Implementation of Integrated Electronic Pharmacy System, Rx Solution® improves pharmaceutical inventory management at healthcare facilities in Umzinyathi district, KwaZulu-Natal

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Health Systems Trust Conference
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Presentation Outline

Pharmaceutical Services alignment to Strategic Documents

NHI White Paper
NDoH Strategic Plan (2015-2019)
Annual Performance Plan (2014/15-2016/17)

Umzinyathi District

Socio-Economic Status
Situation Analysis of Pharmaceutical Services pre-integrated electronic pharmacy system installation

Integrated Electronic Pharmacy System

Lessons Learnt
Outcome
Conclusion
8.8 Procurement of pharmaceuticals and goods

Paragraph 385: “The health system faces many challenges in its current procurement system and these must be addressed for NHI to function optimally. NHI will play a role in influencing the procurement of goods. Key components to implementing a successful procurement process include transparency, cost containment, technical capacity, implementation of operational principles, purchasing for safety, adhering to appropriately selected health products list, timely and accurate information, ensuring quality products, and proper budgeting and financing.”
Paragraph 387: ...Improving systems and processes within the procurement system will bring greater efficiencies, fewer stock-outs and better access to health products for the patient.
### National Department of Health’s Strategic Plan 2015-2019

<table>
<thead>
<tr>
<th>Strategic objective</th>
<th>Objective Statement</th>
<th>Indicator</th>
<th>Baseline (2013/14)</th>
<th>Target (2019/20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish A national stock management surveillance centre to improve medicine availability</td>
<td>Establish A national stock management surveillance centre to improve medicine availability</td>
<td>Implement an Electronic system for the early detection of stock outs of medicines at hospitals</td>
<td>Electronic system developed</td>
<td>Electronic stock management system implemented and Functional at all Hospitals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implement an Electronic system for the early detection of stock outs of medicines at PHC Facilities</td>
<td>Electronic stock management system functional in 600 PHC Facilities</td>
<td>Electronic stock management system functional in all PHC facilities</td>
</tr>
</tbody>
</table>
Department of Health’s Annual Performance Plan 2014/15-2016/17

• “In 2012/13, initiatives were introduced to reform procurement systems for essential medicines”

• As an NHI district, Umzinyathi piloted the implementation of an integrated pharmaceutical system - Rx Solution® to manage pharmaceuticals
Umzinyathi District

Population distribution per municipality (District Health Plan 2016/17)

- Umvoti Local Municipality: 178,369
- Nquthu Local Municipality: 105,448
- Msinga Local Municipality: 67,177
- Endumeni Local Municipality: 167,415

Umzinyathi District Map (IDP 2014/15)
Socio-Economic Status-Umzinyathi

• Umzinyathi is classified as Socio Economic Quintile 1- ranking amongst the poorest districts in the country*.

• Msinga ranks number 1 as the most deprived local municipality in South Africa, with Ward 16 being the most deprived ward**

*South African Multiple Deprivation Index
** District Health Barometer 201314, HST Publication
Pre-2015/16 Pharmaceutical Management Systems in Umzinyathi

### Hospitals
- Electronic systems:
  - With no potential to integrate with Primary Health Care facilities nor the Provincial Pharmaceutical Supply Depot;
  - Multiple fragmented electronic systems in use;
  - Understocking & Overstocking;
  - Expired Items;
  - Incorrect linking of items to budget;
  - Inaccurate forecasting and budgeting

### Primary Health Care (PHC) Facilities:
- Manual Systems:
  - Inaccurate reporting;
  - No verified electronic stock take reports;
  - Understocking & Overstocking;
  - Expired Items;
  - Incorrect linking of items to budget;
  - Inaccurate forecasting and budgeting
Problem Statement

• Umzinyathi at a disadvantage compared to other districts in KZN with a higher percentage of facilities ordering directly from Provincial Pharmaceutical Supply Depot (PSSD).

• 30% of the PHC facilities in Umzinyathi do not have authorization to order from PPSD, and rely on district hospitals for pharmaceutical supply, leading to various challenges.
Challenges experienced due to not ordering directly from PPSD

- Incorrect objective codes used when placing orders;
- Inaccurate funds used to procure the different medicine line items;
- Inaccurate reports to Provincial and National Departments for planning, as the source documents were inaccurate;
- Inaccurate financial reports, as the BAS system interphase from MEDSAS (PPSD electronic system) would be inaccurate;
- Inaccurate forecasting, as projected expenditure was predominantly based on past expenditure;
- Pronounced inefficiencies in the pharmaceutical value chain - lot of journals had to be processed on a monthly basis;
- Transactions inaccurately posted - human resources and time to correct.
Interventions

District Task team intervention 1: Multi-pronged strategy

District Task team intervention 2: Rx Solution
Intervention 1: Multi-pronged strategy

- Focused collaboration between District Pharmacy and Finance Departments;

- Project Plan drawn up and implemented, including:
  - Joint pharmacy-finance meetings:
    - Highlighting shared responsibility
    - Role clarification
  - Training;
  - Onsite Support Visits;
  - PTC meetings monitoring pharmaceutical budget-expenditure trends.
### Results end of Quarter 1 2015/16

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Sub-district</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARV Expenditure inaccurately linked to Equitable Share (Voted funds instead of Conditional Grant)</td>
<td>In Msinga sub-district</td>
</tr>
<tr>
<td>Vaccine Expenditure inaccurately linked to HIV Conditional Grant instead of Equitable Share</td>
<td>In Msinga and Endumeni Sub-districts</td>
</tr>
<tr>
<td>Incorrect linking of pharmaceuticals under the School Health Objective and Communicable Diseases Objective codes</td>
<td>In Nquthu sub-district</td>
</tr>
<tr>
<td>Hospitals carrying PHC expenditure, as a result of journals not being timeously captured</td>
<td>Nquthu, Msinga, uMvoti and Endumeni sub-districts</td>
</tr>
<tr>
<td>Electronic Stock Take Records availability at PHC</td>
<td>Only available in uMvoti sub-district</td>
</tr>
</tbody>
</table>
Application of Pharmaceutical Leadership Development Program (PLDP) training

• Manager: Pharmaceutical Services (Umzinyathi) had undergone the PLDP, facilitated by SIAPS, a project implemented by Management Sciences for Health (MSH), funded by USAID.

• PLDP capacitated the manager to apply management and leadership principles in developing actionable and measurable results.
ROOT CAUSE ANALYSIS

- **Inaccurate reports**
  - Why is Umzinyathi pharmaceutical-financial information still inaccurate, despite all the interventions implemented?

- **Human error**
  - Hospital pharmacy departments capture orders against the wrong objective code and therefore against the wrong fund.

- **No standardisation**
  - Pharmaceutical line items are not linked and grouped to correct objective codes.

- **Different pharmaceutical inventory systems**
  - There is no integration between hospital pharmacy and PHC ordering systems

- **No integration**
  - There is no electronic pharmacy system in Umzinyathi PHC facilities
Intervention 2: Integrated Electronic Pharmacy System

• SIAPS, a project implemented by Management Sciences for Health (MSH) requested by District Pharmacist to support district and install an integrated electronic pharmacy system at hospitals, Community Health Centre and PHC facilities
Why Computerize Pharmaceutical Management?

• Analysis of paper-based logistics data is complex and time consuming
• Better tracking of stock movements
• Easy analysis of computerized records
• Quick and more accurate report generation
• Easy data sharing with other systems
• Automated ordering for medicines
• Strengthens manual stock management practices through automation
Reasons for adopting RxSolution in Umzinyathi

• Discussed and approved at National Health Council
• Selected pharmacy software for the NHI 700 project
• National workshop held on 21 Jan 2014 to discuss RxSolution Rollout – advising a national strategy
RxSolution Processes

The system automates:

- Medicines stores management
  *(Requisitions, issues, stock taking, monitoring)*
  - Medicines procurement:
    *(Selection, quantification, ordering, delivery)*
  - Medicines financial management:
    *(Credit line, budgeting, monitoring)*
  - District medicines management:
    *(Logistics data collection, reporting, monitoring)*
Rx Solution Benefits

- No License Fee
- Large User Base (South Africa, Swaziland, Lesotho, Uganda etc.)
- Fully integrated (1 system)
- Advanced Reporting & Exporting Capabilities
- Low Maintenance
- Complies with Standard Requirements and STGs

- User Driven Development
- Designed by Pharmacists with Pharmacists for Pharmacists
- System Interfacing Development (with other systems)
- Developed by MSH (South Africa)
- Winner of 3 National Awards (South Africa)
  - 1 for Innovative use of ICT for effective service delivery
  - 2 by Centre for Public Service Innovation
Rx Solution District Task Team in Umzinyathi
Rx Solution Timeline in Umzinyathi

**Q4 2014/15**
- Training of pharmacy personnel;
- Facility Readiness Assessments and Installation

**Q1 2015/16**
- Standardization of umZinyathi database
- Rx Business Case-Provincial IT Department

**Q2 2015/16**
- Training of pharmacy personnel
- Database linked to:
  - ATC,
  - Objective codes; RDM Codes

**Q3 2015/16**
- Provincial IT MANCO
- Provincial CFO
- Further refining database

**Q4 2015/16**
- Rx solution as database for CCMDD;
- Benchmarking at Ethekwini-Esplamed
- Further refining database
- Rx Superusers
Results

Q1 vs Q4 2015/16 Pharmaceutical Performance

<table>
<thead>
<tr>
<th></th>
<th>PHC Min/max stock levels</th>
<th>Electronic stock reports</th>
<th>Electronic planning reports</th>
<th>Objective code linking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter 1 2015/16</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Quarter 4 2015/16</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>87</td>
</tr>
</tbody>
</table>
Results

Q1 vs Q4 2015/16 Pharmaceutical Performance

Rand value exp.stock

- Quarter 1 2015/16
- Quarter 4 2015/16

R 25,000.00
R 20,000.00
R 15,000.00
R 10,000.00
R 5,000.00
R 0.00

R 19,783.00
R 6,647.00
## Challenges and Remedial Actions

<table>
<thead>
<tr>
<th>Identified Challenge</th>
<th>Mitigating Strategy</th>
</tr>
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<tbody>
<tr>
<td>• Rural nature of the district-high turnover of trained individuals;</td>
<td>• Training plan with regular training sessions</td>
</tr>
<tr>
<td>• Rural nature and terrain of the district-Computers cannot be transported to a central area for training, as they get damaged in transit;</td>
<td>• Using notebooks stationed at district office, for training.</td>
</tr>
<tr>
<td>• Health Systems Trust exited the district in June 2015, meaning no full time onsite technical person to address Rx Solution technical challenges timeously;</td>
<td>• Training of Rx Superusers.</td>
</tr>
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</table>
Lessons Learnt
Conclusion

• Implementing Rx Solution in Umzinyathi has laid a foundation for accurate pharmaceutical inventory management that will inform more accurate forecasting and budgeting in the NHI era.
Acknowledgements

• Mr Mndebele-Umzinyathi District Manager
• Mr LV Xaba-Umzinyathi District Finance Manager
• Mr M Pillay-MSH/SIAPS Principal Technical Advisor
• Pharmaceutical Services:
  – Province
  – Sub-district level
  – PHC