1. **What is the National Surveillance Centre (NSC)?**

The National Surveillance Centre is a business intelligence software platform primarily used for analysing large volumes of medicine availability data, supplier data as well as other kinds of data relevant to the environment.

The NSC in various ways connects to or receives data from around 700 hospitals, well over 3,000 Primary Health Care (PHC) and Community Health Centre (CHC) clinics, and all provincial depots. This data is ingested into the system, transformed and processed before being presented via interactive reports, dashboards, charts and graphs.

This allows stakeholders at national and provincial levels to quantify or predict challenges in medicine supply and turn raw data into actionable tasks.

An introductory video explaining Tableau and business intelligence is available here: https://youtu.be/7JI-RwkzqQ4

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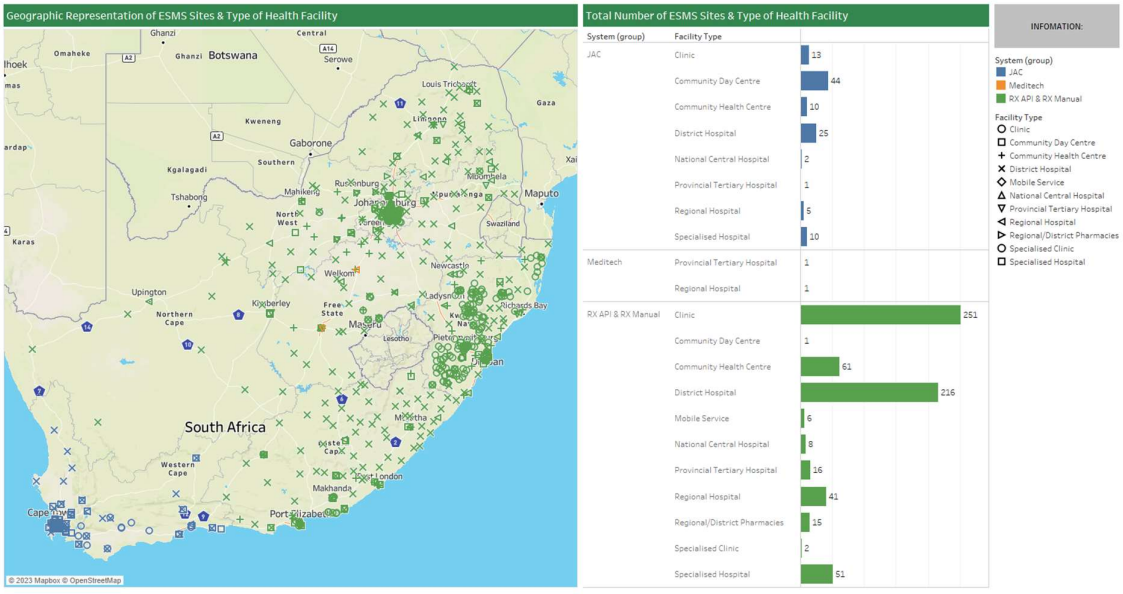
The NSC provides many reports, dashboards, charts and graphs of which this is one example:



2. **What is the Stock Visibility System (SVS) and Rx Solutions? What data is captured on these systems and what's the difference between them?**

RxSolution (not "Rx Solutions") is a very comprehensive Electronic Stock Management System (ESMS) that includes prescribing and dispensing functionality, whereas SVS is a stock visibility and ordering system.

RxSolution can assist with stock replenishment planning, managing stock requisitions, full tracking and management from stock receiving to dispensing into the hands of the patient. It is purpose built for South African processes and infrastructure requirements, using an on-site server but allowing for reporting back to the cloud and NSC subject to availability of network connection. By tracking the movements of stock in and out of the system, RxSolution can estimate stock levels at any point in time. This is called a continuous stock management system.

By contrast, the Stock Visibility System (SVS) uses cloud technology with a central database hosted in the cloud and this is accessed using is an Android based application installed on smart devices with standard cellular connectivity. No server or other infrastructure is required at the point of care.

SVS supports periodic stock management by enabling efficient weekly stock counts. Given configuration of stock replenishment parameters, SVS can then also suggest an order quantity for that item by comparing stock on hand to the preset minimum and maximum parameters.

3. **When staff at a hospital or clinic capture data on drug stocks via Rx Solutions or SVS, who sees this data, and how is it used?**

Three systems come into play. Sites using RxSolution have an array of reports and the ability to create further customized reports on the system per their needs for managing the stock. SVS also has many reports available on its portal which may be accessed by authorized users, especially at provincial and district level.

The data is also imported into the NSC where users may use the drill down and what-if analysis capabilities for overall stock level monitoring.

Additionally, the data is also used to improve stock availability through use in demand forecasting, planning processes and budgeting. The data may also be contrasted with supplier pipeline forecasting.

A large focus of late has been to support districts in developing suitable minimum and maximum stock holding values per medicine item for each facility. These values increasing pull through into the NSC and SVS in order to contextualise stock holding values and act as trigger values for reordering.

We are moving away from asking whether stock is present or not, to asking whether there is the optimal level of stock. While the consequences of understocking are easy to grasp, overstocking also ultimately comes at an opportunity cost that negatively impacts patient care.

4. **What impact have the NSC, SVS and Rx Solutions had on public healthcare facilities? Have they helped reduce stock-outs?**

We prefer to distinguish between shortages and stockouts. Shortages are contained to a narrow area and are likely of short duration. Stockouts may be national or provincial and take additional time to resolve.

While the impact of these tools and approaches is difficult to quantify, we can say confidently that deep stock outs have become rare since implementing them.

The available data is used for regular in-contract demand forecasting activities where collaborative sessions are held with suppliers giving early warning of problems and allowing suppliers the opportunity for better planning given the data.

Aggregating the data to better quantify demand for contracting has also assisted to reduce stock outs. System data played an essential role in ensuring that there were no stock outs during the pandemic.

The focus now is to improve replenishment planning across the supply chain, especially the use of SVS to produce suggested requisitions based on stock counts relative to minimum and maximum values.

5. **One health worker at a KZN hospital informed me that they've struggled to use Rx Solutions due to electricity and network problems. Is this a common problem?**

There is definitely a trade off between employing cloud based solutions that depend on high bandwidth to function but can perhaps be less dependent on local infrastructure at the point of service, versus using local servers which can run for long periods without connecting to the internet, provide quite powerful system capability, but which are much more dependent on infrastructure, such as electricity, back up power systems and the local area network (LAN) availability at the point of service. RxSolution can run long term without access to the internet as reporting data can be submitted manually to the NSC environment by other means. However, the local area network is required for the system to be accessed by more than one PC.

Due to bandwith constraints, systems developed by the NDoH and made available to provincial departments often favour a hybrid approach whereby computing can continue locally without the internet, but then provides reporting data or synchronisation to the cloud when a connection becomes available.

The first priority for backup generators has been for direct patient care, but moving forward the next step should be to provide backup power to IT infrastructure at the point of care to retain the benefits of these systems during outages. However, backup power is not a function within the ambit of the NDoH.

6. **Why do there continue to be media reports about drug stockouts at public health facilities if we have good surveillance systems on medicine stocks at different facilities?**

As stated above, we prefer to distinguish between shortages and stockouts. Shortages are contained to a narrow area and are likely of short duration. Stockouts may be national or provincial and take additional time to resolve.

We would argue that these media reports usually relate to localised shortages which occur from time to time and we aim to reduce these through ongoing improvements in inventory management processes.

Having said that, provincial departments do face multiple constraints. These constraints may relate to infrastructure, staffing, skills, budgets, connectivity, price inflation and many other areas.

The aim is to move these constraints as far as possible and then to optimise for good patient outcomes across the remaining constraints.

Good surveillance systems are one factor in a multifactor situation but do play an important role in reducing stock outs. This can be seen in the downward trend of major stockouts since introducing the surveillance systems and related processes and we will continue to train and embed the use of these systems and processes going forward.

7. **What is the pipeline analysis tool and has it been rolled out? Are all suppliers of medicines required to report via the tool?**

Suppliers are contractually bound to participate in pipeline analysis by providing up to date production pipeline data for product that they supply. The mandatory six month pipeline window allows for proactive prediction and management of looming supply challenges.

This tooling and process applies to medicine products that are purchased via national transversal contracts setup by NDoH in conjunction with provinces, constituting the bulk of the Essential Medicines List (EML). For items not subject to national transversal contracting provinces set up their own supply contracts with suppliers and apply their own supplier management practices.

8. **One researcher told me that in order to conform to the ideal clinic/hospital, some healthcare workers keep a single container of medicine to prevent it from running out of stock, even though it is never used. Is this something you've ever heard of?**

Masking issues degrades the level of service and does not serve the interests of clinic staff or the interests of the patients. Especially where issues have arisen further back in the supply chain, there is, even now, little incentive to hide a shortage at the point of service. Doing so demonstrates a lack of understanding of the supply chain context.

Also, we are moving towards using minimum and maximum stock values to contextualise the stock on hand values. Then for most items, retaining a single unit will not hide shortcomings.

It is our experience that as maturity with regard to the tools, processes and understanding of the supply chain improves, so does trust in these tools and processes, and cynical behaviours are reduced.

High performing districts leverage transparency to discover and execute appropriate interventions.

9. **One researcher told me that the department should try to split more tenders for essential medicines as a means to prevent stockouts. What are your thoughts on this?**

Many contracts are currently awarded with award quantities split among suppliers, however this is done with a measure of pragmatism because there are factors that complicate a strategy of maximizing the splits.

Chiefly, more splits results in lower quantities being awarded to each supplier. This in turn can invite higher prices because the price is largely related to economies of scale.

The health system must then also honour the quantities promised to each supplier which slightly complicates ordering processes in the provinces as well as general supplier management.

Currently tender processes do provide some redundancy by considering the ideal number of suppliers and the ability of suppliers to meet the award when deciding the split. Supplier performance management data on the NSC is then used to monitor the ability of suppliers to meet the award.

Questions sent by Spotlight, answered by Khadija Jamaloodien, head of the National Department of Health's Affordable Medicines Directorate