

# **New Performance-Based Reward Strategy to Improve Pharmacy Practices, Financial Management, and Appropriate Medicines Use in the Public Sector in Uganda**

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# ABSTRACT

**Problem statement:** Ensuring availability and appropriate use of essential medicines is crucial if limited resources are to be used optimally. Although training of health workers has been underway for a long time, significant and sustainable improvements in availability and medicines management have not been achieved, and new interventions are needed. Increasingly, countries are finding it difficult to ensure sufficient funding for medicines; at the same time, the financial management (FM) capacity among pharmaceutical staff is weak. The use of a performance-based recognition strategy (PBRS) has proven successful in strengthening vaccine management. The effect of capacitating pharmaceutical staff in FM and applying PBRS still needs to be assessed in regard to improving medicines management.

**Objective:** To assess impact of PBRS in improving pharmacy practices (PP) and appropriate medicines use (AMU), implemented through on-the-job training by trained medicines management supervisors (MMSs)

**Design:** Pre-post with control and randomized longitudinal intervention study with randomization by districts; 25 indicators applied to assess good PP and AMU after educational, managerial, regulatory, and financial (recognition) interventions were implemented. Data collection is undertaken as baseline at the initial facility visit, and prior to each following visit; Visits with performance assessment and on-the-job training (OJT) are expected to continue for up to 2 years.

**Setting:** The study includes 45 intervention and 9 control districts with 1,482 public and 443 private not-for-profit, all-level health facilities; on average, 39 (11-105) facilities per district.

**Intervention:** Facilities of all levels of care in intervention districts are assigned to SPARS intervention: performance assessment /OJT targeted at accreditation in good PP - all compared to a control group of facilities. After four OJT, all hospitals and HC 4, 42 respectively 68, are randomly allocated to one of three groups (1) OJT in FM targeted at certification in good FM, (2) OJT in stores computerization and (3) control group. Accreditation in good PP is undertaken by the national drug authority and harmonized with the licensing criteria applied in private sector pharmacies; 146 MMSs will be trained as district and health sub-district supervisors. The recognition system is designed for both MMSs and facilities with community involvement.

**Outcome measures:** Indicator based performance assessment

**Results:** Initial finding documents significant improvement in stock and storage management, appropriate use of medicines and quality of ordering and reporting following two OJT applying PBRS.

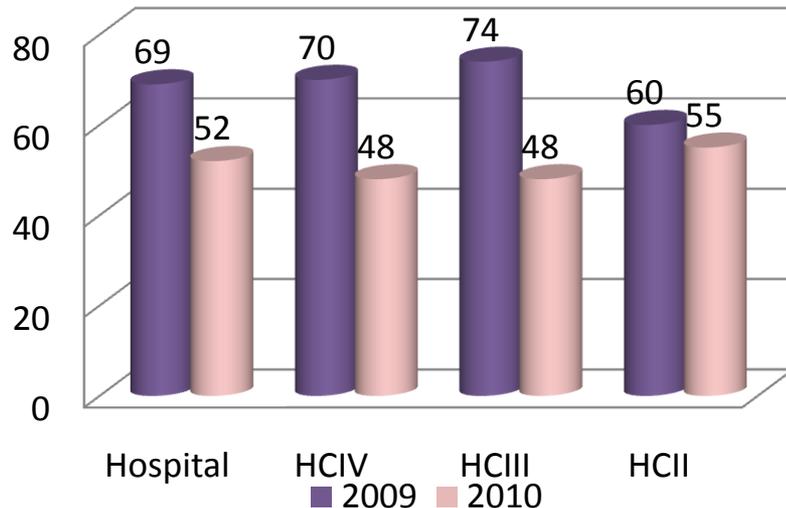
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# BACKGROUND AND SETTING -1

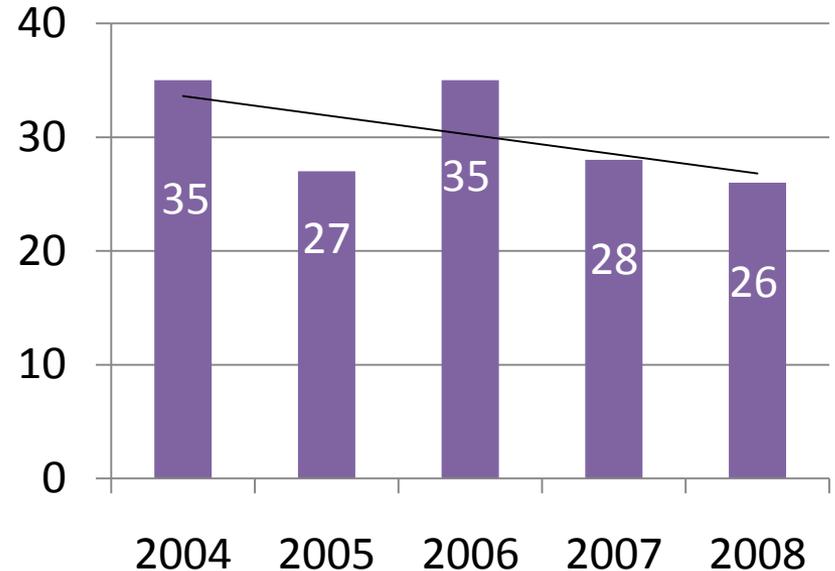
It continues to be a challenge to:

- Ensure availability of vital EMHS - target 100%
- Maintaining stock and storage management capacity at HF – Target 100%

**% facilities with correct stock card and physical count balance**



**% of health facilities without stock-outs of 6 medicines**



Supervision combined with Performance Assessment and a Recognition Strategy (SPARS) has been found to improve vaccine management and reporting quality

# BACKGROUND AND SETTING -2

**SPARS** combines all four intervention strategies:

Theoretical



Practical



## Supervision or On the job training

- District and HSD staff are trained as Medicines Management Supervisors (MMS) in a 2 weeks examinable course followed by practical field training enabling them to do on-the-job (OTJ) training.

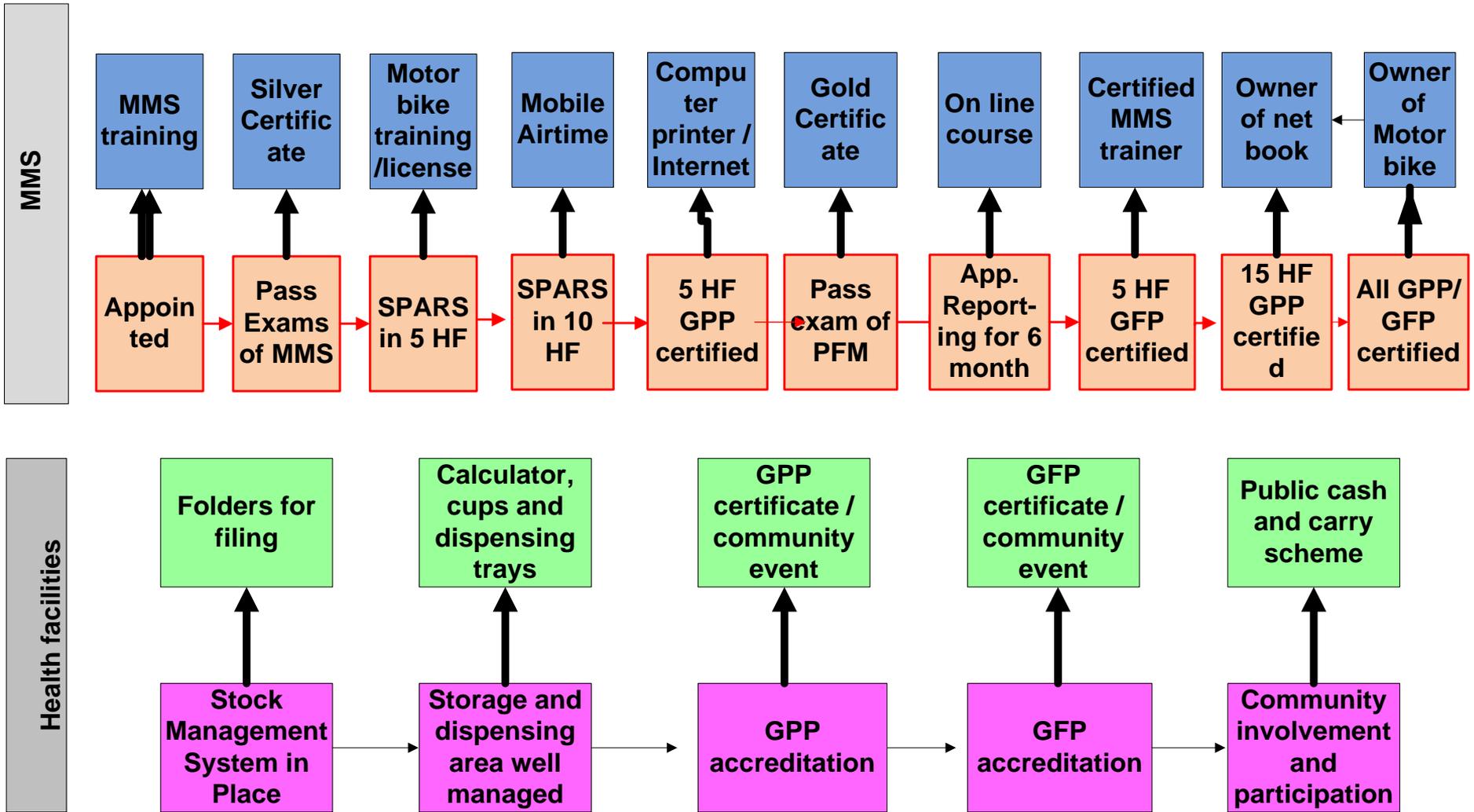
## Performance assessment

- Performance assessment based on 25 qualitative and quantitative indicators assessing: stock and storage management, prescribing and dispensing quality, and ordering and reporting quality

## Recognition

- Recognition strategy is targeting both the MMS and the facilities that performs well

# PERFORMANCE BASED RECOGNITION SCHEME



# STUDY AIMS

## Objective

To assess impact of SPARS in improving pharmacy practices (PP) and appropriate medicines use (AMU), implemented through on-the-job training by trained MMSs

## Research question

1. Does SPARS result in a measurable and sustainable impact on PP and AMU measured using a standardized tool with 25 indicators?
2. Is SPARS making a significant impact on five measured areas: stock and storage management, prescribing and dispensing quality, and ordering and reporting quality?
3. Does financial management capacity combined with SPARS have an added impact on PP and AMU ?
4. Does introduction of computerized logistic management (RxSolution) combined with SPARS have an added impact on PP and AMU?

# METHODS -1

## Setting

The study includes 45 intervention districts with 1,482 public and 443 private not-for-profit, all-level health facilities; on average, 39 (11-105) facilities per district and 9 control districts from which 63 HF, all level of care are randomly selected.

## Design

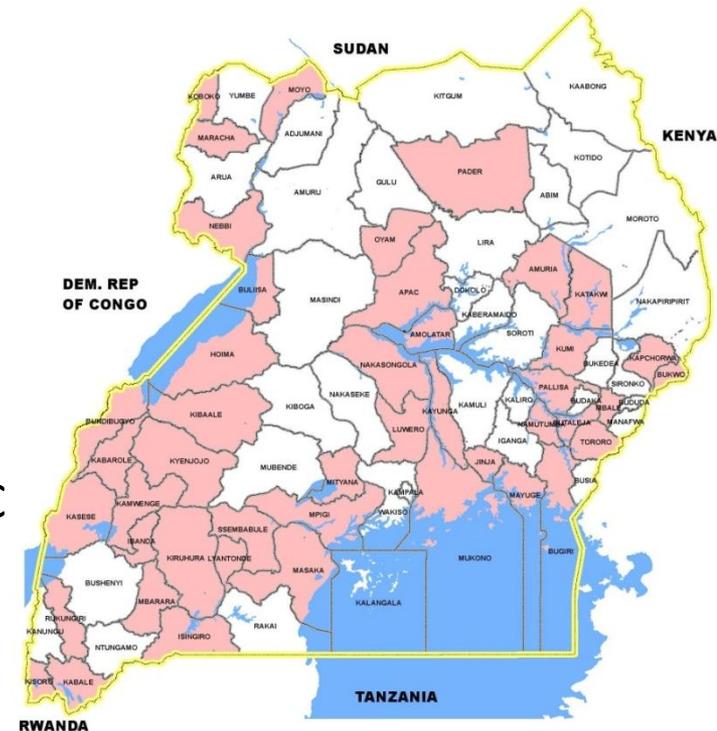
Pre-post with control and randomized longitudinal intervention study with randomization by facilities; intervention consist of facility visits with performance assessment (PA) and on-the-job training (OJT), initially in SPARS followed by OJT in financial management or computerization. Study expected finalized end 2012

## Preliminary assessment

For ICIUM: 72 facilities by level of care (hospital, HC 4, 3, 2) from 9 intervention districts have had 3 PA by MMS before and after SPARS intervention following 2 OJT – Pre/post assessment.

## Ethical considerations

The study involved patient data and approval was obtained from the Ministry of Health.



# METHODS -2

## Reproducibility

### Methodology:

3 trained MMS individually assessed performance at a HC4,3 and 2 facilities in a district using a indicator based standardized data collection tool. The assessment was repeated with 3 more MMS in another district and the findings were compared for reproducibility assessment

### Findings:

Differences in interpretation of observations (i.e. cleanliness, clean water); Difficulties in the use of “0”, “NA” and blank field; Calculation errors related to differences in MMS mathematical ability and Failure to follow or unclear instructions in the data collection tool

### Solutions

Train MMS in the pitfalls discovered using multiple choice, QA exercises and discussions; Reorient the MMS on data quality requirements; Revise the performance assessment data collection tool; Conduct yearly reproducibility studies

## Statistical analysis

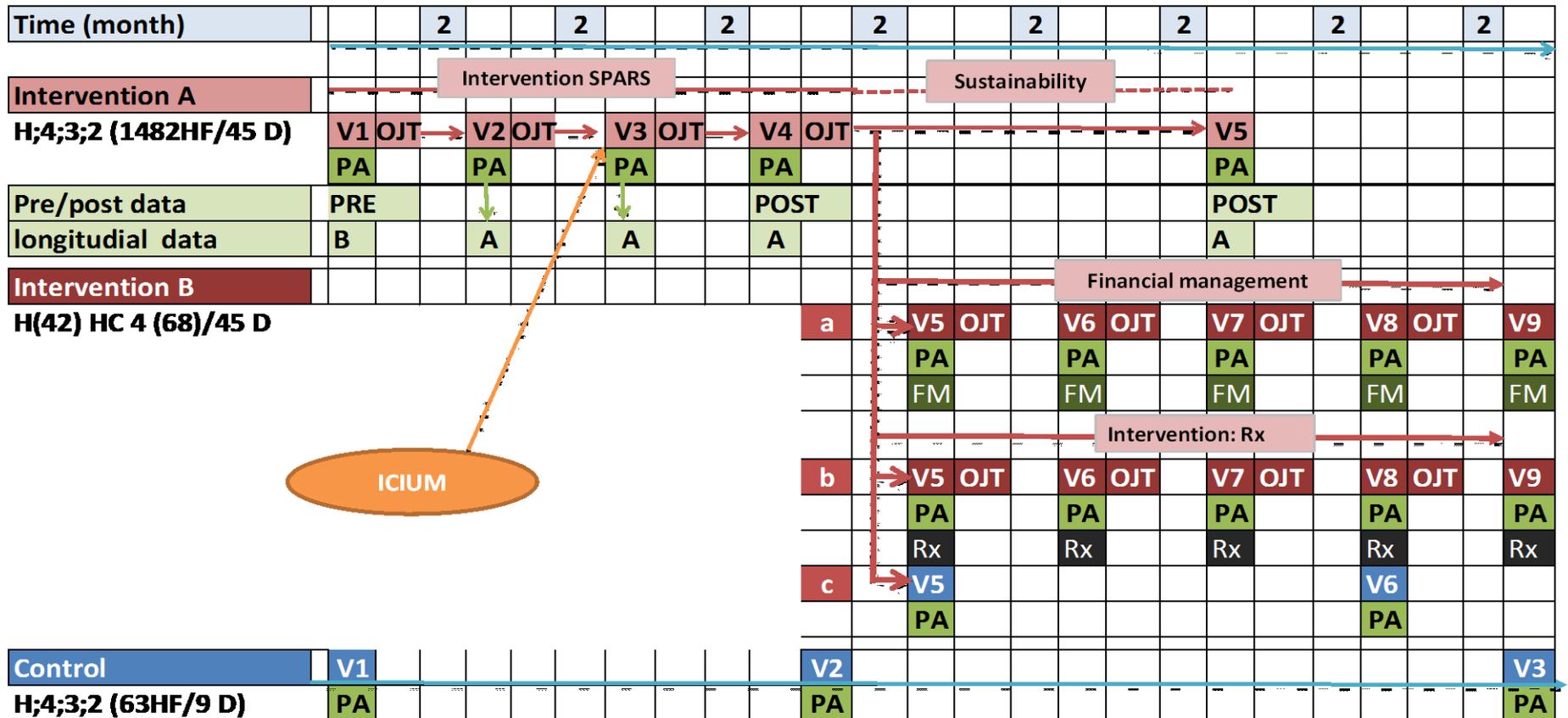
**Pre-post analysis:** Preliminary assessment and intervention A and B vs. Control - paired observations, Wilcoxon-sign ranksum and paired student t-test

**Longitudinal analysis:** Multivariate analysis of variance (MANOVA) for repeated measurements or generalized estimating equations analyses.

# Intervention

**Intervention A: SPARS** . Performance assessment /OJT intervention to all facilities in 45 intervention districts. Sustainability measured after 6 months. Comparison to 63 control facilities randomly selected from 9 control districts

**Intervention B: Financial management and computerization.** After four OJT, 42 hospitals and 68 HC 4 are randomly allocated to one of three groups (1) OJT in FM targeted at certification in good FM, (2) OJT in stores computerization and (3) control group.



Performance Assessment:

PA in pharmacy practice

PA + financial management

PA + Rx indicators

# Performance indicators

## A. Dispensing quality

1. Dispensing time
2. Packaging material
3. Dispensing equipment
4. Services available
5. Patient care
6. Labeling
7. Discrepancy prescribed/dispensed

## B. Prescribing quality

8. Correct recording of prescriptions
9. Rational prescribing
10. Adherence to STGs for Diarrhea
11. Adherence to STGs Cough/cold (ARI)
12. Adherence to STGs Malaria

## E. Ordering and reporting quality

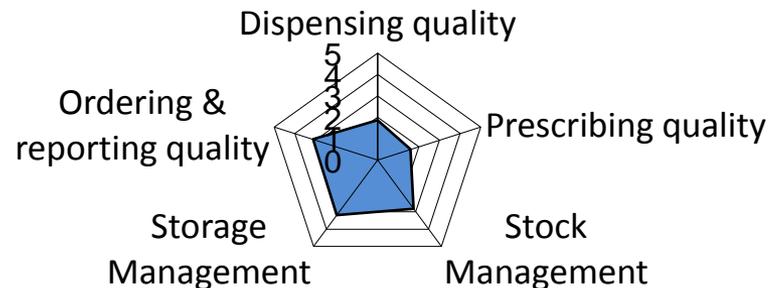
22. Reorder level calculation
23. Timeliness of order and distribution
24. Accuracy of HMIS reports
25. Filing

## C. Storage management

13. Stock card availability
14. Correct filling of stock card
15. Does physical count agree with stock card balance
16. Is stock book correctly used

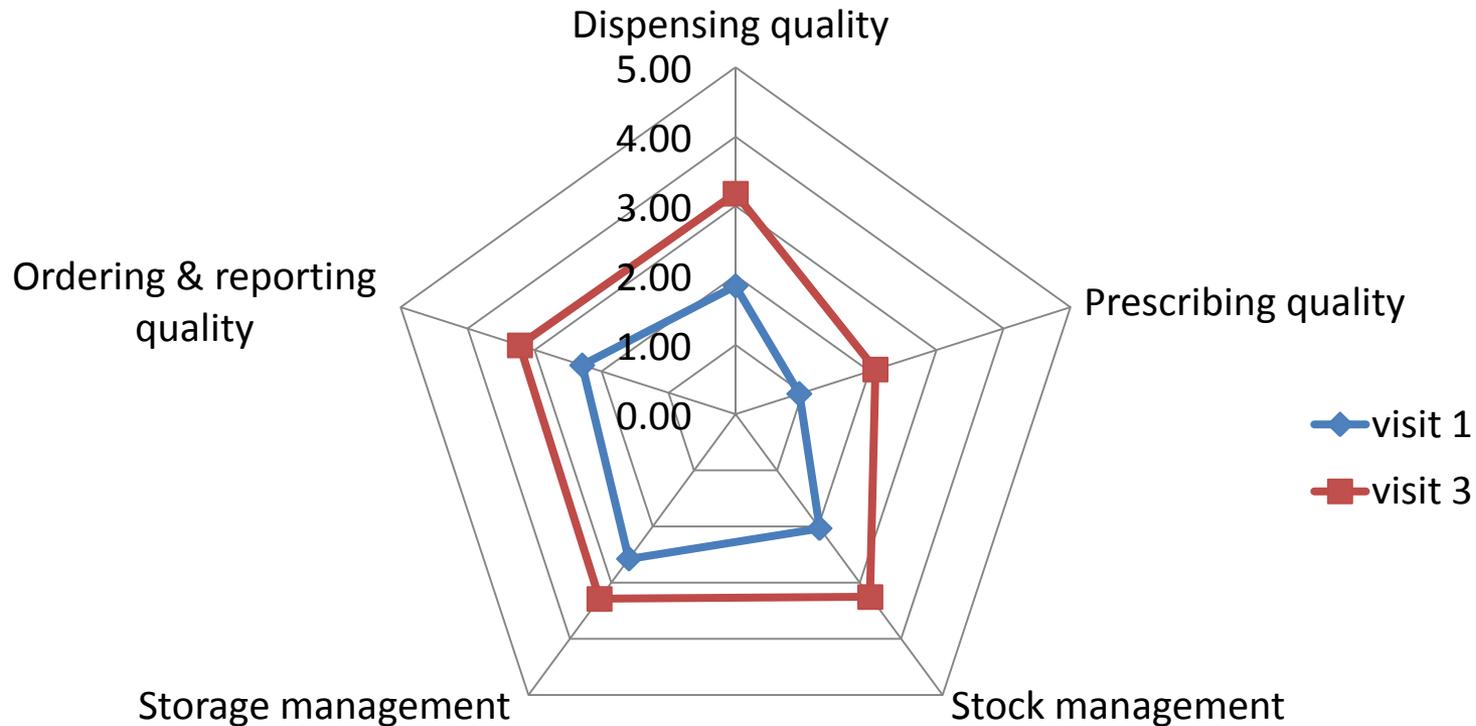
## D. Storage management

17. Cleanliness of the pharmacy
18. Hygiene of the pharmacy
19. System for storage of medicines
20. Storage conditions
21. Storage practices of medicines



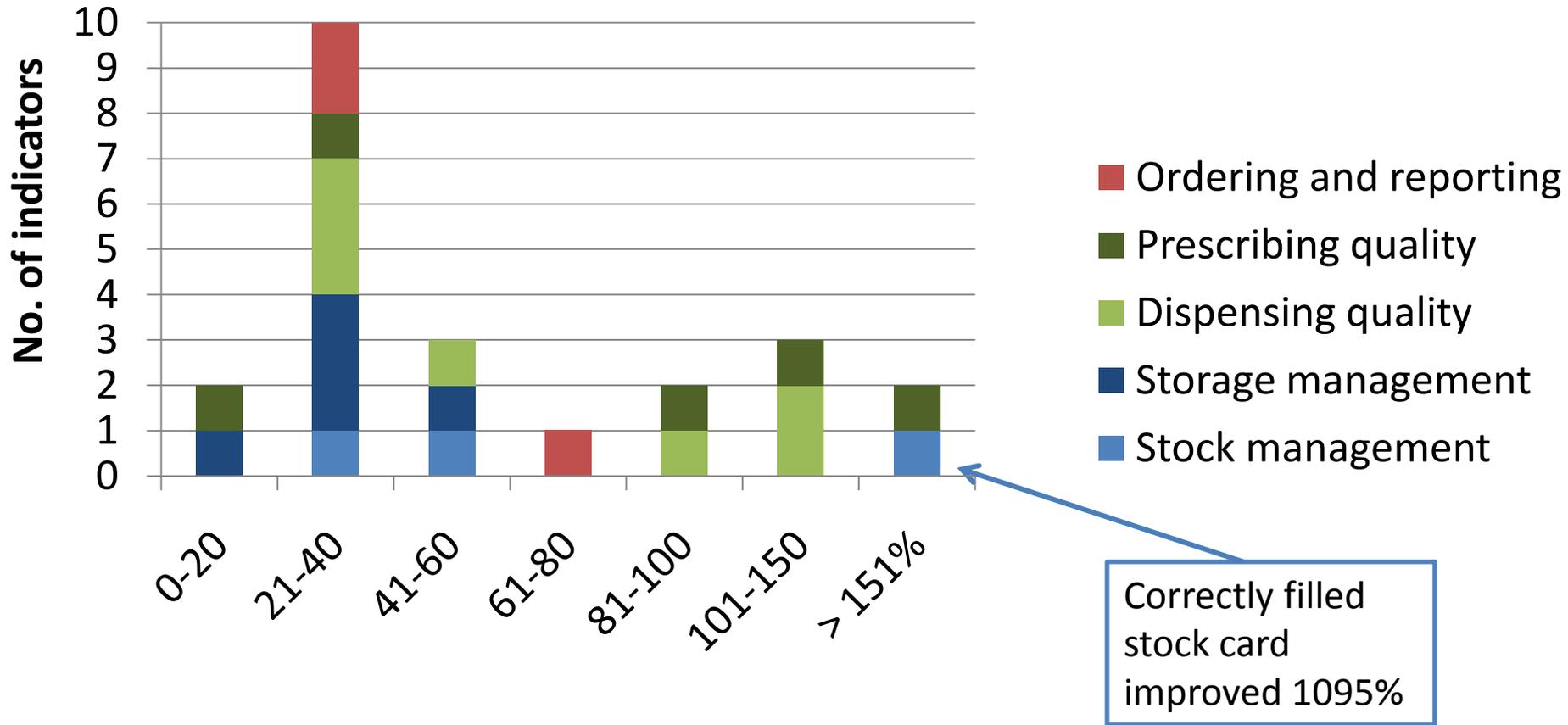
# RESULTS -1

Preliminary results from 72 HF (all levels of care) following SPARS intervention (PA+OJT) assessed pre and post following 2 OJT at 3 PA analyzing the combined average component score and each of the individual 25 indicators



# RESULTS -2

% improvement for all indicators with significant change



Correctly filled stock card improved 1095%

Indicators 16 and 23 did not improve significantly

# DISCUSSION

- All indicators except 16, and 23 improved significantly. **Average improvement was 58%** (excl indicator 14 with >1000% improvement).
- % improvement seen:
  - ✓ **stock management, dispensing and prescribing quality – 67-75%**
  - ✓ **ordering and reporting improving 44%**
  - ✓ **storage management of 29%**

Stock management improved with improved correct use of stock card and having correct balance an aspect of OJT that was prioritized.

Dispensing increased with use of appropriate packaging material – dispensing envelope instead of paper cone, with improved labeling and by ensuring that a full course of antibiotics was given.

Prescribing improved with improved adherence to STG for diarrhoea and common cough and cold (no use of antibiotics).

- **None significant improvement:** Indicator 16: Is stock book correctly used? Stock books are a new tool that still has to be made available. Indicator 23: Timeliness of order and distribution - are related to central level performance and not influenced by facility performance.

# CONCLUSION

1. The preliminary analysis based on 72 facilities indicates that SPARS - PA followed by OJT by trained MMSs combined with a recognition scheme - result in significant improvement in all but 2 of the 25 indicators.
2. SPARS was found to make a significant impact on all five measured areas: stock and storage management, prescribing and dispensing quality, and ordering and reporting quality.
3. It is too early to assess impact of increased financial management capacity and computerized logistic management (RxSolution) combined with SPARS on PP and AMU
4. Even with a standardized well tested tool it is important to regularly test reproducibility, retrain data collectors and revise tool and tool instruction based on lessons learned
5. PA not only strengthens improvement in PP and AMU at facility level but also serves an important role in pharmaceutical management information systems.



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