

**Drug shops and integrated
community case management –
appropriateness of care and
adherence to treatment guidelines**

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Studies and publications

- I. **Awor P**, Wamani H, Bwire G, Jagoe G, Peterson S. (2012) Private sector drug shops in integrated community case management of malaria, pneumonia and diarrhoea in children in Uganda. *American Journal of Tropical Medicine and Hygiene*. 87:92-96
- II. **Awor P**, Wamani H, Tylleskar T, Jagoe G, Peterson S. (2014) Increased access to care and appropriateness of treatment at private sector drug shops with integrated management of malaria, pneumonia and diarrhoea: a quasi-experimental study in Uganda. *PLoS ONE* 9(12): e115440.
- III. **Awor P**, Wamani H, Tylleskar T, Peterson S. (2015) Drug seller adherence to clinical protocols with integrated management of malaria, pneumonia and diarrhoea at drug shops in Uganda. *Malaria Journal*. 2015, 14: 277.

Integrated community case management of malaria, pneumonia and diarrhoea (iCCM)



- Promoted by WHO/UNICEF
- 2010 iCCM policy in Uganda
- Scale up through CHWs across Africa in public sector
- No similar private sector intervention

Care seeking & role of drug shops in health care delivery

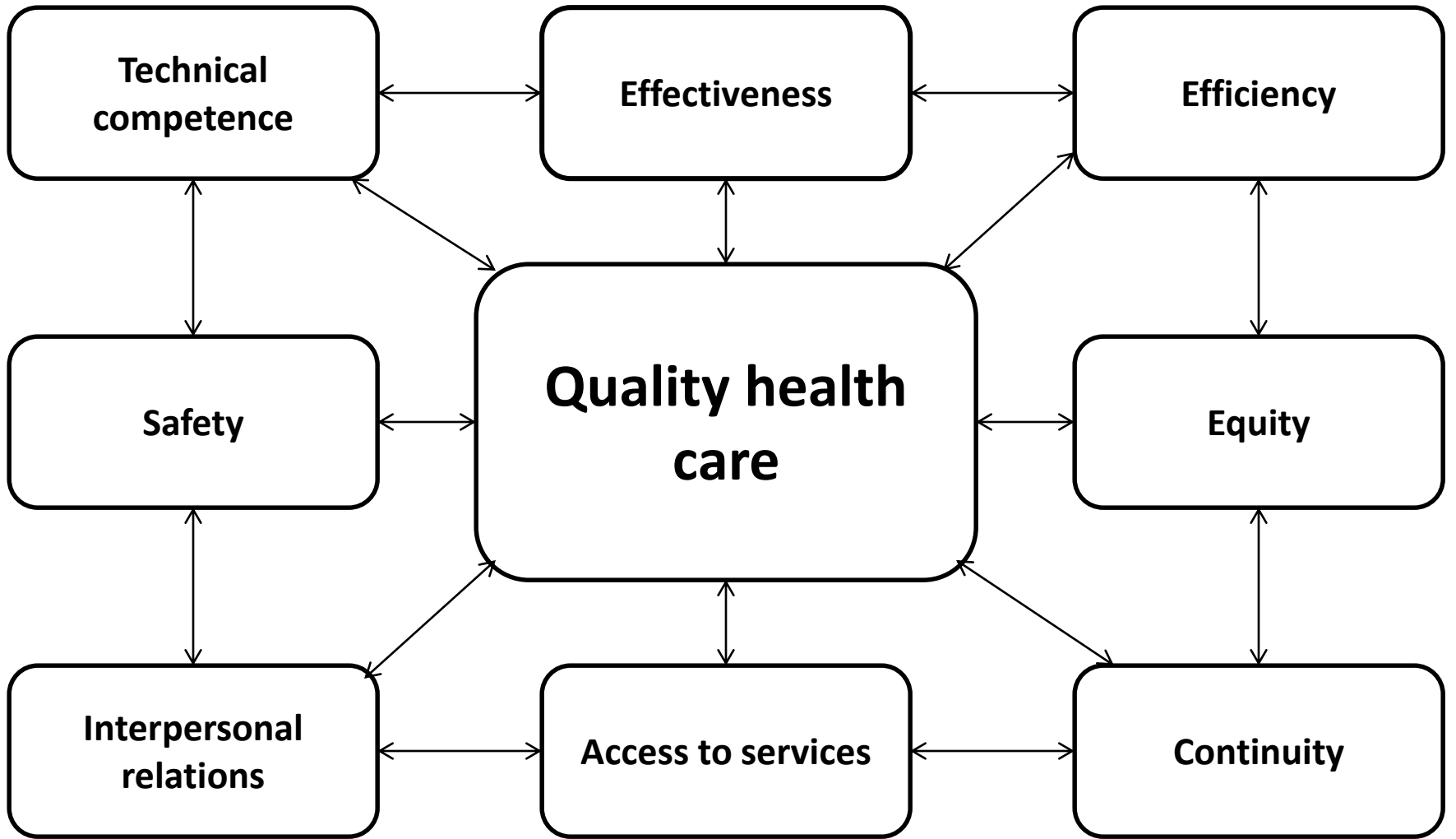
- Drug shops are an important source of care
 - 50% of all outpatient fever care in Africa^{1, 2}
 - 50% of febrile children in Uganda first seek care at drug shops^{3, 4}
 - Affordable Medicines Facility – malaria (AMFm) of the Global Fund increased access to ACT through private sector in Africa (2010 – 2013)
- However:
 - Poor regulation⁵
 - Poor quality of care^{6, 7, 8}
 - No integrated management of childhood illnesses⁹

Drug shop in Eastern Uganda



Drug shop in Eastern Uganda





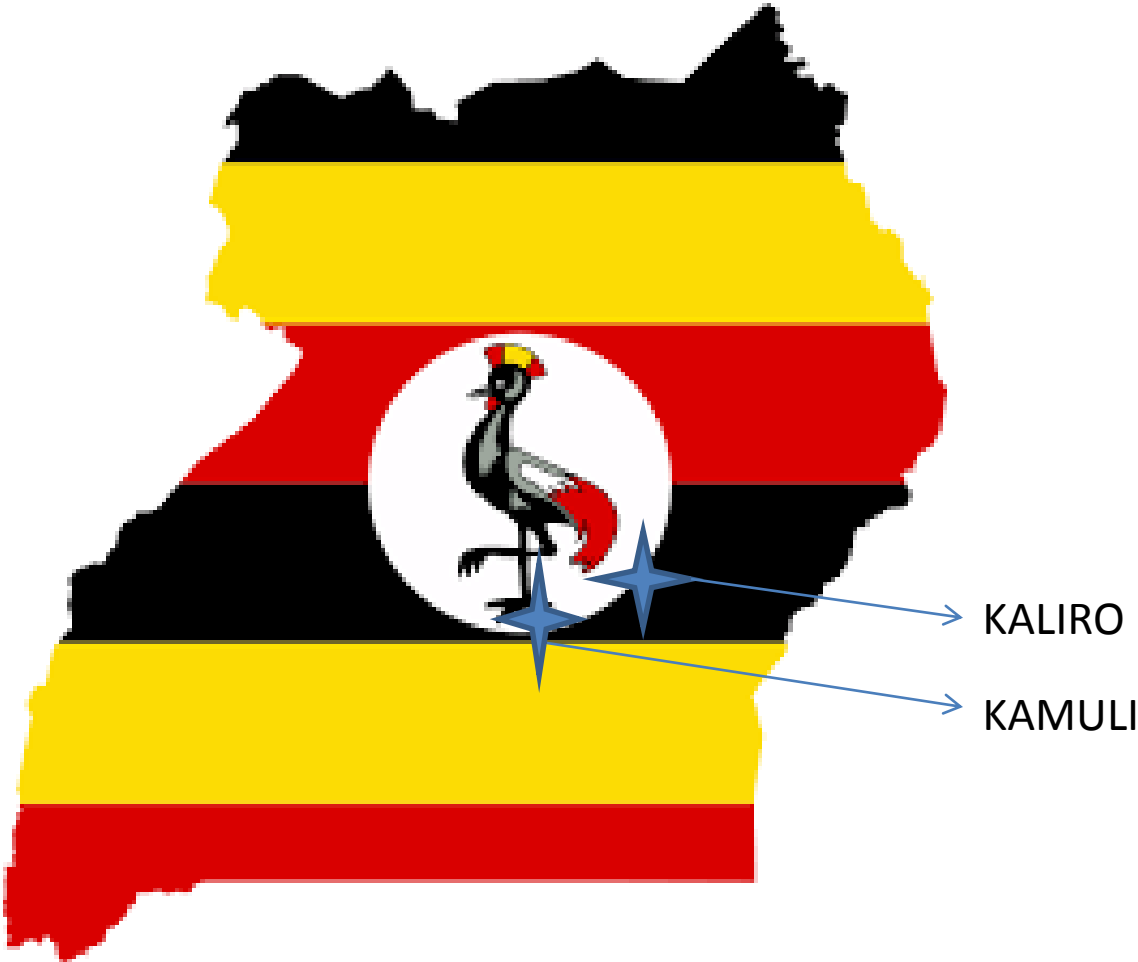
WHO conceptual framework: the dimensions of quality in health care

General objective

Determine feasibility
and effectiveness of
diagnostics and pre-
packed drugs
for
malaria, pneumonia
and diarrhoea
in
registered drug shops
in Eastern Uganda



Map of Uganda showing study site



KALIRO

KAMULI

Specific objectives

1. Determine role of drug shops in management of childhood illness and the appropriateness of care they provide – **Paper I**
2. Determine effect on appropriateness of care after introducing diagnostics and pre-packaged paediatric drugs for malaria, pneumonia and diarrhoea at drug shops – **Paper II**
3. Determine the level of adherence by drug shop attendants to the iCCM treatment protocol – **Paper III**

Methods

Quasi Experimental Design

Intervention district - Kaliro

N = 44 drug shops

iCCM

1. Subsidized pre-packed drugs
2. Free diagnostics
3. Training
4. Community awareness

Comparison district - Kamuli

N = 40 drug shops

Standard AMFm

1. Presumptive treatment of fever with ACT

10 months duration (10/2011 – 07/2012)

Training drug shop attendants



Training drug shop attendants



Methods

Paper	Design	Data collection method and sample size	Data analysis method
Paper I (baseline data)	Cross-sectional analysis	Household survey (n = 1604) Exit interviews (n = 163)	<ul style="list-style-type: none"> - Descriptive statistics - Bi-variate analysis - Proportions of appropriateness of treatment
Paper II	Quasi experimental design	Household surveys (3759; 1604 before/2155 after) Exit interviews (943; 163 before/780 after)	<ul style="list-style-type: none"> - Multivariate analysis - Survey adjusted generalized linear regression models - difference in difference analysis
Paper III	Review of records – cross sectional analysis	Review of records from drug shop patient registers (n = 7667)	<ul style="list-style-type: none"> - Descriptive statistics - Proportions of appropriateness of treatment
Additional data	Qualitative data	In-depth interviews with drug shop attendants (25 before/14 after) Focus group discussion (4)	<ul style="list-style-type: none"> - Manifest content analysis



WHO conceptual framework: the dimensions of quality in health care

Results – paper I

Role of drug shops and appropriateness of care provided to children – **30% care seeking at drug shops** (53% private)

Appropriateness of care	Number (%)
Children with fever treated with any Artemisinin Combination Therapy (ACT) for 3 days	27 (18.6)
Children with pneumonia treated with amoxicillin	5 (15.6)
Children with pneumonia treated with amoxicillin for 5-7 days	0
Children with diarrhoea treated with Oral Rehydration Salts (ORS)	8 (14.3)
Children with diarrhoea treated with ORS/Zinc	0

Results – Paper II

Effect of iCCM intervention on uptake of diagnostics

- Proportion of febrile children receiving malaria diagnostic test (RDT)
 - Intervention district: 88% (95% CI 79 – 96)
 - Comparison district: 0%
- Proportion of children with pneumonia symptoms having respiratory rate counted
 - Intervention district: 55% (95% CI 33.8 – 75.8)
 - Comparison district: 0%

Results – Paper II

Effect of the iCCM intervention on appropriateness of care

Management (from exit interviews)	Prevalence ratio (using GLM)	95% CI
Children with fever treated with ACT	4.2	(1.9 – 9.4)
Children with pneumonia treated with amoxicillin	2.8	(2.0 – 3.9)
Children with pneumonia treated with (obsolete) cotrimoxazole	0.07	(0.01 – 0.39)
Children with diarrhoea treated with ORS/Zinc	12.8	(4.2 – 38.6)

Results – Paper II

Effect of the iCCM intervention on appropriateness of care

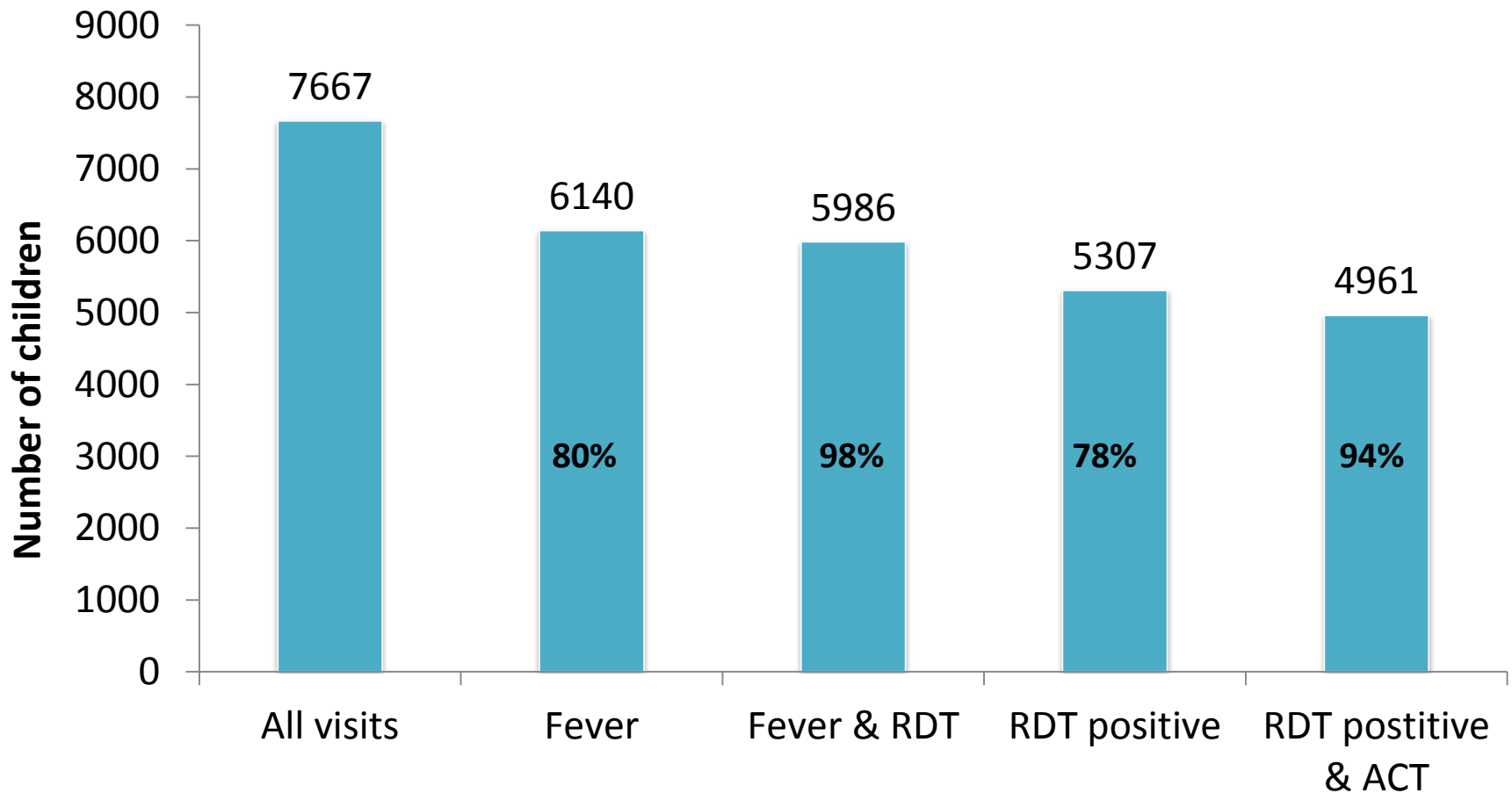
Management (from household interviews)	Prevalence ratio (using GLM)	95% CI
Malaria RDT used to make diagnosis in children with fever	3.2	(1.9 – 5.4)
Children with pneumonia treated with (obsolete) cotrimoxazole	0.45	(0.27 – 0.74)
Children with pneumonia treated with amoxicillin	0.82	(0.58 – 1.2)
Children with diarrhoea treated with ORS/Zinc	2.3	(1.2 – 4.7)

Care seeking behaviour – Paper II

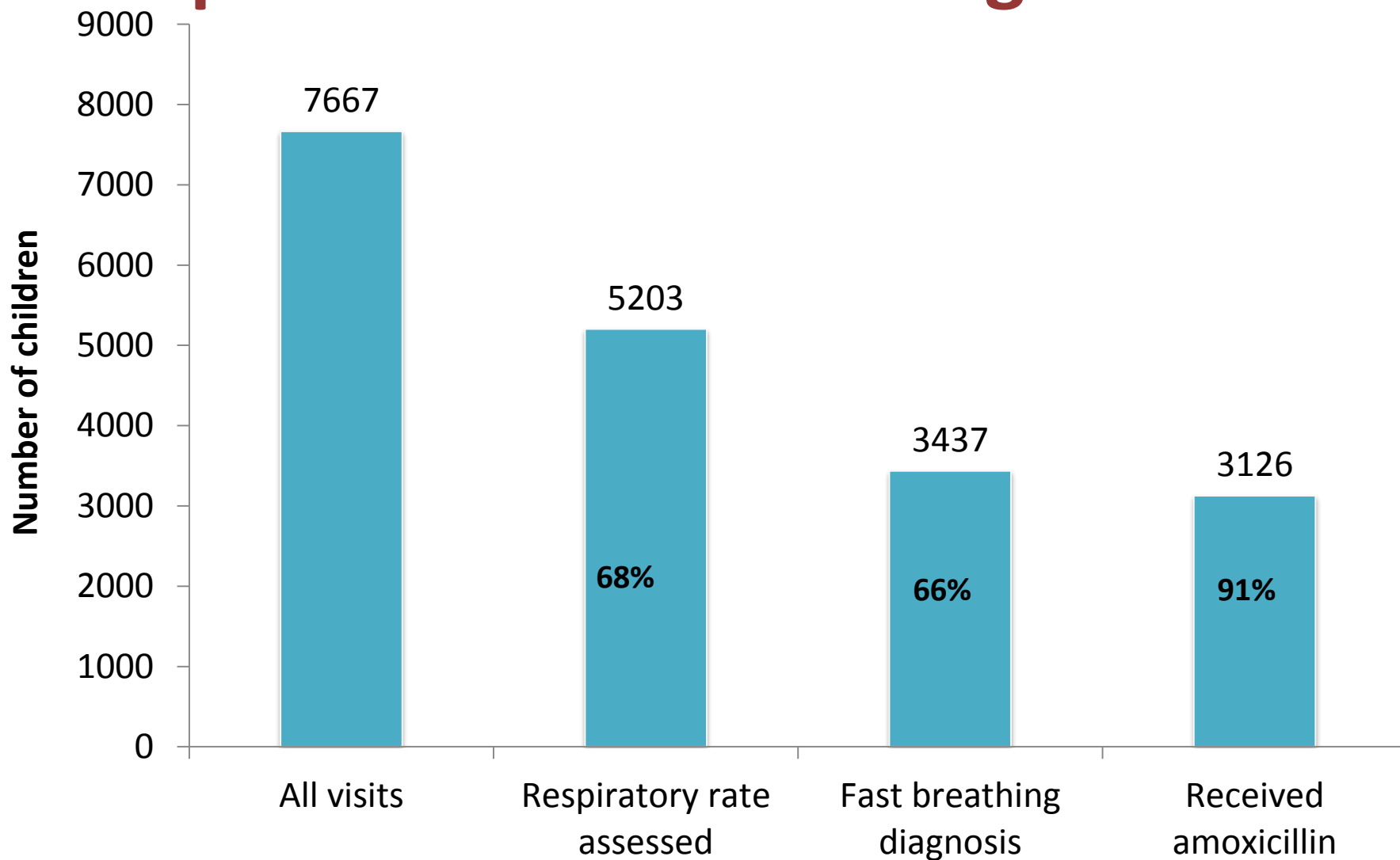
	Comparison			Intervention		
	Before	After	p-value	Before	After	P value
	N=457	N=711		N=483	N=748	
	n (%)	n (%)		n (%)	n (%)	
Government health facility	84 (18)	127 (18)	0.8	101 (21)	154 (21)	0.9
Managed at home	149 (33)	305 (43)	<0.001	79 (16)	130 (17)	0.7
Drug shop	137 (30)	246 (35)	0.1	142 (29)	412 (55)	<0.001
Other private sector*	72 (16)	31 (4)	<0.001	145 (30)	41 (6)	<0.001
Others	15 (3)	2 (0.3)	<0.001	16 (3)	11 (2)	0.04

Results – Paper III

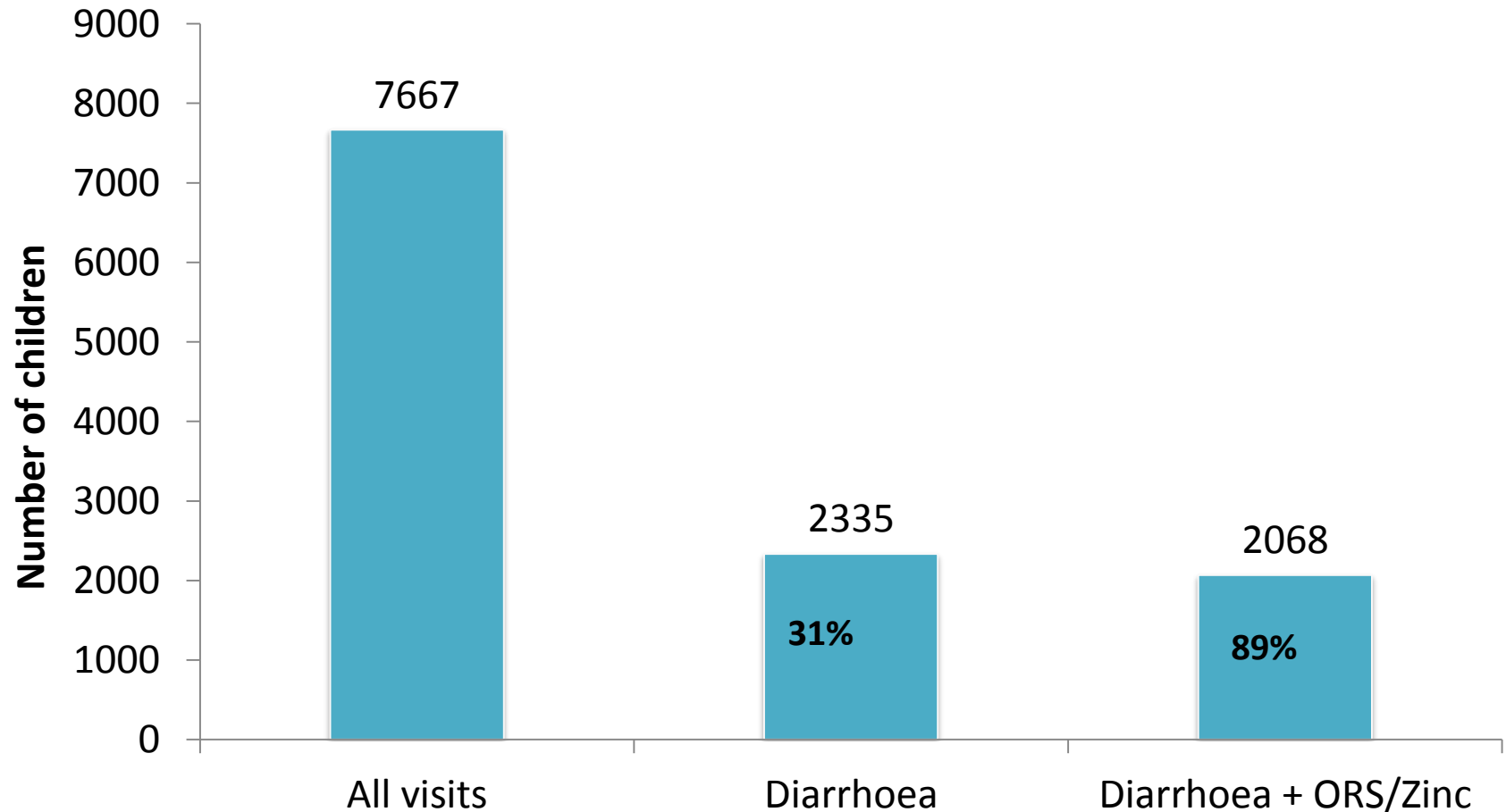
Adherence to the malaria treatment protocol



Adherence by drug shop attendants to pneumonia treatment guidelines



Adherence by drug shop attendants to diarrhoea treatment guidelines



Qualitative results

- From baseline FDGs: the community had confidence in the ability of drug shops to manage their illnesses and thought of them as competent providers
- Drug shop attendants saw themselves as providers of clinical care and not just as medicine sellers
- Drug shop attendant experiences with iCCM: they greatly appreciated the new knowledge; skills; professionalism; self confidence and community recognition resulting from the intervention

Ethical considerations

- Potential ethical risks in this study included:
 - Drug shop attendants may not carry out diagnostics tests properly
 - Poor disposal of sharps and blood stained items
 - Promotion of utilization the private sector at the expense of public sector
- Risks mitigated through training, support supervision, community awareness, subsidized drugs

Limitations and mitigation

- The quasi-experimental study
 - lower in hierarchy than the RCT
 - However:
 - Large effect size
 - Consistency of results across methods
- Survey methodology is prone to recall bias – reduced by restricting analysis to illnesses within 2 weeks of the interview
- Drug shop records were used in paper III with no possibility to validate the information

Conclusions

- Half of parents seek care for febrile children in the private sector, mainly comprising of drug shops, where the management of childhood illness is largely inappropriate - **Paper I**
- Introduction of the iCCM intervention at drug shops in rural Uganda resulted in high levels of appropriateness of care for malaria, pneumonia and diarrhoea in children - **Paper II**
- There was also high adherence to the iCCM treatment protocols by the drug shop attendants - **Paper III**

Policy recommendations

1. Quality of care for children with malaria, pneumonia and diarrhoea can be considerably improved by extending the iCCM strategy to drug shops in Uganda
2. As with the public sector iCCM interventions, a subsidy is necessary in the private sector to ensure affordability for the majority of patients
3. For ease of implementation, consider including a limited number of dedicated drug shops per village

Research recommendations

1. Further studies on the effect on mortality, rational drug use and antimicrobial resistance are necessary
2. Studies are also necessary within a low malaria endemic area for comparison purposes
3. If a stepped wedge cluster randomized evaluation design is used during scale up of the intervention at drug shops, solid data of the effect of the intervention can be collected

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Thank you!

2012/04/24

Intervention design – adapted from Elliot et al 2008; Bloom et al 2008; & iCCM strategy

Supply factors

Community awareness

Governance factors

