

# The impact of visualizing performance in improving medicines management in public health facilities in Uganda

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# ABSTRACT

## Problem Statement:

Pharmaceutical supervision has been practiced in Uganda for a long time. Though effectiveness of supervision in improving medicines management is documented, Uganda continues to struggle with weak medicines management. While performance based reward system has proven successful in strengthening vaccine management, its efficiency in improving medicines management is not known. The impact of supervision much depends on implementation modality. To strengthen the effect of supervision and improve medicines management, trained medicines management supervisors (MMS) implemented an indicator based assessment tool, developed based on a tool assessing good pharmacy practices (GPP). The tool visualises performance in a spidograph allowing the health worker to better see performance and assess progress. The impact of the standardised indicator based performance assessment and visualising tool combined with supervision in Uganda to improve medicines management is not known.

## Objective:

To establish the impact of performance assessment and visual feedback on medicines management, implemented by trained supervisors.

## Design:

A pre-post intervention study with randomisation by facility. Performance assessment is based on a set of 25 qualitative and quantitative indicators covering medicines management. Performance assessment is done initially and at each supervisory visit at least one month apart. Data is analyzed at initial and third performance assessment following two on-the-job training supervisions.

## Setting:

The study is implemented in 9 districts (Dec 10 – Sep 11) situated in the central region of Uganda including 60 (83%) public and 12 private not for profit intervention facilities covering all levels of care (Health centre II to hospital).

## Intervention:

All 72 facilities by level of care within each of the 15 health sub-districts are randomly assigned to one of two groups: the intervention group (35) having supervision, performance assessed and visualised, the control group (37) having supervision and performance assessed.

## Outcome Measures:

The primary outcome measures include assessment of stock and storage management, ordering and reporting quality, and dispensing and prescribing quality.

## Results:

There was found no significant difference in medicines management with or without visualization. Both intervention and control groups showed improved medicines management from first to third supervision visit.

## Conclusion:

Visualization of performance does not significantly improve performance. However, continuous supervision combined with standardised performance assessment improves medicines management.

# BACKGROUND AND SETTING -1

- Ensuring good pharmacy practices including storage and stock management continues to be a challenge in public health facilities in Uganda

Stock management on the day of survey in 2011 in Uganda*	Medicines	Commodities
Items with stock card available	30%	7%
Items with stock card balance being the same as physical count	16%	3%

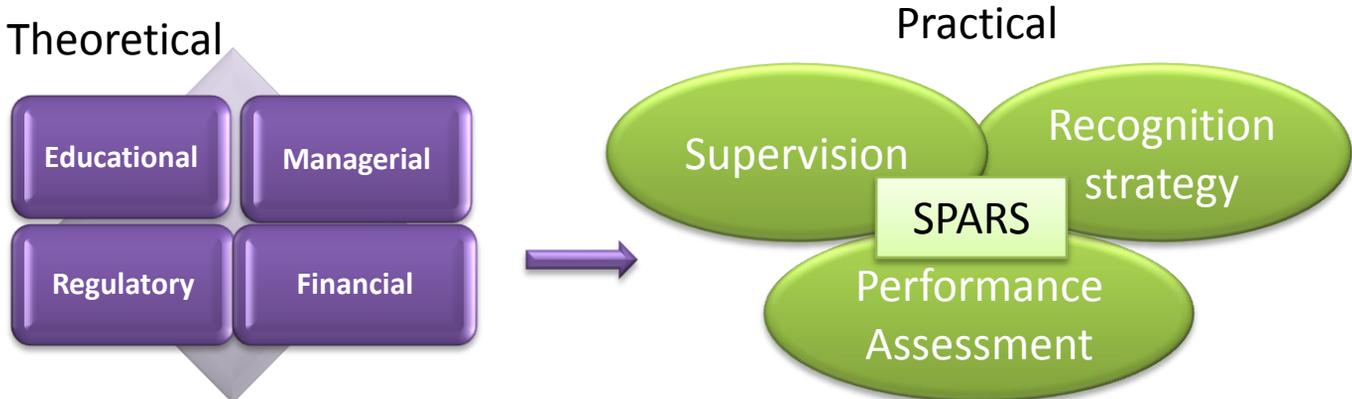
Appropriate Medicines Use (Baseline survey, Uganda 2010)	H/ HC IV	HC III	HC II
Patients with an antibiotic prescribed %	69	66	68
Range %	(40-95)	(30-95)	(30-100)

- A new intervention strategy called SPARS: Supervision, Performance Assessment, Recognition Strategy was introduced in Uganda to improve medicines management.
- SURE – Securing Ugandans’ Right to Essential Medicines, a USAID funded program is implementing the SPARS strategy together with the Ministry of Health in 45 of the 118 districts in Uganda

\*Stock management in Primary Health Care facilities in Uganda, 2011

# BACKGROUND AND SETTING -2

- To get a higher impact, SPARS combines
  - A. Education, managerial, regulatory and financial strategies
  - B. Performance assessment with a recognition strategy



## SPARS

### Supervision

- 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

- A standardized performance assessment tool based on 25 qualitative and quantitative indicators is used. Five components – stock and storage management, prescribing and dispensing quality, ordering and reporting quality are assessed

### Recognition

- Recognition is aimed at both the MMS and facility

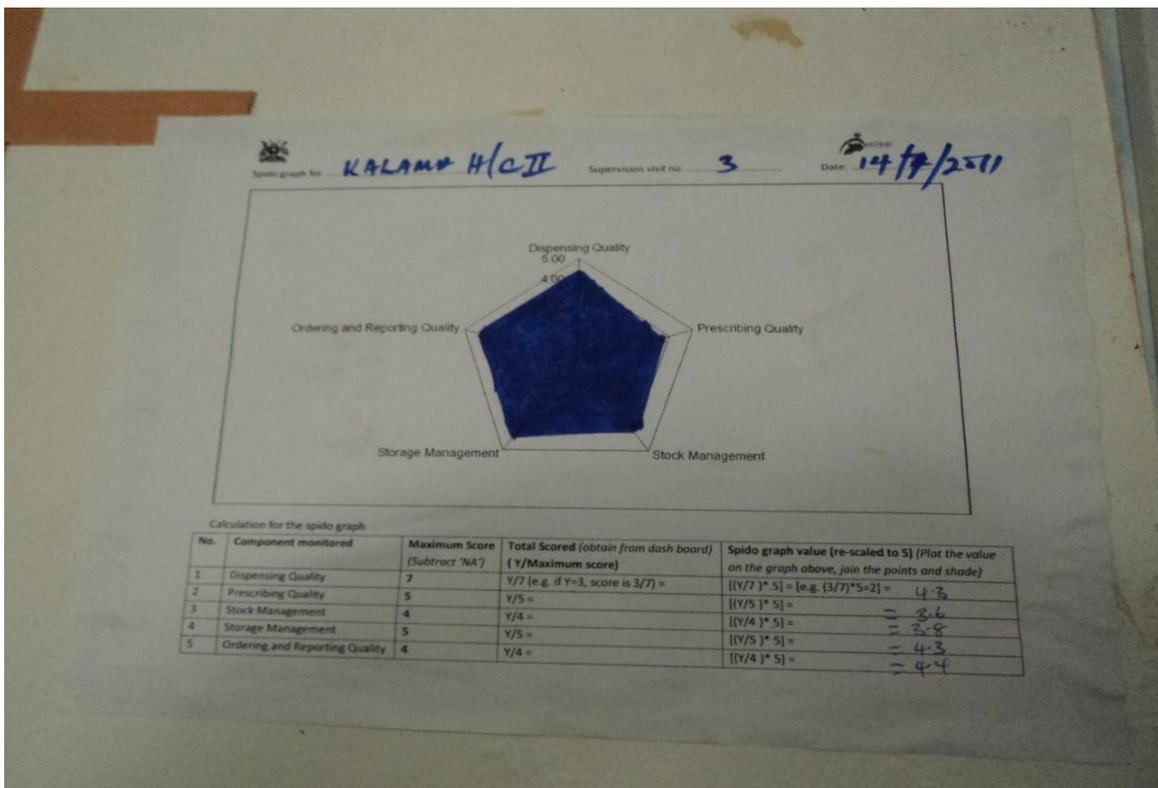
# STUDY AIMS

## Objective

To establish the impact of performance assessment and visual feedback on medicines management implemented by trained Medicines Management Supervisors (MMS)

## Research question

- Does visualization of performance provide an added advantage in improving medicines management?



# METHODS - 1

- Design**

Randomised pre-post intervention study with control

- Setting**

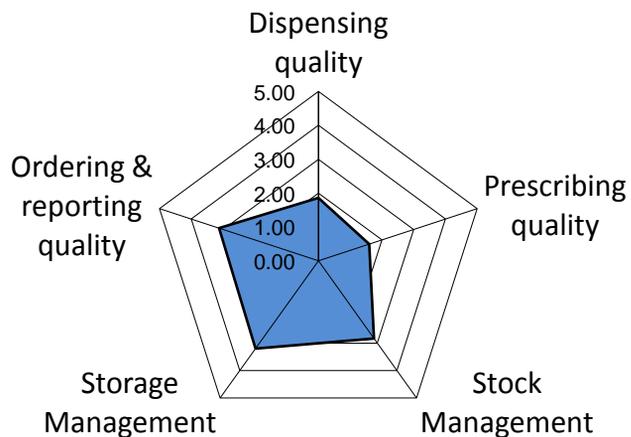
72 facilities by level of care (hospital, HC IV, III, II) from 9 districts in the central region of Uganda were randomly assigned to two groups, intervention and control

- Intervention**

	Intervention	Control
Number of facilities	35 (49%)	37 (51%)
Performance assessment (PA) (3 visits)	+	+
Supervision/ OTJ (2 visits)	+	+
Visualization of performance	+	-

## Visualization:

What you see is hard to forget. Therefore Facility performance is displayed as a print-out in form of a spidograph.



## Data collection (Dec 2010 – Sep 2011)



# METHODS - 2

## Performance indicators

### A. Dispensing quality

1. Dispensing time
2. Packaging material
3. Dispensing equipment
4. Services available at the dispensing area
5. Patient care
6. Labeling
7. Discrepancy between prescribed & dispensed medicines

### 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

### B. Prescribing quality

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

### 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

### E. Ordering and reporting quality

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

Each component was rescaled to a maximum score of 5.

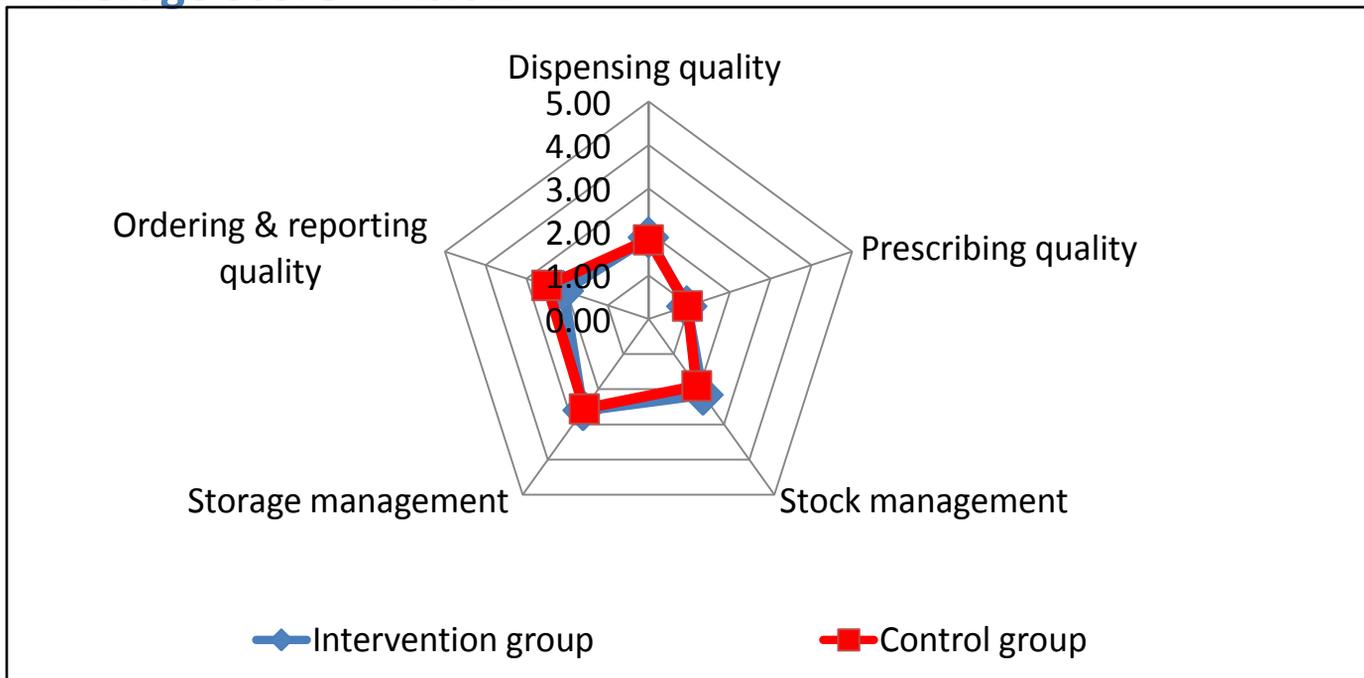
# METHODS - 3

- **Statistical analysis**
  - The student t-test, 2 tailed and unequal variance,  $p=0.05$  was used for comparison between the intervention and control groups for :
    - a) The combined average component score
    - b) Each of the individual 25 indicators
    - c) All the 25 indicators together
- **Ethical considerations**
  - The study involved patient data and approval was obtained from the Ministry of Health.

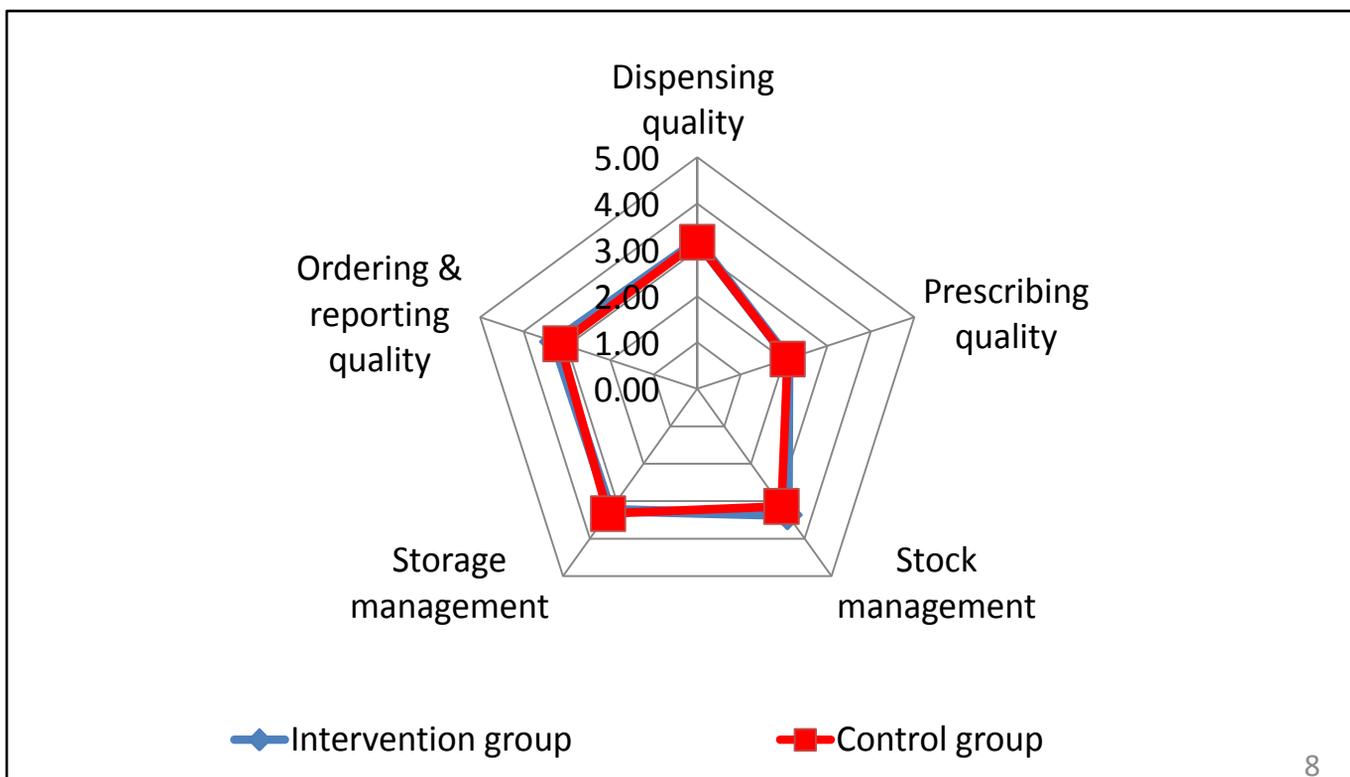
# RESULTS -1

- Both groups showed marked improvement from the first to the third supervisory visit in all five components assessed

## Average score - Visit 1



## Visit 3



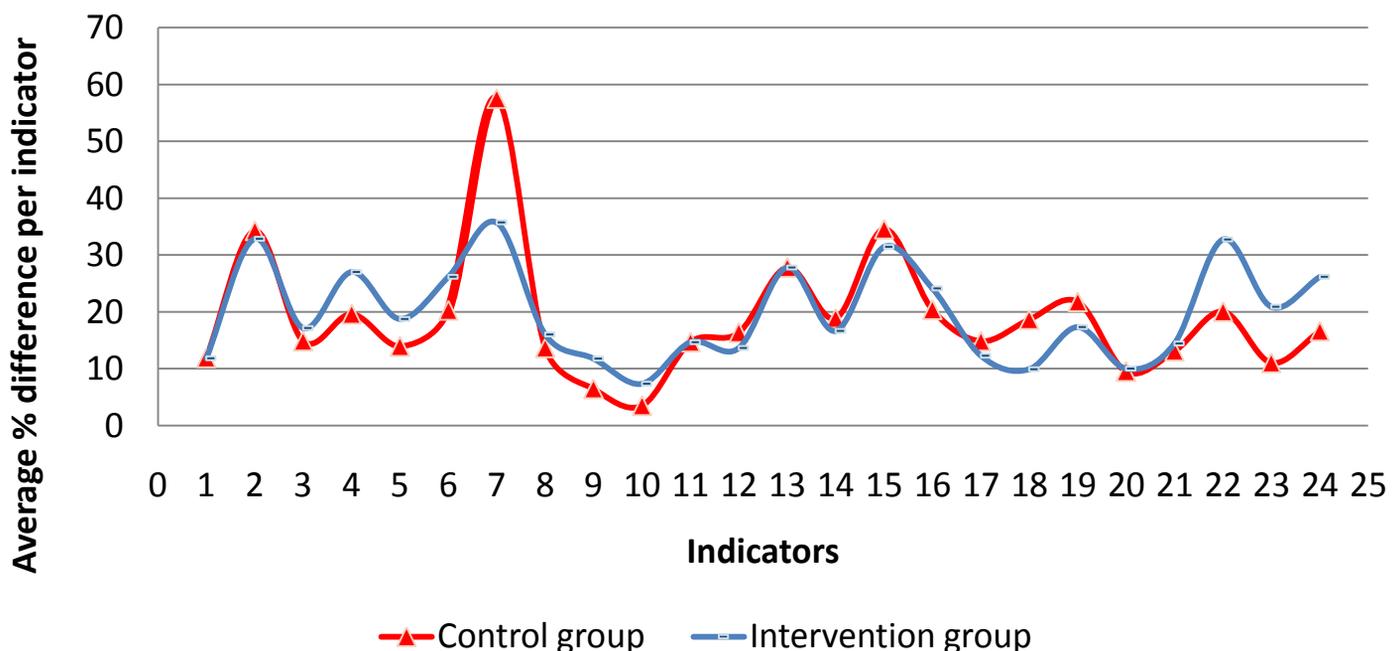
# RESULTS -2

There was **no significant difference** between the intervention and control when:

a) Comparing average performance in the 5 components

Visit 3 score (All out of 5)	Dispensing Quality	Prescribing Quality	Stock Mgt.	Storage Mgt.	Ordering/reporting quality
Intervention group	3.19	2.09	3.36	3.24	3.29
Control group	3.17	2.08	3.14	3.33	3.15
p-value	0.76	0.96	0.39	0.25	0.33

b) Comparing the difference between the 1<sup>st</sup> and 3<sup>rd</sup> visits for the individual 25 indicators (p=0.19).



# DISCUSSION -1

Performance improvements at facilities varied greatly resulting in high standard deviations (STD).

- Sample size and high STD
  - In view of the high STD, the sample size (72 facilities) was insufficient to document a possible impact of visualization

## The high STD could be attributed to several factors:

- Profession and education back ground of the MMS
  - MMS had different professions (dispensers, clinical officers or nurses). Different professions may prioritize improvement in different areas i.e. clinical officers prioritize prescribing quality while dispensers could prioritize stock and stores management.
- Number of on-the-job trainings done
  - Intervention only consisted of two on-the-job trainings. Limited intervention coupled with different areas of emphasis could have contributed to the high STD
- Behavioral change
  - Building capacity not only involved acquiring new skills but also changing behaviors. HC2/3 facilities are less motivated for change as their supply is based on a push (kit) system

# CONCLUSION

- Visualization of performance was not found to have an added advantage towards improving medicines management and Good Pharmacy Practice.
- The none statistical significance in the difference in performance between the intervention and control groups could be attributed to high STD, only two OTJ trainings, differences in MMS educational background, systematic area of focus during on-the-job training and small sample size.
- However, SPARS was found to improve medicines management in both intervention and control groups



# RECOMMENDATIONS

- The impact of SPARS needs to be further documented
- The sample size needs to be increased
- Confounding factors need to be controlled



Before SPARS



After SPARS



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