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Enhancing Life Cycle Management of COVID-19 Stockpile through Inventory Expiry Reporting and Forecast

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Introduction & Aim

As part of COVID-19 stockpile management, the Supply Chain Task Force (SCTF) team initiated a project with the aim:

- To develop a robust and timely reporting of COVID-19 stockpile expiries as inventory are held across several 3PL and vendor locations.
- To ensure clear accounting and visibility over expiring stockpile.

The outcome is to facilitate robust planning with MOH on utilization and early mitigation to reduce potential wastage. Such an expiry forecast is intended to aid joint planning and decision making with MOH on stock replenishment.

Methodology

The DMAIC framework was adopted to identify potential root causes, as well as to optimize the process of compilation and strengthen reporting.

A. SIPOC Tool to Visualize End to End Process

| Suppliers | Input | Process |
|--|--|---|
| <ul style="list-style-type: none"> Pharmaceutical Companies Medical Supply & Equipment Vendor Warehouse Providers | <ul style="list-style-type: none"> Stock Batch Information Stock Count Information | <ol style="list-style-type: none"> Consolidate Data Mesh the Dataset Follow up with Stakeholders |
| Outputs | Customers | |
| <ul style="list-style-type: none"> Inventory Expiry Inventory Accuracy | <ul style="list-style-type: none"> Government Ministries Public Health Institutions 3PL | |

B. Five Whys Methods to Identify Root Causes From Pain Points

| Pain Points | | |
|---|--|--|
| Complexity of various reports from vendors/3pls with different data standards | There are some variance in between reporting snapshots | Accessibility to Reports |
| <ul style="list-style-type: none"> Multiple vendors and service providers involved Different definitions and formatting used Different Unit of Measurement (UOM) used amongst stakeholders | <ul style="list-style-type: none"> Report can be created by different authors Each author may have their methodology Different formulas may be used to calculate a measure. | <ul style="list-style-type: none"> Report could be delivered from various channels A report could be sent to different stakeholders in a week, based on different data snapshots |

Root Causes

| | | |
|--|---|--|
| It is tedious to compile the data as there are different data standards amongst 3PLs | Methodology used to run report differs between authors. | There is no single channel to deliver a consistent report to stakeholders. |
|--|---|--|

Solution

Solutions were pursued along the following:

- Address the pain point of tedious compilation as expiry information resides with multiple Vendors/Third Party Vendor (3PL), with different data formats and definitions.
- Align UOM methodology across all 3PLs to account for different unit of measurements/ bulk configurations from different vendors
- To switch from ad-hoc reporting to a regular scheduled 12 month rolling forecast reporting, enabling a reliable and consistent set of information to aid planning and decision making.
- To identify means to make the report accessible across the team, through the use of data dashboard.

A. Python application to reduce potential errors and time required to compile the various sources

| | Before Process | New Process | Savings |
|--|---|---|------------------|
| Consolidate the Data | <ol style="list-style-type: none"> 1. Retrieve 5X Reports 2. Align Reports to Desired Format 3. Consolidate External Reports | <ol style="list-style-type: none"> 1. Retrieve 5X Reports | 5.5 Hours |
| Mesh External and Internal Data | <ol style="list-style-type: none"> 1. Extract SAP Data 2. Adjust SAP data to align UOM 3. Manually Map Internal with External Data | <ol style="list-style-type: none"> 1. Extract SAP Data 2. Run Script to Mesh Data | 4.5 Hours |
| Follow up with Stakeholders | <ol style="list-style-type: none"> 1. Summarize the Data 2. Check Results for Errors 3. Report the KPIs via Spreadsheet | <ol style="list-style-type: none"> Summarize the Data Report KPIs via Tableau | 1 Hour |
| Total Time Savings: | | | 11 Hours |

B. Provide common access to stakeholders through a BI Platform

Expiry Forecast Overview for next 12 Months
Based on the report on 01 Jun 2023

Key Features

- Common Access to Single, Consistent Data Source
- Summarize Views Enabling Users to Make Better Decisions & Planning
- Data Drilldown from Summary to Details is Available for Further Analysis

Results and Conclusion

With the reduced report generation time as well as aligned methodology and data definitions, the SCTF team can better focus on providing reliable information for planning with stakeholders on expiry mitigation

Some of the key highlights include:

- ✓ Joint sessions with stakeholders (MOH) on expiry mitigation through identification of avenues to refresh, extend shelf life, as well as reduce potential wastage.
- ✓ Expiry mitigation in the form of planned distribution, moderated replenishment and stock refresh through rotation.