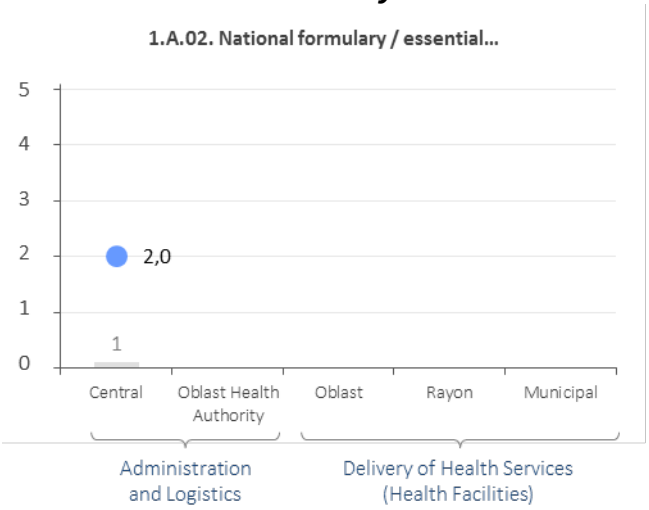
FA-1. Product Selection

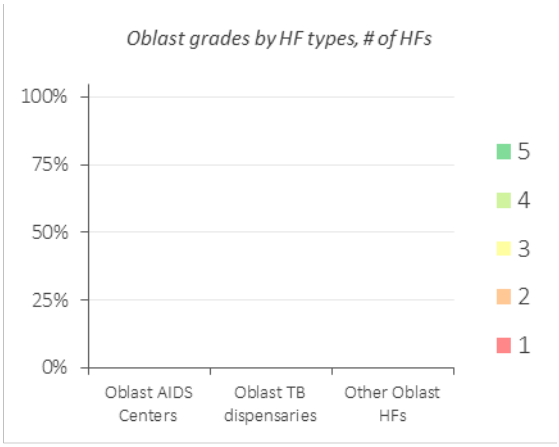
1.A.01. Standard Treatment Guidelines/Clinical Guidelines



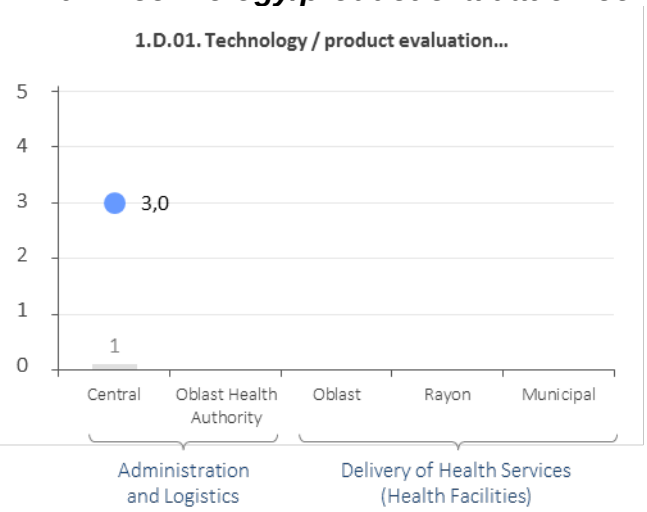


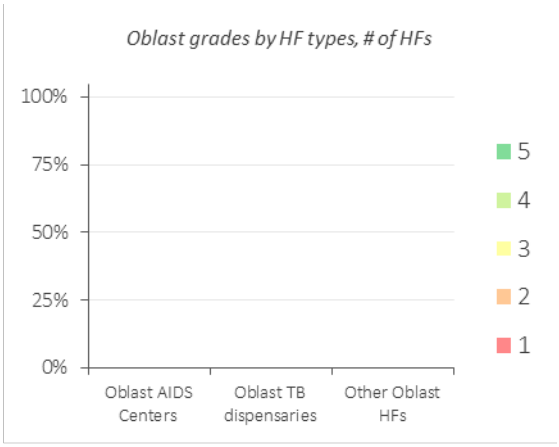
1.A.02. National formulary/essential medicines list



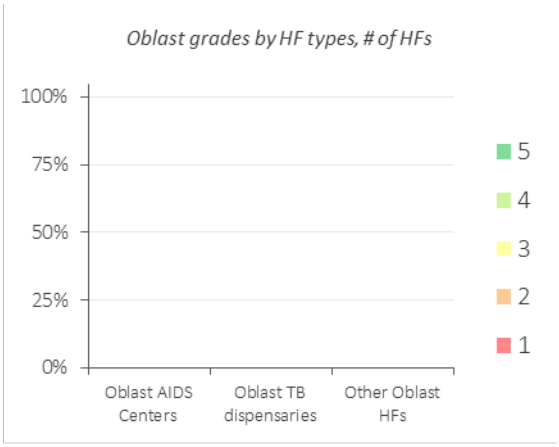


1.D.01. Technology/product evaluation committee



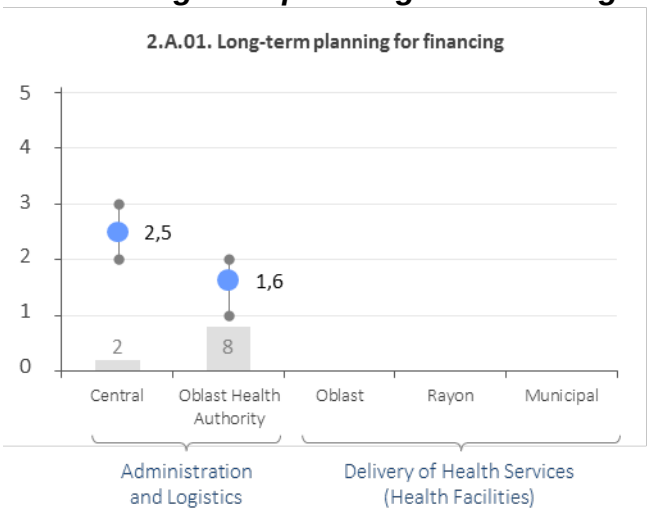


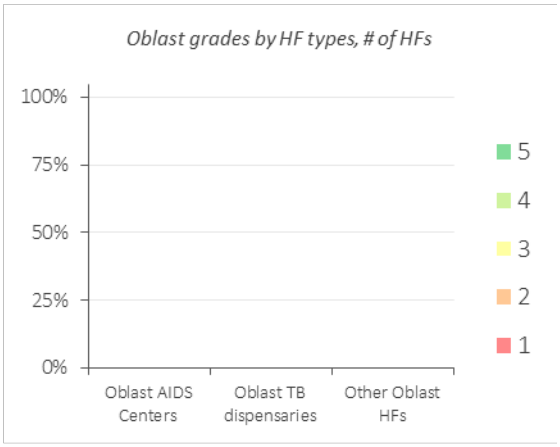
1.D.02. Priority health program strategies



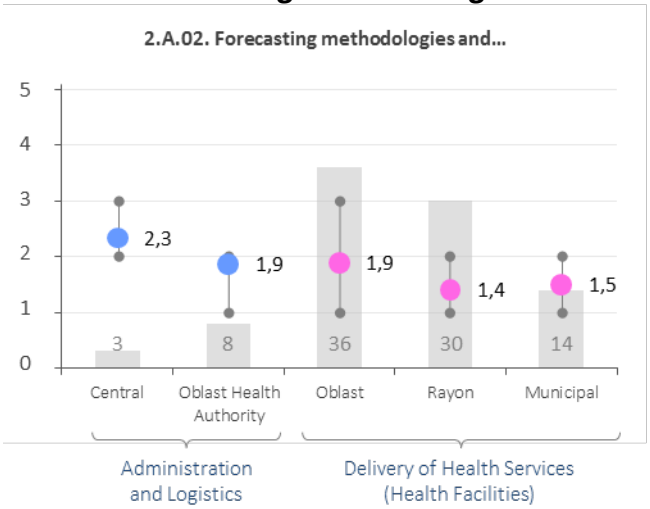
FA-2. Forecasting and supply planning

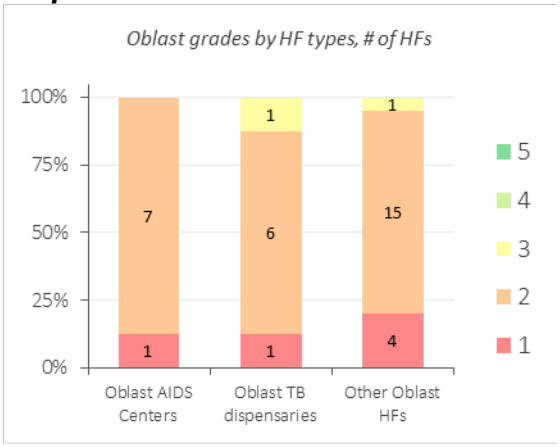
2.A.01. Long-term planning for financing



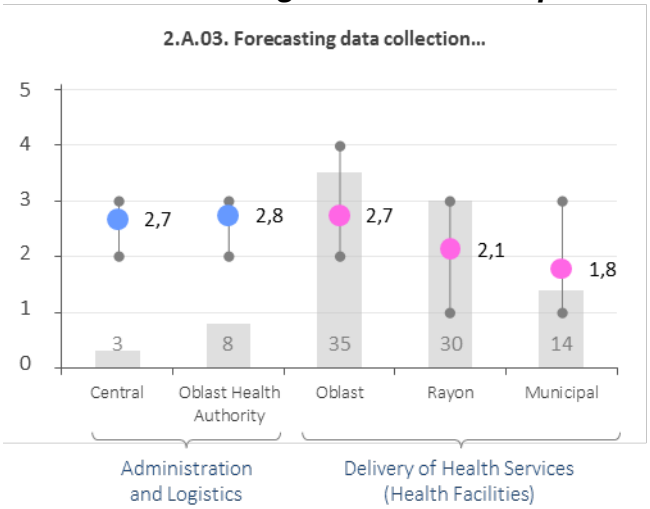


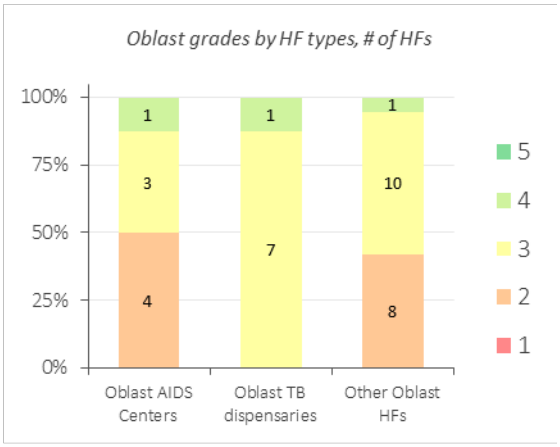
2.A.02. Forecasting methodologies and assumptions



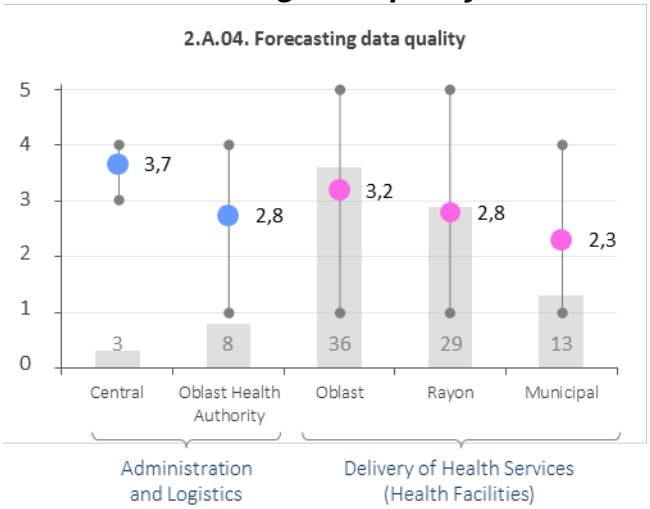


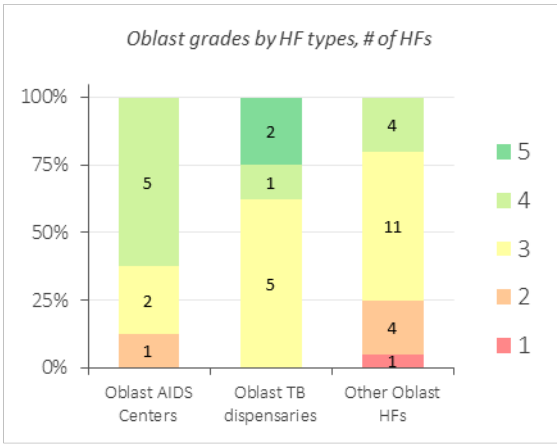
2.A.03. Forecasting data collection process



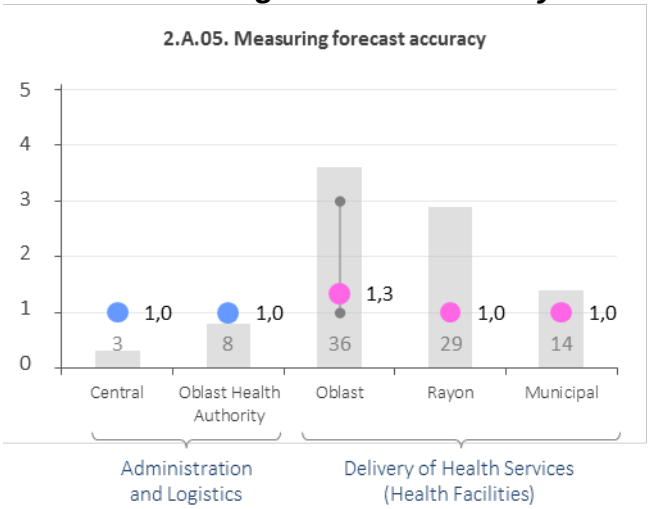


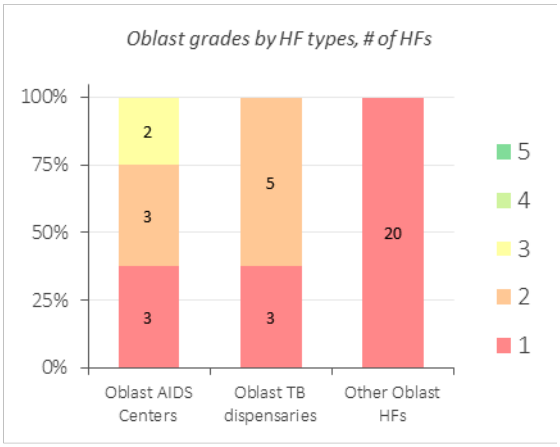
2.A.04. Forecasting data quality



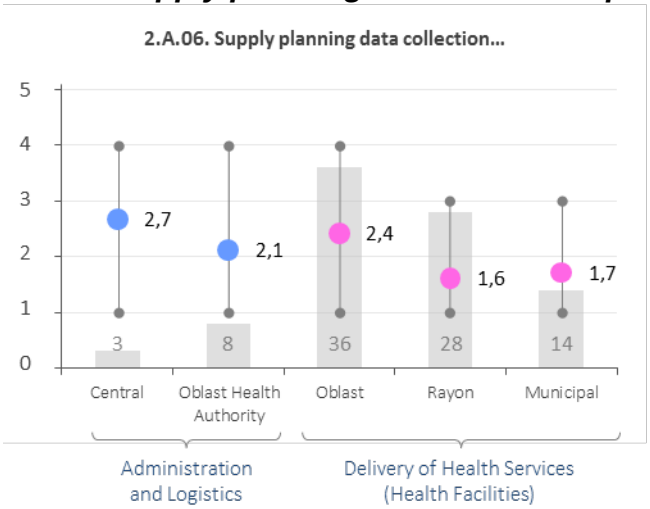


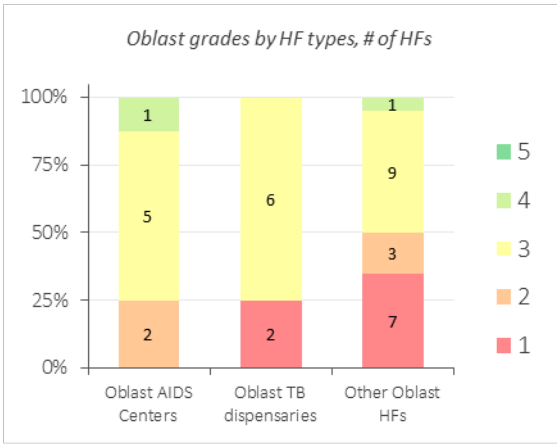
2.A.05. Measuring forecast accuracy



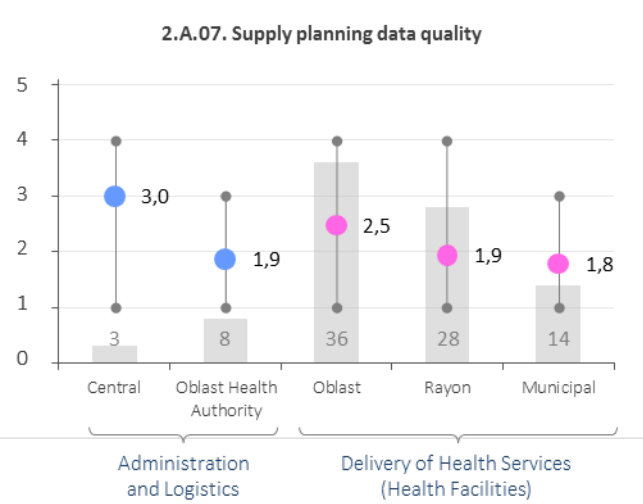


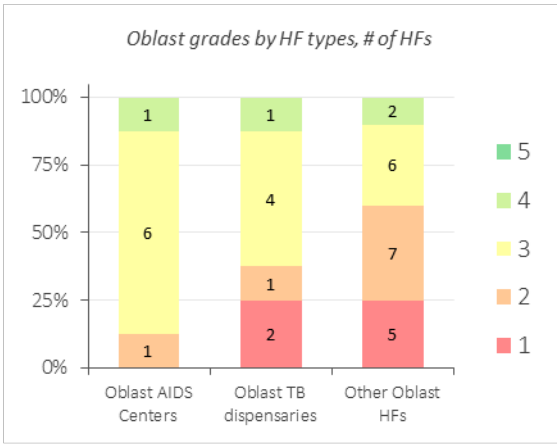
2.A.06. Supply planning data collection process



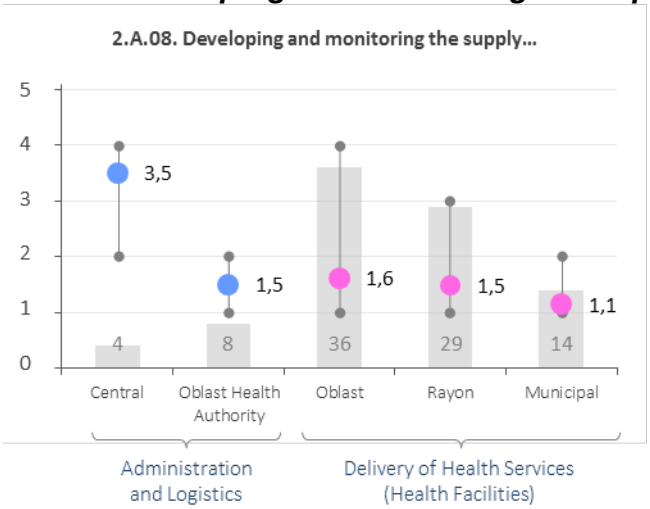


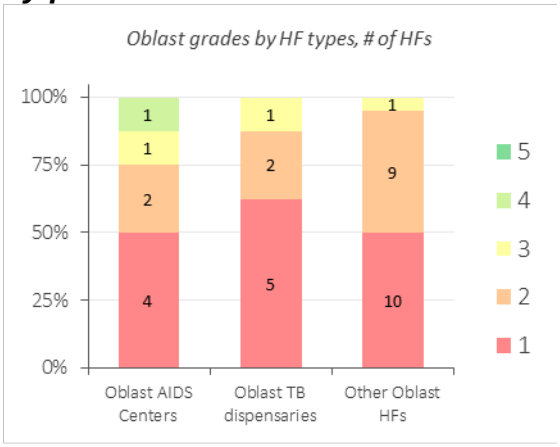
2.A.07. Supply planning data quality



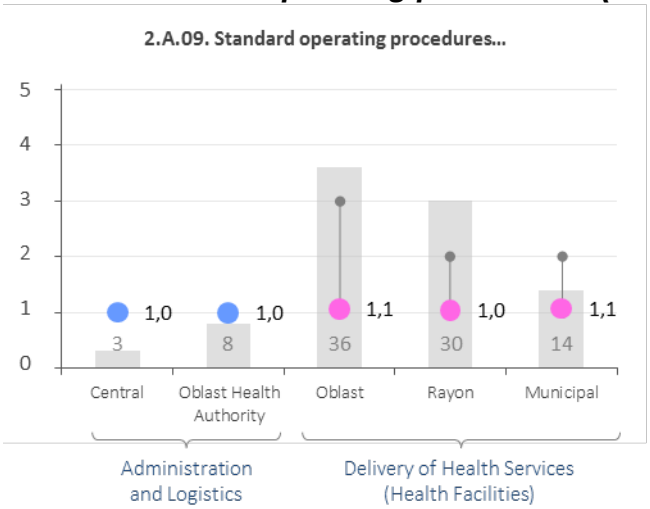


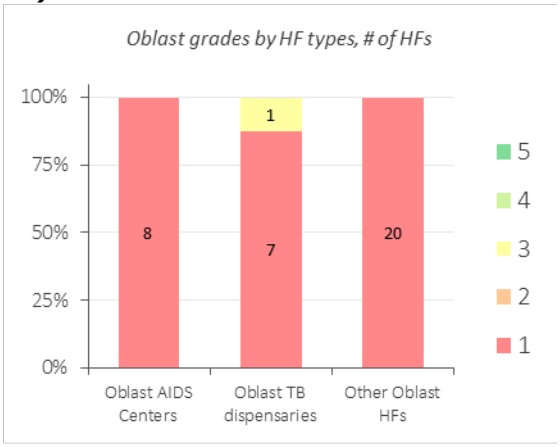
2.A.08. Developing and monitoring the supply plan



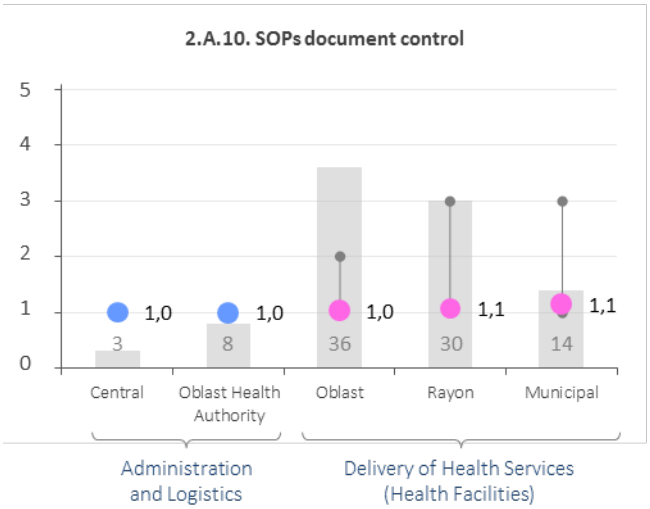


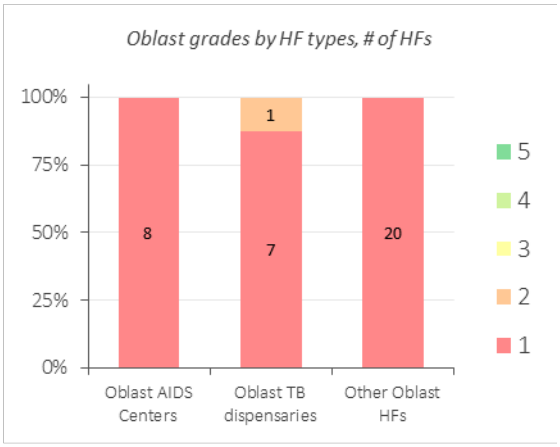
2.A.09. Standard operating procedures (SOPs)



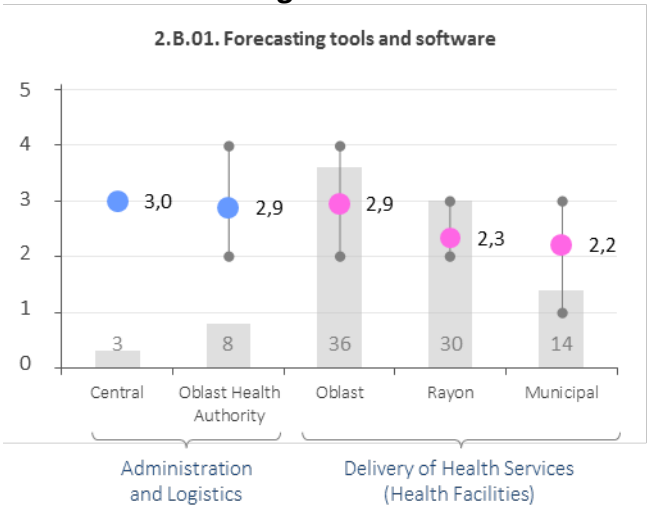


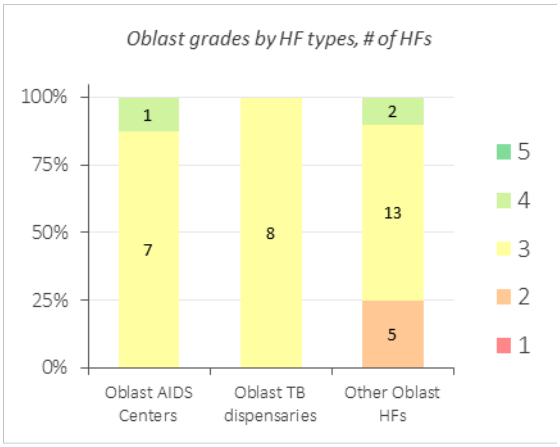
2.A.10. SOP document control



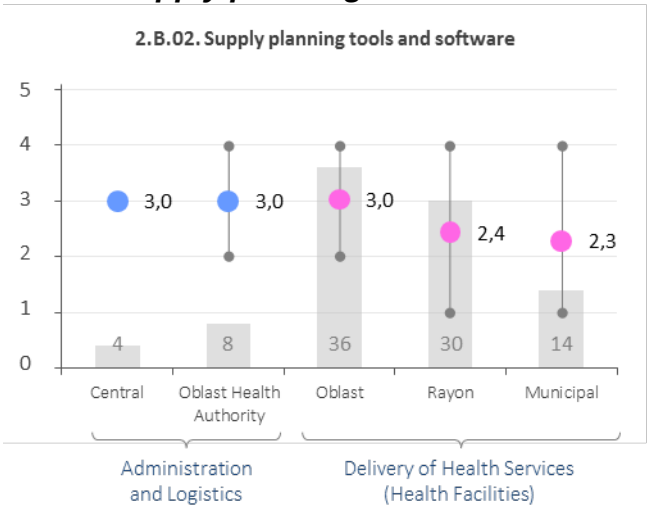


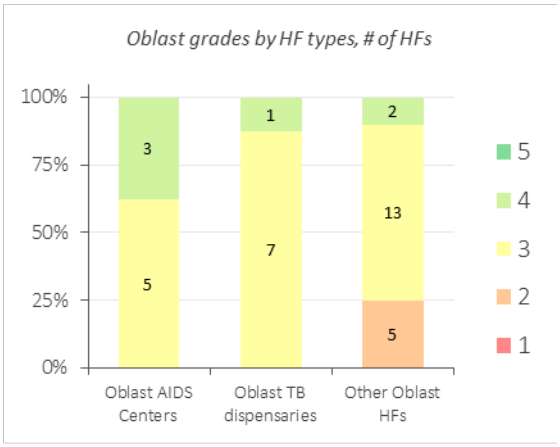
2.B.01. Forecasting tools and software



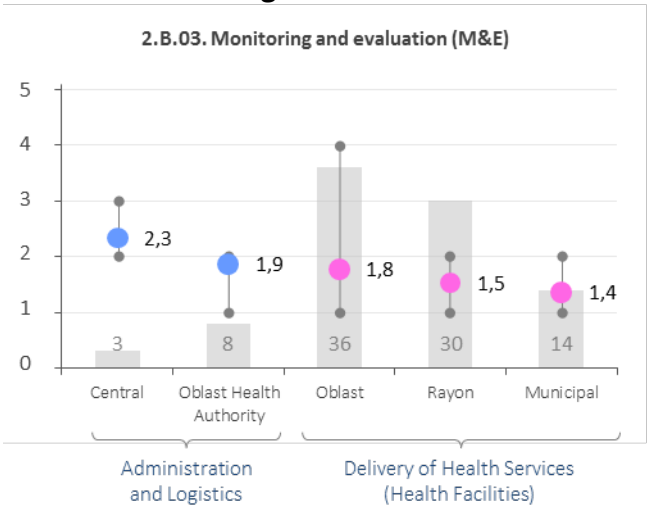


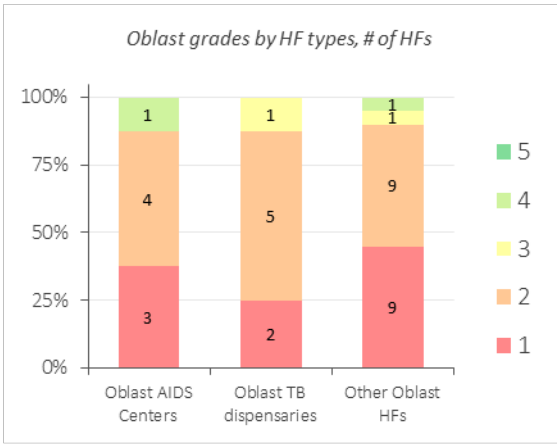
2.B.02. Supply planning tools and software



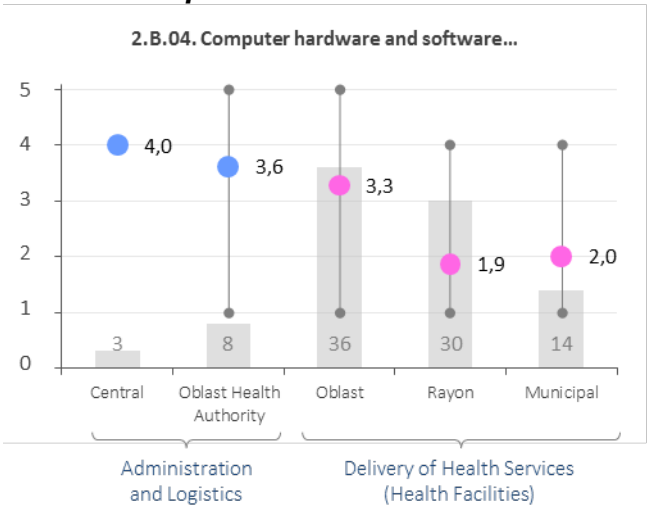


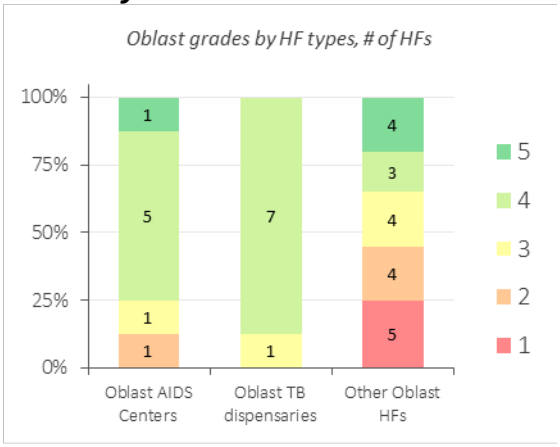
2.B.03. Monitoring and evaluation



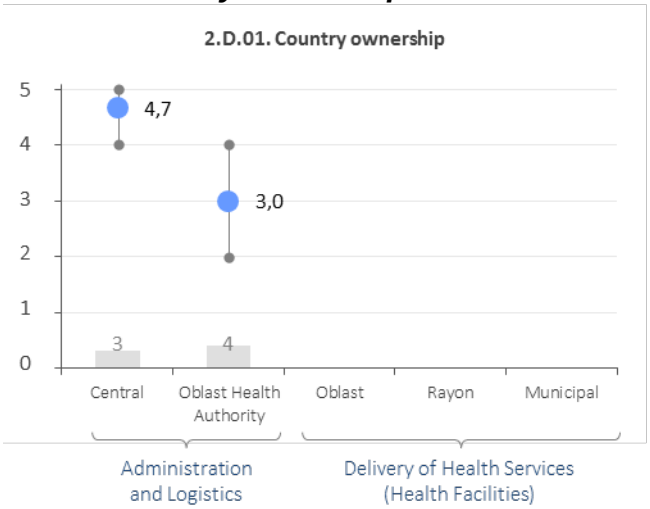


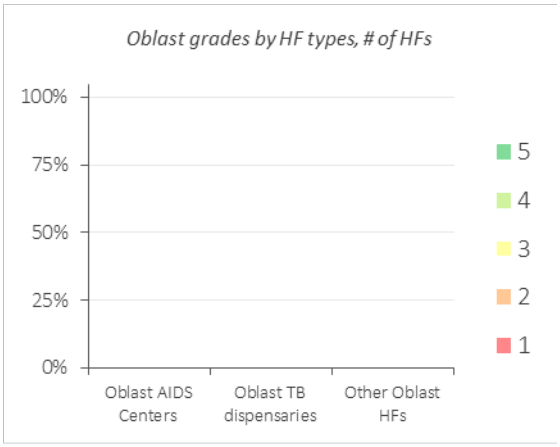
2.B.04. Computer hardware and software availability



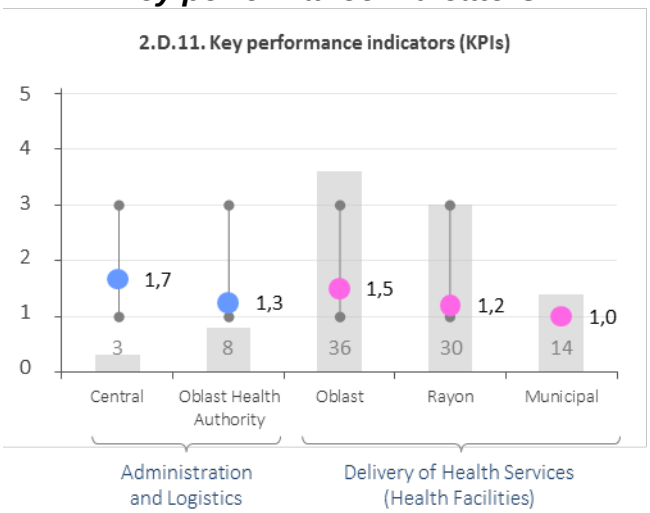


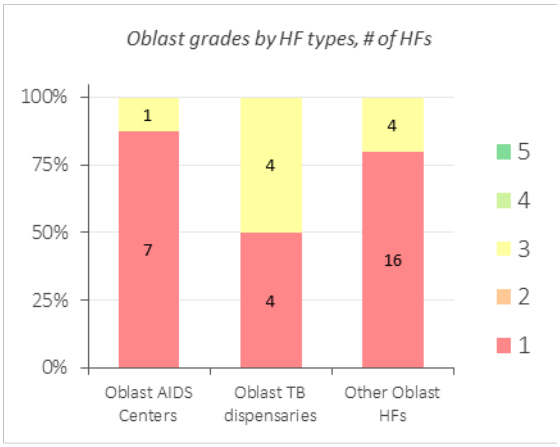
2.D.01. Country ownership



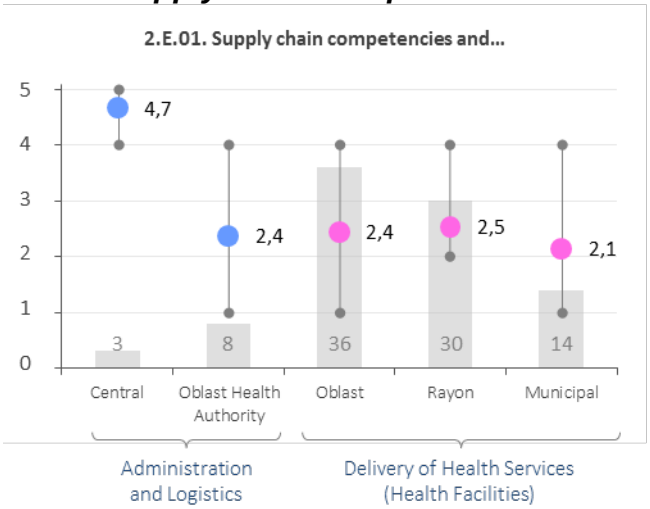


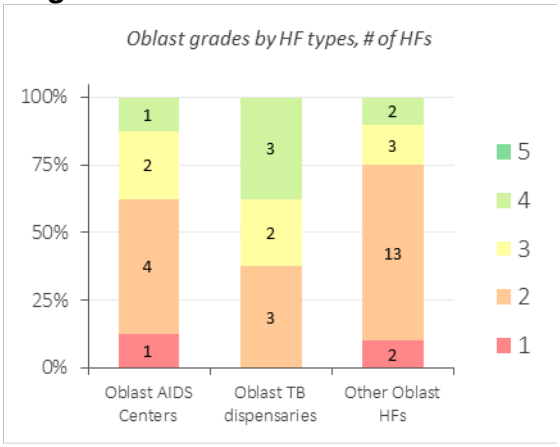
2.D.11. Key performance indicators





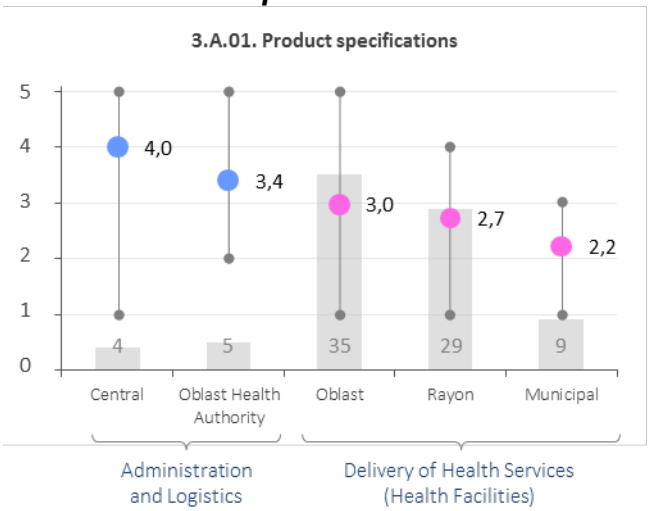
2.E.01. Supply chain competencies and staffing

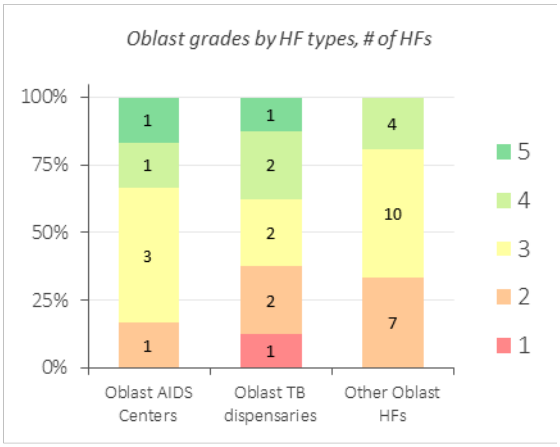




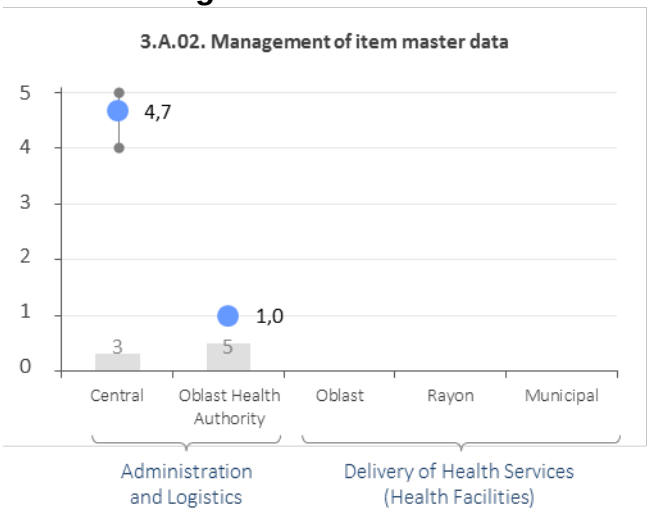
FA-3. Procurement

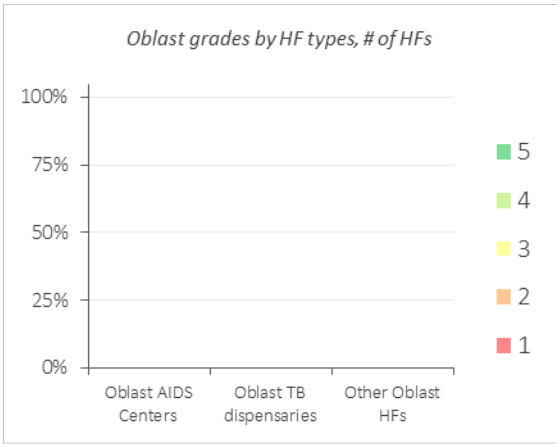
3.A.01. Product specifications



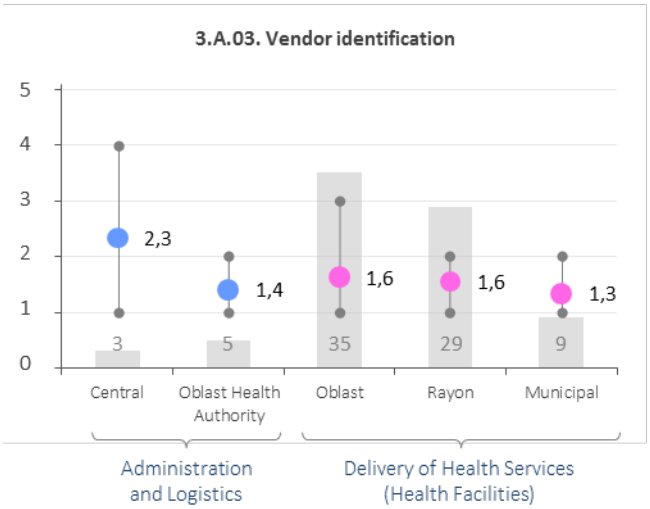


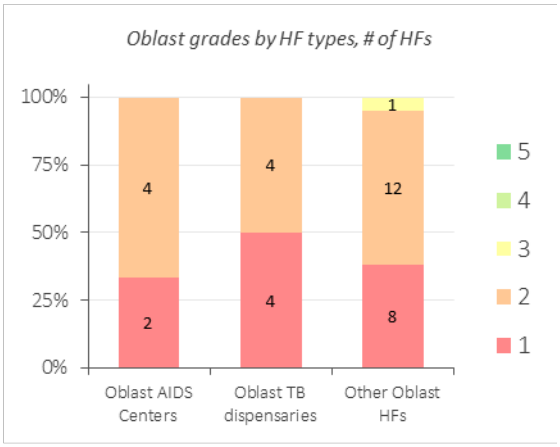
3.A.02. Management of item master data



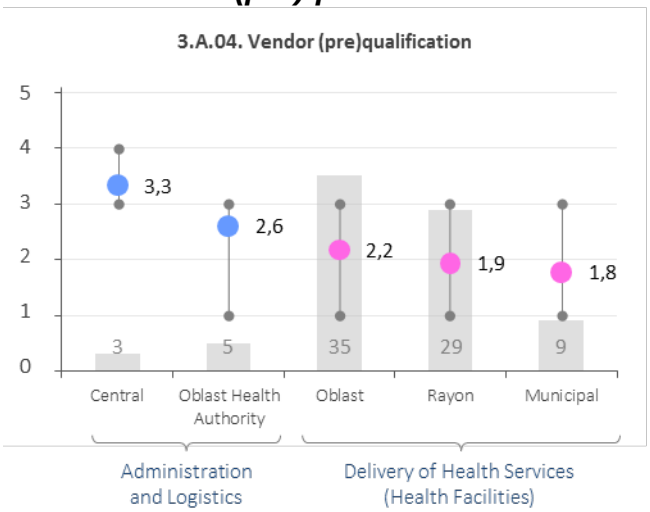


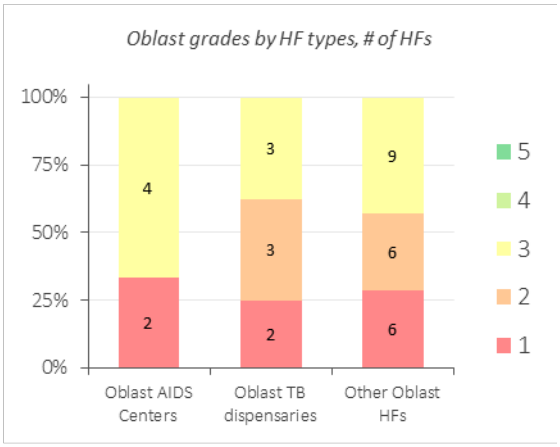
3.A.03. Vendor identification



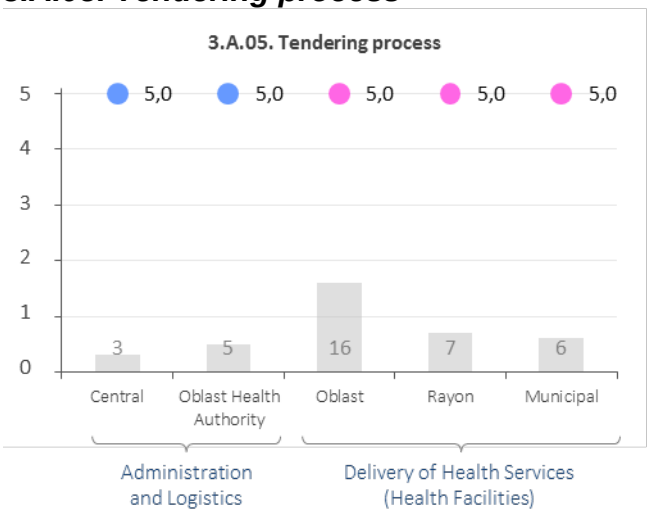


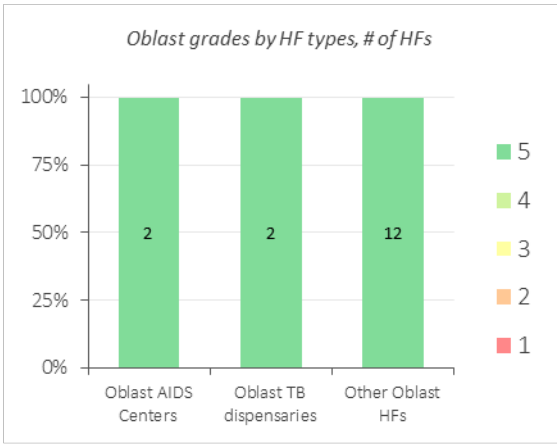
3.A.04. Vendor (pre)qualification



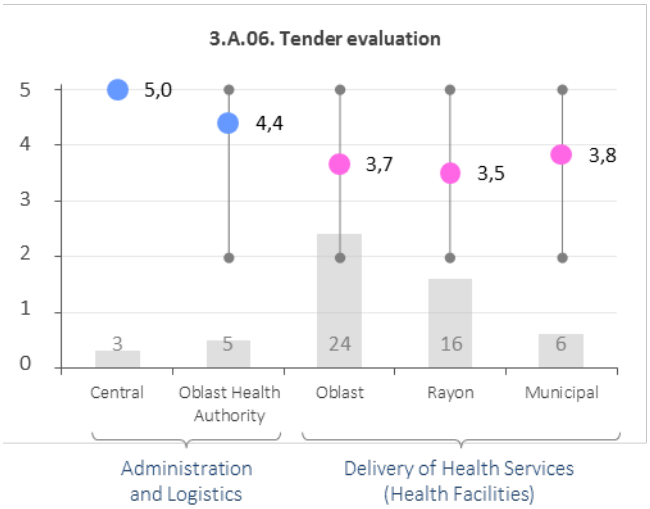


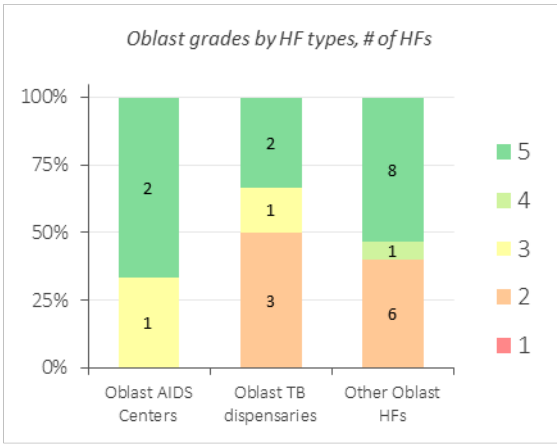
3.A.05. Tendering process



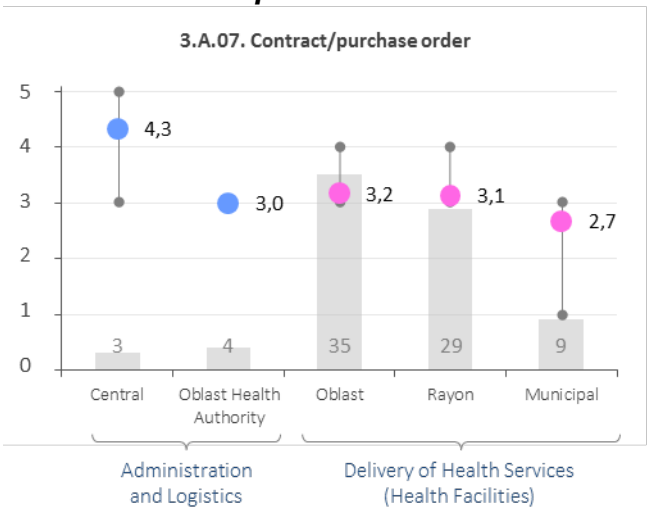


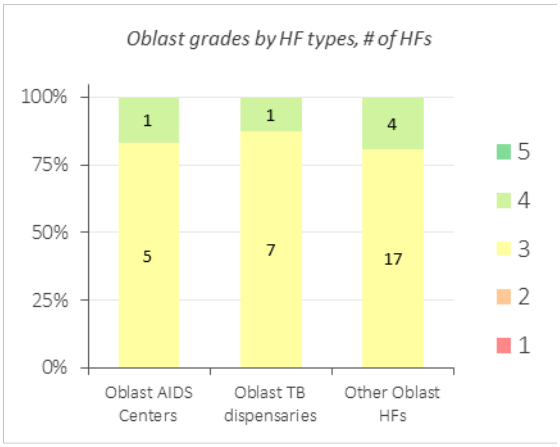
3.A.06. Tender evaluation



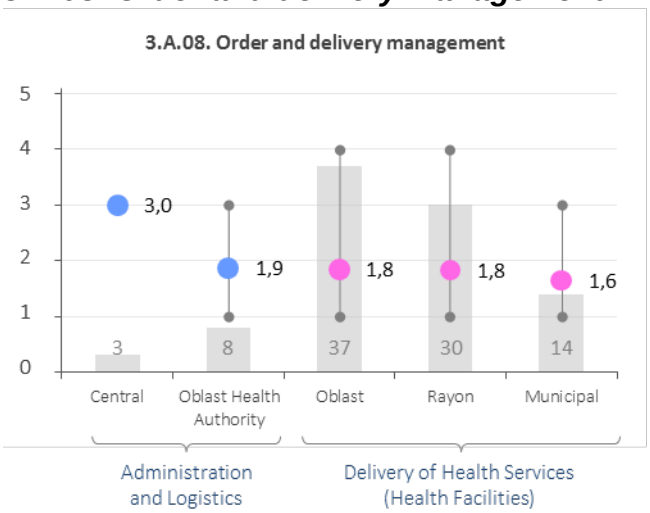


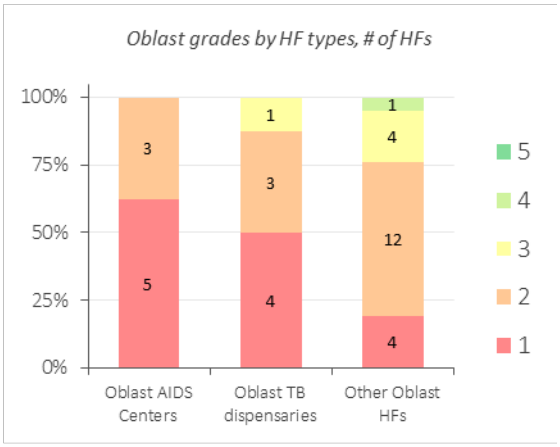
3.A.07. Contract/purchase order



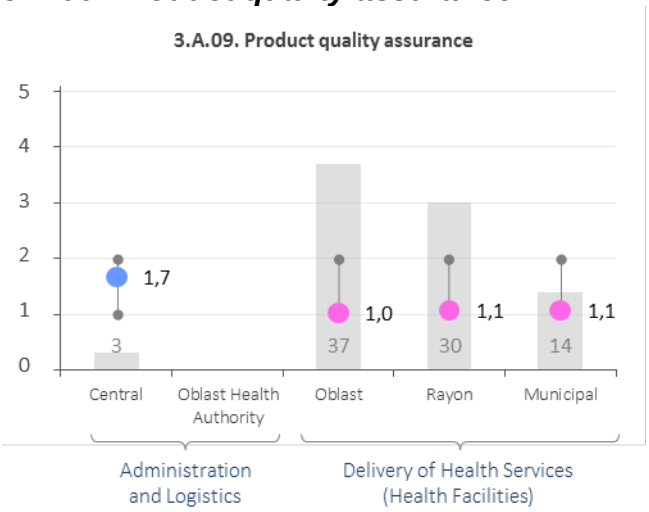


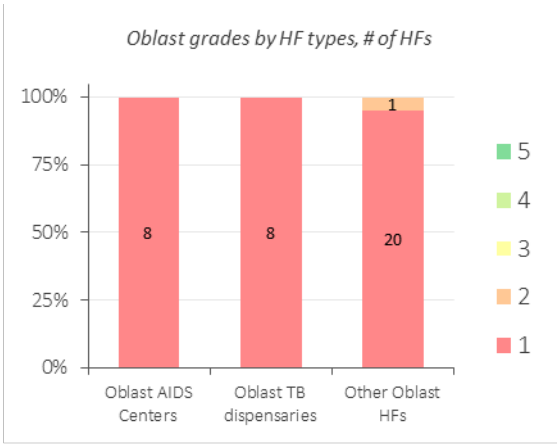
3.A.08. Order and delivery management



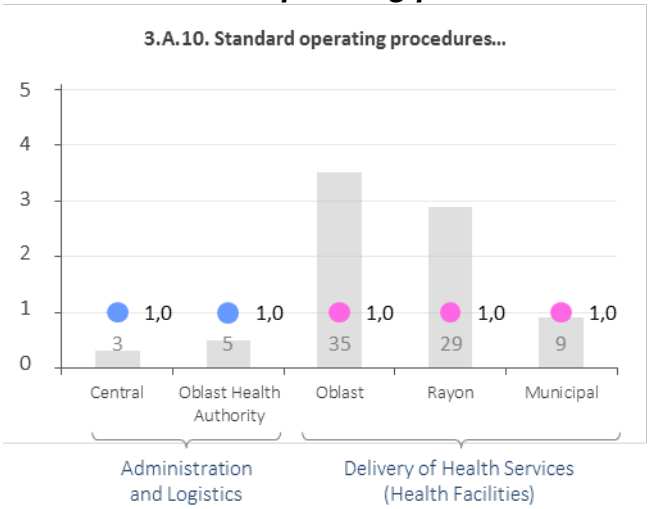


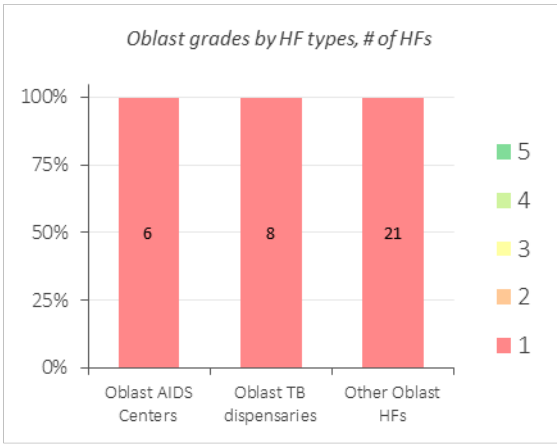
3.A.09. Product quality assurance



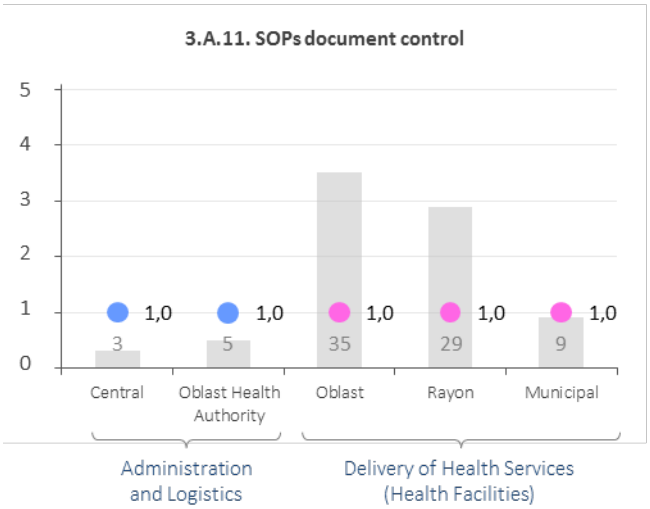


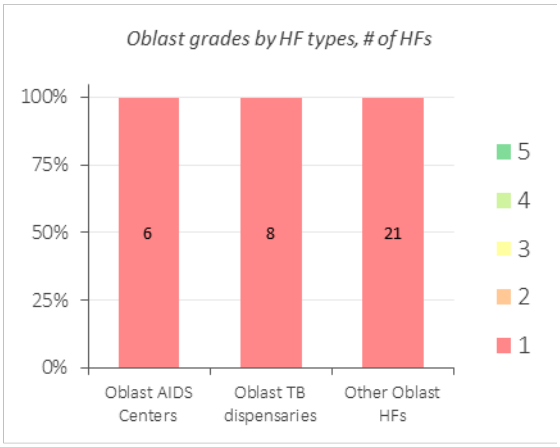
3.A.10. Standard operating procedures



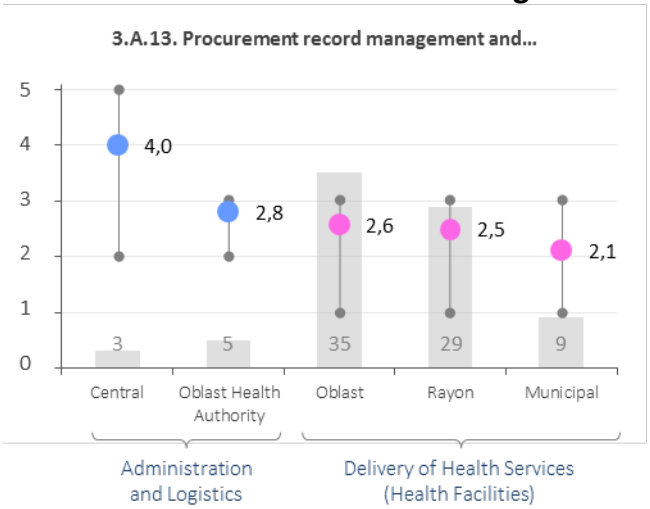


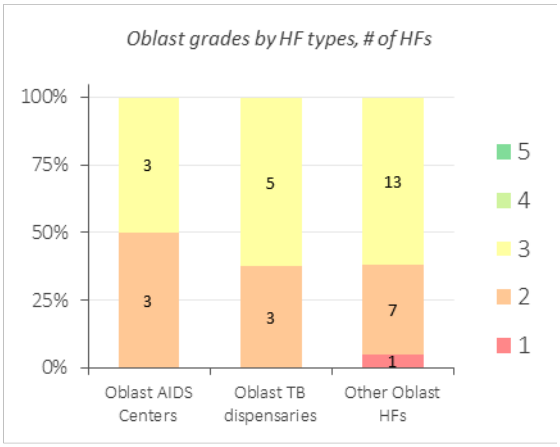
3.A.11. SOP document control



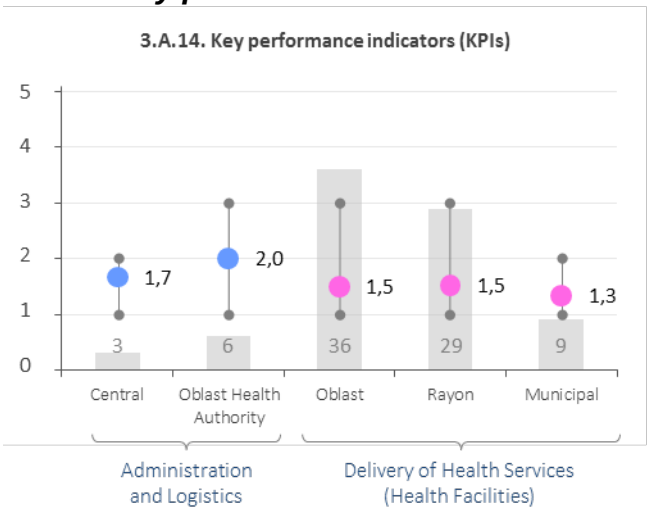


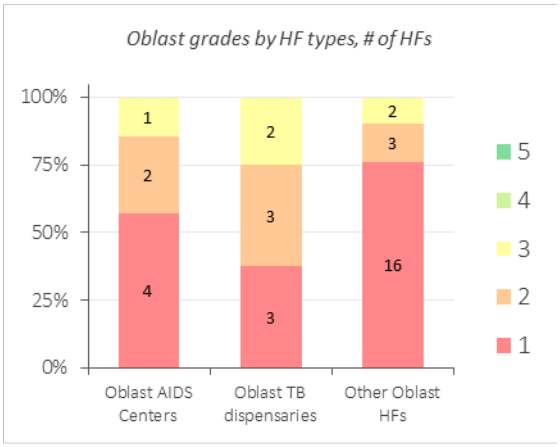
3.A.13. Procurement record management and review



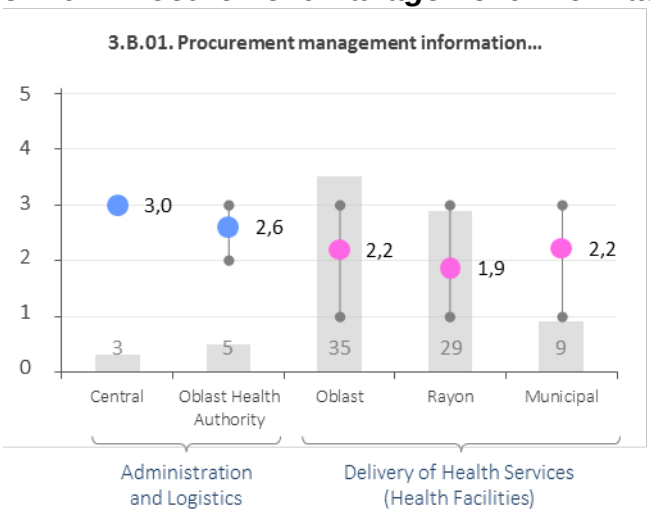


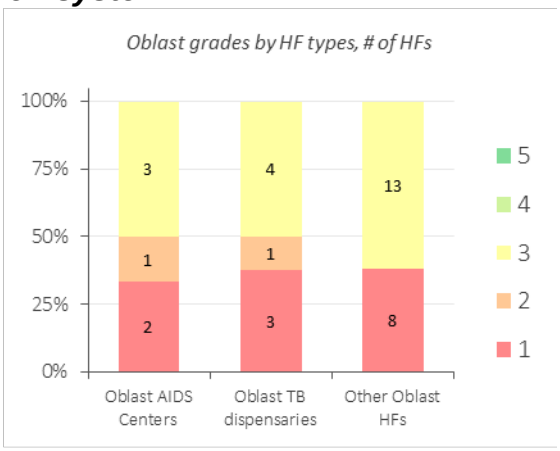
3.A.14. Key performance indicators



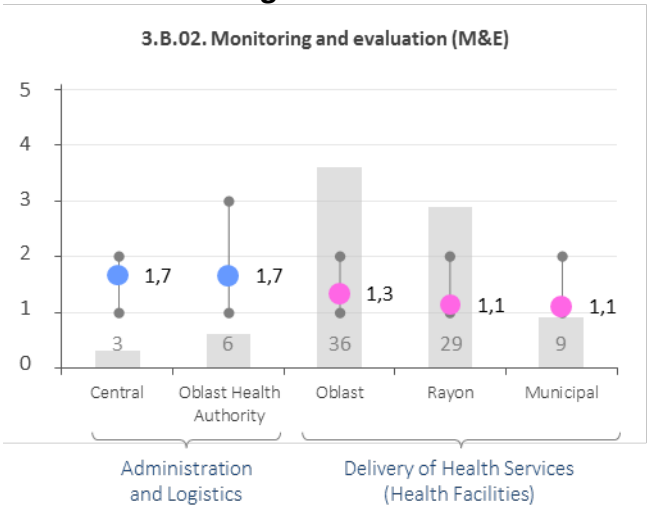


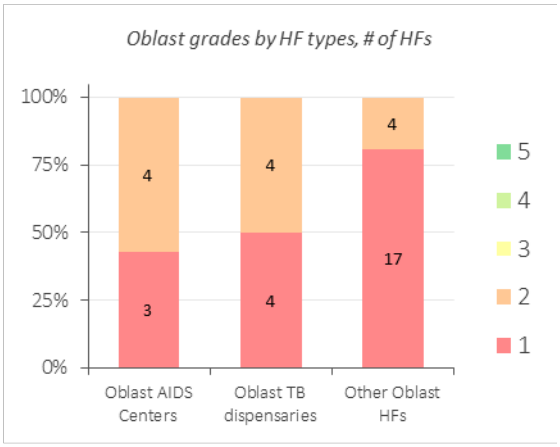
3.B.01. Procurement management information system



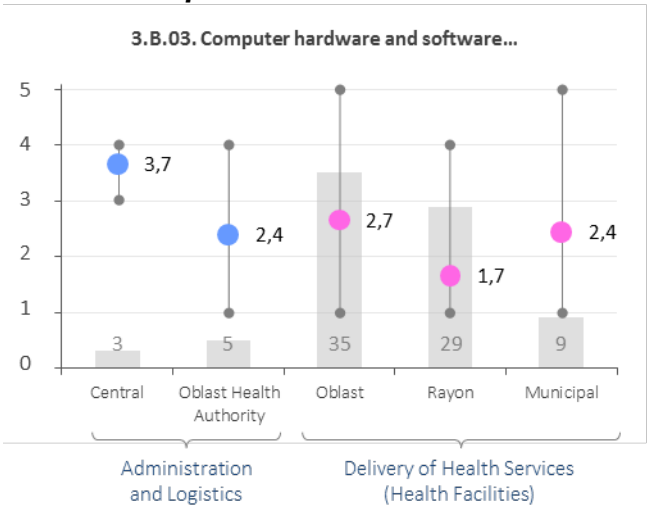


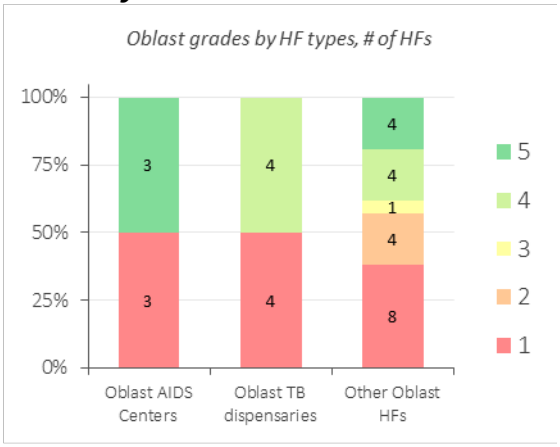
3.B.02. Monitoring and evaluation



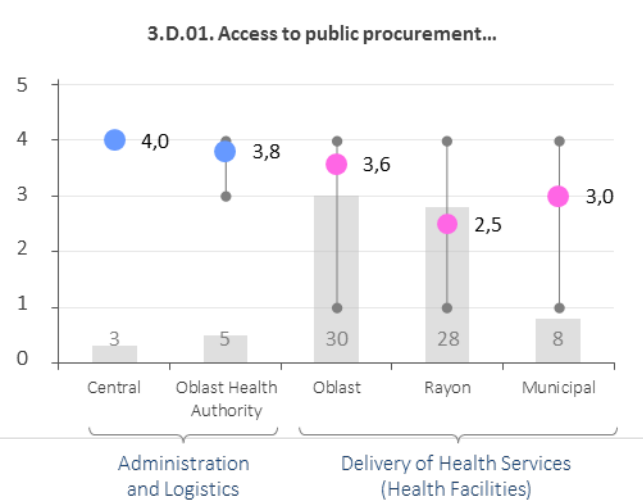


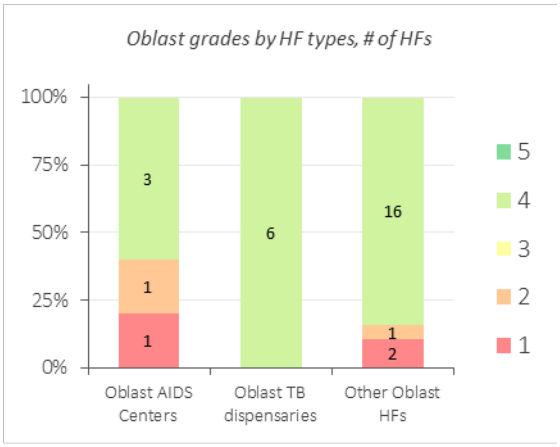
3.B.03. Computer hardware and software availability



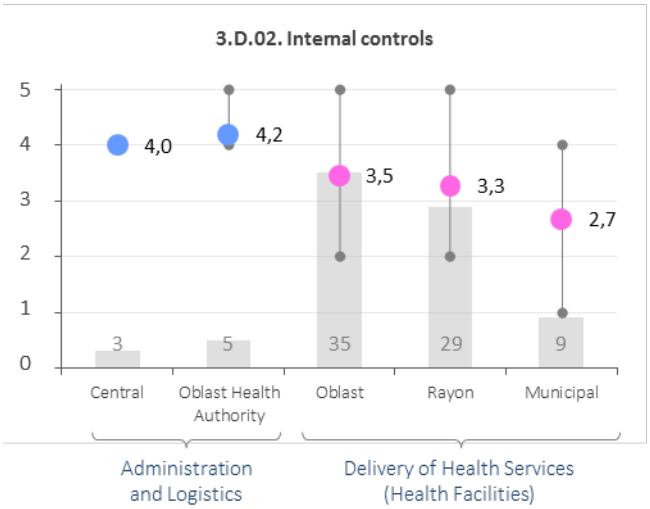


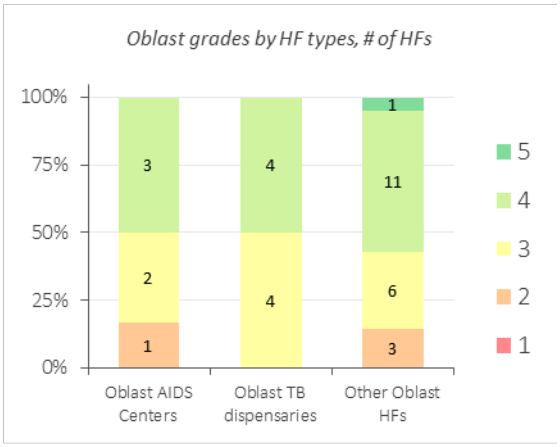
3.D.01. Access to public procurement information



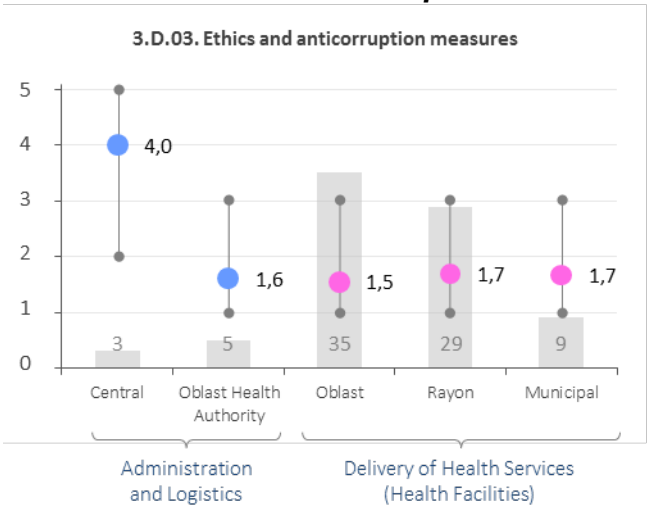


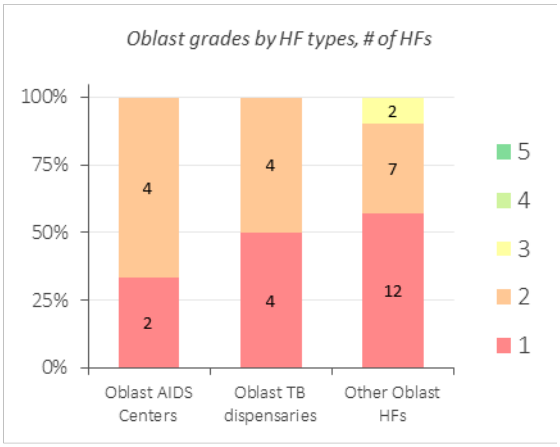
3.D.02. Internal controls



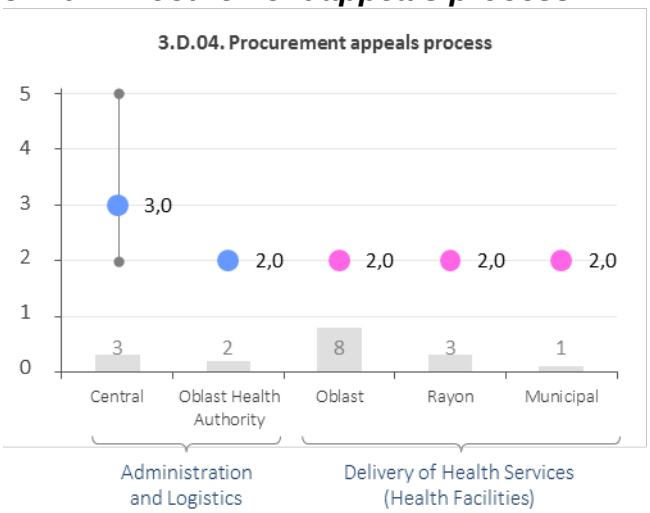


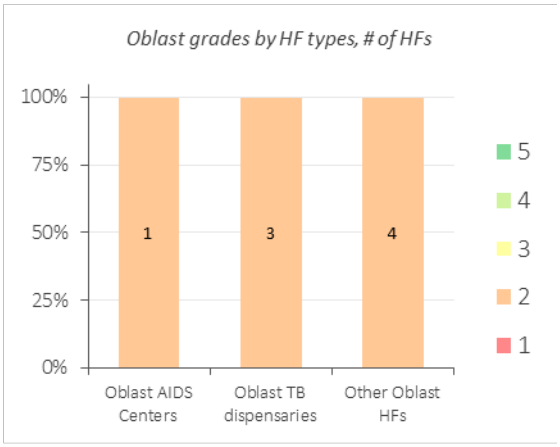
3.D.03. Ethics and anticorruption measures



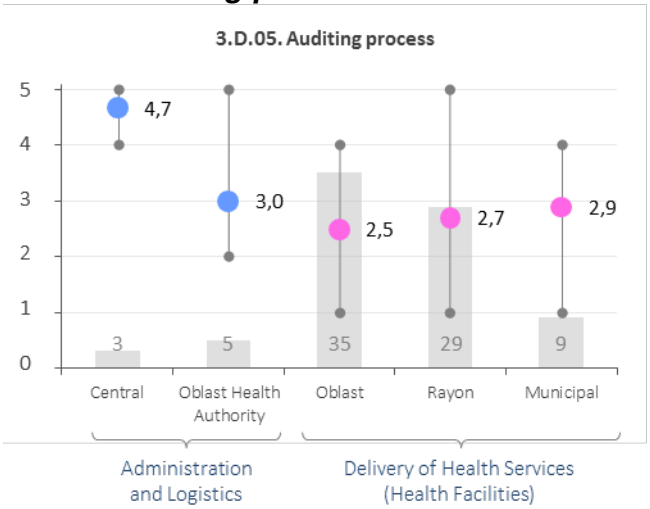


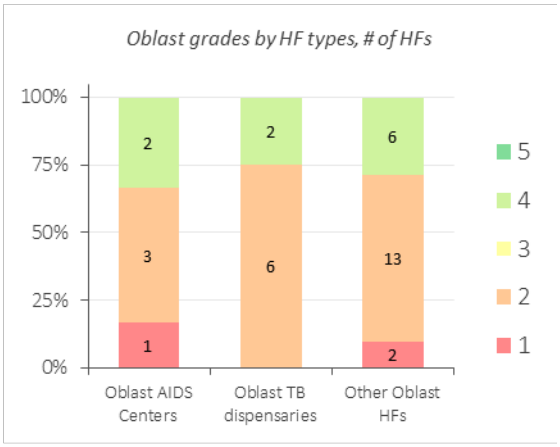
3.D.04. Procurement appeals process



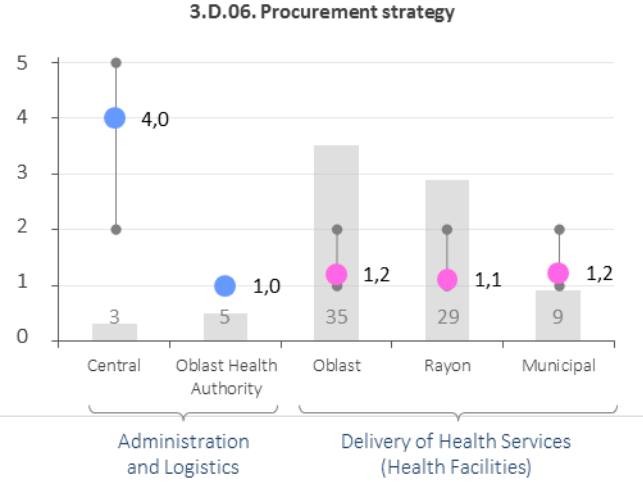


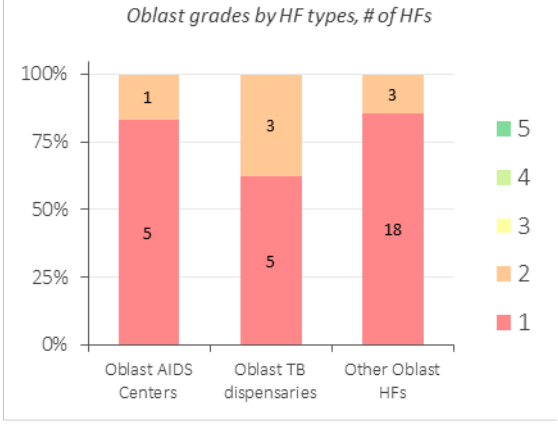
3.D.05. Auditing process



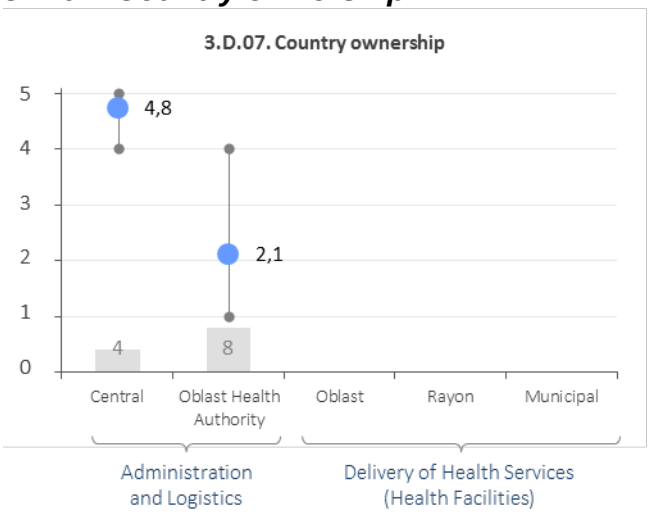


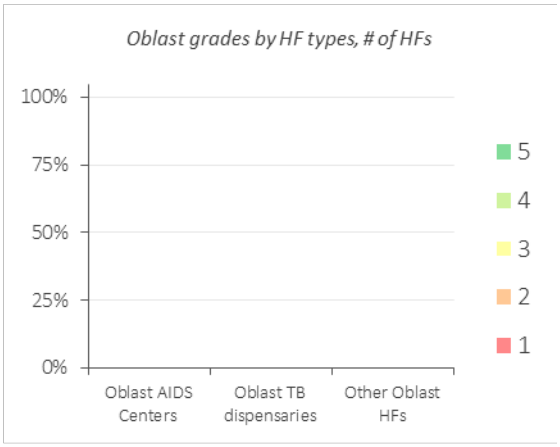
3.D.06. Procurement strategy



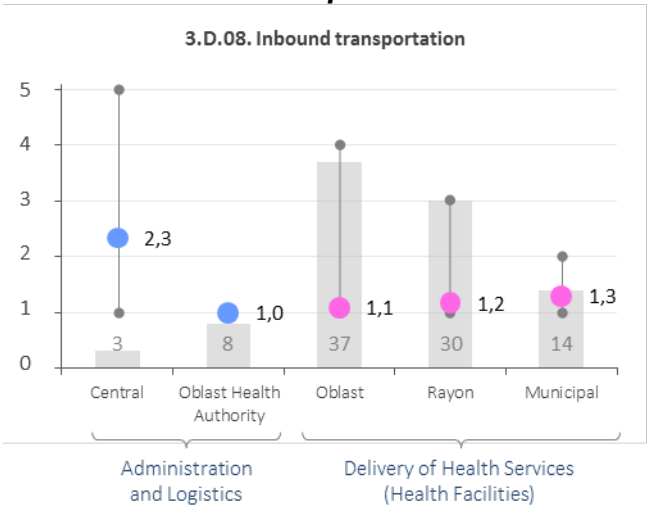


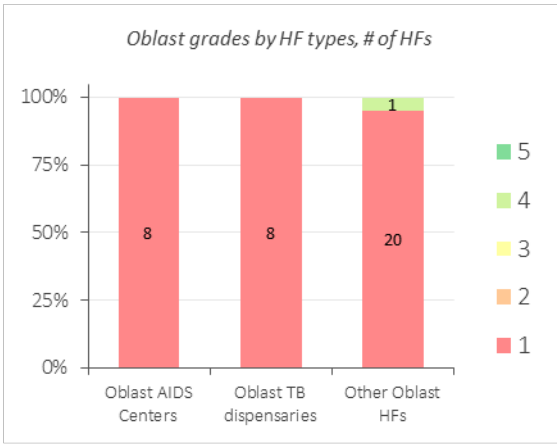
3.D.07. Country ownership



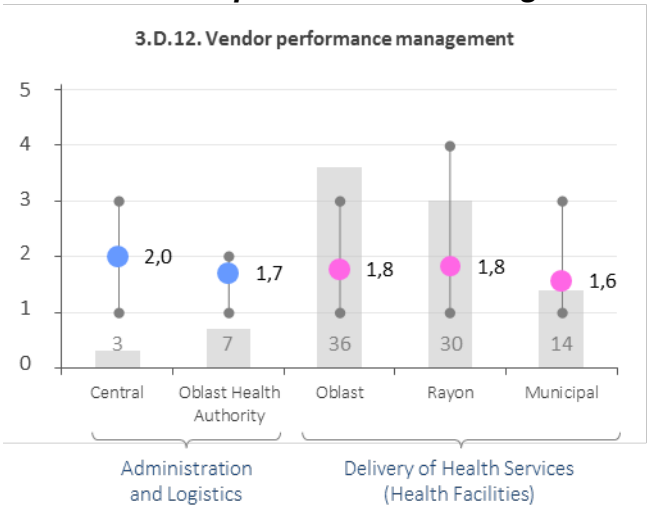


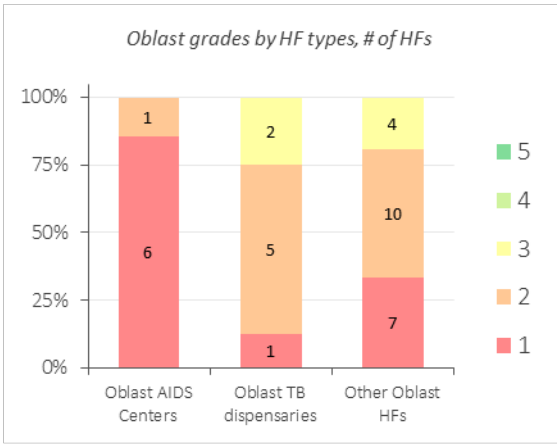
3.D.08. Inbound transportation



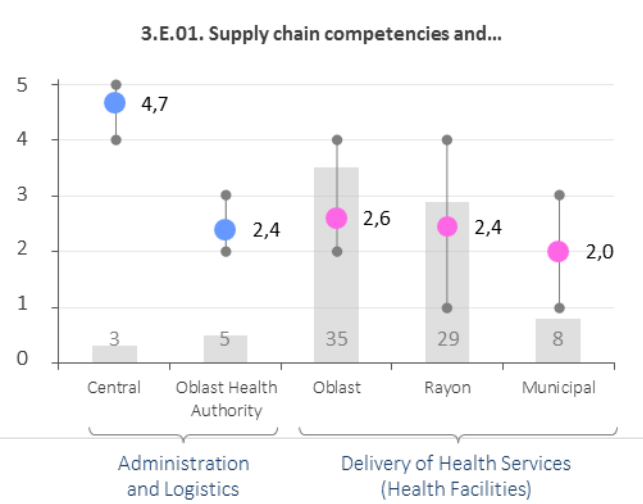


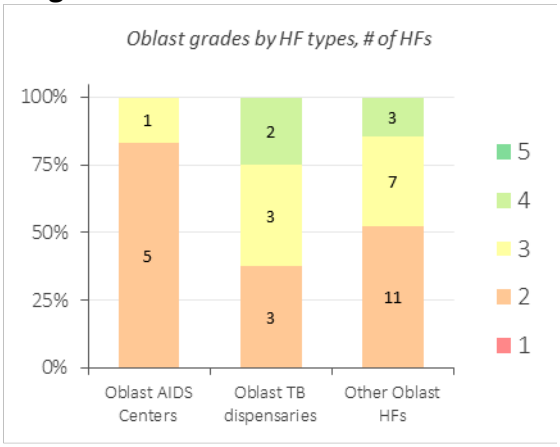
3.D.12. Vendor performance management





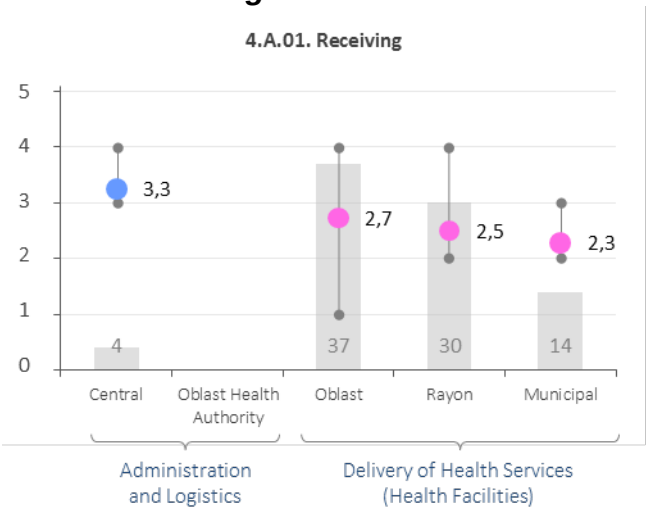
3.E.01. Supply chain competencies and staffing

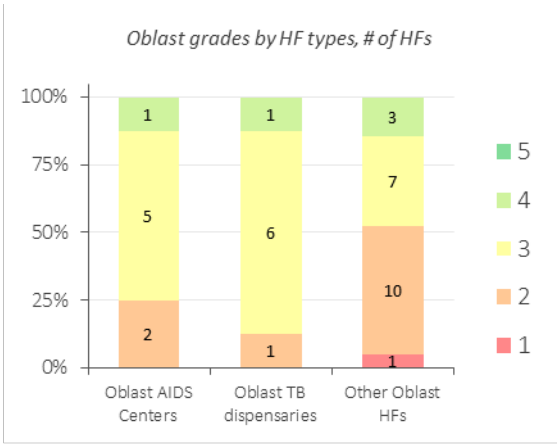




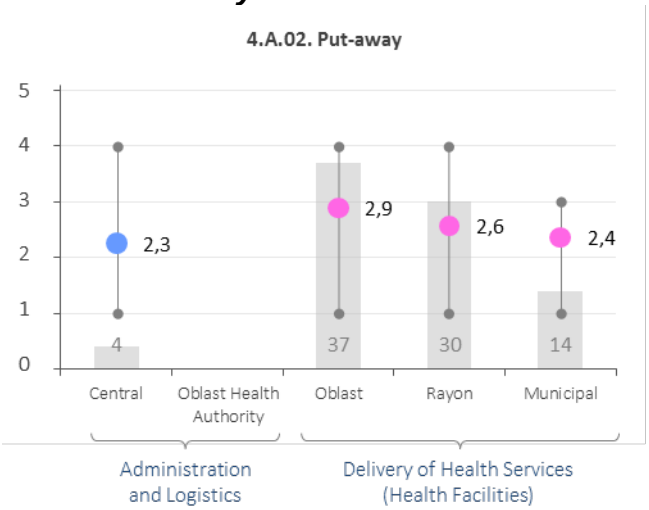
FA-4. Warehousing and inventory management

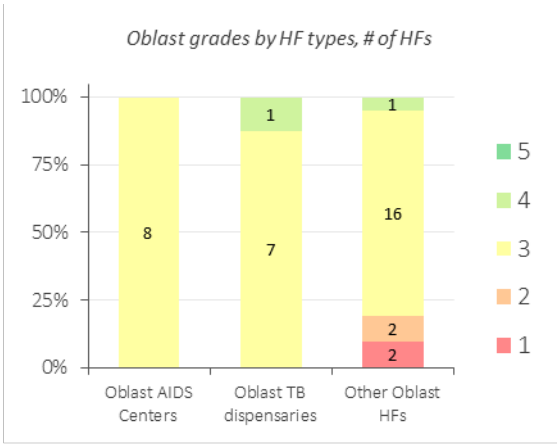
4.A.01. Receiving



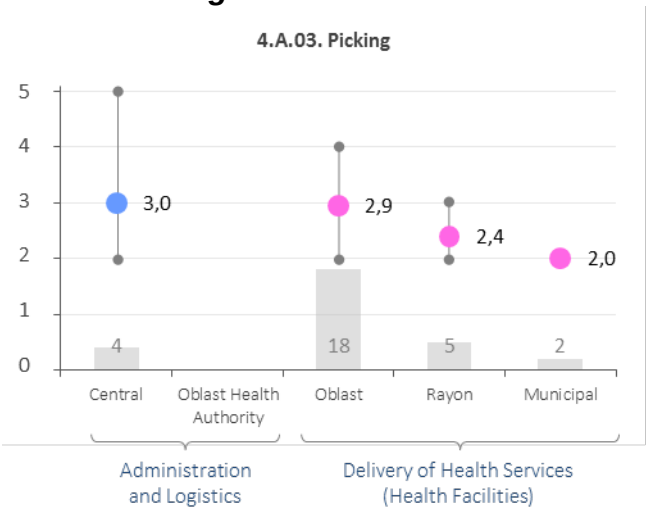


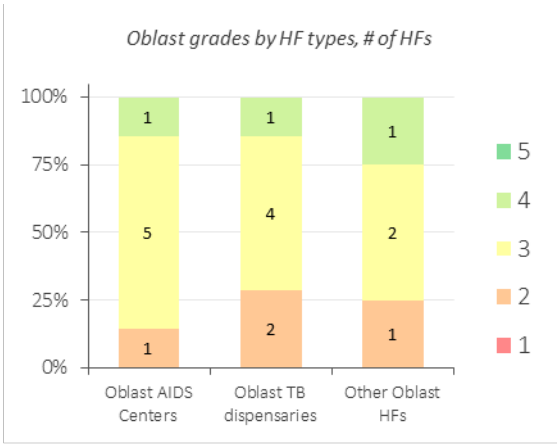
4.A.02. Put-away



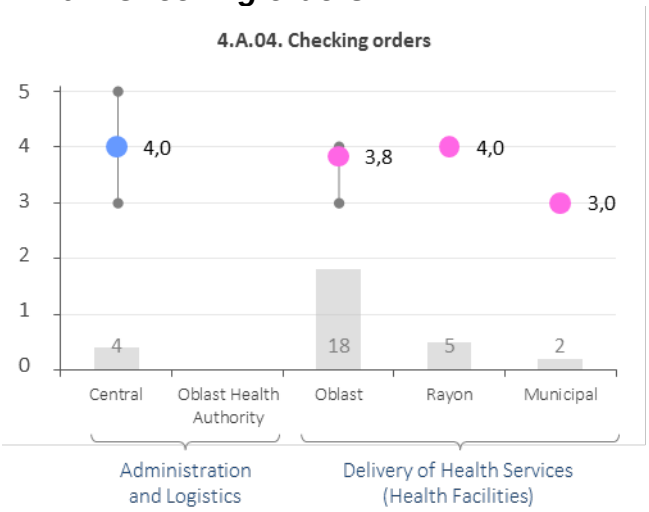


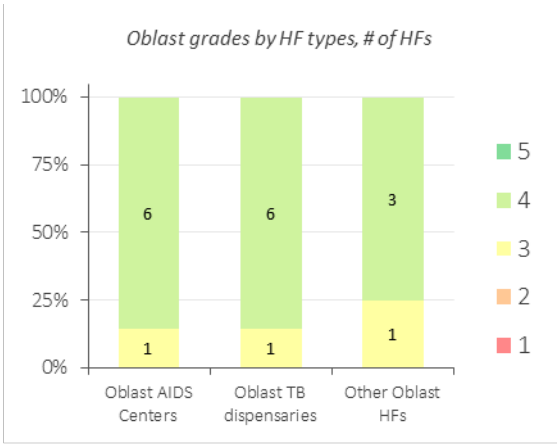
4.A.03. Picking



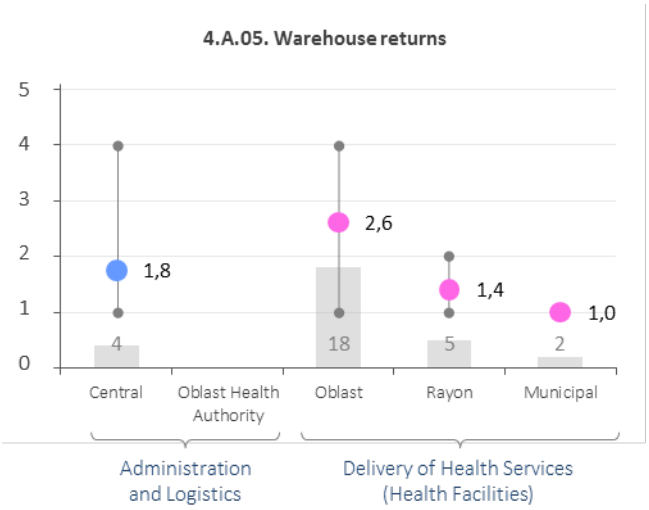


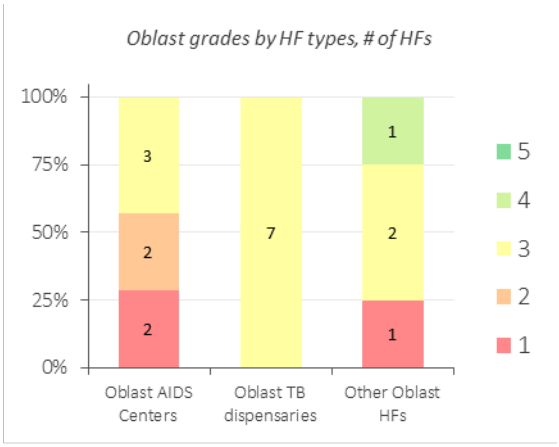
4.A.04. Checking orders



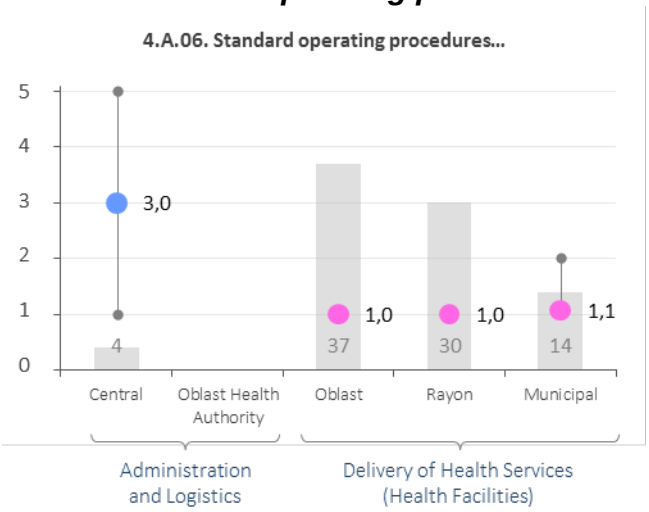


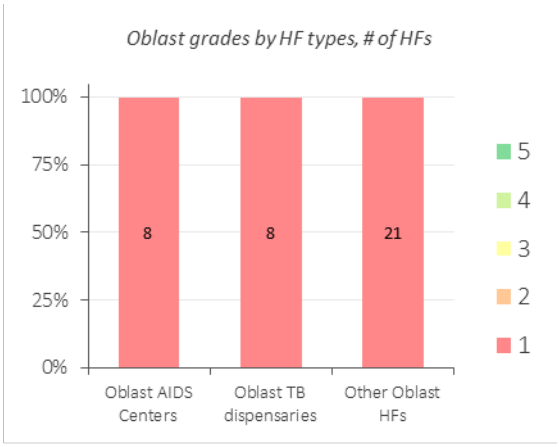
4.A.05. Warehouse returns



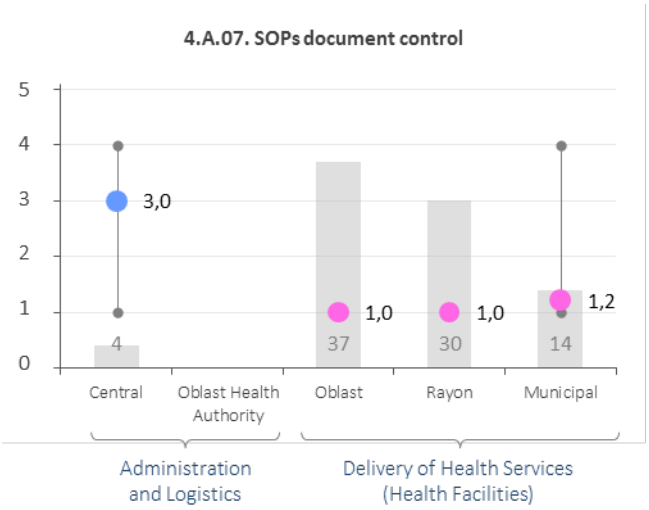


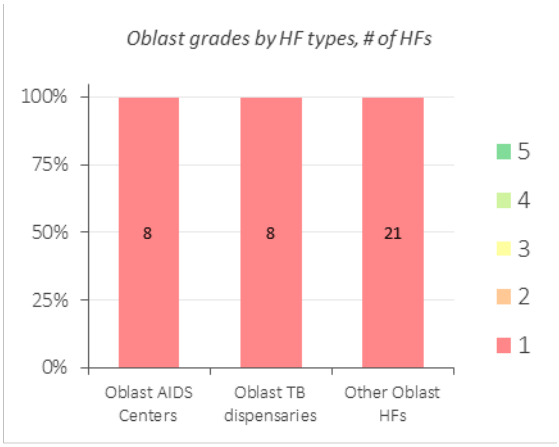
4.A.06. Standard operating procedures



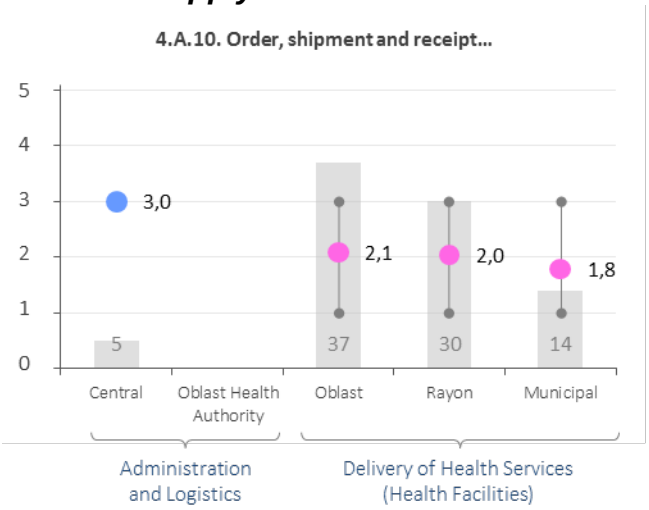


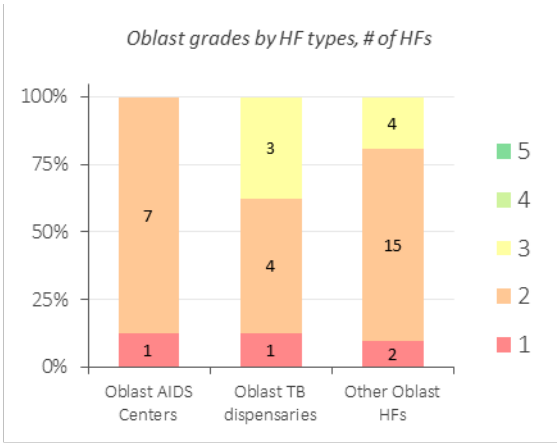
4.A.07. SOP document control



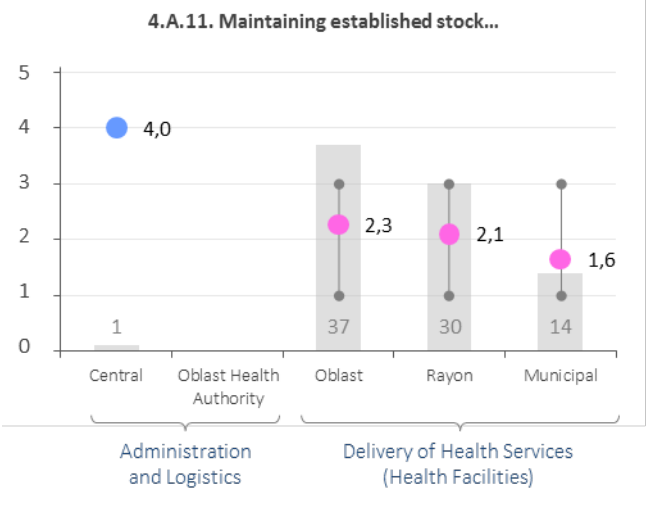


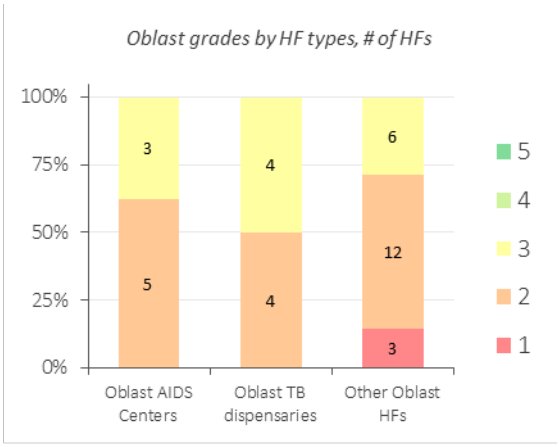
4.A.10. Order, shipment, and receipt confirmation for orders to sites further down the supply chain



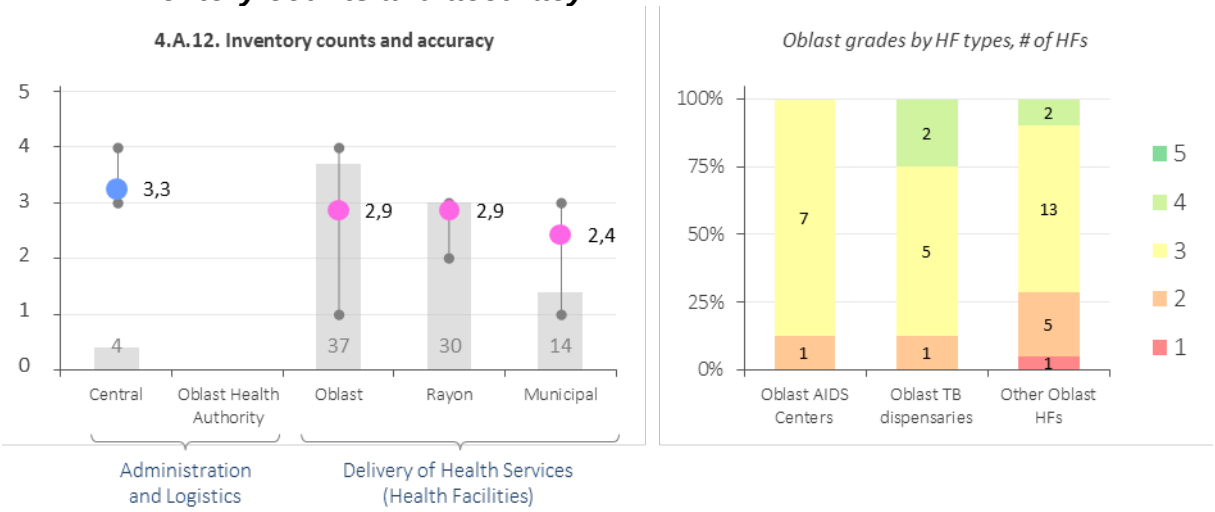


4.A.11. Maintaining established stock levels

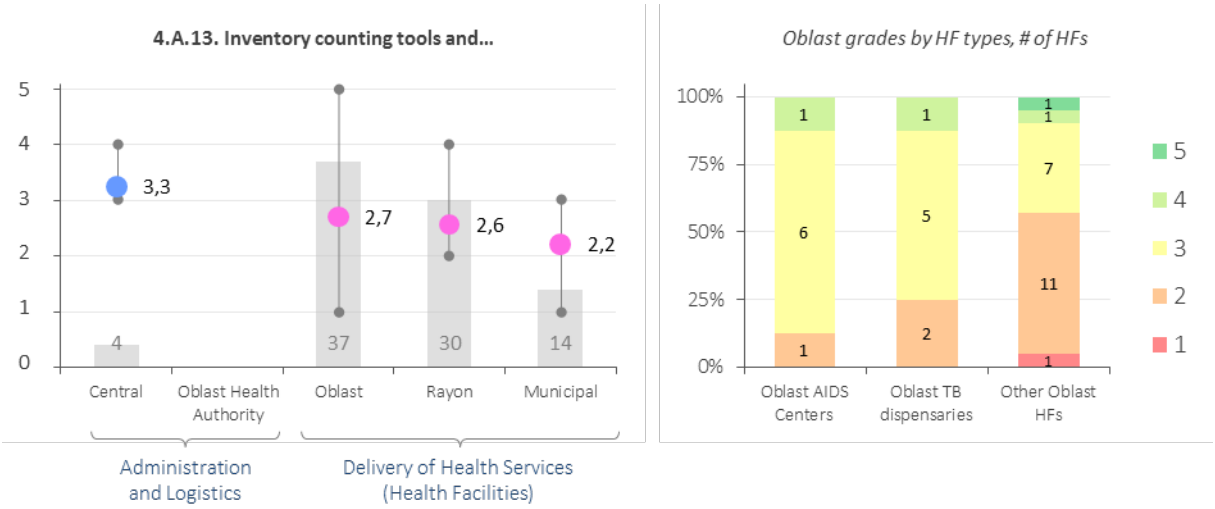




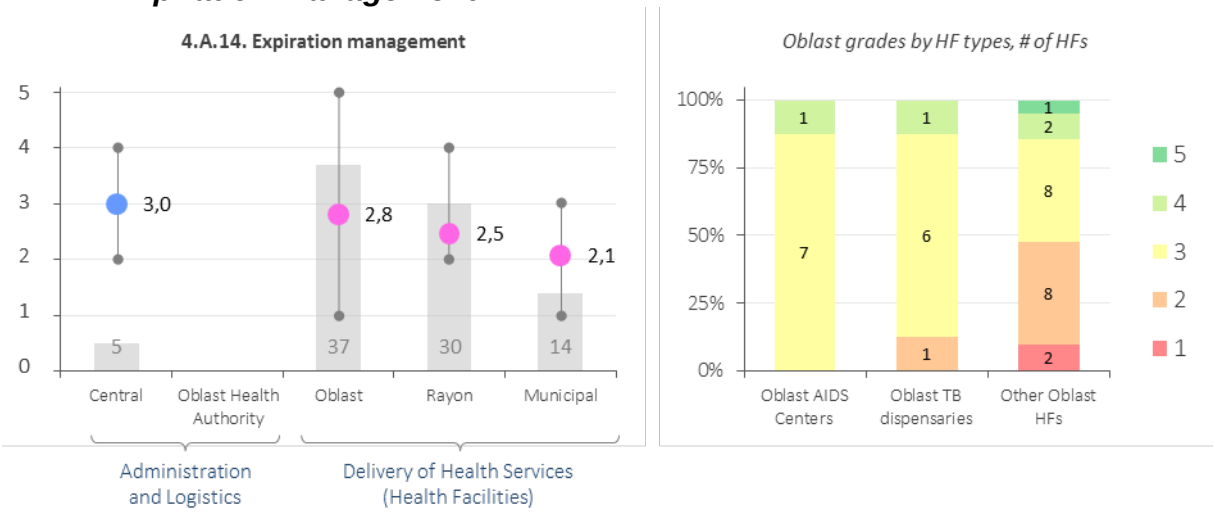
4.A.12. Inventory counts and accuracy



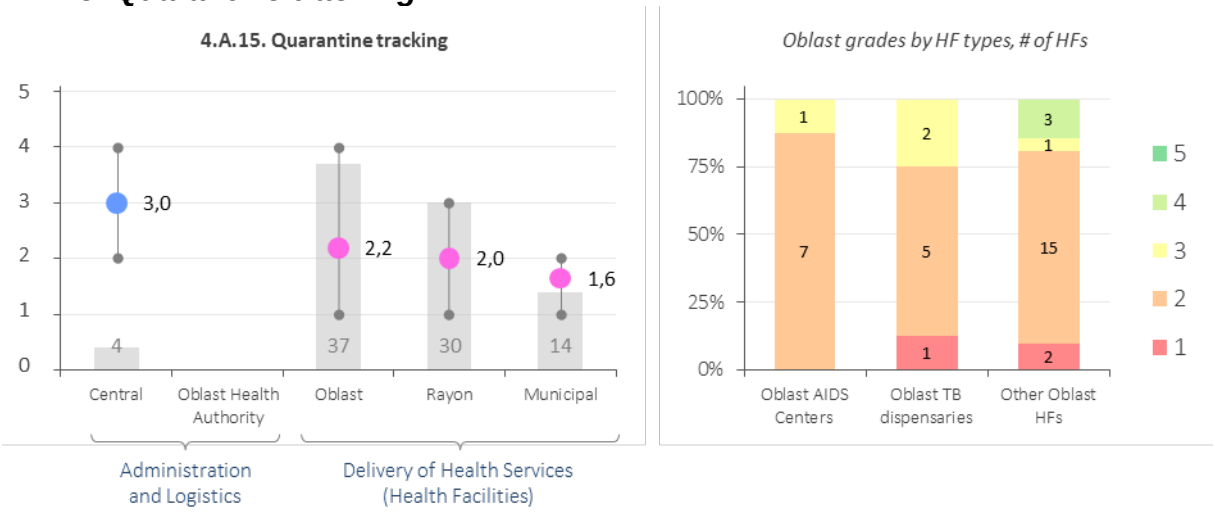
4.A.13. Inventory counting tools and reconciliation; inventory management tools



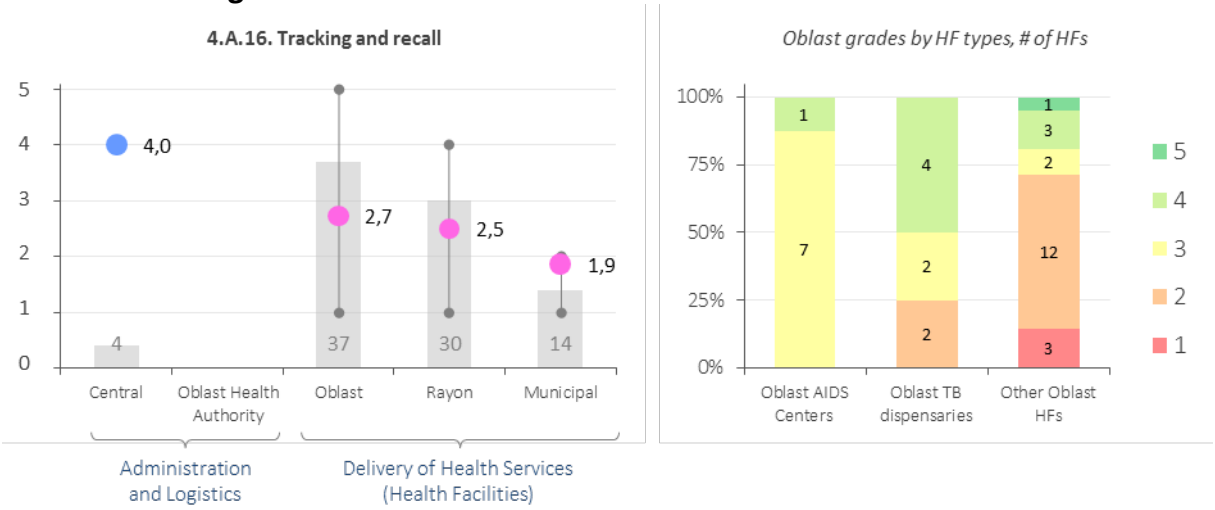
4.A.14. Expiration management



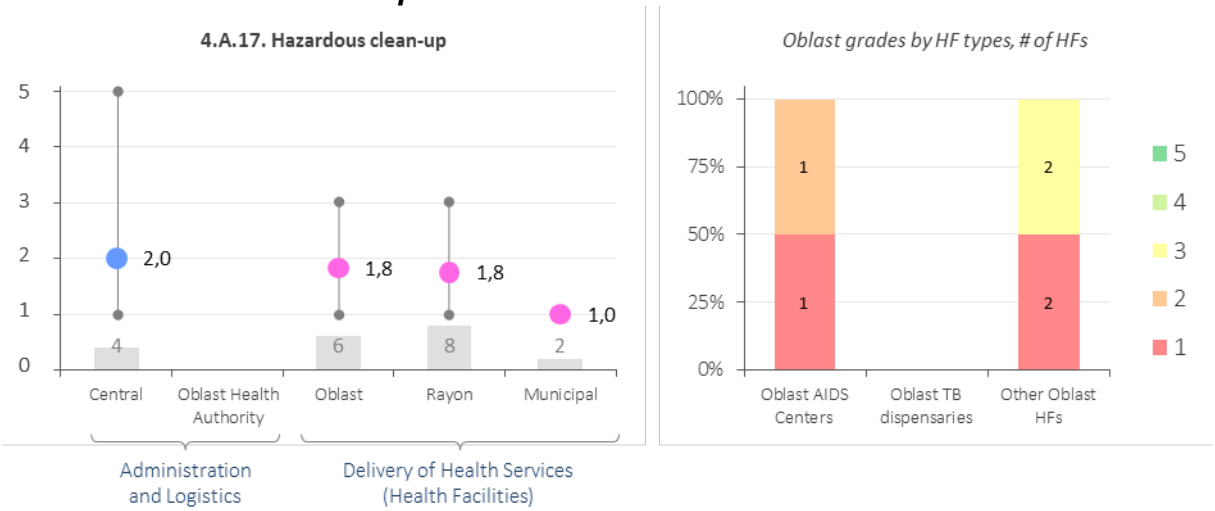
4.A.15. Quarantine tracking



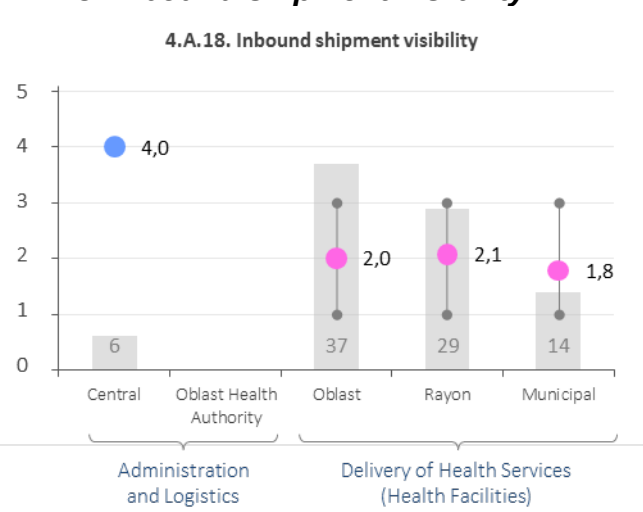
4.A.16. Tracking and recall

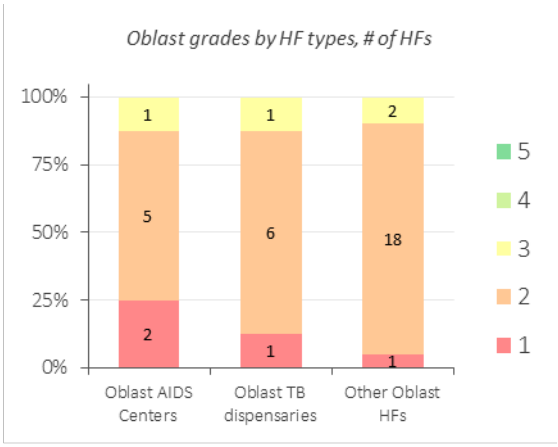


4.A.17. Hazardous clean-up

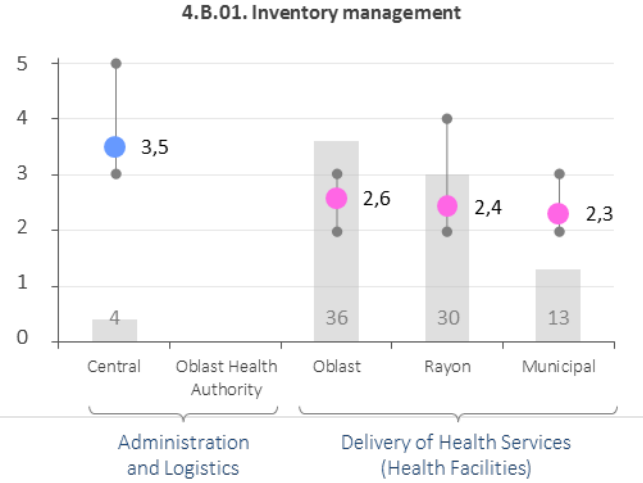


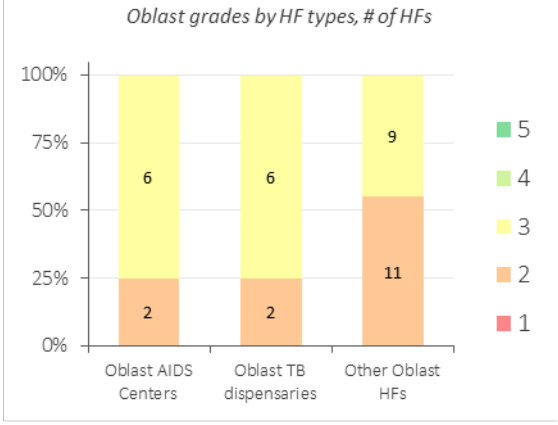
4.A.18. Inbound shipment visibility



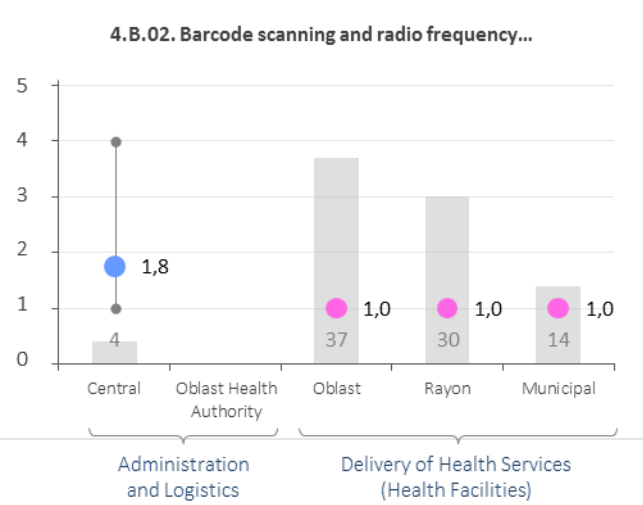


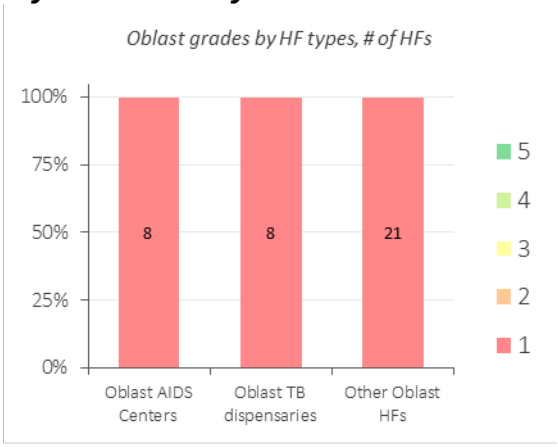
4.B.01. Inventory management



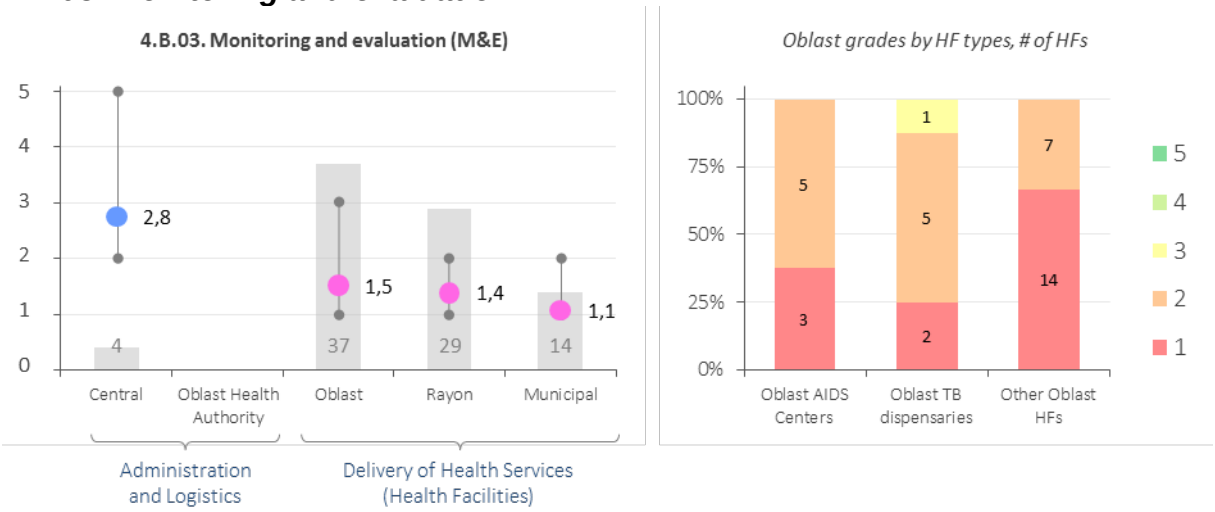


4.B.02. Barcode scanning and radio frequency functionality

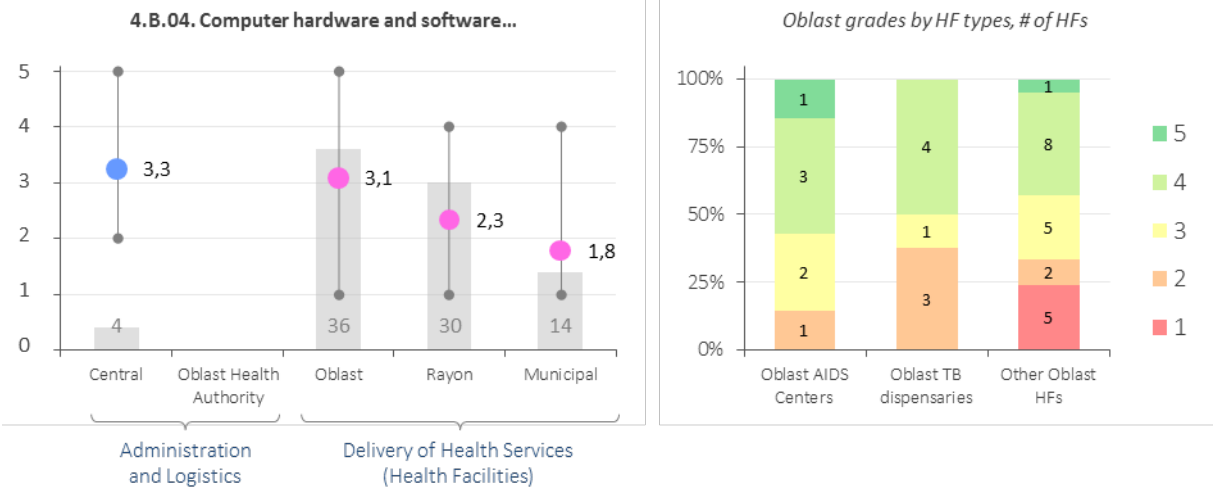




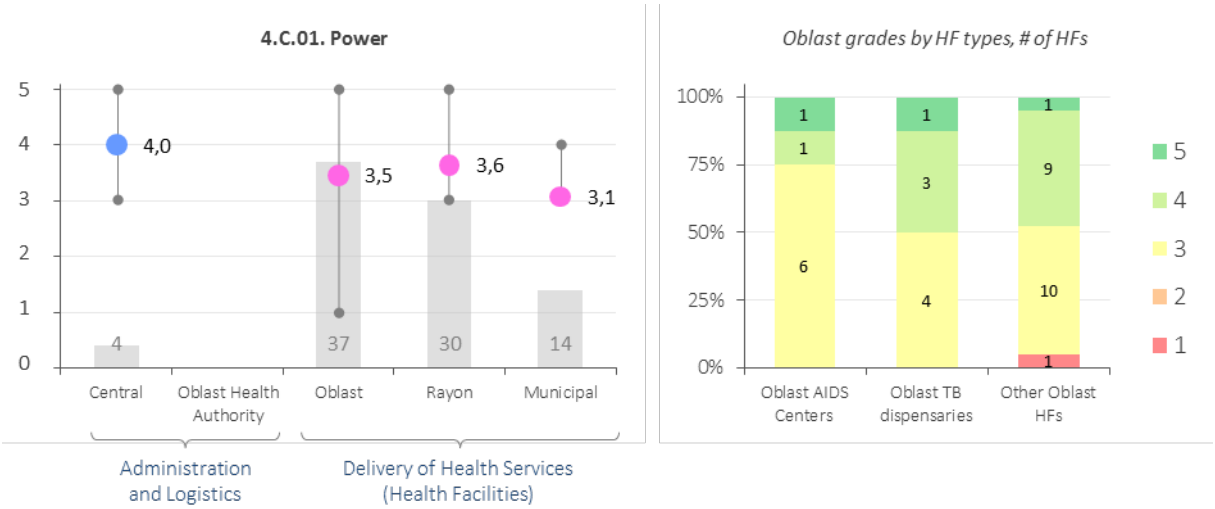
4.B.03. Monitoring and evaluation



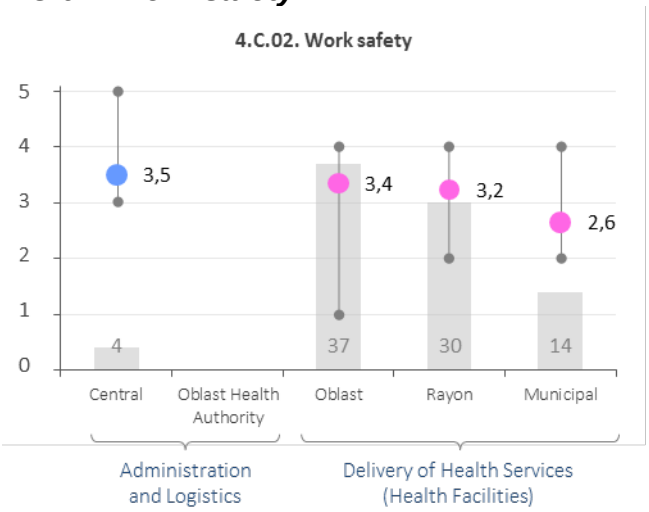
4.B.04. Computer hardware and software availability

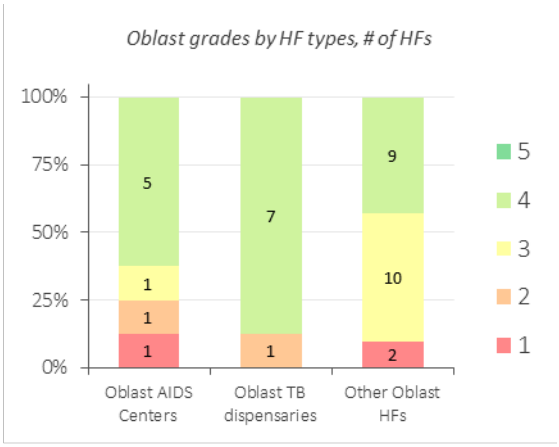


4.C.01. Power

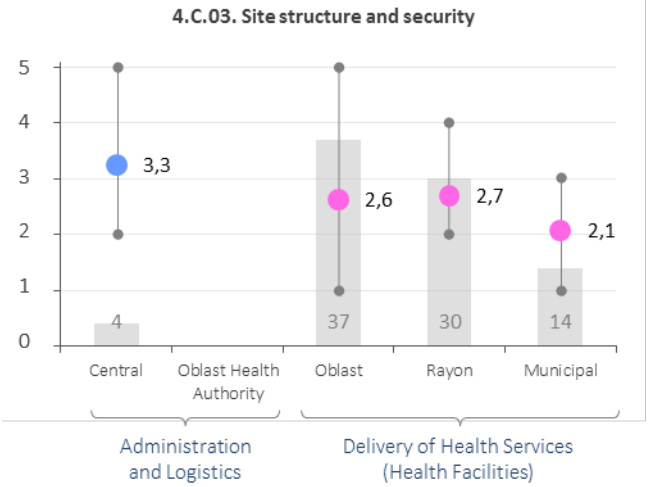


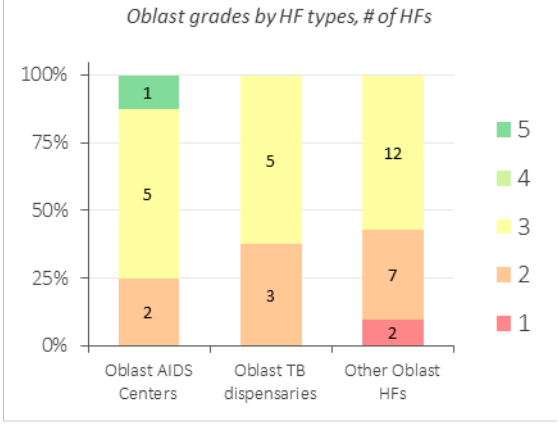
4.C.02. Work safety



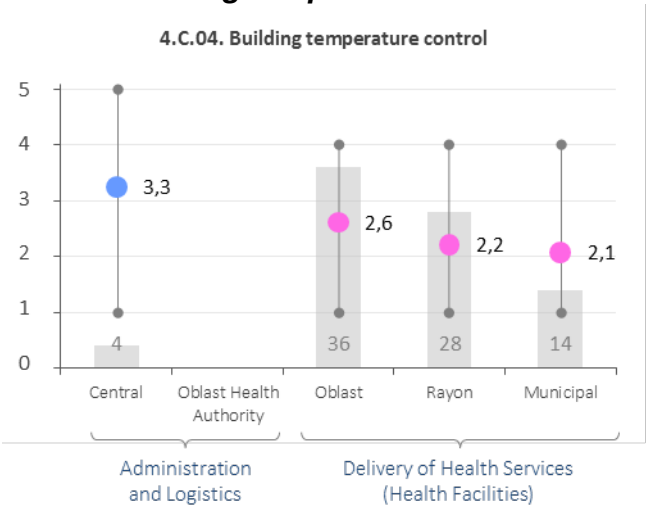


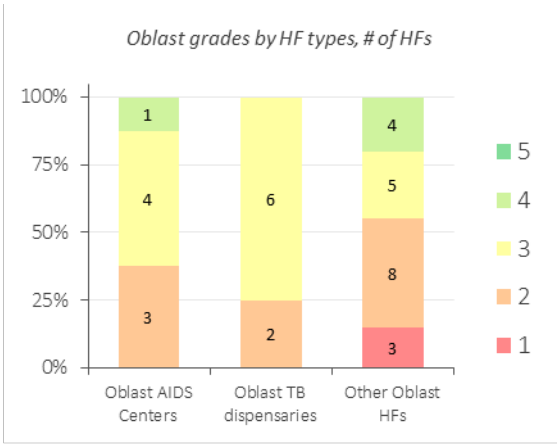
4.C.03. Site structure and security



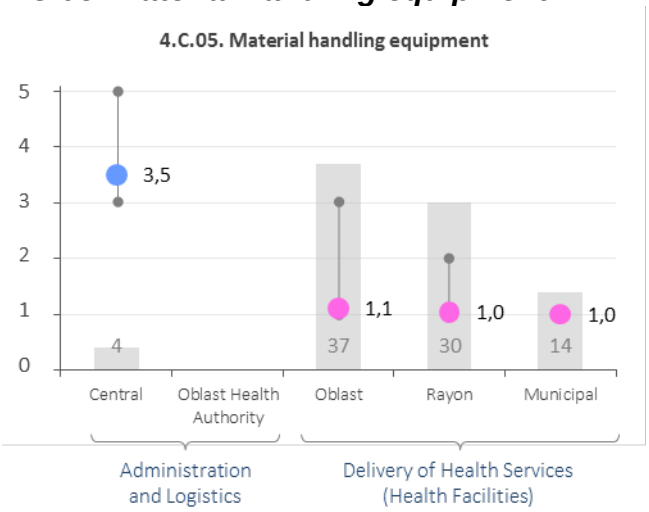


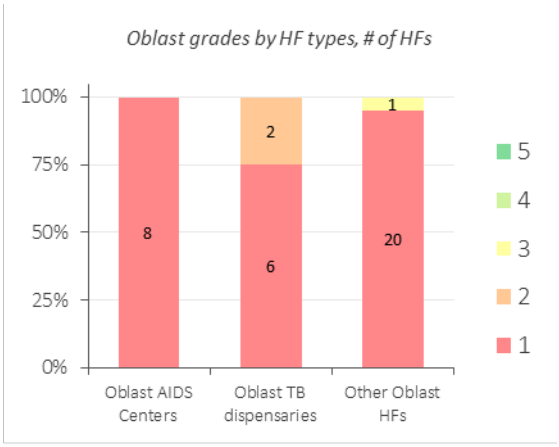
4.C.04. Building temperature control



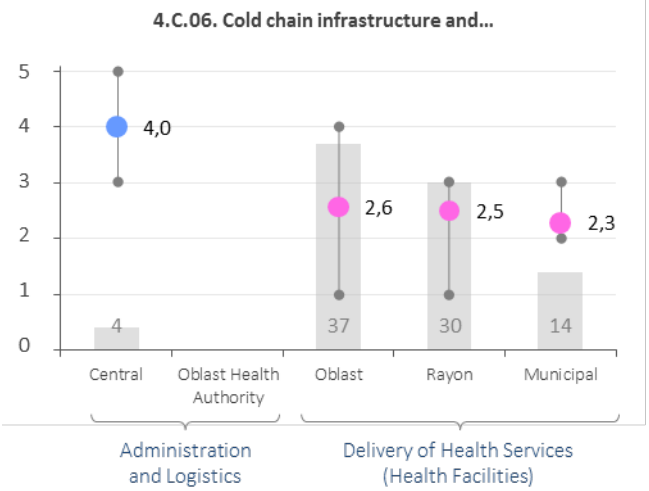


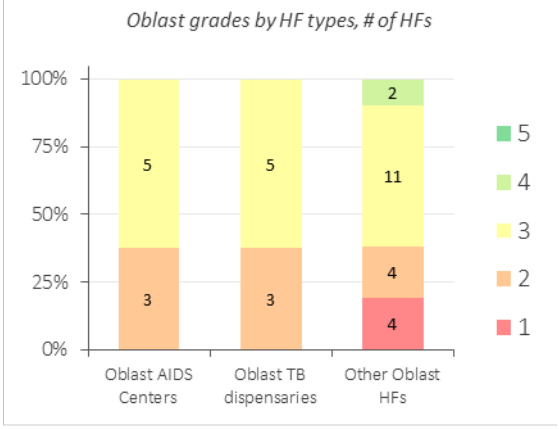
4.C.05. Material handling equipment



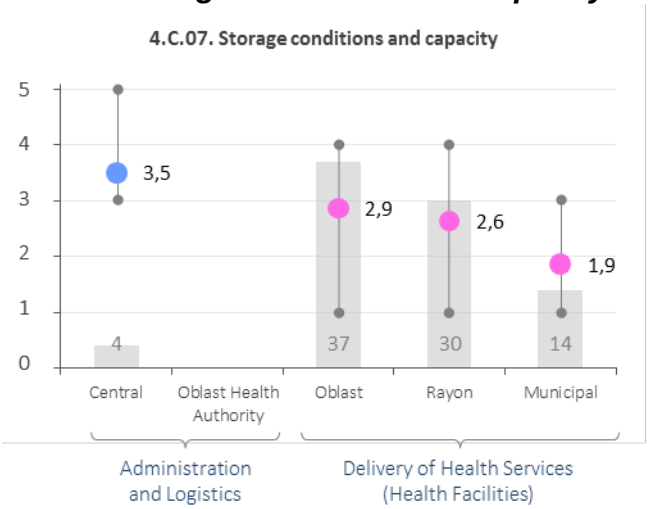


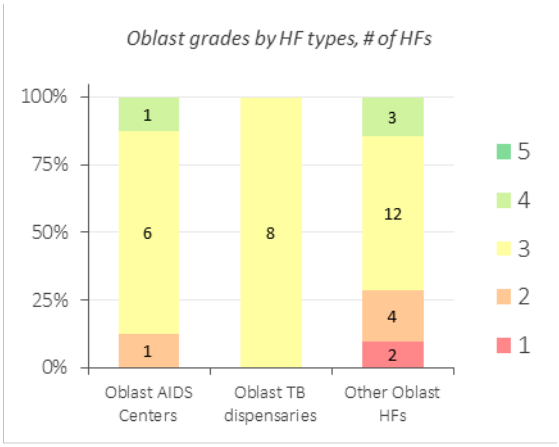
4.C.06. Cold chain infrastructure and capacity



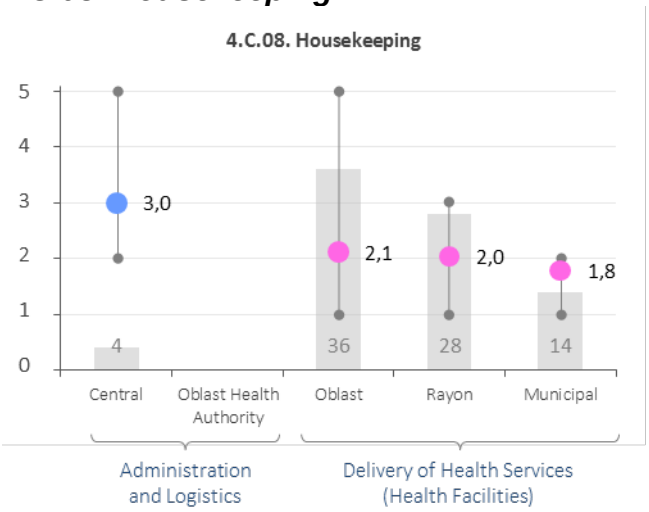


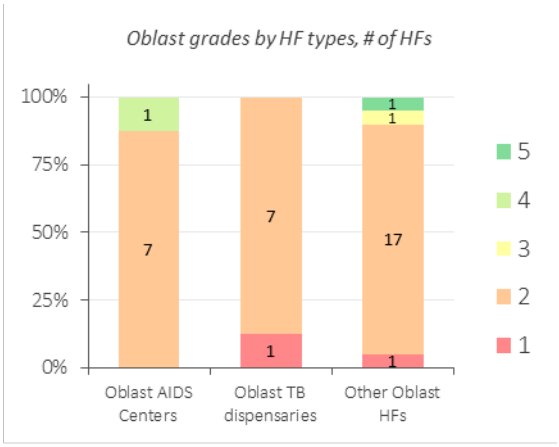
4.C.07. Storage conditions and capacity



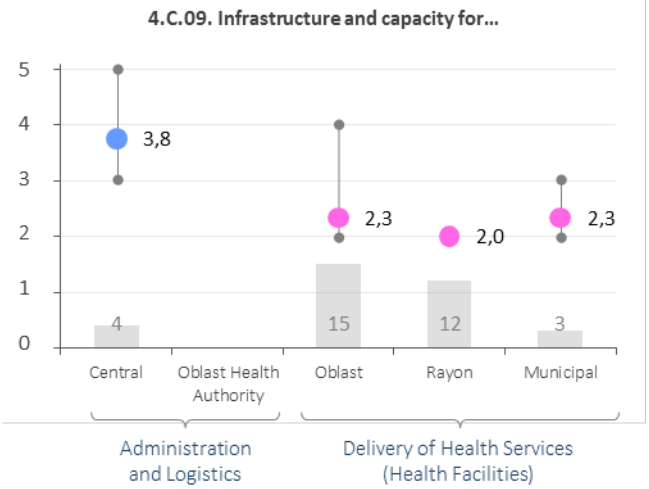


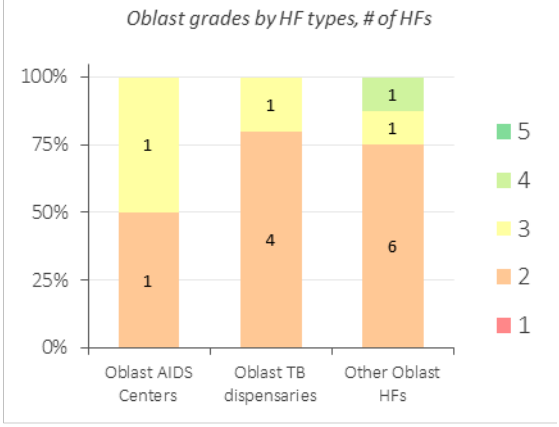
4.C.08. Housekeeping



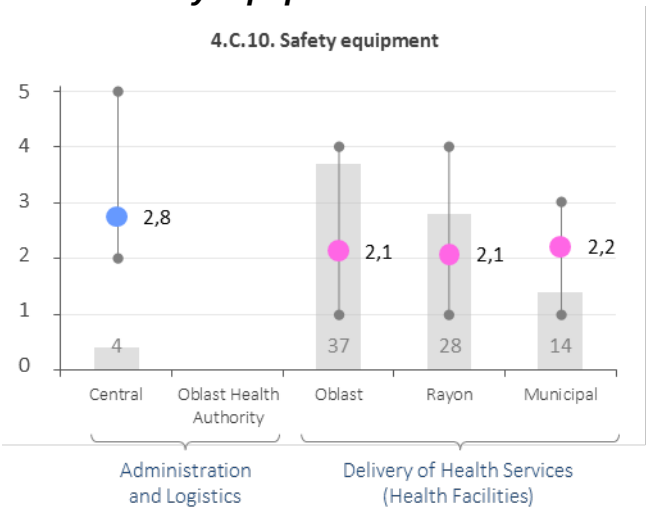


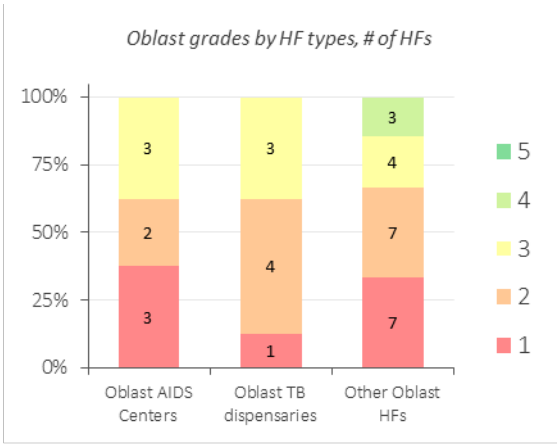
4.C.09. Infrastructure and capacity for expired products



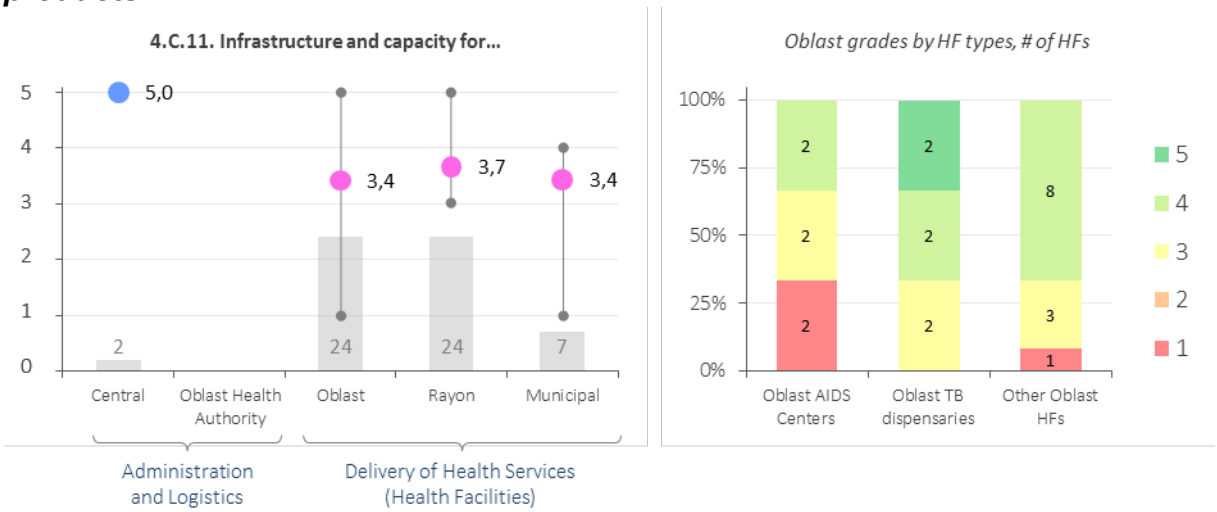


4.C.10. Safety equipment

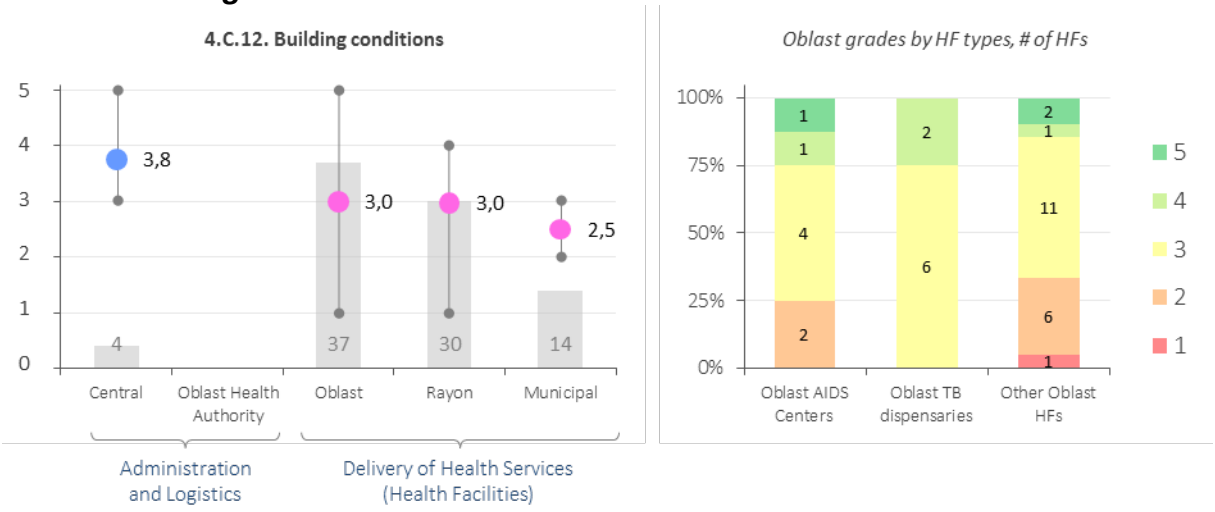




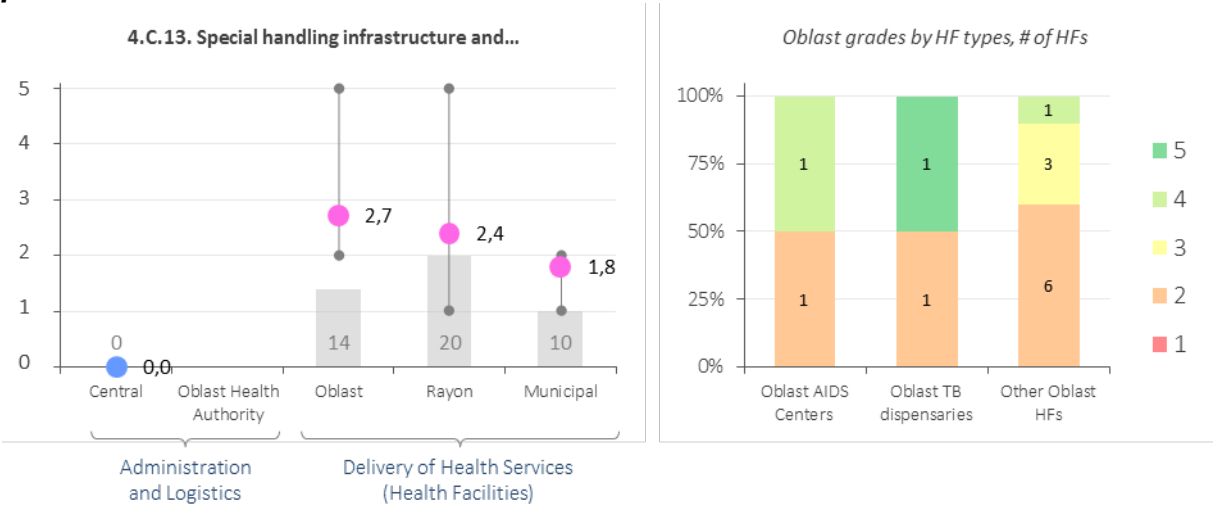
4.C.11. Infrastructure and capacity for controlled substances/high-value products



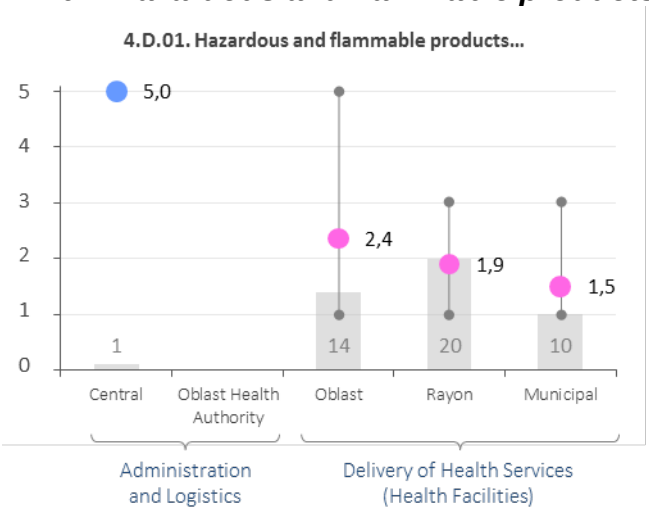
4.C.12. Building conditions

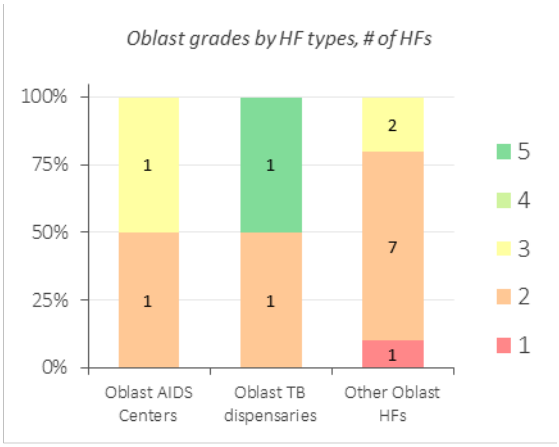


4.C.13. Special handling infrastructure and capacity for hazardous/flammable products

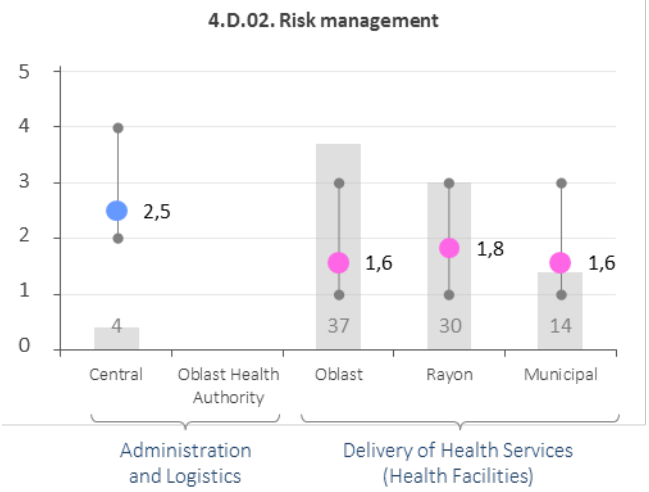


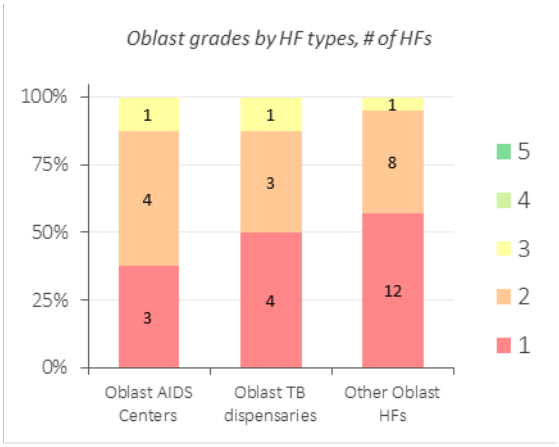
4.D.01. Hazardous and flammable products standards



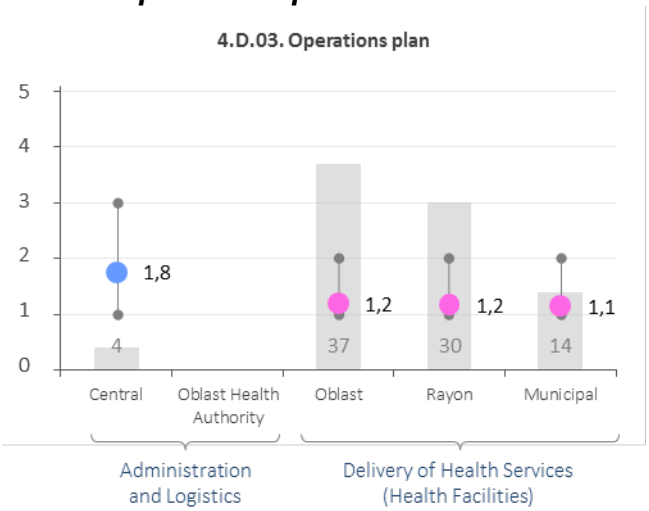


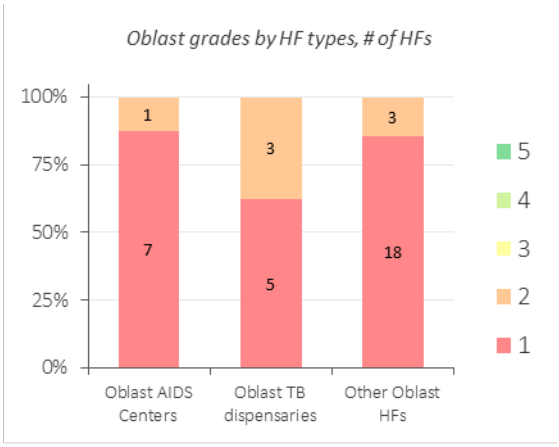
4.D.02. Risk management



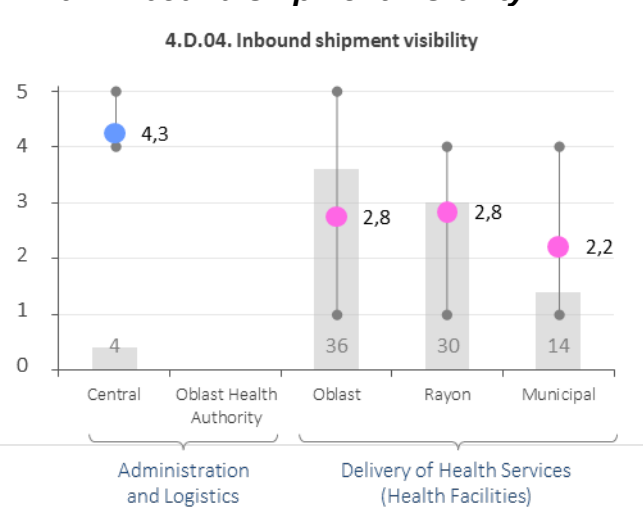


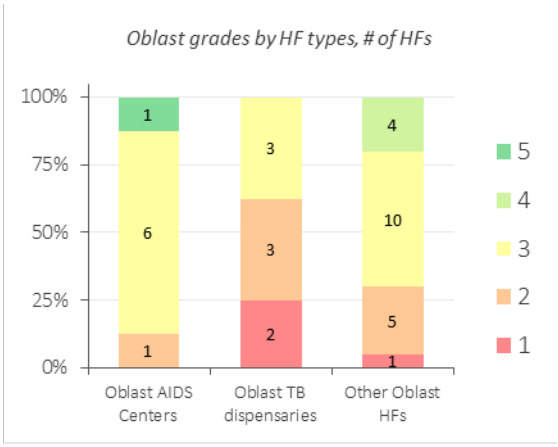
4.D.03. Operations plan



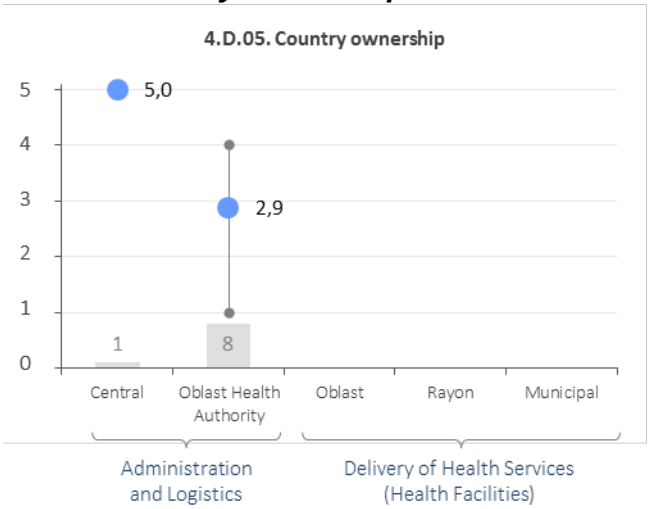


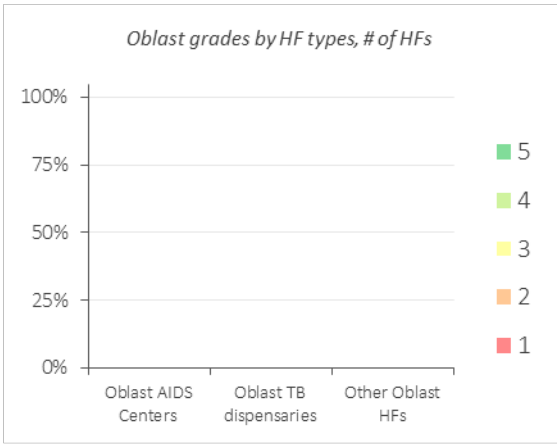
4.D.04. Inbound shipment visibility



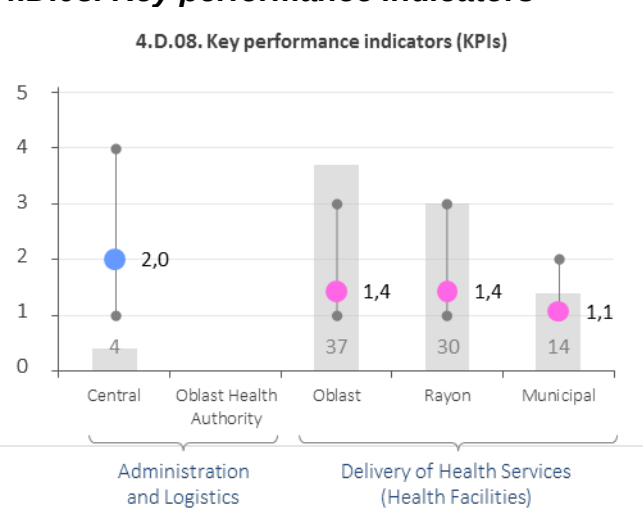


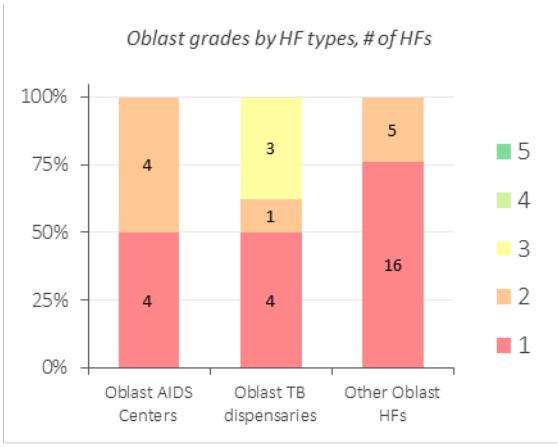
4.D.05. Country ownership





4.D.08. Key performance indicators





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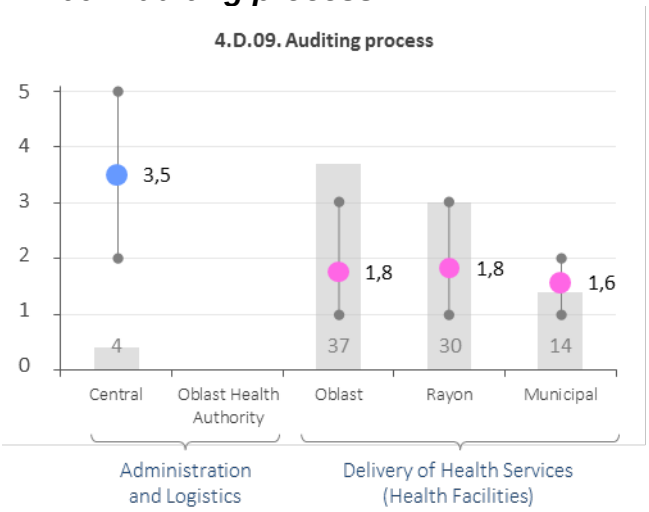
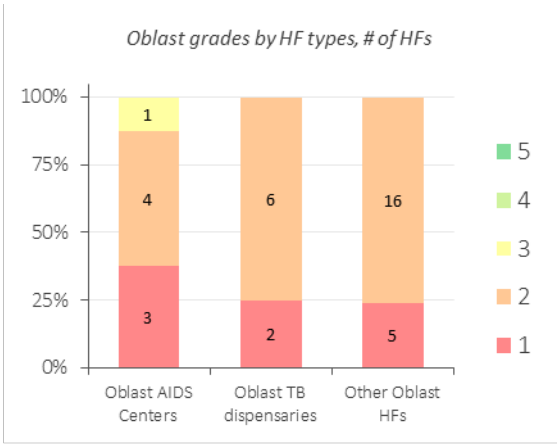
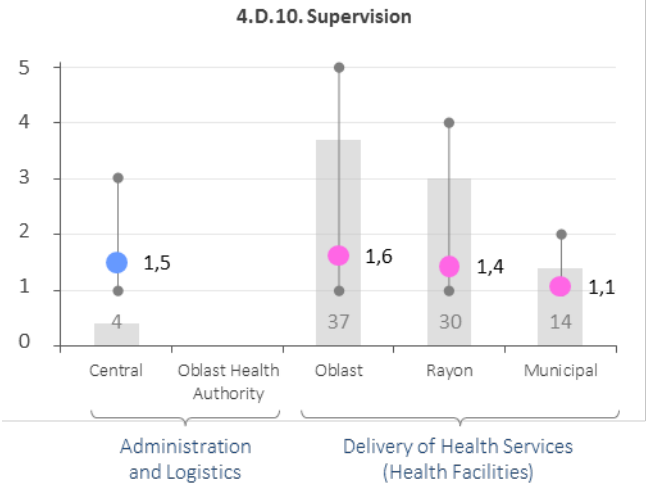
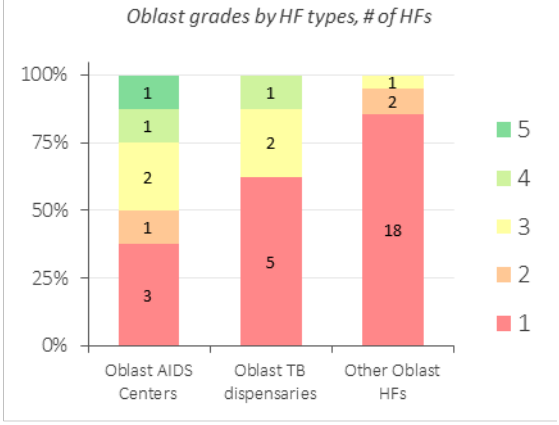


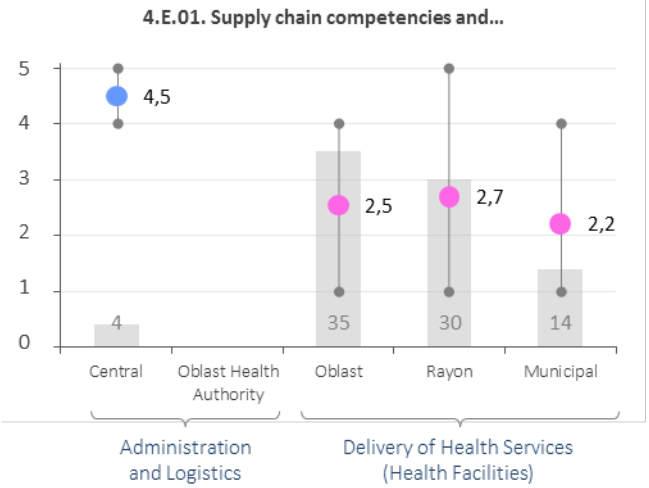


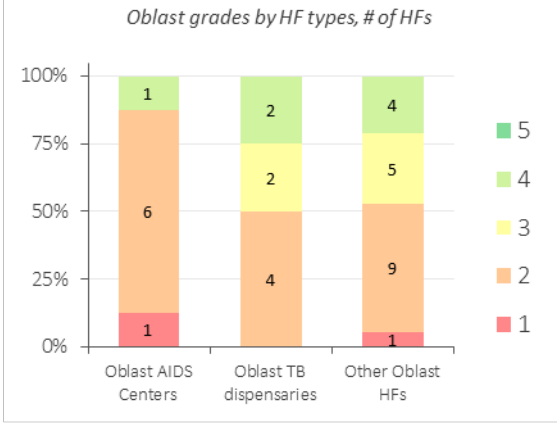
4.D.10. Supervision





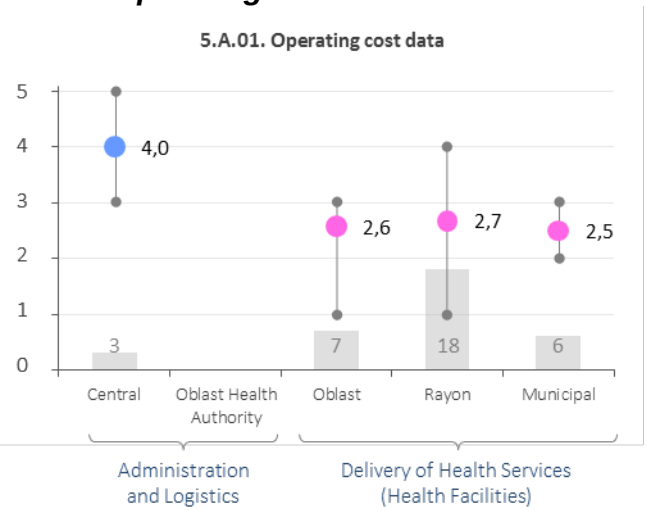
4.E.01. Supply chain competencies and staffing

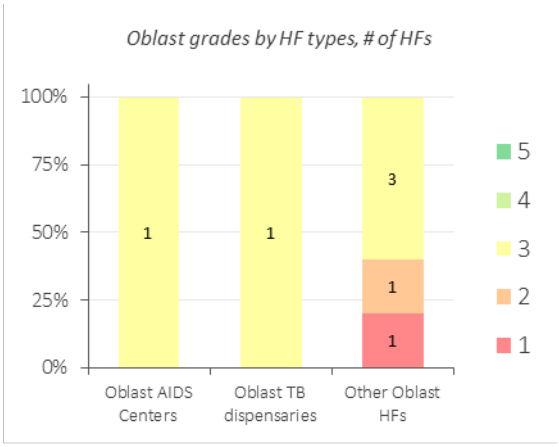




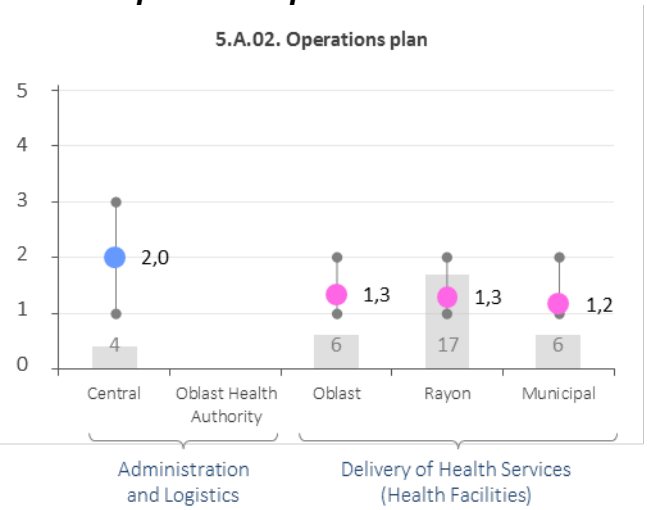
FA-5. Transportation

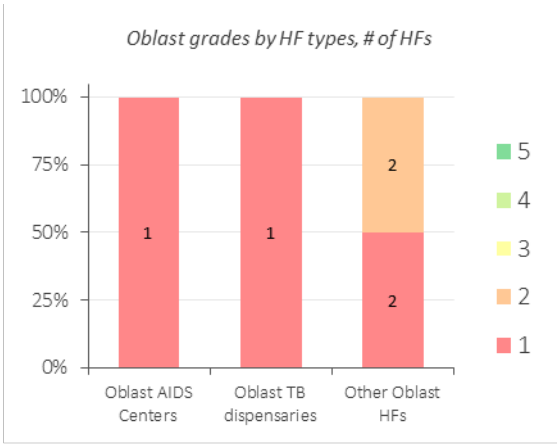
5.A.01. Operating cost data





5.A.02. Operations plan





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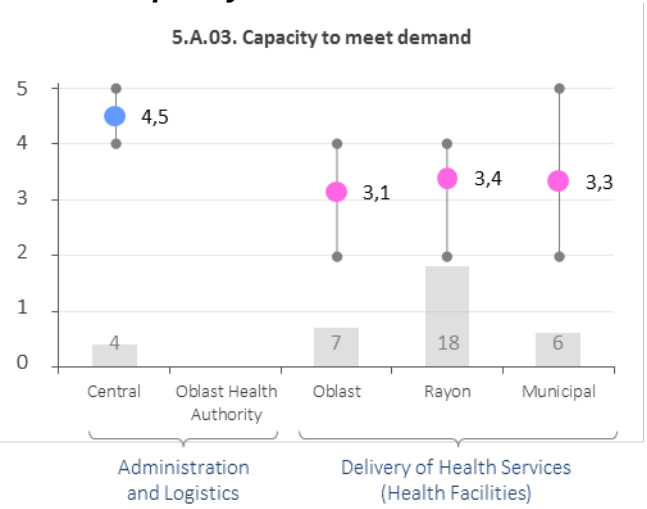
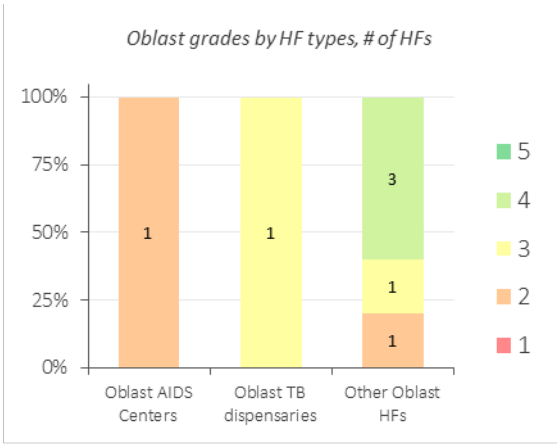
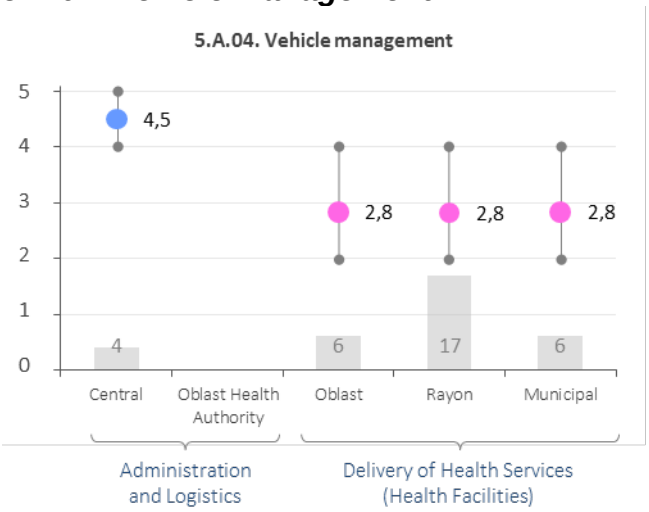
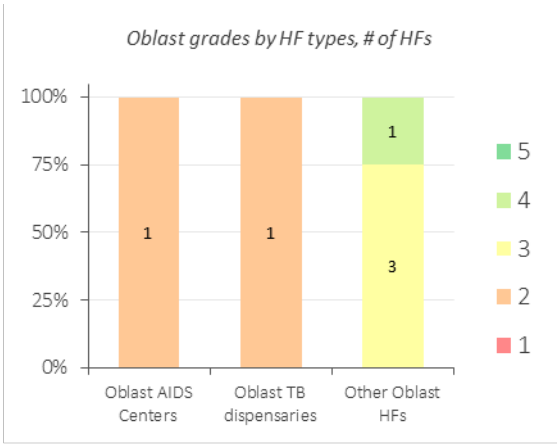


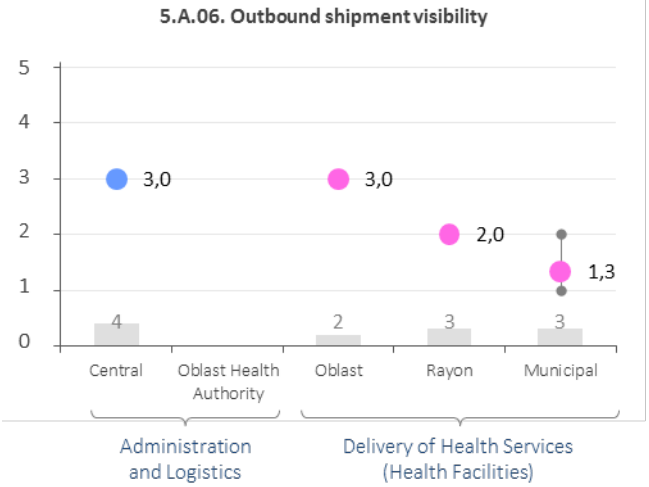


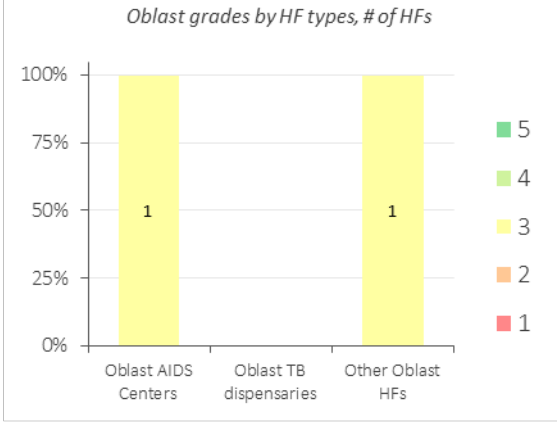
5.A.04. Vehicle management



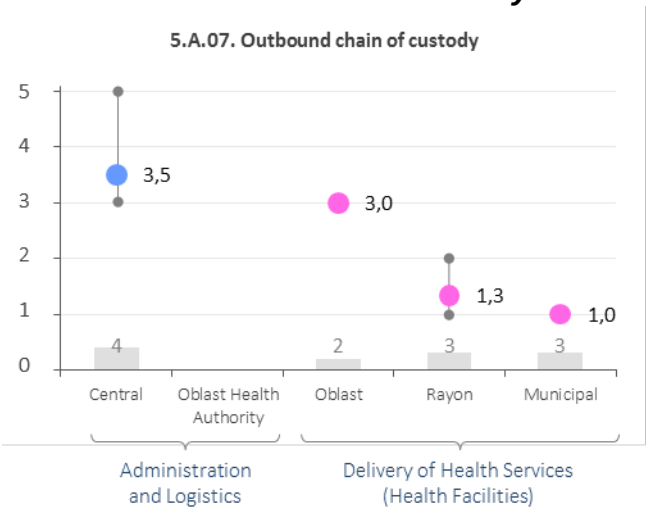


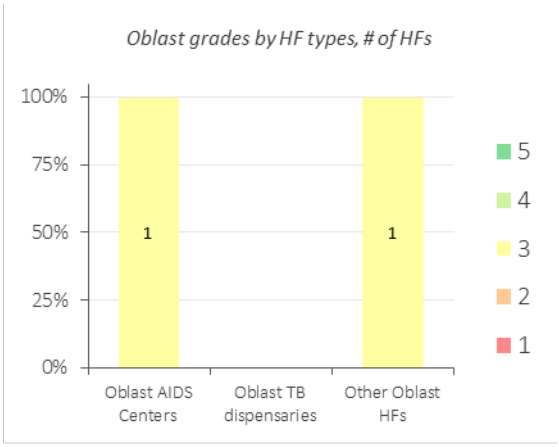
5.A.06. Outbound shipment visibility



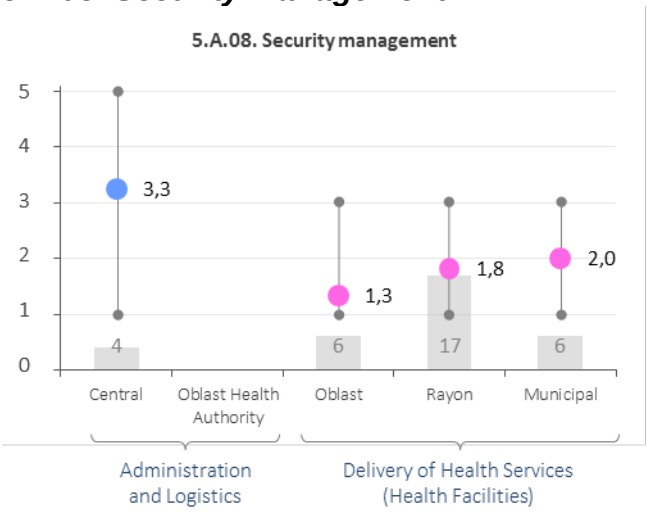


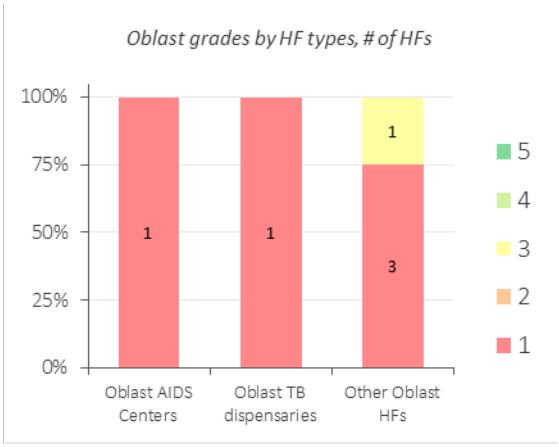
5.A.07. Outbound chain of custody



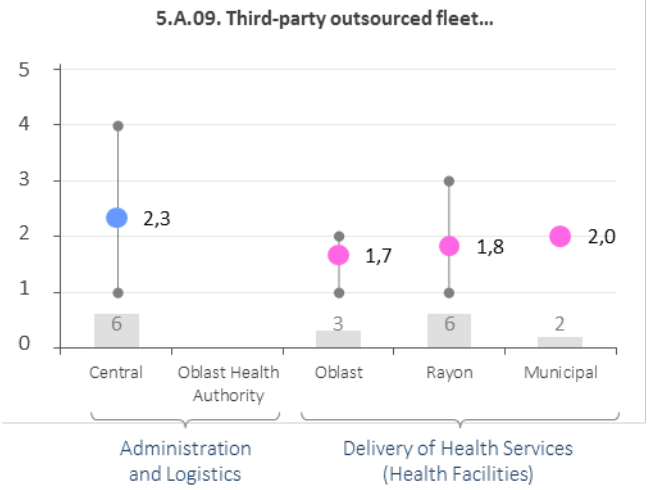


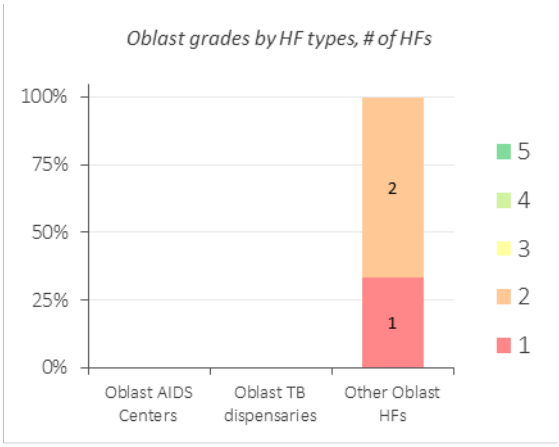
5.A.08. Security management





5.A.09. Third-party outsourced fleet management





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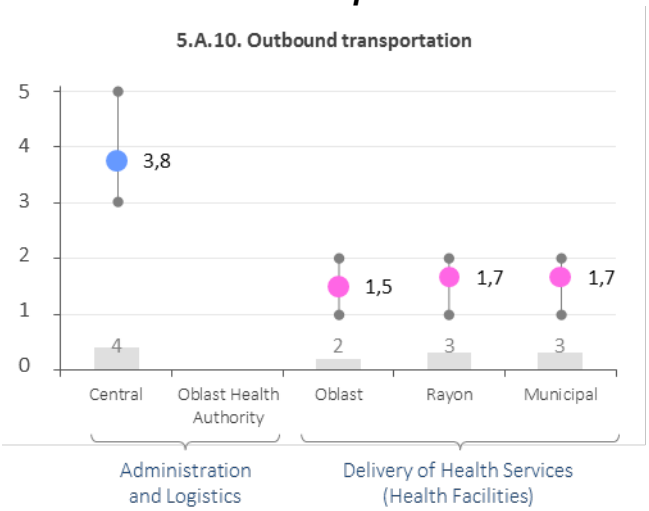

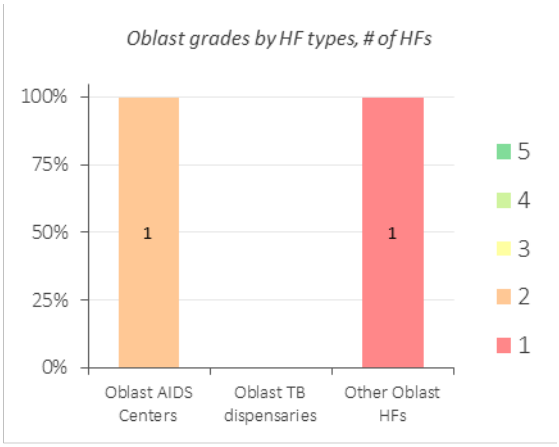

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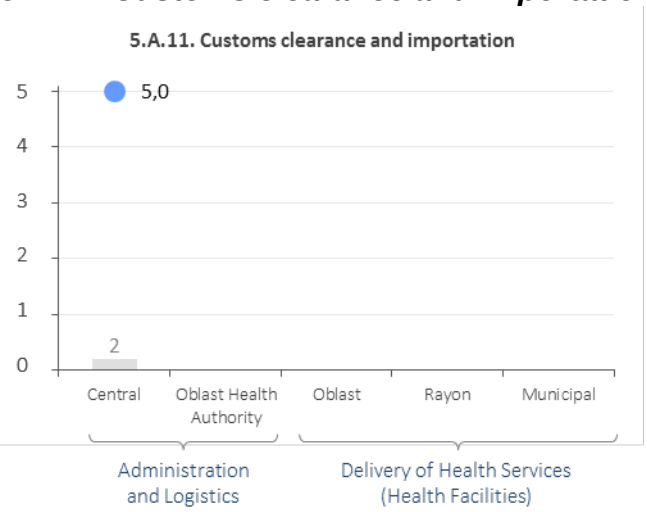

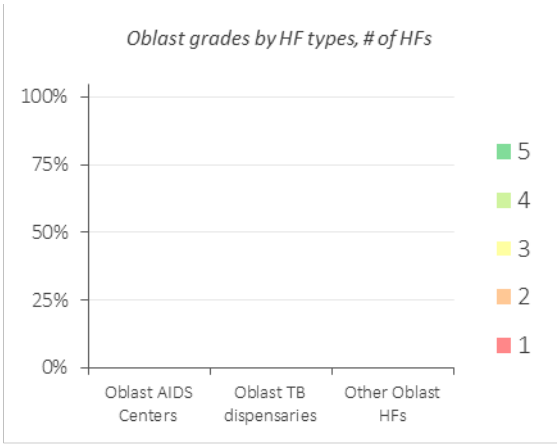

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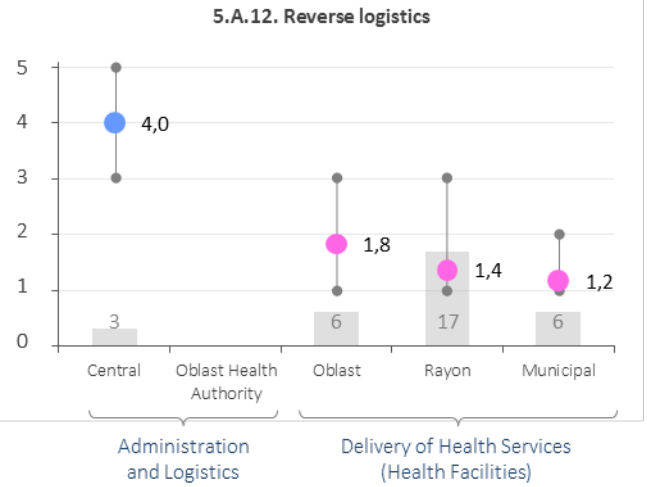
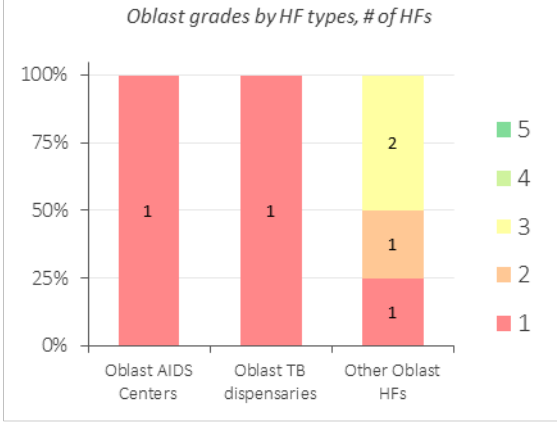
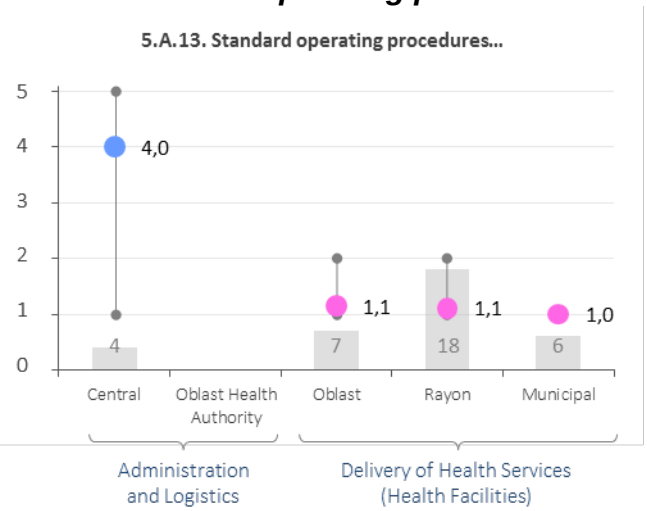
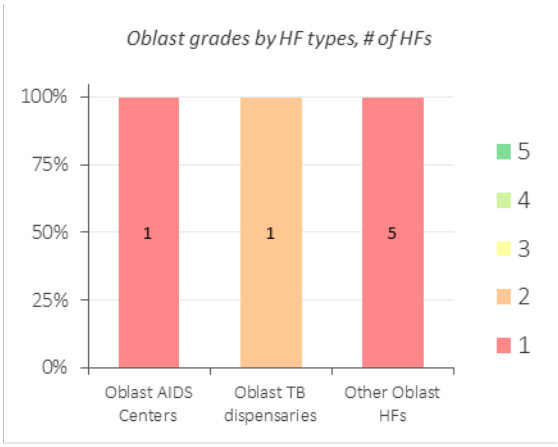




5.A.13. Standard operating procedures





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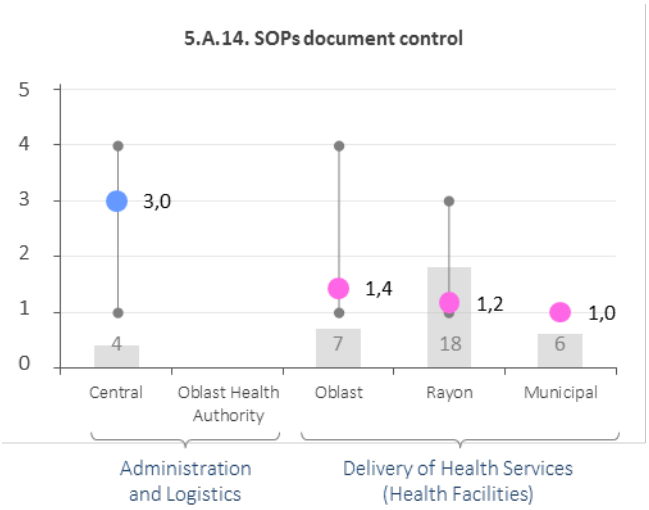

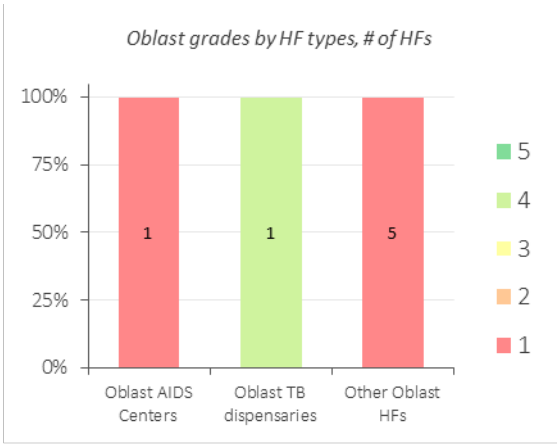

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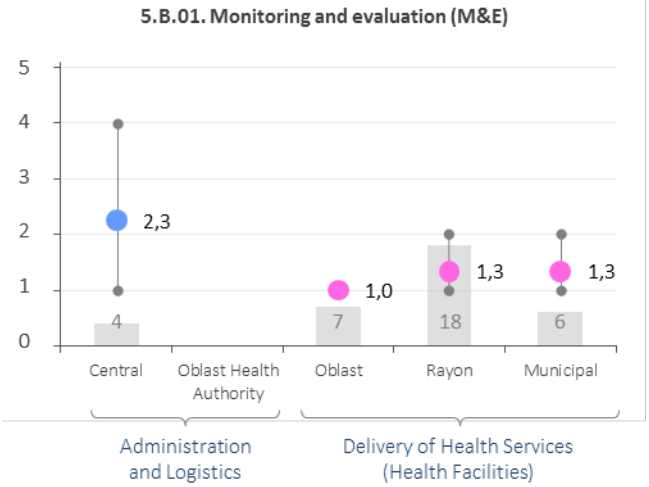
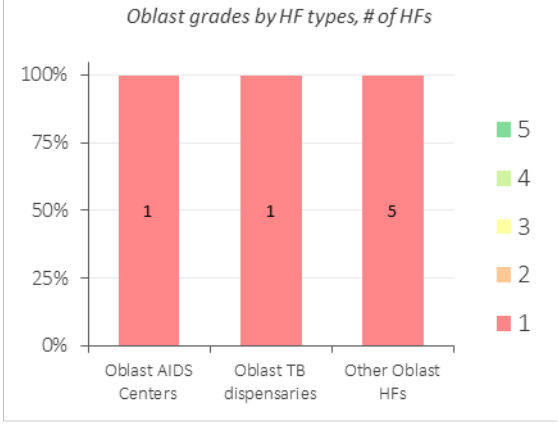
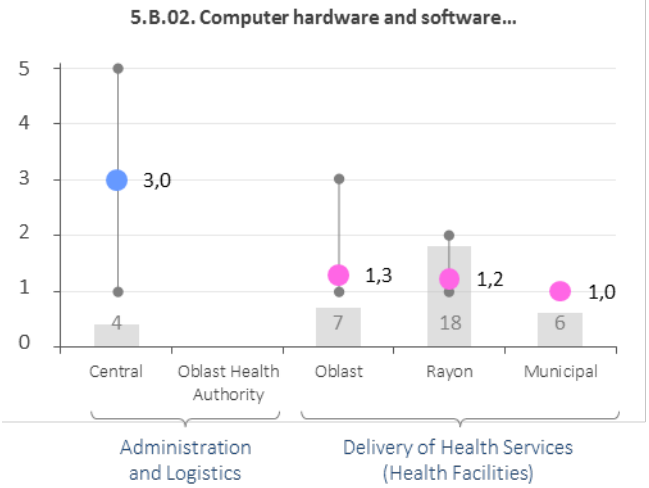
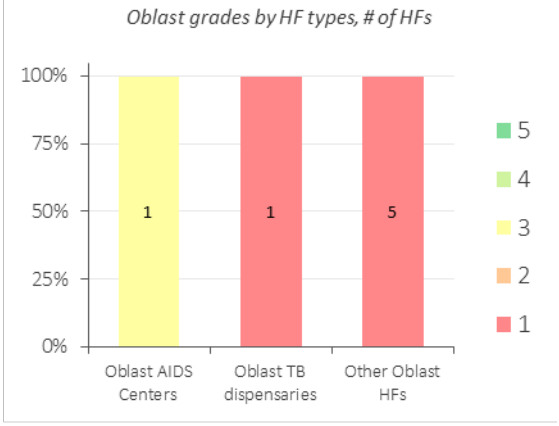


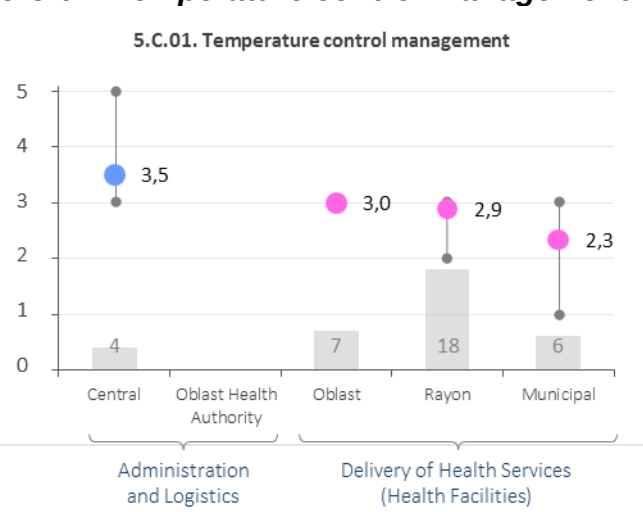


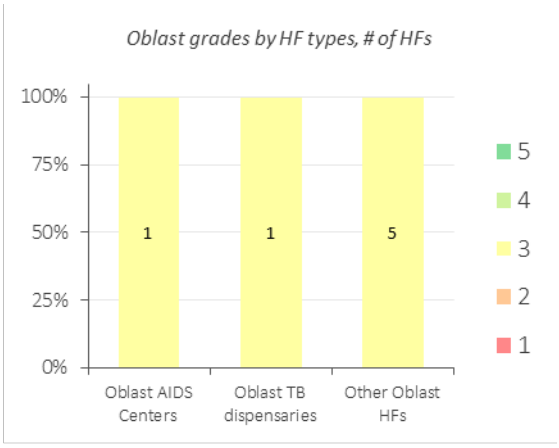
5.B.02. Computer hardware and software availability



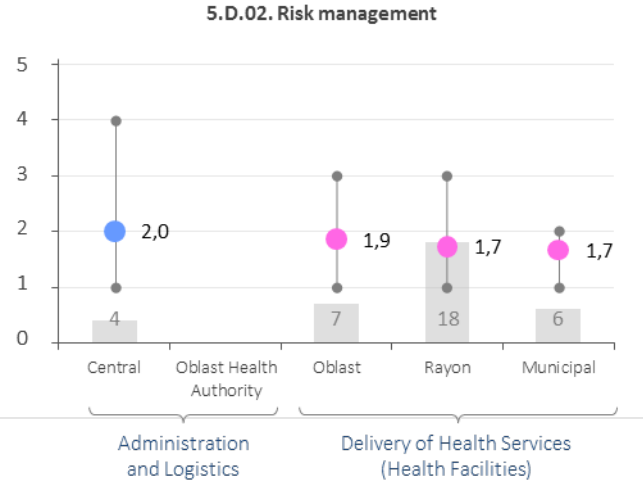


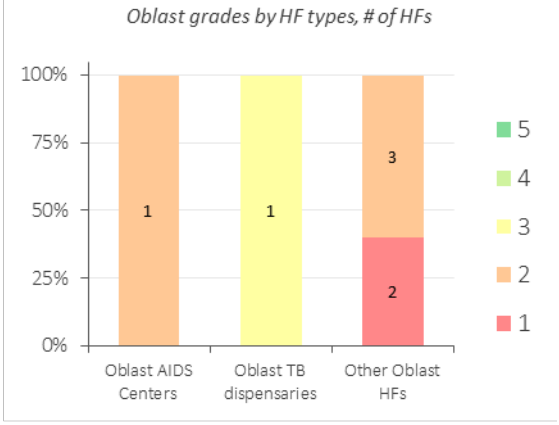
5.C.01. Temperature control management



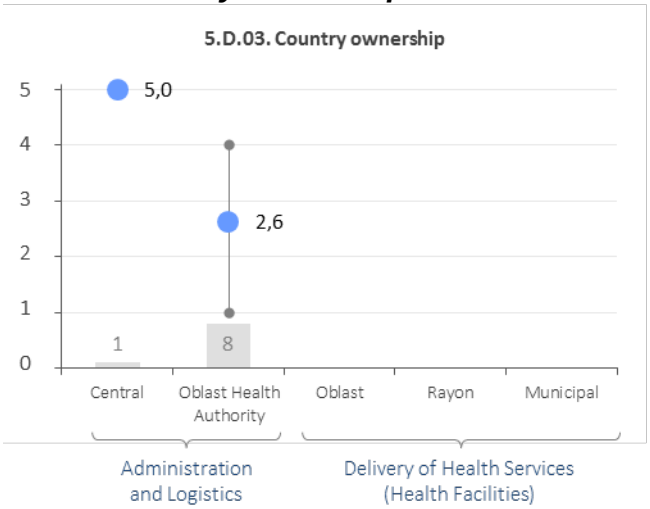


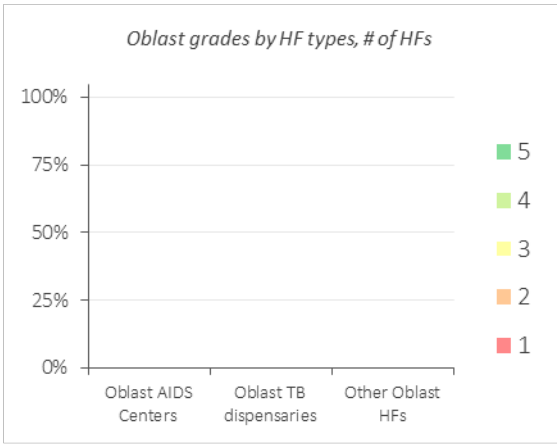
5.D.02. Risk management



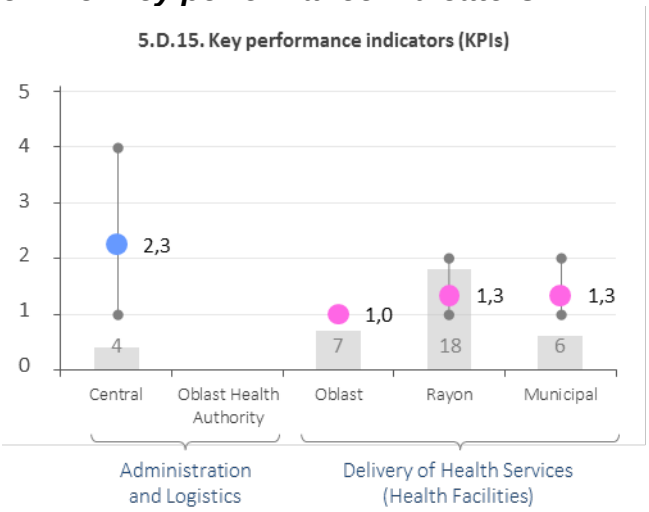


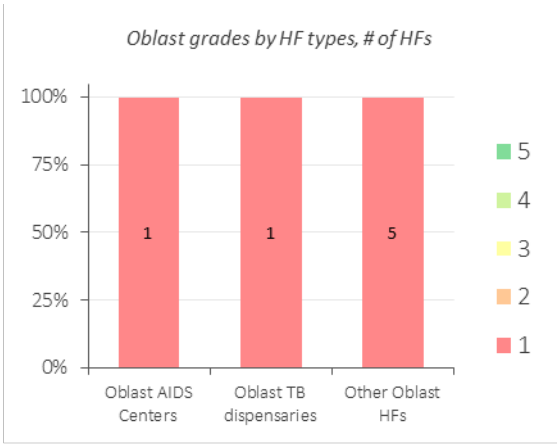
5.D.03. Country ownership



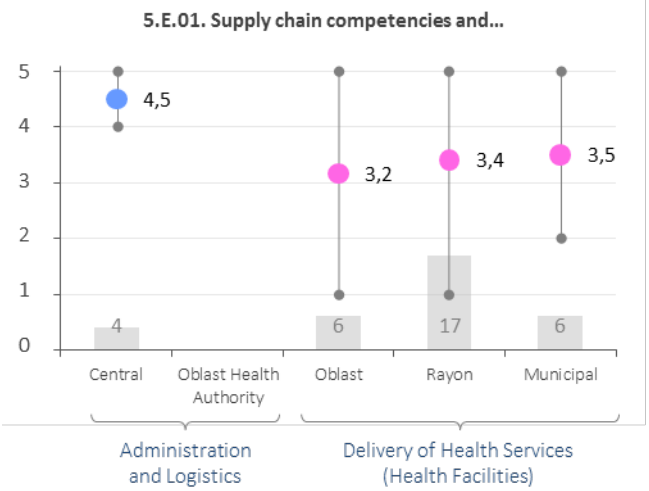


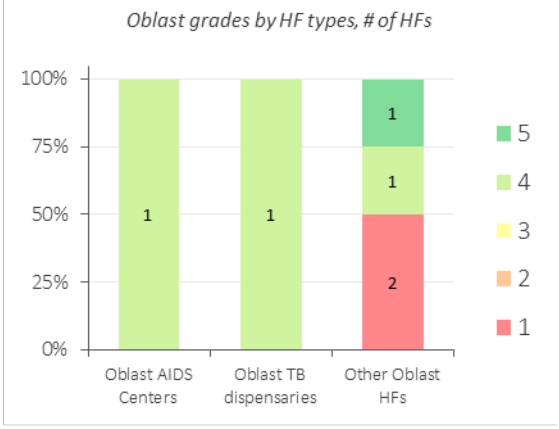
5.D.15. Key performance indicators





5.E.01. Supply chain competencies and staffing





ANNEX C. CMM QUESTIONNAIRE

1. Product Selection

1.a. Process and Tools

1.a.1. Standard treatment guidelines (STGs)/clinical guidelines

Interview questions	Things to observe
• Are STGs available? • How often are they updated? • Describe how the STGs affect supply chain functions.	• Ask for a copy of the STGs.

1	2	3	4	5
• Standard treatment guidelines do not exist.	• Universal clinical guidelines, such as those put forth by the World Health Organization (WHO), are used for some priority health programs. • Guidelines are not adapted to the country context and application is not consistent.	• Universal clinical guidelines, such as those put forth by WHO, are used for all priority health programs. • Guidelines are not fully adapted to the country context and application is consistent.	• Universal clinical guidelines, such as those put forth by WHO, are used to inform national STGs for most priority health programs; application is consistent. • STGs are reviewed at intervals longer than one year. • Updates to STGs are communicated to most stakeholders.	• Universal clinical guidelines, such as those put forth by WHO, are used to inform national STGs for all priority health programs; application is consistent. • Guidelines are reviewed annually. • Updates are officially communicated to all program stakeholders.

1. Product Selection

1.a. Process and Tools

1.a.2. National formulary/essential medicines list (EML)

Interview questions	Things to observe
• Is a NEML available? • How often is it updated? • Describe how the NEML guides decision making in the supply chain.	• Ask for a copy of the NEML.

1	2	3	4	5
• An essential medicines list (or similar tool) is not in place.	• The WHO EML is in place but not adapted to the country context. • The list is not referenced in procurement decisions.	• A national essential medicines list (NEML) is in place. • NEML use is ad hoc in making procurement and supply chain management decisions.	• The NEML is based on up-to-date STGs. • The NEML is regularly updated by the EML committee.	• The NEML is based on up-to-date STGs. • The NEML is regularly updated by the EML committee. • The updated NEML actively drives procurement and supply chain management decisions.

1. Product Selection

1.d. Strategic Planning and Oversight

1.d.1. Technology/product evaluation committee

Interview questions	Things to observe
• What is the process for updating the NEML and STGs? • Who is responsible for the updates?	• N/A

1	2	3	4	5
• No oversight board exists. • Review of change requests to STGs/NEML is ad hoc and on a case-by-case basis.	• An oversight board exists. • Change requests to STGs/NEML are conducted, through which major changes to universal clinical guidelines, such as those put forth by WHO, are implemented. • A list of approved items exists for procurement.	• An oversight board exists. • Change requests to STGs/NEML are consistently reviewed (every two years). • A list of approved items exists for procurement.	• The oversight board ensures STGs are regularly updated, at least annually. • The oversight board ensures the NEML is regularly updated, at least annually • A comprehensive and transparent evaluation process for changes/additions is in place. • A list of approved items exists for procurement.	• The oversight board ensures STGs are regularly updated, at least annually. • The oversight board ensures the NEML is regularly updated, at least annually • A comprehensive and transparent evaluation process for changes/additions is in place. • A list of approved items exists for procurement. • An oversight board ensures that the STG and NEML drive procurement and supply chain management decisions.

1. Product Selection

1.d. Strategic Planning and Oversight

1.d.2. Priority health program strategies

Interview questions	Things to observe
• Does a supply chain strategy exist for priority health programs?	• Ask to see relevant strategic planning documents.

1	2	3	4	5
• Priority health program strategies either are not developed or are outdated.	• Short-term goals are outlined (one year). • Strategies are somewhat aligned to the actual services and products available or provided at SDPs and laboratories. • Key stakeholders (e.g., technical experts, donors) are included ad hoc in the strategic planning process. • The impact of product selection strategies on the supply chain is only somewhat understood.	• Medium-term goals (two years) are outlined, in addition to short-term goals. • Strategies are fully aligned with the actual services and products available or provided at SDPs and laboratories. • Key stakeholders (e.g., technical experts, donors) are consistently included in the strategic planning process. • The impact of product selection strategies on the supply chain is not well understood below the managerial level.	• Long-term goals (three to four years) are outlined, in addition to short- and medium-term goals. • Strategies are fully aligned with the actual services and products available or provided at SDPs and laboratories. • Key stakeholders (e.g., technical experts, donors) are consistently included in the strategic planning process. • The strategy enables decision makers to plan for resources and to support the annual planning and activity process. • All participants involved in product selection understand how their roles align with strategic goals.	• A five-plus-year strategy is included along with short-, medium-, and long-term goals. • Strategies are fully aligned with the actual services and products available or provided at SDPs and laboratories. • Key stakeholders (e.g., technical experts, donors) are consistently included in the strategic planning process. • The strategy enables decision makers to plan for resources and to support the annual planning and activity process. • All participants involved in product selection understand how their roles align with strategic goals. • Managers use the strategy to guide decision making. • Progress toward goals is monitored.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.1. Long-term planning for financing

Interview questions	Things to observe
• How long of a time period do forecasts cover (e.g., one- to two-year forecasts, three-year forecasts, five-year forecasts)? • Are forecasts for the specified period(s) (e.g., one to two years) sufficient to maintain a "full supply"? • Is forecast information used to mobilize advocacy efforts for product financing? • Does the Ministry of Health (MOH) budget include line items for the supply chain?	• N/A

1	2	3	4	5
• Forecasts cover one to two years. • Forecasts are not used to advocate for product financing from government or donor sources. • Financing is insufficient for maintaining "full supply."	• Forecasts cover one to two years. • Forecasts are used to mobilize funding from government and donor sources. • Financing is somewhat, but not completely, sufficient for maintaining full supply.	• Forecasts cover three years. • Forecasts are used to mobilize funding from government and donor sources. • Financial resources are sufficient to ensure a full supply (forecasted quantities) of products for the current year.	• Forecasts cover three years. • Forecasts are used to mobilize funding from government and donor sources. • Financial resources are sufficient to ensure a full supply of most priority products for a two-year horizon. • MOH budget line items for supply plans exist.	• Forecasts cover five years. • Forecasts are used to mobilize funding levels for full supply of priority health products. • Financial resources are sufficient to ensure a full supply of most priority products for a two-year horizon. • MOH budget line items for supply plans are consistently funded.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.2. Forecasting methodologies and assumptions

Interview questions	Things to observe
• Describe the forecasting process. **Probe:** What methodologies are considered in preparing the forecast? How is a forecasting methodology selected? • What types of data are used to develop forecasts (e.g., morbidity, demographics, consumption, and service data)? • Is there a documented methodology for forecasting?	• If methodology is documented, ask to see a copy. • Determine if results can easily be replicated based on whether the methodology is clearly defined and if assumptions are well described.

1	2	3	4	5
• A forecasting methodology is not defined or does not exist. • Forecast assumptions are not backed up with documented sources. • Forecast results cannot be replicated from data due to lack of methodology, assumption, and/or data source explanation.	• A single methodology is selected, based on available data. • A forecasting methodology is used inconsistently and is only partially applied. • Methodology, data sources, and assumptions are documented partially. • Results can only be partially replicated from the information available.	• A single methodology is consistently and correctly applied to forecasting. • Methodology, data sources and assumptions are well documented.	• Two methodologies are appropriately applied. • Methodology, data sources, and assumptions are well documented but not fully supported by morbidity, demographic, consumption, and service data. • Forecast results from various methodologies used are compared/analyzed.	• The forecast is developed using all applicable methodologies. • Methodology, data sources, and assumptions are fully documented and supported by available data, including morbidity, demographic, consumption, and service data. • Forecast results from various methodologies employed are compared/analyzed.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.3. Forecasting data collection process

Interview questions	Things to observe
• Do you have any kind information system in your facility with data available to help	• If product description or pricing information is available, ask to see a copy to determine if

1	2	3	4	5
• No process or tools are used to collect forecasting data. • Data needed for forecasting are consistently unavailable. • No product description or pricing information is collected.	• A standardized process exists for collecting forecasting data. • Data needed for forecasting are not consistently and/or readily available. • Product description and pricing data are only partially documented. • Paper-based tools are used throughout the system.	• The standardized process for collecting forecasting data is institutionalized. • Most data needed for forecasting are consistently and readily available. • Product descriptions and pricing are available after compilation from various electronic and manual reports. • Service delivery point data are regularly consolidated at the district, regional, or central level into electronic tools with paper-based reporting for sites where electronic systems do not reach.	• The standardized process for collecting forecasting data with an LMIS (an information system to track and monitor supply chain data) and HMIS (an information system to track and monitor health services data) is institutionalized and electronic. • All data needed for forecasting are consistently and readily available. • Product descriptions and pricing are available electronically after compilation from various electronic and manual reports. • LMIS and HMIS data are available electronically but need to be re-entered manually into forecasting tools.	• The standardized process for collecting forecasting data, including morbidity, service and consumption (LMIS and HMIS), is institutionalized and electronic. • All data needed for forecasting are consistently and readily available. • Real-time nationwide data are available for forecasting in formats that integrate with forecasting tools. • Updated product descriptions and price data are automatically updated through enterprise resource planning (ERP) functionality into forecasting software.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.4. Forecasting data quality

Interview questions	Things to observe
• Describe the reporting tools available for forecasting. Are the data consistent, correct, and timely? • What logistics and/or service data challenges affect forecast reliability? • Do forecasts take into account data quality issues (e.g., unadjusted/invalidated data)? Describe. • Are minor data adjustments documented? • Are systematic internal validation checks made to ensure that reported data is consistently complete and timely?	• Ask the facility to show the reporting tools.

1	2	3	4	5
• Data needed for forecasting are generally unavailable, inconsistent, outdated, and/or incomplete.	• Logistics and/or service data are poor due to consistent problems with timeliness and completeness. • Logistics and/or service data accuracy cannot be validated. • Unadjusted and/or invalidated data are used in the forecast. • Product description and pricing data are either outdated or incomplete.	• The quality of logistics and/or service data is considered "acceptable"; however, inconsistencies are common. • Data are not consistently validated. • Unadjusted and/or invalidated data are sometimes used in the forecast. • Product description and pricing data are generally current and complete.	• All data needed for forecasting are up-to-date, consistent, and complete. • Critical adjustments are fully documented. • Data are consistently validated. • Product description and pricing data are urgent and complete.	• All data needed for forecasting are up to date, timely, consistent and complete. • All adjustments are fully documented. • Data are consistently and systematically validated. • Product description and pricing data are current and complete.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.5. Measuring forecast accuracy

Interview questions	Things to observe
• How often is forecast accuracy measured? • Are written procedures used to measure the accuracy of the forecast data? • Are there defined methods for measuring forecast accuracy? • Is root cause analysis performed to explain discrepancies between forecast and actual consumption? • Are findings from root cause analysis used in future forecast exercises?	• Ask the facility to show written procedures and any documentation that illustrates defined methods for measuring forecast accuracy.

1	2	3	4	5
• Methods for measuring forecast accuracy are not defined. • Forecast accuracy is not measured.	• Methods for measuring forecast accuracy are not defined. • Forecast accuracy is measured ad hoc.	• Methods for measuring forecast accuracy are defined. • Forecast accuracy is measured regularly.	• Methods for measuring forecast accuracy are defined. • Forecast accuracy is measured regularly. • A root cause analysis is conducted to identify discrepancies between forecast and actual consumption.	• Methods for measuring forecast accuracy are defined. • Forecast accuracy is measured every time the forecast is updated. • Findings of the root cause analysis are considered during future forecast exercises to learn from mistakes.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.6. Supply planning data collection process

Interview questions	Things to observe
• Is a defined process in place for collecting relevant data (i.e., stock on hand, consumption and shipment status data) that can be used when preparing a supply plan? • Describe the process for collecting data that are used in preparing supply plans. • Are data available and easy to assemble for use in developing supply plans? In what format are the data? • Are the electronic data available through enterprise resource planning (ERP) required to be re-entered manually into supply planning tools? • Is a process in place for continuously monitoring stock on hand and consumption for received shipments? • Is a process in place for obtaining the forecast of future consumption? • Is a process in place for regularly obtaining freight costs and lead times by vendor?	• N/A

1	2	3	4	5
• No defined process is in place for collecting data needed to inform the supply plan. • Not all data needed to inform the supply plan are available.	• Basic processes are in place for routinely obtaining forecasts, stock-on-hand, consumption, and shipment status data. • Data collection is problematic and time consuming. • A manual, paper-based process is in place.	• Processes are in place for obtaining consumption data, pending and received shipments, and supplier prices. • Data are available electronically but must be collated from various reports and entered manually.	• Processes are in place for obtaining consumption data, pending and received shipments, and prices by supplier. • Processes are in place for obtaining freight costs and lead times by supplier. • Data are available electronically but need to be re-entered manually into the supply planning tool.	• Consumption, stock- on-hand, and delivery information is updated electronically through integrated software solutions. • No data entry into supply planning tools is required.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.7. Supply planning data quality (if there are no data on 2.a.6., then skip this question)

Interview questions	Things to observe
• Explain the quality of data that are used for supply planning purposes. Are they complete? Are they reliable? • Is supply planning data easy to obtain? • Describe the process for reconciling data quality. • Are assumptions documented?	• N/A

1	2	3	4	5
• Data needed for supply planning are consistently unavailable, outdated, and/or incomplete.	• Stock-on-hand, consumption, supplier prices, and shipment status data are generally poor due to consistent problems with timeliness and completeness. • Data assumptions are not documented.	• Data quality is considered "acceptable"; however, inconsistencies are common. • Data assumptions are minimally documented.	• Data quality is "good"—up to date, complete, and reliable. • Data assumptions are fully documented.	• Complete and up-to-date electronic data provides an accurate picture of shipment status, consumption, etc. • Data assumptions are fully documented.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.8. Developing and monitoring the supply plan (if there are no data on 2.a.6., then skip this question)

Interview questions	Things to observe
• Are supply plans routinely reviewed and monitored? How often are supply plans reviewed and updated? • What data inform the updating of supply plans (e.g., consumption, stock on hand)? • Are supply plans developed and reviewed using paper or electronic tools?	• N/A

1	2	3	4	5
• Procedures are not in place for developing and/or monitoring the supply plan. • The supply plan is never monitored. • Shipments in the supply plan are not modified.	• Basic or informal procedures are in place for developing and/or modifying the supply plan, including data requirements. • The supply plan is monitored and adjusted less than twice a year.	• Formal procedures are in place for developing and/or monitoring the supply plan. • Forecast, consumption, and stock-on-hand data are used to develop the supply plan. • The supply plan is updated at least twice a year.	• Supply plan development and/or monitoring procedures are institutionalized. • Relevant forecast, consumption, and stock- on-hand data inform the supply plan. • The supply plan is updated quarterly.	• Supply plan development and monitoring are integrated into electronic systems. • All relevant forecast, consumption, and stock- on-hand data inform the supply plan. • The supply plan is updated quarterly.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.9. Standard operating procedures (SOPs)

Interview questions	Things to observe
• Do some kind of SOPs exist for management, basic operations, or processes/departments? • Is there a policy in place for implementing and managing SOP processes? • Are employees mandated to read SOPs, and is their compliance documented?	• Ask the facility to provide some SOPs. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• Some SOPs for basic process supply chain operations are available.	• Detailed SOPs for most processes are available. • A policy exists for implementing and managing processes outlined in the SOPs.	• Detailed SOPs for all processes are available. • All employees are mandated to read the SOPs and there is a documented record that employees are aware of the content.	• Detailed SOPs for all processes are available. • All employees are mandated to read the SOPs and there is a documented record that employees are aware of the content. • SOPs comply with national and local regulations.

2. Forecasting and Supply Planning

2.a. Process and Tools

2.a.10. SOP document control

Interview questions	Things to observe
• Have some kind of SOPs been reviewed after their initial creation? • How often are the SOPs reviewed and updated? • What is the process for updating the SOPs?	• Ask the facility to show multiple versions of the SOPs and any documentation that illustrates version control, if applicable. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• SOPs are available in their original version but have not been reviewed since inception.	• SOPs are reviewed infrequently (less than annually). • Limited version control measures are in place.	• SOPs are reviewed annually. • SOPs are updated during annual review as needed. • SOPs are filed in an accessible central location.	• SOPs are updated whenever procedures or system functionality is changed. • Copies of SOPs are printed and provided to relevant personnel. • SOPs contain a documented review history (list of dates and authorized signature) and version number. • Originals of SOPs are stamped with the word “original” and copies with “copy.”

2. Forecasting and Supply Planning

2.b. Management Information

2.b.1. Forecasting tools and software

Interview questions	Things to observe
• Are manual tools or computer software used to conduct forecasts? • If no, what types of software tools are used to support forecasting (e.g., spreadsheets, commercial off-the-shelf (COTS) or donor supply chain tools (i.e., Pipe Line/Quantimed))? • Have advanced forecasting tools been integrated with the LMIS and ERP procurement and supply planning functionality?	• Verify if a working computer exists and if so, confirm that the required software or manual tools are available.

1	2	3	4	5
• No manual tools or computer software are used to conduct forecasting.	• Forecasting calculations are made using a paper-based tool.	• Forecasting calculations are made using simple software tools such as MS Excel or Access.	• Forecasting calculations are made using a specialized forecasting software or tool (i.e., commercial off-the-shelf software, basic proprietary software or donor-developed tool).	• Forecasting calculations are made using a specialized forecasting software or tool (i.e., commercial off-the-shelf software, basic proprietary software or donor-developed tool). • The forecasting tool is integrated with an LMIS and/or ERP system that has procurement and supply planning functionality.

2. Forecasting and Supply Planning

2.b. Management Information

2.b.2. Supply planning tools and software

Interview questions	Things to observe
• Are manual tools or computer software used to conduct supply planning? • Are other software tools (e.g., spreadsheets) or COTS or donor supply chain project-developed supply planning tools used to support supply planning?	• Verify that manual tools or computer software exists if the interviewee says that they are available.

1	2	3	4	5
• No manual tools or computer software are used to conduct supply planning.	• Supply planning calculations are made using a paper-based tool.	• Supply planning calculations are made using simple software tools such as MS Excel or Access.	• Supply planning calculations are made using a commercial, off-the-shelf software, a basic proprietary software, or a donor-developed tool.	• Supply planning calculations are made using an advanced warehouse management system/ERP tool (i.e., commercial off-the-shelf software, basic proprietary software, or a donor-developed tool). • The supply planning tool is integrated with an LMIS and procurement system.

2. Forecasting and Supply Planning

2.b. Management Information

2.b.3. Monitoring and evaluation

Interview questions	Things to observe
• What types of supply chain data are available? • Describe procedures for data maintenance, analysis, and reporting. • Explain how stakeholders use supply chain data. • Have the procedures for basic data capture, maintenance, and reporting been clarified and implemented?	• Ask to view databases and reports.

1	2	3	4	5
• No data analysis or reporting is used. • No data are used in decision making.	• Informal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are inconsistently captured and reported. • Data are used ad hoc in decision making.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • Key performance indicators are developed and tracked. • There is limited routine use of data for decision making.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • An M&E committee routinely meets to review KPIs. • Corrective actions are identified and informally tracked and documented.	• Automated systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data in real time. • Data are consistently captured and reported. • An M&E committee routinely meets to review KPIs. • Corrective actions are identified and formally tracked and documented.

2. Forecasting and Supply Planning

2.b. Management Information

2.b.4. Computer hardware and software availability

Interview questions	Things to observe
• Does the facility have a computer for completing supply chain functions such as forecasting? • What type of software is available on the computers? • Is office equipment maintained? • Do you feel that the number of computers available is sufficient to perform daily activities? • Is there internet access at the facility?	• Verify that a working computer exists if the interviewee says that the hardware and software are available.

1	2	3	4	5
• No working computer hardware or software is available.	• Insufficient computers interfere with staff's ability to complete job-related activities • Available computer software is limited to a word processing program.	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs).	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive sporadic maintenance.	• All staff who require computers have them to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive scheduled maintenance.

2. Forecasting and Supply Planning

2.d. Strategic Planning and Oversight

2.d.1. Level of country ownership

Interview questions	Things to observe
• Who has ownership of the forecasting process?	• N/A

1	2	3	4	5
• The forecasting process is managed by donors or partners with little or no country input.	• Donors or partners manage the forecasting process and seek input from the Ministry of Health (MOH).	• Donors or partners manage the forecasting process. • The MOH plays an active role in forecasting; designated MOH staff collaborate with donors/partners in forecasting.	• The MOH manages the forecasting process. • Senior MOH staff produce/are in charge of the forecasts, and they do so with support from external consultants.	• A designated unit within the MOH is responsible for managing the forecasting process. • Forecasting is a collaborative activity that includes all supply chain and funding stakeholders.

2. Forecasting and Supply Planning

2.d. Strategic Planning and Oversight

2.d.11. Key performance indicators

Interview questions	Things to observe
• Does the facility report on any specific performance indicators for forecasting and supply planning (i.e., forecast accuracy)?	• Ask to see any monitoring reports or data sets used to analyze KPIs.

1	2	3	4	5
• No KPIs are in place to monitor and evaluate performance.	• An informal measurement system is in place to measure efficiencies.	• KPIs are established.	• KPIs measure high-level outcomes and process efficiencies using validated data.	• KPIs measure high-level outcomes and process efficiencies using validated data. • KPIs are benchmarked against relevant best practice. • Action plans for each KPI are generated monthly.

2. Forecasting and Supply Planning

2.e. Human Resources

2.e.1. Supply chain competencies and staffing

Interview questions	Things to observe
• Are any staff specifically designated to complete supply chain activities? • Do staff designated to complete supply chain activities have the core competencies required to fulfill these functions?	• N/A

1	2	3	4	5
• No staff have been designated to complete activities.	• Limited staff are available to complete activities. • Core competencies are not outlined or required to complete job functions (i.e., understands necessary processes, required data, tools, and use).	• Staff have been informally designated to complete activities (where identified) in addition to other roles. • Core competencies (i.e., understands necessary process, required data, tools, and use) are under development (linked to organizational structure).	• Staff positions designated in the organizational structure are partially filled. • Core competencies (i.e., understands necessary process, required data, tools, and use) are developed.	• Staff positions designated in the organizational structure are all filled by staff with strong core competencies (i.e., understands necessary process, required data, tools, and use). • Core competency frameworks are clearly defined for all supply chain positions and consistently applied.

3. Procurement

3.a. Process and Tools

3.a.1. Product specifications

Interview questions	Things to observe
• Do specifications for tender purposes exist for most frequently procured product lines? • If yes, what types of specifications are included (i.e., packaging, storage requirements, quality)? • Are these specifications consistent with those of relevant national and international regulatory bodies? • Is there access to technical expertise or staff for most product lines? • Do these purchasing entities have standard and generic, internationally recognized specifications for all product lines procured? • How often are these specifications updated? • Are these specifications available for public scrutiny and review?	• Ask the facility to show the specifications (standardized) and any documentation that illustrates the interviewee's answers.

1	2	3	4	5
• Product specifications do not exist for the most frequently procured products.	• Product specifications exist for the most frequently procured products. • Specifications are inconsistently applied throughout the procurement process. • Specifications are reviewed/updated ad hoc (less than annually).	• Product specifications exist for the most frequently procured products. • Specifications are consistently applied throughout the procurement process. • Specifications are reviewed/updated annually. • Specifications are consistent with those of relevant national and international regulatory bodies.	• Product specifications exist for all frequently procured products, including packing and storage requirements. • Specifications are consistently applied throughout the procurement process. • Specifications are reviewed/updated annually and when new products are introduced into the supply chain. • Specifications are consistent with those of relevant national and international regulatory bodies. • Access to technical expertise is available through external consultants.	• Product line specifications exist for all frequently procured products, including packing and storage requirements. • Specifications are consistently applied throughout the procurement process. • Specifications are reviewed/updated annually and when new products are introduced into the supply chain and made publicly available. • Specifications are consistent with those of relevant national and international regulatory bodies. • Staff with technical expertise for product lines are available.

3. Procurement

3.a. Process and Tools

3.a.2. Management of item master data

Interview questions	Things to observe
• Is there a list describing what products you can buy? • How often is it updated? • Describe the process for reviewing/updating the list. • What levels of the supply chain use this list?	• If the item master exists, ask to see a copy.

1	2	3	4	5
• A list does not exist.	• Review/updates to the list are either ad hoc or do not take place.	• A process for reviewing/updating the list is in place. • The list is reviewed ad hoc (less than annually). • The list is not consistent throughout all levels of the supply chain.	• A formal process for reviewing/updating the list is documented and in place. • The list is reviewed annually. • A complete and up-to-date list is available, and is consistently used throughout all levels of the supply chain (e.g., logistics, finance)	• A formal process for reviewing/updating the list is documented and in place. • The list is reviewed annually. • A complete and up-to-date list is available and is consistently used throughout all levels of the supply chain (e.g., logistics, finance) • List data are analyzed and results are used to continuously improve policy and implementation.

3. Procurement

3.a. Process and Tools

3.a.3. Vendor identification

Interview questions	Things to observe
• How does the procurement unit identify vendors it purchases from? • Are these processes documented? • How is vendor information maintained?	• N/A

1	2	3	4	5
• No formal process is in place for identifying vendors. • The primary means of identifying vendors is through unsolicited inquiries.	• An ad hoc process is in place for identifying vendors. • The primary means of identifying vendors is through unsolicited inquiries, expressions of interest, and past use.	• A documented process is in place for identifying vendors. • Vendors are identified through Internet research and advertisements, including expressions of interest, as well as unsolicited inquiries and past use.	• A formal, well-documented process is in place for identifying vendors. • Vendors are actively identified through manufacturer representatives and advertisements, including expressions of interest. • This process is followed routinely.	• A formal, well-documented process is in place for identifying vendors. • Vendors are actively identified through manufacturer representatives and advertisements, including expressions of interest. • This process is followed continuously. • Vendor information is maintained in a centralized database and updated regularly.

3. Procurement

3.a. Process and Tools

3.a.4. Vendor (pre)qualification

Interview questions	Things to observe
• Are there qualification procedures for vendors within the tendering process? • What criteria are used to evaluate vendors? • Is feedback provided to vendors and other key stakeholders?	• If vendor qualification procedures exist, ask to see a copy of the documentation of this process, including the criteria used and feedback reports.

1	2	3	4	5
• No qualification procedures exist.	• Qualification procedures exist and are applied inconsistently. • The qualification process relies primarily on a third party.	• Adequate qualification procedures exist and are applied consistently. • Qualification criteria include vendor performance, in-country registration status, and financial standing. • Requirements may not be product line specific. • The qualification process relies on a third party and the procurement unit. • Feedback is not provided to vendors and other key stakeholders after the qualification process.	• Advanced qualification procedures are consistently applied. • Some prequalification is conducted in addition to tendering. • Guidance on when to apply the prequalification procedure is included in the guidelines. • Prequalification criteria include vendor performance, in-country registration status, financial standing, and product quality. • Requirements are product line specific. • The qualification process relies on a third party and the procurement unit. • Pass/fail criteria are specified, but extensive feedback is not provided to vendors and other key stakeholders after the qualification process.	• Advanced qualification procedures are consistently applied. • Some prequalification is conducted in addition to tendering. • Guidelines specify when to apply the pre-qualification procedure. • Prequalification criteria include vendor performance, in-country registration status, financial standing, and product quality. • Requirements are product line specific. • The qualification process relies on the NRA and procurement unit. • Pass/fail criteria are specified, including appropriate international quality systems such as the World Health Organization Model Quality Assurance System and good manufacturing practices. • Detailed feedback is provided to vendors after the qualification process.

3. Procurement

3.a. Process and Tools

3.a.5. Tendering process

Interview questions	Things to observe
• Describe the approach used for issuing an announcement. • Where are announcements posted for the public to view them?	• Ask to see tender documents (e.g., announcement, request for price quotations).

1	2	3	4	5
• The announcement process is either informal or does not exist.	• The announcement process is documented but informal.	• A more formalized announcement process is in place but applied inconsistently. • Announcements are posted in local newspapers and internally, such as on an office bulletin board.	• Detailed announcement instructions are in place that specify the information that should be published. • Announcements are posted on the internet and in newspapers. • The tender generates vendor competition.	• Detailed announcement instructions are in place that specify the information that should be included in the tender announcement. • Announcements are posted on the internet and in newspapers. • The tender generates vendor competition. • The tender includes terms and conditions that are enforced.

3. Procurement

3.a. Process and Tools

3.a.6. Tender evaluation

Interview questions	Things to observe
• Describe the process used for evaluating procurement proposals/bids.	• View tender evaluation tools or documentation.

1	2	3	4	5
• The tender evaluation process is either informal or does not exist.	• Multiple proposals are reviewed during the evaluation process. • Price is the only evaluation criterion.	• Multiple proposals are reviewed during the evaluation process. • Evaluation criteria include price as well as the vendor's financial and technical capabilities and past performance where applicable. • Attempts are made to keep vendors' proprietary information confidential.	• Multiple proposals are reviewed during the proposal evaluation process. • Evaluation criteria include formalized quantitative measures and price as well as the vendor's financial and technical capabilities and past performance where applicable. • Evaluation criteria include formalized quantitative measures. • Attempts are made to keep vendors' proprietary information confidential.	• Multiple proposals are reviewed during the proposal evaluation process. • Evaluation criteria include formalized quantitative measures and price as well as the vendor's financial and technical capabilities and past performance where applicable. • Evaluation criteria include formalized quantitative measures. • Attempts are made to keep vendors' proprietary information confidential. • A formal committee is convened to conduct evaluations. • Formal notification is sent to successful and unsuccessful bidders.

3. Procurement

3.a. Process and Tools

3.a.7. Contract/purchase order

Interview questions	Things to observe
• Describe the purchase process for products. When is the decision made to place orders? • What type of documentation is used between the vendor and purchaser to document the purchase? • Are terms and conditions used in this documentation? • Are contracts negotiated and reviewed by legal counsel?	• Ask for a copy of the purchase order or other contracts used to make purchases.

1	2	3	4	5
• The purchasing process is informal, with little to no documentation. • No purchase orders are issued and/or no contracts are in place.	• The purchasing process is informal. • Invoices are used as documentation.	• All purchases are made ad hoc as the product is needed. • A basic purchase order form is used. • Purchase information is included in the order form.	• Stand-alone purchases are initiated with purchase orders. • Purchase orders include purchase information and terms and conditions, including liabilities and recall provisions. • Purchases for repeat orders using staggered delivery dates are initiated with a blanket order; individual deliveries are triggered with release orders. • Some repeat procurement relationships are formalized through framework contracts.	• All one-time transactions for definite quantities of goods are initiated through contracts. • For open-ended transactions, terms and conditions are established through framework contracts. • All contracts with vendors are formal, negotiated, and reviewed by legal counsel. • International contracts identify the laws that both parties will abide by if problems arise.

3. Procurement

3.a. Process and Tools

3.a.8. Order and delivery management

Interview questions	Things to observe
• How does the procurement unit manage pending shipments? • Does the procurement unit monitor and track pending shipments? • Are orders expedited? What is the process for expediting? Is this process documented? • Are preshipment inspections organized and conducted? • Is vendor performance monitored and reported?	• Ask to review any documentation on preshipment inspections and any shipment tracking tools/spreadsheets.

1	2	3	4	5
• No formal order and delivery management process is in place.	• Communication with vendors is ad hoc. • The procurement unit has visibility into outstanding orders. • A documented process is in place for expediting orders.	• Vendors are communicated with regularly throughout the order and delivery process. • Procurement has visibility into outstanding orders. • A documented process is in place for expediting orders. • Orders and deliveries are actively managed by reviewing documentation and organizing preshipment inspections (PSIs).	• Vendors are communicated with regularly throughout the order and delivery process. • Procurement has visibility into outstanding orders. • A documented process in place for expediting orders. • Orders and deliveries are actively managed by reviewing documentation and organizing PSIs. • The procurement unit monitors and documents vendor performance.	• Vendors are communicated with regularly throughout the order and delivery process. • Procurement has visibility into outstanding orders. • A documented process is in place for expediting orders. • Orders and deliveries are actively managed by reviewing documentation and organizing PSIs. • The procurement unit monitors and documents vendor performance. • The procurement unit uses vendor data to initiate the performance improvement process.

3. Procurement

3.a. Process and Tools

3.a.9. Product quality assurance

Interview questions	Things to observe
• Are products quality tested beyond manufacturer/vendor quality testing? • What methodology is used to determine which products are quality tested? • Is sampling and quality testing documented? • Are staff who conduct quality testing trained? • Are laboratories that conduct quality testing evaluated?	• Ask to review the sampling protocol and laboratory conclusion on quality on certain medicines.

1	2	3	4	5
• No quality testing of medicines is conducted beyond testing conducted by the manufacturer/vendor.	• Some quality testing of medicines is conducted in addition to testing conducted by the manufacturer/vendor. • Quality assurance documentation is reviewed ad hoc.	• Sampling and testing are done based on a protocol and risk evaluation. • Trained staff ensure that the testing protocol is consistently followed. • Quality assurance documentation is reviewed regularly. • The laboratory performing quality tests is evaluated.	• Sampling and testing are done based on a risk evaluation. • Trained staff ensure that the testing protocol is consistently followed. • Quality assurance documentation is reviewed regularly. • An accredited and qualified testing laboratory performs quality tests. • The laboratory performing quality tests is evaluated to maintain accreditation. • A retention store maintains samples for potential litigation.	• Multiple sampling and testing models are used to address different risks. • Quality control encompasses consistent sampling and testing to defined specifications. • Quality control includes formal procedures and official documentation to justify product release from quarantine based on quality testing results. • Trained staff ensure that the testing protocol is consistently followed. • An accredited and qualified testing laboratory performs quality tests. • The laboratory performing quality tests is evaluated to maintain accreditation. • A retention store maintains samples for potential litigation.

3. Procurement

3.a. Process and Tools

3.a.10. Standard operating procedures

Interview questions	Things to observe
• Do some kind of SOPs exist for management, basic operations, or processes/departments? • Is there a policy in place for implementing and managing SOP processes? • Are employees mandated to read SOPs, and is their compliance documented?	• Ask the facility to provide some SOPs. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• Some SOPs for basic process operations are available.	• Detailed SOPs for most processes are available. • A policy exists for implementing and managing processes outlined in SOPs.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employees are aware of the content.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employees are aware of the content. • SOPs comply with national and local regulations.

3. Procurement

3.a. Process and Tools

3.a.11. SOP document control

Interview questions	Things to observe
• Have some kind of SOPs been reviewed after their initial creation? • How often are the SOPs reviewed and updated? • What is the process for updating the SOPs?	• Ask the facility to show multiple versions of the SOPs and any documentation that illustrates version control, if applicable. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• SOPs are available in their original version but have not been reviewed since inception.	• SOPs are reviewed infrequently (less than annually). • Limited version control measures are in place.	• SOPs are reviewed annually. • SOPs are updated during annual review as needed. • SOPs are filed in an accessible central location.	• SOPs are updated whenever procedures or system functionality change. • Copies of SOPs are printed and provided to relevant personnel. • SOPs contain a review history documented (list of dates and authorized signature) and version number. • Originals of SOPs are stamped with the word “original,” and copies with “copy.”

3. Procurement

3.a. Process and Tools

3.a.13. Procurement record management and review

Interview questions	Things to observe
• Does a procurement record management system exist? • Is this system documented? • Is there a documented procedure to keep procurement documents? • Is the record management reviewed by an internal auditor (here and below: MOH or its subordinate entities)? • How often are these audits conducted? • If no record management system exists, how are records managed?	• Verify that a documented record management system exists as stated by the interviewee. ***Note:*** many of these systems will likely be paper based.

1	2	3	4	5
• A records management system is either informal or not in place.	• A documented records management system is in place.	• A formal records management system is in place with SOPs. • A paper filing system used. • Files are reviewed periodically by internal auditors.	• A formal records management system is in place with SOPs. • A paper and electronic filing system is used. • Procurement files are regularly audited internally and at least every two years by external auditors (beyond MOH or its subordinate entities jurisdiction).	• A formal records management system is in place with SOPs. • A paper and electronic filing system is used. • Procurement files are regularly audited internally and at least every year by external auditors.

3. Procurement

3.a. Process and Tools

3.a.14. Key performance indicators

Interview questions	Things to observe
• Does the facility report on any specific performance indicators for procurement (i.e., lead time, vendor on-time delivery, pricing comparisons)?	• Ask to see any monitoring reports or data sets used to analyze KPIs.

1	2	3	4	5
• No KPIs are in place to monitor and evaluate performance.	• An informal measurement system is in place to measure efficiencies.	• KPIs are established.	• KPIs measure high-level outcomes and process efficiencies using validated data.	• KPIs measure high-level outcomes and process efficiencies using validated data. • KPIs are benchmarked against relevant best practices. • Action plans for each KPI are generated monthly.

3. Procurement

3.b. Management Information

3.b.1. Procurement management information system

Interview questions	Things to observe
• Is a procurement management information system (MIS) for tracking orders, the number and status of shipments and receipts, lead time of each order, and payments made in place? • In what format is the procurement MIS (e.g., paper-based simple procurement software, Excel, Access, real-time data)? • Has the system been integrated with ERP or other applicable systems (e.g., accounts payable, inventory, vendor relationship management, customer/client relationship management, general ledger)?	• Verify that a procurement MIS exists if the interviewee says that a system is in place.

1	2	3	4	5
• No MIS is in place.	• A paper-based procurement MIS is in place.	• Procurement calculations are made using simple software tools, such as MS Excel or Access.	• An electronic procurement MIS is in place. • Real-time data are available.	• A procurement MIS is integrated with an ERP system or other applicable systems, such as accounts payable, inventory, vendor relationship management, customer/client relationship management, and/or general ledger.

3. Procurement

3.b. Management Information

3.b.2. Monitoring and evaluation

Interview questions	Things to observe
• What types of supply chain data are available? • Describe procedures for data maintenance, analysis. and reporting. • Explain how stakeholders use supply chain data. • Have the procedures for basic data capture, maintenance. and reporting been clarified and implemented?	• Ask to view databases and reports.

1	2	3	4	5
• No data analysis or reporting is conducted. • No data are used in decision making.	• Informal systems, procedures, and defined roles are used for capturing, maintaining, and sharing data. • Data are inconsistently captured and reported. • Data are used ad hoc in decision making.	• Formal systems, procedures, and defined roles are used for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • Key performance indicators are developed and tracked. • There is limited routine use of data for decision making.	• Formal systems, procedures, and defined roles are used for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • An M&E committee routinely meets to review key performance indicators. • Corrective actions are identified and informally tracked and documented.	• Automated systems, procedures, and defined roles are used for capturing, maintaining, and sharing data in real time. • Data are consistently captured and reported. • An M&E committee routinely meets to review key performance indicators. • Corrective actions are identified, formally tracked, and documented.

3. Procurement

3.b. Management Information

3.b.3. Computer hardware and software availability

Interview questions	Things to observe
• Does the facility have a computer for completing supply chain functions? • What type of software is available on the computer? • Is office equipment maintained? • Do you feel that the number of computers available to perform daily activities is sufficient? • Is there internet access at the facility?	• Verify that a working computer exists if the interviewee says that hardware and software are available.

1	2	3	4	5
• No working computer hardware or software is available.	• Having an insufficient number of computers interferes with staff's ability to complete job-related activities. • Available computer software is limited to a word-processing program.	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs).	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive sporadic maintenance.	• All staff who require computers have them to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive scheduled maintenance.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.1. Access to public procurement information

Interview questions	Things to observe
• Are procurement data publicly available? • If yes, where are the data available? • Are results of procurement decisions posted in the media, online, or on office bulletin boards? • How is procurement information stored (e.g., in a centralized ERP/customer relationship management system or other electronic file directory)?	• Ask the facility for copies, if any, that show upcoming procurements listed or results posted in the media, online, or on office bulletin boards.

1	2	3	4	5
• Information on upcoming procurements is not made publicly available.	• Information on upcoming procurements is available but difficult to obtain. • The extent of available information is limited.	• Information on upcoming and completed procurements is posted to a limited number of places, such as the local newspaper or an office bulletin board.	• Relevant and complete information on upcoming and completed procurements is posted on the internet.	• Information on upcoming and completed procurements is centralized in an enterprise resource planning (ERP)/customer relationship management or other electronic file directory. • Files are sufficiently accessible and widely circulated to enable procurement partners to monitor results, outcomes, and performance.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.2. Internal controls

Interview questions	Things to observe
• Is there any division of responsibility for the selection of medicines, supplier selection, contracting, or making payments? How is it determined? • If so, please explain the systems and/or policies. • Are well-defined mechanisms in place for overseeing the procurement function? Explain.	• N/A

1	2	3	4	5
• No functioning internal control system is in place.	• The internal control system is unenforced and inadequate. • Order approval and payment approval are done simultaneously.	• Internal controls for processing order approval and payment approval are adequate and routinely enforced. • There is separation between order approval and payment approval. • Well-defined mechanisms exist to oversee the procurement function.	• Internal controls are rigidly enforced and audited. • The order approval and payment approval processes are formally separated. • Clearly defined control mechanisms are in place to oversee the procurement function.	• Evidence is ample that internal controls are routinely enforced. • The order approval and payment approval processes are formally separated. • Clearly defined control mechanisms are in place to oversee the procurement function. • Periodic risk assessments and controls are tailored to mitigate potential risks. • There is balance between timely and efficient decision-making and adequate risk mitigation.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.3. Ethics and anticorruption measures

Interview questions	Things to observe
• What ethics or anticorruption measures are in place?	• Ask for a copy of the documented ethics code (either in tender documents or as a separate document) and/or other anticorruption documented measures (programs, rules, etc.).

1	2	3	4	5
• No ethics or anticorruption programs are in place.	• An ethics or anticorruption program is in place.	• Ethics or anticorruption programs adequately address fraud and corruption. • Ethics requirements are detailed in tender documents.	• A comprehensive ethics or anticorruption program addresses fraud and corruption. • Ethics requirements are detailed in tender documents. • The program sets out the consequences for individuals and firms found violating rules. • A code of ethics exists.	• A comprehensive ethics or anticorruption program addresses fraud and corruption, including whistle-blower protection. • Program guidelines detail how to deal with fraud and corruption in procurement, including the tendering process. • Program guidelines outline the responsibilities for government employees, firms, and other stakeholders involved in the process. • A code of ethics exists.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.4. Procurement appeals process

Interview questions	Things to observe
• Please describe your procurement appeals process.	• N/A

1	2	3	4	5
• No functioning appeals mechanism exists.	• An appeals process exists but it is informal and applied in an ad hoc way. • External (beyond MOH or its subordinate entities' jurisdiction) auditing of the procurement process is conducted inconsistently (less than annually).	• Adequate appeals mechanisms exist; they are independent and have the authority to issue appeals decisions. • External (beyond MOH or its subordinate entities' jurisdiction) auditing of the procurement process is conducted routinely (at least annually).	• Adequate appeals mechanisms exist; they are independent and have the authority to issue timely appeals decisions. • External (beyond MOH or its subordinate entities' jurisdiction) auditing of the procurement process is conducted routinely (at least annually).	• Independent, autonomous appeals mechanisms exist. • They issue timely appeals decisions. • The public recognizes their judgments as fair and balanced. • Decisions made publically are available on the internet. • External (beyond MOH or its subordinate entities' jurisdiction) auditing of the procurement process is conducted routinely (at least annually).

3. Procurement

3.d. Strategic Planning and Oversight

3.d.5. Auditing process

Interview questions	Things to observe
• Are external (here and below: beyond MOH or its subordinate entities' jurisdiction) audits of the procurement process at your facility completed? • Please describe the auditing process. • How often are audits completed?	• Any auditing reports (acts, etc.).

1	2	3	4	5
• External audits are not conducted.	• External audits are informal and ad hoc. • Audit results are not shared with those audited.	• External audits are conducted annually. • The audit process is partially documented. • Audit results are not shared with those audited.	• External audits are conducted annually. • The audit process is fully documented. • Results and recommendations are provided, but little or no action is taken to improve upon shortcomings.	• External audits are conducted at least annually. • Audits are fully documented and are conducted by auditors who are trained in procurement. • The audit process is fully documented. • Results and recommendations are provided and implemented, leading to continual improvements.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.6. Procurement strategy

Interview questions	Things to observe
• Do you have short, middle and/or long term procurement strategies? • Please describe your procurement strategy.	• Ask for a copy procurement strategy.

1	2	3	4	5
• A procurement strategic plan is either outdated or does not exist. • The impact of the procurement function is not fully understood by employees.	• A basic strategic plan for procurement is in place; short-term goals (one year) are included. • Only some leaders are aware of the impact of the procurement function on the supply chain.	• A strategic plan for procurement is in place; short- (one year) and medium-term goals (two to three years) are included, and the plan aligns with other key supply chain strategic plans. • The plan includes input from key stakeholders. • The impact of the procurement function on the supply chain is understood by the manager level and above.	• A strategic plan for procurement is in place; short- (one year) and medium-term (two to three years) goals are included. • The strategic plan is coordinated with other departments in the supply chain. • The plan begins to look at the country's overall supply chain goals. • The plan enables the organization to plan for resources and to support the annual planning process. • All employees working on procurement, including leadership, understand the impact of the procurement function on the supply chain.	• A strategic plan for procurement is in place; short- (one year) and medium-term (two to three years) goals are included. • The strategic plan is coordinated with other departments in the supply chain. • The procurement strategy plan provides leadership with the ability to direct operations in the country. • The plan aligns with the country's strategic plans. • All employees working on procurement, including leadership, understand the impact of the procurement function on the supply chain.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.7. Country ownership

Interview questions	Things to observe
• Who is responsible for procurement?	• N/A

1	2	3	4	5
• The procurement process is managed by donors or partners with little to no country input.	• Donors or partners manage the procurement process and seek input from the MOH.	• Donors or partners manage the procurement process. • The MOH plays an active role in the procurement process; designated MOH staff collaborate with donors/partners during the procurement process.	• The MOH manages the procurement process. • Senior MOH staff manage procurements, with support from external consultants.	• A designated unit within the MOH is responsible for managing the procurement process. • Procurement is a collaborative activity that includes all supply chain and funding stakeholders.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.8. Inbound transportation

Interview questions	Things to observe
• Describe who is responsible and the process by which the procured medicines are transported from the supplier.	• Ask for a copy of the contract.

1	2	3	4	5
• All goods are procured direct delivery, duty paid (DDP).	• Attempts are made to secure best transportation pricing (e.g., Ex Works versus DDP) on an ad hoc basis. • Vendors and/or donors are relied on for inbound measurements.	• Transportation is consistently managed for some core commodities. Other items are procured DDP.	• Some Ex Works procurement is done based on best cost decisions. • The transportation unit works with procurement to manage high-volume products.	• Professional logisticians collaborate with procurement to manage transportation.

3. Procurement

3.d. Strategic Planning and Oversight

3.d.12. Vendor performance management

Interview questions	Things to observe
• How is vendor performance evaluated and managed?	• N/A

1	2	3	4	5
• No vendor performance management exists.	• Vendor performance is evaluated only when a problem arises.	• Vendor performance is measured inconsistently in such areas as on-time delivery, price changes, and product quality.	• Vendor performance is consistently measured, including on-time delivery, cost changes, and product quality, using a simple scoring mechanism and is well-documented. • Performance is considered when making future procurement decisions.	• Vendor performance is consistently measured, including on-time delivery, cost changes, and product quality, and is well-documented. • A scoring mechanism is used to assess performance; performance criteria and scoring are shared with vendors. • Vendor performance is considered when making future procurement decisions.

3. Procurement

3.e. Human Resources

3.e.1. Supply chain competencies and staffing

Interview questions	Things to observe
• Are any staff specifically designated to complete procurement activities? • Do staff designated to complete procurement activities have the core competencies required to fulfill these functions?	• N/A

1	2	3	4	5
• No staff have been designated to complete activities.	• Limited staff are available to complete activities. • Core competencies are not outlined or required to complete job functions (i.e., understands necessary processes, required data, tools, and use).	• Staff have been informally designated to complete activities (where identified) in addition to other roles. • Core competencies (i.e., understands necessary process, required data, tools, and use) are under development (linked to organizational structure).	• Staff positions designated in the organizational structure are partially filled. • Core competencies (i.e., understands necessary process, required data, tools, and use) are developed.	• Staff positions designated in the organizational structure are all filled by staff with strong core competencies (i.e., understands necessary process, required data, tools, and use). • Core competency frameworks are clearly defined for all supply chain positions and consistently applied.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.1. Receiving

Interview questions	Things to observe
• Explain the process for receiving products at this facility. • How do you know that the quantity received is equal to the quantity sent? • How do you record that items are received?	• If products are being received at the time of visit, observe the receiving process.

1	2	3	4	5
• Items received are not checked. • Received inventory is not recorded.	• Received products are confirmed against a packing slip or invoice. • Received products are counted and compared with packing slip or invoice quantities. • Items received are entered into stock cards or another paper-based inventory tool.	• Received items are entered into a simple software-based stock-keeping system (i.e., Access, Excel).	• Product is blind received (compared to invoice/packing list after) into warehouse management system (WMS) and then validated against the packing slip or invoice.	• Received items are entered against purchase orders and advance shipping notifications into a WMS.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.2. Put-away

Interview questions	Things to observe
• How do you organize your stockroom? • Are received products registered on the stock card or ledger? • Are products organized by expiration date? • Is quantity and other product information recorded on/in an inventory management tool? • Where are bulk products and high-value products stored?	• If put-away is in process at the time of visit, observe the put-away process. • Spot-check stock cards to validate that receipt of product is being recorded. • Spot-check products on shelves to ensure that first expired, first out principles are respected. • Confirm where high-value products are stored.

1	2	3	4	5
• Put-away is random in space that is available. • First-expired-first-out (FEFO) principles are not followed. • Stock is not rotated when put-away is to a location with the same product. • Quantity and other product information are not recorded on stock cards and/or other inventory management tool.	• Products have assigned locations on shelves. • FEFO principles are implemented ad hoc. • Stock is rotated ad hoc when put-away is to a location with the same product. • Quantity and other product information is recorded ad hoc on stock cards and/or another inventory management tool.	• Product has assigned locations on shelves. • FEFO principles are documented and implemented routinely. • Stock is rotated each time put-away is to a location with the same product. • Quantity and other product information is routinely recorded on stock cards and/or other inventory management tool.	• Slotting is software generated to fixed locations based on "ABC classification," special handling requirements, and physical characteristics.	• WMS-generated slotting is based on random put-away and available space.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.3. Picking

Interview questions	Things to observe
• When you receive an order from a MOH/local authorities, how do you prepare the products for pick-up/delivery? • Do you have separate picking areas for products ordered in large and small quantities?	• If an electronic system is used to generate waybills, have the facility illustrate this software capability.

1	2	3	4	5
• Waybills are not available. • Locations to pick from are not specified. • Orders are picked one at a time in a random sequence. • No records are kept of items picked.	• Waybills are not available. • Orders are picked in the sequence they are received. • Picks are recorded on a stock-keeping record or tool (i.e., stock card, ledger or alike). • Bulk pick/cases and fine pick/units are picked from the same location.	• Waybills are generated from simple inventory tracking software (i.e., Excel, Access). • Locations to pick from are specified on the waybill.	• The WMS generates waybills one order at a time. • Bulk pick/cases and fine pick/units are picked from separate locations. • Orders are picked according to delivery route/required ship date.	• WMS software generates waybills to aggregate multiple orders together on one pick ticket. • Bulk pick/cases and fine pick/units are picked from separate locations. • Orders are picked according to delivery route/required ship date.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.4. Checking orders

Interview questions	Things to observe
• After picking the products, what steps are taken before they are collected or loaded onto a truck for delivery?	• Observe the process if it is being conducted at the time of the site visit.

1	2	3	4	5
• Orders are not checked to confirm whether the correct items were picked.	• Orders are checked ad hoc to confirm whether the correct items were picked.	• 100% of orders are checked to confirm whether the correct items were picked.	• 100% of orders are checked to confirm whether the correct items were picked. • A second check is performed at dispatch.	• 100% of orders are checked to confirm whether the correct items were picked. • Dispatch performs a second check by weighing the product to confirm that carton weight is in the range of items confirmed as picked.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.5. Warehouse returns

Interview questions	Things to observe
• What is the process for returning product to vendors? • How are returns recorded at the facility? • Does anyone authorize returns? • If the return is received, how does the warehouse deal with the return? If the product is unusable? Usable?	• If returns are documented, view the software or paper-based system for documentation.

1	2	3	4	5
• Returns either are not accepted or are accepted with no process control in place.	• Returns are accepted by the warehouse. • Returned commodities are put on a shelf with the rest of the inventory. • The stock-keeping record is updated with return put-away quantity.	• Basic return policy documentation is in place. • Received returns are checked for expiration before put-away. • Simple inventory-tracking software (i.e., Excel, Access) is updated with quantity returned.	• A formal return policy is in place and documented in the SOPs. • The returned commodity is checked for quality and expiration before put- away. • WMS inventory is updated with quantity returned.	• A formal return policy is in place and documented in the SOPs. • Return authorization is automated through the WMS. • Return process is confirmed electronically (i.e., collection of returned product is electronically logged by the client, an electronic receipt is generated by the receiving warehouse and the client's electronic log is compared with the warehouse receipt).

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.6. Standard operating procedures for warehouse management

Interview questions	Things to observe
• Do some kind of SOPs exist for management, basic operations, or processes/departments? • Is there a policy in place for implementing and managing SOP processes? • Are employees mandated to read SOPs, and is their compliance documented?	• Ask the facility to provide some SOPs. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• Some SOPs for basic process operations are available.	• Detailed SOPs for most processes are available. • A policy exists for implementing and managing processes outlined in the SOPs.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employee are aware of the content.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employee are aware of the content. • SOPs comply with national and local regulations.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.7. SOPs document control for storage and warehousing

Interview questions	Things to observe
• Have some kind of SOPs been reviewed after their initial creation? • How often are the SOPs reviewed and updated? • What is the process for updating the SOPs?	• Ask the facility to show multiple versions of SOPs and any documentation that illustrates version control, if applicable. **Note:** they may have form of decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.

1	2	3	4	5
• SOPs are not available.	• SOPs are available in their original version but have not been reviewed since inception.	• SOPs are reviewed infrequently (less than once a year). • Limited version control measures are in place.	• SOPs are reviewed annually. • SOPs are updated during annual review, as needed. • SOPs are filed in an accessible central location.	• SOPs are updated when procedures or systems change. • Copies of SOPs are printed and provided to relevant personnel. • SOPs contain a review history (dates and authorized signature) and version number. • SOP originals are stamped with the word “original,” and copies, with “copy.”

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.10. Order, shipment, and receipt confirmation for orders to sites further down the supply chain

Interview questions	Things to observe
• If the facility is receiving an order, how does it know when it will arrive? • How is the receipt of this order confirmed? • If the facility is distributing an order, how is the receiving facility informed of arrival?	• Review a sample of delivery notes and any additional delivery logs/tools indicated during the interview that confirm delivery.

1	2	3	4	5
• No order or shipment confirmation is sent to the intermediate warehouse or SDP. • Intermediate warehouse or SDP does not receive confirmation of their order. • Delivery time is not estimated.	• Order and shipment confirmation is provided by telephone or email. • Intermediate warehouse or SDP signs delivery log sheet as confirmation of receipt. • Delivery time is estimated.	• Order and shipment confirmation is provided by telephone or email. • Order information (including order number and delivery date) is recorded in a simple software system (i.e., Excel, Access). • An agreed-upon delivery time is achieved inconsistently. • The delivery driver has a multi-copy receipt confirmation listing order contents.	• Order and shipment confirmation are automatically emailed from the WMS. • Shipment confirmation indicates items and quantities that will be fulfilled. • Deliveries are made based on an agreed-upon delivery schedule.	• Order and shipment confirmation are automatically emailed from the WMS. • Shipment confirmation indicates items and quantities that will be fulfilled. • Deliveries are made based on an agreed-upon delivery schedule. • The driver has an automated delivery device (handheld scanner). • Updates to the system are completed automatically and frequently (several times a day).

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.11. Maintaining established stock levels

Interview questions	Things to observe
• What is the process for obtaining resupply? • How do you calculate the quantity to order when ordering resupplies? • How often do you place orders?	• N/A

1	2	3	4	5
• Resupply orders are placed on an ad hoc basis. • No process for calculating resupply orders is in place. Quantities are always guesses.	• Resupply orders placed when warehouse calls to say stock levels are getting low. • Resupply quantities are determined using estimates of previous consumption. • Resupply orders are manually calculated and documented using paper-based tools.	• Warehouse sends weekly updates on stock levels that have fallen to minimum levels. • Resupply orders are calculated using simple software-based tools (i.e. Excel, Access). • Resupply orders are based on min/max and reorder levels, lead time, buffer stock, and order intervals.	• Resupply orders are systematically calculated by the procurement unit based on programmed formulas. • Procurement ensures contract and funding are available for required replenishment orders.	• Procurement and WMS are integrated, allowing systems to automatically submit orders to vendors for products to restock the warehouse.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.12. Inventory counts and accuracy

Interview questions	Things to observe
• Do you count the stock in your storeroom? • How often do you count stock? • What method do you use to count stock? • What do you do if the stock counted is different than what is recorded on/in the inventory management tool?	• Look at a sample of stock cards to see if inventory count quantities are included and at what frequency. Note: validate during stock data collection activity.

1	2	3	4	5
• No inventory counts are performed.	• Manual shelf counts are performed.	• Manual shelf counts are performed. • Financial adjustments are tracked and reported.	• Physical inventory counts are performed annually, and monthly cycle counts are based on ABC classifications. • Accuracy metrics are tracked and reported.	• A physical annual count plus daily cycle counting are performed. • Accuracy goals are tracked and reported.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.13. Inventory counting tools and reconciliation

Interview questions	Things to observe
• What tools do you use to do inventory counts? • If you find a discrepancy between the physical inventory count and inventory sheet, what do you do?	• Look at a sample of stock cards to see if inventory count quantities are included and at what frequency. ***Note:*** Validate during stock data collection activity.

1	2	3	4	5
• No tools are available to assist in inventory counts. • No reconciliation is performed if discrepancies are found during inventory counts.	• Stock cards are the only tool for inventory counts. • Inventory discrepancies are recorded on stock cards.	• Simple inventory tracking software (i.e., Excel, Access) is used. • Simple software (i.e., Excel, Access) summarizes count discrepancies.	• The WMS prints inventory count sheets. • The WMS performs reconciliation and reporting.	• The WMS is interfaced with the finance system. • WMS inventory adjustments automatically update financial statements.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.14. Expiration management

Interview questions	Things to observe
• Where do you indicate product expiration dates? • Do you consider expiry when you organize your products? • What tools do you use to record data on expiration?	• Look at a sample of stock cards to see if expiry dates are included. If other electronic tools are used, review this tool.

1	2	3	4	5
• Expiration dates are not monitored.	• Expiration dates are informally noted.	• Simple inventory tracking software (i.e., Excel, Access) is used to track expiration dates. • An ad hoc review and reporting are conducted of products nearing expiration.	• Expiration dates are noted in the WMS. • The WMS tracks expiry date of product to be picked on pick tickets. • The WMS specifies expiration dates on all paperwork. • Reports are run at least every six months to review products nearing expiration. • Steps are taken to use products before expiration.	• Each product/expiration date is assigned a unique pick location with system-directed FEFO. • Reports are run monthly to note products nearing expiration. • Plans are made to use products nearing expiration or move them to another facility that can use them before they expire.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.15. Quarantine tracking

Interview questions	Things to observe
• What do you do with quarantined products?	• If a quarantine area exists, visually inspect it. View a copy of a report or system that tracks quarantined product in the warehouse.

1	2	3	4	5
• Quarantine items are not labeled for identification. • No process is in place to identify quarantine items within the warehouse.	• Quarantine items are stored in the general warehouse. • Quarantine items are physically labeled for identification. • Stock cards list the product as quarantined.	• The quarantine area has clear barriers (i.e., fence or separate room). • Product and locations are listed in a simple inventory tracking software (i.e., Excel, Access) as quarantined.	• Quarantine is in a separate area (i.e., fenced in or a separate room). • The WMS blocks inventory from being picked or replenished from quarantine locations.	• Quarantine access is limited. • The WMS reports on quarantine and alerts when commodities have been released for put- away. • Advance ship notices pre-identify quarantine items.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.16. Tracking and recall

Interview questions	Things to observe
• Where do you track batch numbers for products received at this facility?	• View the stock card or other reports that are used to track batch numbers.

1	2	3	4	5
• No means are in place to identify specific lot or batch numbers.	• Lot or batch numbers are documented ad hoc on stock cards.	• Lot or batch numbers are documented consistently. • A simple inventory tracking tool is used (i.e., Excel, Access) to document lot or batch numbers.	• All items have an associated lot or batch number in the WMS. • Lot numbers are printed on delivery notes. • The WMS prints reports by lot number for recall.	• All items have an associated lot or batch number in the WMS. • The WMS can generate return pre-authorization and email all locations with recalled commodities.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.17. Hazardous clean-up

Interview questions	Things to observe
• If a hazardous product spills in the warehouse, what is the process for cleaning?	• If the interviewee states that hazardous cleanup equipment and processes are in place,

1	2	3	4	5
• No provisions are in place for cleaning up hazardous spills. • No hazardous spill training is provided to staff. • No hazardous clean-up instructions are posted in facilities.	• Provisions are in place for cleaning up hazardous spills. • No hazardous spill training is provided to staff. • Hazardous clean-up instructions are posted in facilities. • First aid kits are conveniently located throughout the facility.	• Provisions are in place for cleaning up hazardous spills. • A water sprinkler system is in place throughout the facility. • Carbon dioxide extinguishers are installed throughout the site. • Personal protective equipment (PPE) is available throughout the site. • Several staff are required to undergo annual training and certification, including first aid. • First aid kits are conveniently located throughout the facility, and supply inventory is regularly monitored.	• Provisions are in place for cleaning up hazardous spills. • A water sprinkler system is in place throughout the facility. • Carbon dioxide extinguishers are installed throughout the site. • PPE is available throughout the site. • Several staff are required to undergo annual training and certification, including first aid. • First aid kits are conveniently located throughout the facility and supply inventory is regularly monitored. • Inert dry absorbent materials are strategically located throughout to clean acidic or basic spills. • Recovered material is disposed of according to the material safety datasheets.	• Provisions are in place for cleaning up hazardous spills. • A water sprinkler system is in place throughout the facility. • Carbon dioxide extinguishers are installed throughout the site. • PPE is available throughout the site. • Several staff are required to undergo annual training and certification, including first aid. • First aid kits are conveniently located throughout the facility and supply inventory is regularly monitored. • Inert dry absorbent materials are strategically located throughout to clean acidic or basic spills. • Recovered material is disposed of according to WHO standards. • Non-water-based fire-extinguishing solutions are distributed throughout the site.

4. Warehousing and Inventory Management

4.a. Process and Tools

4.a.18. Inbound shipment visibility (internal shipments tracking system)

Interview questions	Things to observe
• Once you sign a contract with the vendor, how are delivery dates established and tracked?	• N/A

1	2	3	4	5
• There is no inbound visibility of goods being shipped from the supplier.	• The inbound product is manually tracked from procurement purchase orders to determine approximate delivery date.	• Inbound delivery dates are manually tracked with an established schedule.	• Inbound orders are manually scheduled with suppliers to meet warehouse capacity.	• Inbound visibility from suppliers is available in the WMS. • The WMS accepts advanced shipment notice information from suppliers. • Inbound scheduling and parking lot management are automated. • A cost-benefit analysis is conducted for picking up versus supplier delivery.

4. Warehousing and Inventory Management

4.b. Management Information

4.b.1. Inventory management

Interview questions	Things to observe
• What tools do you use to track information about stock (e.g., stock movement, receipts, transfers)?	• Ask to see the tool used for inventory management.

1	2	3	4	5
• There is no stock recording.	• Stock recording is paper-based using stock cards or ledgers.	• Stock recording is done using simple inventory tracking software (i.e., Excel, Access).	• A warehouse management system is used. • The WMS includes all basic warehouse functionality, such as receiving, inventory tracking, and picking.	• The WMS is integrated with an enterprise resource planning system (ERP) or other financial system.

4. Warehousing and Inventory Management

4.b. Management Information

4.b.2. Barcode scanning and radio frequency functionality

Interview questions	Things to observe
• Does this facility use barcode scanning as part of inventory management?	• If the interviewee states barcode scanning exists, ask for a demonstration of barcoding technology.

1	2	3	4	5
• There is no barcode scanning.	• A plan is in place to introduce a barcode scanning system that interfaces with a simple inventory tracking software (i.e., Excel, Access).	• A barcode scanning system is in place that populates a simple inventory tracking software (i.e., Excel, Access). • Barcode scanning is available at some stationary work stations.	• The WMS has limited mobile functionality for portable hand-held radio frequency scanners. • Scanners are used to read barcodes, including location labels, during picking and put-away.	• Portable hand-held radio frequency scanners are used in all applicable processes.

4. Warehousing and Inventory Management

4.b. Management Information

4.b.3. Monitoring and evaluation (M&E) warehousing and inventory management

Interview questions	Things to observe
• Are performance data collected and analyzed? • If yes, how are these data used? • Is the system for collecting and analyzing these data defined and documented? • Do these data inform any decision making?	• View any reporting or analysis tools used to monitor KPIs, as well as databases and reports.

1	2	3	4	5
• No data analysis or reporting is used. • No data are used in decision making.	• Informal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are inconsistently captured and reported. • Data for decision making are used ad hoc.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • KPIs are developed and tracked. • Data for decision making are used in a limited routine way.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data • Data are consistently captured and reported. • An M&E committee routinely meets to review KPIs. • Corrective actions are identified and informally tracked and documented	• Automated systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data in real time. • Data are consistently captured and reported. • An M&E committee routinely meets to review KPIs. • Corrective actions are identified, formally tracked, and documented.

4. Warehousing and Inventory Management

4.b. Management Information

4.b.4. Computer hardware and software availability for warehousing and inventory management

Interview questions	Things to observe
• Does the facility have a computer for completing supply chain functions such as inventory management? • What type of software is available on the computers? • Is office equipment maintained? • Do you feel that the number of computers available to perform daily activities is sufficient? • Is there internet access at the facility?	• Verify that a working computer exists if the interviewee says that the hardware and software are available.

1	2	3	4	5
• No working computer hardware or software is available.	• Having an insufficient number of computers interferes with staff's ability to complete job-related activities. • Available computer software is limited to a word-processing program.	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs).	• A sufficient number of working computers is available to complete job-related activities. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive sporadic maintenance.	• All staff who require computers to complete job-related activities have them. • Computer software is available for activities beyond word processing (i.e., Microsoft Office programs). • Computers receive scheduled maintenance.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.1. Power

Interview questions	Things to observe
• What sources of electricity exist at this facility/warehouse? • How reliable are these sources? • Does the facility/warehouse have a backup source of electricity?	• If the facility states that it has a backup power source, such as a generator, ask to see the generator.

1	2	3	4	5
• There is no power.	• There is intermittent power.	• There is regular power.	• There is regular power. • There is a generator.	• There is regular power. • There is a generator. • The warehouse has a battery back-up for cross-over time (until the generator kicks in).

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.2. Work safety

Interview questions	Things to observe
• Explain how the building is monitored for safety conditions.	• If there is a log or other report on safety conditions, ask to see it.

1	2	3	4	5
• The building and site are not monitored for environmental conditions and safety.	• The building and site are informally monitored for noticeable environmental conditions and safety concerns by staff working in the building.	• The building and site are formally monitored through regular inspection by designated staff for environmental conditions and safety concerns. • Conditions are manually recorded in a log.	• The building and site are formally monitored through regular inspection by designated staff for environmental conditions and safety concerns. • Conditions are manually recorded in a log. • Maintenance requests are generated and routinely responded to.	• The building and site are formally monitored through regular inspection by designated staff for environmental conditions and safety concerns. • An electronic maintenance request system is in place.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.3. Site structure and security

Interview questions	Things to observe
• What security measures are in place at this facility/warehouse to ensure product safety?	• Validate that the security measures are in fact in place (i.e., bars on doors, security alarms).

1	2	3	4	5
• There are no locks on the doors.	• Solid doors have operating locks. • The entrance is controlled (i.e., with guards or buzzer).	• Burglar bars are installed on all windows and a perimeter fence is in place. • Intruder alarms are linked to local security or police.	• Access is controlled by security personnel, who log all vehicles entering and exiting. • Staff identification cards are used. • Cameras record for future playback.	• Card access control and a turnstile to the main warehouse are provided. • A closed-circuit television recording is in place.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.4. Building temperature control (skip if commodity temperature range does not require heating or cooling)

Interview questions	Things to observe
• What type of cooling system does the warehouse have to control the temperature of the building (not cold storage but overall climate temperature control)?	• View the air conditioner or other cooling system.

1	2	3	4	5
• The storage area has no cooling and/or heating.	• The storage area has limited cooling and/or heating.	• The storage area has a fully functional cooling and/or heating system that maintains a consistent temperature.	• The storage area has a fully functional cooling and/or heating system that maintains a consistent temperature. • Temperatures are manually logged. • The cooling/heating system has an up-to-date maintenance plan.	• The storage area has a fully functional cooling and/or heating system that maintains a consistent temperature. • The storage area is electronically monitored. • The cooling/heating system has an up-to-date maintenance plan. • The storage area has an alarm system to notify personnel of deviations in temperature.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.5. Material handling equipment

Interview questions	Things to observe
• Is equipment used to move product within the warehouse? • If yes, what type of equipment?	• If equipment exists at the facility, ask to see it (i.e., pallet jacks or lift trucks).

1	2	3	4	5
• All commodities are moved by hand. • Loading is through man doors only with no protection.	• The warehouse has manual handling equipment, such as a hand truck or pallet jack. • Maintenance occurs only when a piece of equipment breaks. • The warehouse has an overhead/drive-up door.	• The warehouse has functioning powered handling devices such as a lift truck or powered pallet jack. • A training program is mandatory for all staff using powered equipment. • There is at least one dock door. • A portable dock plate is used.	• The warehouse has functioning powered handling devices such as a lift truck or powered pallet jack. • Training is mandatory for all staff using powered equipment. • All material handling equipment is covered under a service level agreement (SLA) and receives regular maintenance. • There is more than one dock door with a leveler.	• The warehouse has functioning powered handling devices such as a lift truck or powered pallet jack. • Training is mandatory for all staff using powered equipment. • All material handling equipment is covered under an SLA and is regularly maintained. • The WMS assigns tasks based on material handling equipment being used. • There are multiple dock doors with levelers and dock locks.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.6. Cold chain infrastructure and capacity (answer only if refrigerated items are stocked)

Interview questions	Things to observe
• What type of cold chain infrastructure does this facility/warehouse have to keep products requiring cold chain at the right temperatures? • Do you monitor the temperature of the storage area or refrigerator used to store products requiring cold chain?	• Observe the cold chain infrastructure and any associated evidence that temperatures are monitored.

1	2	3	4	5
• The storeroom has a free-standing refrigerator but power is not consistent. • Equipment is not maintained or repaired in a timely way (it may sit for a year or more). • The temperature is not monitored.	• The storeroom has an adequate free-standing refrigerator with consistent power. • The temperature is monitored with thermometers. • When equipment is broken, it is fixed within a reasonable time.	• The storeroom has an adequate free-standing refrigerator with consistent power. • The storeroom has extra coolers for cold chain overflow. • Capacity is sufficient for typical storage but it is difficult to manage with large receipts (such as for a vaccine campaign). This results in cramped conditions. • When equipment is broken, it is fixed within a reasonable time. • Annual preventative maintenance is performed. • The temperature is monitored with thermometers and logged.	• The warehouse has built-in cold rooms. • Audible alarms sound when the temperature is outside the established range. • Maintenance contracts are in place and biannual preventative maintenance is performed. • Capacity is sufficient for large receipts.	• The warehouse has built-in cold rooms. • Audible alarms sound when the temperature is outside the established range. • The temperature is automatically monitored with email and/or a mobile phone alarm sent to the distribution list. • Maintenance contracts are in place and biannual preventative maintenance is performed. • Cold rooms are connected to the generator/uninterruptible power supply. • Capacity is sufficient for large receipts.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.7. Storage conditions and capacity

Interview questions	Things to observe
• Explain how your storeroom/warehouse is organized. • Do you feel that the storage space available at your facility/warehouse is adequate to handle the normal volume of products stored there?	• Observe the storeroom/warehouse to see how the products are organized and how full the warehouse is.

1	2	3	4	5
• Storage is haphazard. • The warehouse has insufficient capacity, leading to products being stored in offices and hallways.	• The main storeroom is minimally organized. • Bulk/overflow products are stored on the floor.	• The main storeroom is well-organized. • Capacity is sufficient for typical inventory levels, but it is difficult to manage large receipts (i.e., epidemic or seasonal stock). • Bulk or overflow products are placed on pallets on the floor.	• The warehouse is well-organized. • Building capacity can be manually tracked, with efforts to maintain capacity for the expected inbound shipments. • Bulk products are stored in racks or on a deck rack. • Storage conditions meet or exceed WHO standards. • Capacity is sufficient for large receipts.	• The WMS tracks warehouse capacity. • An effort is made to maintain 85% or less storage capacity. • The WMS recommends consolidation and replenishments to use space efficiently. • A multiyear capacity plan exists to plan for expected growth. • Capacity is sufficient for large receipts.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.8. Housekeeping

Interview questions	Things to observe
• Explain your process for cleaning the storeroom/warehouse. • How often is the storeroom cleaned?	• Observe how clean the storeroom/warehouse is. If the interviewee states that there is a cleaning schedule, ask for a copy of this schedule.

1	2	3	4	5
• There are no standards for cleaning. • There is no schedule for cleaning.	• Basic cleaning tasks are understood. • Cleaning is scheduled at least monthly.	• Basic standards for cleaning are included in SOPs. • Cleaning is scheduled weekly.	• Cleaning is scheduled to take place at least twice a week. • A pest program is in place (if necessary).	• Cleaning is scheduled to take place at least twice a week. • A pest program is in place (if necessary). • Cleaning standards meet all local/national or WHO standards for storing pharmaceuticals.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.9. Infrastructure and capacity for expired products

Interview questions	Things to observe
• Where do you store expired products at your facility/warehouse?	• Observe expired product storage area.

1	2	3	4	5
• There is no space for expired products, which are stored with usable inventory.	• Expired products are stored in any space available, separate from inventory.	• Expired products are stored in a designated location.	• Expired products are stored in a dedicated lockable location for expired products. • Expiry storage is clearly designated with correct signage. • Expiries are separated and stored in collection containers by commodity type.	• A lockable, controlled location is dedicated to expired products, with specific storage conditions for hazardous expired materials. • Expiry storage is clearly designated with correct signage. • Expiries are separated and stored in collection containers, organized by commodity type.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.10. Safety equipment

Interview questions	Things to observe
• Is any safety equipment available for handling products in the storeroom/warehouse?	• Ask to view any safety equipment.

1	2	3	4	5
• No safety cabinet or safety equipment exists.	• Limited safety equipment is available (i.e., fire extinguisher, eye protection, appropriate gloves). • Safety equipment is not maintained according to product specifications (i.e., expiry date, storage requirements, functionality checks).	• Adequate safety equipment is available (i.e., spill kits, eye wash, masks, lab coats, closed toe shoes, fire extinguishers, eye protection, appropriate gloves). • Safety equipment is maintained according to product specifications (i.e., expiry date, storage requirements, functionality checks).	• Some safety cabinets are available for storing hazardous products. • Adequate safety equipment is available (i.e., spill kits, eye wash, masks, lab coats, closed toe shoes, fire extinguishers, eye protection, appropriate gloves). • Safety cabinets and equipment are maintained according to product specifications (i.e., expiry date, storage requirements, functionality checks).	• Safety cabinets available for hazardous product storage meet current and future needs. • All necessary safety equipment is available. • Safety cabinets and equipment are maintained according to product specifications (i.e., expiry date, storage requirements, functionality checks).

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.11. Infrastructure and capacity for controlled substance/high-value product storage

Interview questions	Things to observe
• Where are controlled substances/high-value products stored at the storeroom/warehouse? • Who has access to these controlled substances/high-value products? • How often do you count controlled substances/high-value products?	• View the storage area for controlled substances/high-value products. • For access control, observe a log or any other documents illustrating the entry or access to the controlled substance/high-value product storage area.

1	2	3	4	5
• No infrastructure is in place for storing controlled substances/high-value products, such as a secure location.	• Some accommodation is available for controlled substances/high-value products, including lockable cabinet/cage. • Access is not controlled and the key is left out in the open. • Controlled substances/high-value products are counted at the same time other shelf counts are made.	• Access to controlled substances/high-value products is limited, including lockable cabinets, cages, or rooms. • Access to controlled substances/high-value products is limited to designated personnel. • There is a limited number of keys. • Controlled substances/high-value products are counted at the same time other shelf counts are made.	• Access to controlled substances/high-value products is controlled, including lockable cabinets, cages, or rooms. • Access to controlled substances/high-value products is limited to designated personnel. • There is a limited number of keys. • Controlled substances/high-value products are tracked by manual register/ledger. • Weekly/monthly shelf counts are made.	• Access to controlled substances/high-value products is strictly controlled, including lockable cabinets, cages, or rooms. • Access to controlled substances/high-value products is limited to designated personnel. • There is a limited number of keys. • Controlled substance/high-value products are tracked through a manual register/ledger signed with each exchange of keys. • Commodities are inventoried each time the keys are exchanged.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.12. Building conditions

Interview questions	Things to observe
• Is the building structurally sound?	• Observe the building and how it meets the standards laid out in this capability.

1	2	3	4	5
• Storage areas have a roof and floor.	• Storage areas have a roof, floor, walls, and doors for storing products • Storage areas have a level floor with space for storage and receiving/dispatch. • Storage areas have adequate lighting.	• Storage areas have a solid insulated roof that is free of leaks. • Storage areas have an impervious (i.e., concrete/cement) level floor with separate areas for storage and receiving/dispatch. • Storage areas have adequate lighting.	• Storage areas have a solid insulated roof that is free of leaks. • Storage areas have an impervious (i.e., concrete/cement) level floor with a set layout for storage and receiving and dispatch areas. • Storage areas have designated areas for additional operational activities. • Storage areas have a separate receiving and dispatch area with doors. • Storage areas have adequate lighting.	• Storage areas have a solid insulated roof that is free of leaks. • Storage areas have an impervious (i.e., concrete/cement) level floor with a set layout for storage and receiving/dispatch areas. • Storage areas have designated areas for additional operational activities. • Storage areas have a separate receiving and dispatch area with doors. • Storage areas have adequate lighting. • The warehouse meets good warehousing practice standards.

4. Warehousing and Inventory Management

4.c. Infrastructure

4.c.13. Special handling infrastructure and capacity for hazardous and flammable products

Interview questions	Things to observe
• Do you have hazardous/flammable products (not only medicines) stored in the storeroom/warehouse? If no, then go to the next question. • If yes, then where are hazardous/flammable products (not only medicines) stored in the storeroom/warehouse?	• Ask to see any separate storage space for hazardous/flammable products.

1	2	3	4	5
• No special handling infrastructure is in place for hazardous and flammable products, such as an isolated location.	• Hazardous and flammable products are kept separate from regular stock but within the main storeroom.	• Hazardous and flammable products are kept outside the main storeroom.	• Hazardous and flammable products are kept in a fire-rated room or outside in an external storage area.	• Hazardous and flammable products are kept in a fire-rated room or outside in an external storage area.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.1. Hazardous and flammable products standards

Interview questions	Things to observe
• Does the facility have any standards for handling hazardous/flammable products?	• Ask to see standards if they exist.

1	2	3	4	5
• Basic national/site hazardous chemical standards do not exist.	• Basic national/site hazardous chemical standards exist.	• National/site hazardous chemical standards were reviewed and updated more than one year ago. • National/site chemical standards include MSDS, hazardous disposal, spill and fire procedures, and required PPE.	• National/site hazardous chemical standards are reviewed at least annually. • A formal process is in place for document management. • Standards reflect current hazardous products kept in stock.	• National/site hazardous chemical standards are reviewed at least annually. • A formal process is in place for document management. • Annual training is mandatory in hazardous chemical standards and is documented in personnel files.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.2. Risk management

Interview questions	Things to observe
• Does the facility/warehouse have a "plan B" to address any likely interruption (e.g., power shutdown, damage to the vehicle) of typically provided warehousing services?	• Ask to see a formal written communications plan if it exists.

1	2	3	4	5
• Risks are not identified. • No contingency plans are in place.	• Risks are assessed and documented ad hoc/when a situation arises. • Contingency plans are limited to dealing with issues as a situation develops.	• Risks are identified, assessed, and documented annually. • An informal contingency plan exists to address issues that may arise.	• Risks are identified, assessed, and prioritized annually. • Corresponding strategies and resources are employed to minimize, monitor, and control the probability and/or impact of risks. • Most key stakeholders are involved in the risk management process. • Formal contingency plans are in place.	• Risks are continually identified, assessed, and prioritized using a risk-scoring model. • Corresponding strategies and resources are used to minimize, monitor, and control the probability and/or impact of risks. • All key stakeholders are involved in managing risk. • A formal contingency plan is updated annually.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.3. Operations plan

Interview questions	Things to observe
• Does the facility have an operations plan or equivalent document that is used to plan its day-to-day operations?	• Ask to see the operations plan or equivalent document.

1	2	3	4	5
• No operations plan is in place. • There is no awareness of a national or local strategic plan.	• A basic operations plan is in place with short-term (one year) goals. • The operations plan is not aligned with the national or local strategic plan.	• An operations plan with medium-term (two year) goals is in place. • The operations plan loosely aligns with national or local strategy. • The plan includes general performance goals such as stock-out rates, stocked according to plan, and percent expiry.	• A multiyear (three to four year) operations plan is in place with resource planning for increases/fluctuations in volume. • The operations plan is integrated with national or local strategic plans. • Performance goals and metrics are monitored by relevant departments.	• A long-term plan (five-plus years) is in place with clear goals aligned with national or local strategy. • Operations plan performance is tracked and reported. • Corrective actions are implemented for departments with substandard performance.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.4. Inbound shipment visibility (information received from suppliers)

Interview questions	Things to observe
• Does the warehouse know when shipments will be arriving from vendors? • How are they notified?	• Ask for any documents illustrating the notification process.

1	2	3	4	5
• The warehouse has no visibility into supplier shipment status.	• The warehouse is notified by the supplier/procurement unit that the shipment is en route.	• The warehouse is notified by the supplier/procurement unit when the shipment will be delivered. • Some information on content is provided.	• The warehouse is informed by the supplier/procurement unit of inbound shipment arrival times; arrival times are coordinated between the procurement unit and vendor based on the supply plan.	• The warehouse is informed by the supplier/procurement unit of booked inbound shipment arrival time. • Arrival times are coordinated between the procurement unit and vendor based on the supply plan. • Waybill/transporting waybill are made available to the destination warehouse before shipment arrival.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.5. Country ownership

Interview questions	Things to observe
• Who is responsible for the warehousing and inventory management functions at this facility/warehouse (the government/ MOH or partners)?	• N/A

1	2	3	4	5
• Warehouse processes are managed by donors or partners with little to no country input.	• Donors or partners manage warehouse processes and seek input from the MOH or another government entity.	• Donors or partners manage warehouse processes. • The MOH or other government entity plays an active role in warehouse processes; designated MOH staff collaborate with donors/partners.	• The MOH or another government entity manages warehouse processes. • Warehouses are managed by senior MOH staff with support from external consultants.	• A designated unit within the MOH or another government entity is responsible for managing warehouse processes. • Warehousing is a collaborative activity that includes all supply chain and funding stakeholders.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.8. Key performance indicators (KPIs) for warehousing and inventory management

Interview questions	Things to observe
• Does the facility report on any specific performance indicators for warehousing (i.e., order fill rate, expiry, stock accuracy)?	• Ask to see any monitoring reports or data sets used to analyze KPIs.

1	2	3	4	5
• No KPIs are in place to monitor and evaluate performance.	• An informal measurement system is in place to measure efficiencies.	• KPIs are established.	• KPIs measure high-level outcomes and process efficiencies using validated data.	• KPIs measure high-level outcomes and process efficiencies using validated data. • KPIs are benchmarked against relevant best practices. • Action plans for each KPI are generated monthly.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.9. Auditing process

Interview questions	Things to observe
• Are external (beyond MOH or its subordinate entities' jurisdictions) audits of the health facility completed? • How often are audits completed?	• Ask for any audit reports.

1	2	3	4	5
• External audits do not take place.	• External audits are informal and ad hoc. • Audit results are not shared with auditees.	• External audits are conducted annually. • The audit process is partially documented. • Audit results are not shared with auditees.	• External audits are conducted annually. • The audit process is fully documented. • Results and recommendations are provided, but little or no action is taken to improve upon shortcomings.	• External audits are conducted at least annually. • Audits are fully documented and are conducted by auditors who are trained in warehousing. • The audit process is fully documented. • Results and recommendations are provided and implemented, leading to continual improvements.

4. Warehousing and Inventory Management

4.d. Strategic Planning and Oversight

4.d.10. Supervision

Interview questions	Things to observe
• Is this facility visited by a supervisor for supply chain issues? • How often do you receive a supervision visit for supply chain issues? • Have you seen the results of the supervisory report?	• Ask for visit report, certificate, etc.

1	2	3	4	5
• No supply chain focused supervision visit in the last 12 months.	• At least one supply chain focused supervision visit in the last 12 months. • Supply chain supervision visits are ad hoc. • No feedback.	• At least one supply chain focused supervision visit in the last six months. • Supply chain supervision visits are ad hoc. • Feedback received after visit but little to no action is taken to improve.	• Supply chain focused supervision visits take place quarterly. • Visit schedule is clear. • Results and recommendations are provided and feedback is implemented on an ad hoc basis.	• Supply chain focused supervision take place at least quarterly. • Visit schedule is clear. • Results and recommendations are provide, and implemented, leading to continual improvements.

4. Warehousing and Inventory Management

4.e. Human Resources

4.e.1. Supply chain competencies and staffing

Interview questions	Things to observe
• Are any staff specifically designated to complete warehousing activities? • Do staff designated to complete warehousing activities have the core competencies required to complete these tasks? • Is a job description available for staff designated to complete warehousing activities?	• If a job description exists, review the document.

1	2	3	4	5
• No staff have been designated to complete activities.	• Limited staff are available to complete activities. • Core competencies are not outlined or required to complete job functions (i.e., understands necessary processes, required data, tools, and use).	• Staff informally designated to complete activities (where identified) in addition to other roles. • Core competencies (i.e., understands necessary process, required data, tools, and use) are under development (linked to organizational structure).	• Staff positions designated in the organizational structure are partially filled. • Core competencies (i.e., understands necessary process, required data, tools, and use) are developed.	• Staff positions designated in the organizational structure are all filled by staff with strong core competencies (i.e., understands necessary process, required data, tools, and use). • Core competency frameworks are clearly defined for all supply chain positions and consistently applied.

5. Transportation

5.a. Process and Tools

5.a.1. Operating cost data

Interview questions	Things to observe
• Are transport costs tracked? • If yes, how are these data used? • Does the facility use these data to make decisions on cost-effective transportation?	• Ask to see reports or databases tracking transportation costs.

1	2	3	4	5
• Transport operating costs are unknown.	• Some transport operating costs are understood.	• All transport operating costs are understood. • Cost data are used to inform decision making.	• All transport operating costs are understood. • Cost data are used to conduct cost-benefit analyses, set capital spending priorities, and inform financial management decisions.	• All transport operating costs are understood. • Cost data are used to maximize return on investment, conduct cost-benefit analyses, set capital spending priorities, and make sound financial management decisions. • Costs of owning fleet versus outsourced vehicles are calculated and reviewed quarterly.

5. Transportation

5.a. Process and Tools

5.a.2. Operations plan for transportation

Interview questions	Things to observe
• Does the facility have an operations plan that is used to plan its day-to-day operations?	• Ask to see the operations plan.

1	2	3	4	5
• No operations plan is in place. • No awareness is present of national/local strategy.	• A basic operations plan with short-term goals is in place. • Awareness of national/local strategy is present but operation plans are not aligned.	• An operations plan is in place with medium-term goals. • The operations plan loosely aligns with national/local strategy. • The plan aligns with general performance goals such as stock-out rates, stocked according to plan, and percent expiry.	• A multiyear operations plan includes resource planning for increases/fluctuations in volume. • The operations plan is integrated with national/local strategic plans. • Performance goals and metrics are monitored by relevant departments.	• A long-term plan is in place (five-plus years) with clear goals aligned with national/local strategy. • Operations plan performance is tracked and reported. • Corrective actions are implemented for departments demonstrating substandard performance.

5. Transportation

5.a. Process and Tools

5.a.3. Capacity to meet demand

Interview questions	Things to observe
• Does the facility/warehouse have enough vehicles to meet its transportation needs? • Are vehicles used for deliveries owned by the facility? If no, then skip 5.a.4. • Are vehicles sufficient to consistently meet the transportation demand?	• Quickly assess whether the number/capacity of the vehicles meets the demand of routine deliveries to all facilities serviced by the warehouse.

1	2	3	4	5
• Fleet, staffing, and budgetary resources are highly constrained. • Demand for deliveries is consistently unmet.	• Fleet, staffing, and budgetary resources are constrained. • Demand for deliveries is inconsistently met.	• Adequate fleet, staffing, and budgetary resources are allocated. • Demand for deliveries is inconsistently met.	• Adequate fleet, staffing, and budgetary resources are allocated. • Demand for deliveries is consistently met.	• Adequate fleet, staffing, and budgetary resources are allocated. • Demand for deliveries is consistently met. • Contingency plans are in place to ensure uninterrupted delivery.

5. Transportation

5.a. Process and Tools

5.a.4. Vehicle management

Interview questions	Things to observe
• Are the existing vehicle(s) in the fleet functional? • If the vehicle(s) break down, are they repaired in a timely manner? • Is the budget adequate to maintain the vehicles? • Is any preventive maintenance performed on the vehicles? • Do drivers and/or vehicles meet regulatory requirements?	• Assess the vehicle(s) and any maintenance logs.

1	2	3	4	5
• Vehicles are either not functional or not available. • No preventive maintenance program is in place. • Fleet records are not maintained. • No regulatory management (i.e., vehicle registration and licensing) or controls (i.e., tracking, maintenance) are in place.	• Vehicles are functional most of the time and are repaired if funds are available. • No preventive maintenance program is in place; vehicles are repaired when necessary. • Minimal fleet records are maintained ad hoc. • Minimal regulatory management (i.e., vehicle registration and licensing) or controls (i.e., tracking, maintenance) are in place.	• Vehicles are consistently functional. • Repairs are made in a timely way and funds are routinely available for maintenance. • No preventive maintenance is in place; vehicles are repaired as needed. • Some fleet controls and records are in place. • Regulatory requirements are understood and partially met.	• Vehicles are consistently functional and are repaired in a timely way with funds that are routinely available. • Vehicles are repaired as needed and in a timely way. • A preventive maintenance program is in place. • Vehicle controls and records are in place. • Use of fleet vehicles meets the operational requirement (right size load for vehicle capacity, etc.). • Regulatory requirements are met.	• Vehicles are consistently functional and are repaired in a timely way with funds that are routinely available. • Vehicle(s) are serviced at regular intervals and are well maintained. • Fleet or vehicle(s) are well controlled; accurate records are in place for each vehicle, including which driver used which vehicle on what day. • A comprehensive preventive maintenance program is in place. • All drivers and vehicles meet regulatory requirements.

5. Transportation

5.a. Process and Tools

5.a.6. Outbound shipment visibility

Interview questions	Things to observe
• How do you track shipments from when they leave your warehouse until they arrive at the facility? • Does the facility/warehouse notify facilities about deliveries that it makes? • If yes, how does it notify the facility of when deliveries will arrive?	• Review any documentation (logs or systems) that track outbound shipments.

1	2	3	4	5
• There is no outbound shipment visibility en route to service delivery points. • Facility/warehouse doesn't notify facilities about deliveries that it makes.	• Outbound deliveries are manually tracked by calling carriers to determine shipment location. • Facility/warehouse informally notifies facilities about deliveries that it makes.	• Outbound orders are manually recorded and reconciled daily. • Manual process for notification of facilities about deliveries is in place and is consistently used.	• An outbound tracking system is in place in the transportation management system (TMS) or WMS. • Facility/warehouse notifies facilities about deliveries that it makes using the TMS or WMS.	• Outbound carriers send shipment event updates to the TMS or WMS. • Outbound loads are planned. • Facility/warehouse notifies facilities about deliveries that it makes using the TMS or WMS.

5. Transportation

5.a. Process and Tools

5.a.7. Outbound chain of custody

Interview questions	Things to observe
• Is a system in place to trace the chain of custody of a shipment from the warehouse to the recipient? • How is proof of delivery documented?	• Ask for a sample of proof of delivery.

1	2	3	4	5
• No process is in place for chain of custody. • There is little or no documented record of delivery and stock quantity.	• Manual processes for chain of custody are used ad hoc. • Details of stock loss are not recorded.	• Manual processes for chain of custody are consistently used. • Details of stock loss are recorded but not used to inform an action plan to improve performance. • A manual process is in place for proof of delivery (POD). • Outbound stock is manually reconciled with POD.	• A basic TMS system is in place with shipment tracking. • Loss incidents are entered into the TMS. • A POD management system is in place, and the driver is held accountable for products. • A partially manual process is in place for daily reconciliation of outbound stock with received POD.	• A fully automated TMS is deployed throughout the outbound chain and integrated with the WMS. • An automated POD management system is in place (POD is scanned into the WMS) and is available throughout the organization (accounting team). • An automated process reconciles outbound stock with POD.

5. Transportation

5.a. Process and Tools

5.a.8. Security management

Interview questions	Things to observe
• Are any measures in place to ensure the security of products during transport? • How are these processes/procedures documented? • If a security incident occurs, such as theft, how is that handled?	• Ask to see any incident reports and if possible observe any security measures built into the fleet, such as tracking devices or seals.

1	2	3	4	5
• No security measures or controls are in place.	• Incidents involving losses (e.g., hijacking, truck broken into) may be known but are not recorded.	• Some security measures and controls are in place to limit losses. • Procedures to record loss incidents are applied ad hoc.	• Thorough security measures and controls are in place to limit incident opportunity. • Procedures to record loss incidents are consistently applied. • No proactive profiling or measures are in place to prevent losses. • Cost analysis is not concluded.	• Incident records are filed in a central location. • Risk profiling is done to determine opportunities for incidents. • Proactive measures are in place to avoid incidents. • Cost/benefit analysis is completed to determine acceptable costs of proactive actions to mitigate risk.

5. Transportation

5.a. Process and Tools

5.a.9. Third-party outsourced fleet management (only complete if transportation is outsourced)

Interview questions	Things to observe
• Are service levels and performance of the third-party logistics (3PL) provider monitored? • How are service levels and performance monitored?	• Ask to see any reports or databases used for monitoring a 3PL provider.

1	2	3	4	5
• No process is in place to monitor service levels. • No process is in place to manage expenses. • No process is in place for return of proof of delivery.	• A manual (pen-and-paper) process is in place to monitor service levels. • A minimal process is used to manage expenses. • A minimal process is used for return of POD.	• Excel/Access-based tracking is in place to monitor service levels. • Excel/Access-based monitoring is in place to manage expenses. • Excel/Access-based tracking is in place for return of POD.	• A service-level agreement (SLA) exists. • A transportation management system tracks service levels. • The TMS manages route expense. • The TMS tracks POD return. • Outsourced fleet expense monitoring is used to calculate cost benefit.	• An SLA with a third party is actively managed with monthly review meetings, including performance reviews. • A TMS tracks service levels. • The TMS manages route expense. • The TMS tracks POD return. • Outsourced fleet expense monitoring is used to measure cost benefit so that the optimal mix between outsourced third-party and in-house-operated vehicles is achieved at the lowest overall expense.

5. Transportation

5.a. Process and Tools

5.a.10. Outbound transportation

Interview questions	Things to observe
• How does the facility/warehouse determine when to complete deliveries? • Does the facility/warehouse track vehicle utilization and its optimization?	• Ask to see delivery schedules if available.

1	2	3	4	5
• Outbound transportation is completely response based; there is no planning for vehicle availability, route scheduling, staffing, etc.	• Outbound transportation is primarily response based.	• Outbound transport management is planned and uses Excel-based tracking. • The fleet optimization strategy is reviewed ad hoc.	• Outbound transport is managed by an electronic transportation management system. • The fleet optimization strategy is reviewed annually. Vehicle use rates are tracked.	• Outbound transport is managed by an electronic transportation management system. • The fleet optimization strategy is reviewed at least annually. • The optimization strategy considers fleet efficiency through routing and scheduling. • Vehicle use rates are tracked.

5. Transportation

5.a. Process and Tools

5.a.11. Customs clearance and importation

Interview questions	Things to observe
• Do you have written procedures on customs clearance? • If yes, please describe these procedures?	• N/A

1	2	3	4	5
• No customs clearance and importation processes are in place. • The vendor and/or customs clearing agent have little or no communication.	• An informal customs clearance and importation management process is in place. • Communication between the vendor and/or clearing agent is ad hoc. • Supporting commercial documentation is not well coordinated between parties.	• A documented customs clearance and importation process is in place. • The vendor and/or clearing agent communicate regularly. • Supporting commercial documentation is shared electronically among parties.	• A formal and well-documented customs clearance and importation process is in place. • The vendor and/or clearing agent communicate regularly. • Supporting commercial documentation is shared electronically among parties.	• A mature, automated customs clearance and importation management process is in place. • The vendor and/or clearing agent communicate regularly. • Supporting commercial documentation is shared electronically among parties.

5. Transportation

5.a. Process and Tools

5.a.12. Reverse logistics

Interview questions	Things to observe
• Does the delivery team (drivers) accept stock returns from facilities during their deliveries? • Are any approval processes required to accept these returns?	• Ask to see any forms that would authorize product returns.

1	2	3	4	5
• The delivery team does not accept stock returns from the consignee.	• The delivery team accepts stock returns from the consignee. • No preauthorization process is in place. • Stock arrives anonymously back to the warehouse and is placed in a returns area.	• The delivery team accepts stock returns from the consignee. • No preauthorization process is in place. • Some documentation exists to trace the return transaction.	• The delivery team accepts returned stock and manually checks off against a preauthorized list. • A manual preauthorization process is in place. • Unauthorized stock is not accepted by the driver.	• No unauthorized stock is accepted by the driver. • A formal return authorization (RA) procedure is in place whereby preauthorization is given to the delivery driver or shipped through any transport carrier. • The RA process then reconciles physical returned stock with preauthorized stock. • A returns management process is integrated with the WMS.

5. Transportation

5.a. Process and Tools

5.a.13. Standard operating procedures (SOPs) for transportation

Interview questions	Things to observe
• Do SOPs (here and below: decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.) exist for management, basic operations, or processes/departments? • Is there a policy in place for implementing and managing SOP processes? • Are employees mandated to read SOPs, and is their compliance documented?	• Ask the facility to provide some SOPs.

1	2	3	4	5
• SOPs are not available.	• Some SOPs for basic process operations are available.	• Detailed SOPs for most processes are available. • A policy is in place for implementing and managing processes outlined in SOPs.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employees are aware of the content.	• Detailed SOPs for all processes are available. • All employees are mandated to read SOPs and there is a documented record that employees are aware of the content. • SOPs comply with national and local regulations.

5. Transportation

5.a. Process and Tools

5.a.14. SOP document control for transportation

Interview questions	Things to observe
• Have the SOPs (here and below: decrees of the CMU, orders of MOH or others ministries, internal orders, instructions, job descriptions, etc.) been reviewed after their initial creation? • How often are the SOPs reviewed and updated? • What is the process for updating the SOPs?	• Ask the facility to show the multiple versions of the SOPs and any documentation that illustrates version control, if applicable.

1	2	3	4	5
• SOPs are not available.	• SOPs are available in their original version but have not been reviewed since inception.	• SOPs are reviewed infrequently (less than annually). • Limited version control measures are in place.	• SOPs are reviewed annually. • SOPs are updated during annual review as needed. • SOPs are filed in an accessible central location.	• SOPs are updated whenever procedures or system functionality is changed. • Copies of SOPs are printed and provided to relevant personnel. • SOPs contain a documented review history (list of dates and authorized signature) and version number. • SOP originals are stamped with the word “original,” and copies are stamped with “copy.”

5. Transportation

5.b. Management Information

5.b.1. Monitoring and evaluation (M&E) for transportation

Interview questions	Things to observe
• Are performance data collected and analyzed? If yes, what kind of data are collected and how are these data used? • Is the data collection system and analysis defined/documented? • Do these data inform any decision-making?	• Ask to view databases and reports.

1	2	3	4	5
• No data analysis or reporting is conducted. • No data are used in decision making.	• Informal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are inconsistently captured and reported. • Data are used ad hoc in decision making.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • Key performance indicators are developed and tracked. • Data for decision making are used in a limited routine way.	• Formal systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data. • Data are consistently captured and reported. • An M&E committee routinely meets to review key performance indicators • Corrective actions are identified, informally tracked, and documented.	• Automated systems, procedures, and defined roles are in place for capturing, maintaining, and sharing data in real time. • Data are consistently captured and reported. • An M&E committee routinely meets to review key performance indicators. • Corrective actions are identified, formally tracked, and documented.

5. Transportation

5.b. Management Information

5.b.2. Computer hardware and software availability for transportation

Interview questions	Things to observe
• Does the facility have a computer for completing supply chain functions such as transportation? • If yes, is this computer adequate to complete the required tasks? • What type of software is available on the computers? • Do you feel that the number of computers available to perform daily activities is sufficient? • Is there internet access at the facility?	• Verify that a working computer exists if the interviewee says that they have the hardware and software available.

1	2	3	4	5
• No working computer hardware or software is available.	• Not having enough computers interferes with staff's ability to complete job-related activities. • Available computer software is limited to a word-processing program.	• A sufficient number of working computers is available to complete job-related activities. • Available computer software is limited to Microsoft Office suite or the equivalent.	• A sufficient number of working computers is available to complete job-related activities. • Available computer software is limited to Microsoft Office suite or the equivalent. • Computers receive sporadic maintenance.	• All staff who require computers have them to complete job-related activities. • Available computer software is limited to Microsoft Office suite or the equivalent. • Computers receive scheduled maintenance.

5. Transportation

5.c. Infrastructure

5.c.1. Temperature control management

Interview questions	Things to observe
• Is cold chain infrastructure available while transporting product? What type of cold chain infrastructure is available? • Is the shipping container (cold box or truck) monitored?	• Validate that cold chain infrastructure exists (in trucks or cold boxes).

1	2	3	4	5
• Product requirements for cold chain transportation conditions are not understood and/or adhered to (<25°C – non cold, 2°–8°C – cold, and <-20°C – frozen). • Temperature is not recorded.	• Product requirements for cold chain transportation conditions are understood but inconsistently followed (<25°C – non cold, 2°–8°C – cold, and <-20°C – frozen). • Cold chain packaging supplies are available sporadically. • Temperature is recorded ad hoc.	• Product requirements for cold chain transportation conditions are understood and consistently followed (<25°C – non cold, 2°–8°C – cold, and <-20°C – frozen). • Cold chain packaging supplies are available consistently. • Temperature is recorded consistently.	• Product requirements for cold chain transportation conditions are understood and consistently followed (<25°C – non cold, 2°–8°C – cold, and <-20°C – frozen). • Cold chain packaging supplies are available. • Climate control-equipped vehicles are available. • Temperature is recorded consistently. • Product requirements are understood and processes are in place (in SOPs). • A quality assurance-validated cold chain process is in place.	• Product requirements for cold chain transportation conditions are understood and consistently followed (<25°C – non cold, 2°–8°C – cold, and <-20°C – frozen). • Cold chain packaging is available. • Climate control-equipped vehicles are available. • Temperature monitoring is in place. • Product requirements are understood and processes are in place (in SOPs). • A quality assurance-validated cold chain process is in place.

5. Transportation

5.d. Strategic Planning and Oversight

5.d.2. Risk management

Interview questions	Things to observe
• Does the facility/warehouse have a "plan B" to address any interruption of typically provided transportation services?	• Ask to see a formal written communications plan if it exists.

1	2	3	4	5
• Risks are not identified. • No contingency plans are in place.	• Risks are assessed and documented ad hoc/when a situation arises. • Contingency plans are limited to dealing with issues as a situation develops.	• Risks are identified, assessed and documented annually. • An informal contingency plan is in place to address issues that may arise.	• Risks are identified, assessed, and prioritized annually. • Corresponding strategies and resources are used to minimize, monitor, and control the probability and/or impact of risks. • Most key stakeholders are involved in managing risk. • Formal contingency plans are in place.	• Risks are continually identified, assessed, and prioritized using a risk-scoring model. • Corresponding strategies and resources are used to minimize, monitor, and control the probability and/or impact of risks. • All key stakeholders are involved in managing risk. • A formal contingency plan is updated annually.

5. Transportation

5.d. Strategic Planning and Oversight

5.d.3. Country ownership

Interview questions	Things to observe
• Who is responsible for the transportation functions at this facility/warehouse (the government/MOH or partners)?	• N/A

1	2	3	4	5
• Transportation processes are managed by donors or partners with little or no country input.	• Donors or partners manage transportation processes and seek input from the MOH or another government entity.	• Donors or partners manage transportation processes. • The MOH or another government entity plays an active role in transportation processes; designated MOH staff collaborate with donors/partners.	• The MOH or another government entity manages transportation processes. • Transportation processes are managed by senior MOH staff with support from consultants.	• A designated unit within the MOH or another government entity is responsible for managing transportation processes. • Transportation planning is a collaborative activity that includes all supply chain and funding stakeholders.

5. Transportation

5.d. Strategic Planning and Oversight

5.d.15. Key performance indicators (KPIs)

Interview questions	Things to observe
• Does the facility report on any specific performance indicators for transport?	• Ask to see any monitoring reports or data sets used to analyze KPIs.

1	2	3	4	5
• No KPIs are in place to monitor and evaluate performance.	• An informal measurement system is used to measure efficiencies.	• KPIs are established.	• KPIs measure high-level outcomes and process efficiencies using validated data.	• KPIs measure high-level outcomes and process efficiencies using validated data. • KPIs are benchmarked against relevant best practices. • Action plans for each KPI are generated monthly.

5. Transportation

5.e. Human Resources

5.e.1. Supply chain competencies and staffing

Interview questions	Things to observe
• Are any staff specifically designated to complete transportation activities? • Do staff designated to complete transportation activities have the core competencies required to fulfill these functions? • Is a job description available for staff designated to complete supply chain activities?	• If a job description exists, ask for a document.

1	2	3	4	5
• No staff are designated to complete activities.	• Limited staff are available to complete activities. • Core competencies are not outlined or required to complete job functions (i.e., understands necessary processes, required data, tools, and use).	• Staff have been informally designated to complete activities (where identified) in addition to other roles. • Core competencies (i.e., understands necessary process, required data, tools, and use) are under development (linked to organizational structure).	• Staff positions designated in the organizational structure are partially filled. • Core competencies (i.e., understands necessary process, required data, tools, and use) are developed.	• Staff positions designated in the organizational structure are all filled by staff with strong core competencies (i.e., understands necessary process, required data, tools, and use). • Core competency frameworks are clearly defined for all supply chain positions and consistently applied.