

## Case study: Integrated Infectious Disease Capacity-Building Evaluation (IDCAP) in Uganda

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## Ugandan context

- Training experts noted need for technical assistance, such as CQI
- CQI experts noted need for additional training of mid-level practitioners
- Integrated infectious disease care may be more appropriate clinically  
...and cost-effective

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## Outline

- Aims and Interventions
- Data Surveillance System
- Example of Results
- Summary of Results
- Cost-effectiveness Analysis

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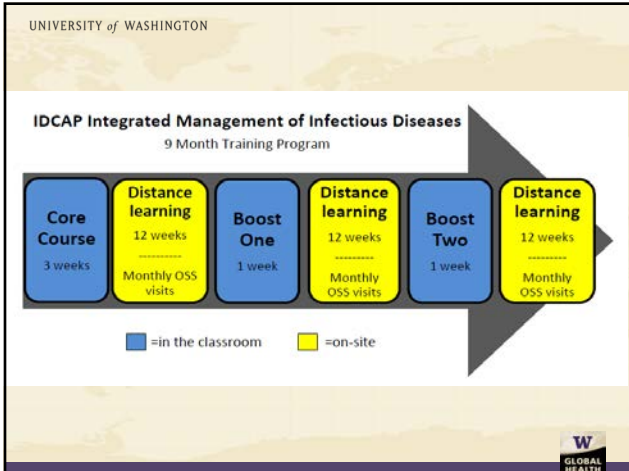
## Create & evaluate an innovative capacity-building program

- Develop an Integrated Management of Infectious Disease (IMID) curriculum for midlevel practitioners
- Complement the training program with On-Site Support (OSS)
- Measure their effect on the quality of care and health outcomes
- Estimate the cost-effectiveness of the interventions



Photo by Charles Steinberg, MD

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## Integrated Management of Infectious Disease (IMID)

- WHO curricula such as IMCI, ETAT, and IMAI
- Advances in health professional education (Miceli, et al. IJID 2012)
- Hospice Uganda Diploma Program in Palliative Care
- Health Care Improvement (HCI)
- Joint Uganda Malaria Training Program (JUMP)

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### On-Site Support (OSS) Mobile Team

- Medical officer
- Clinical Officer
- Laboratory Technologist
- District contact person/nurse officer

Photo courtesy of IDCAP

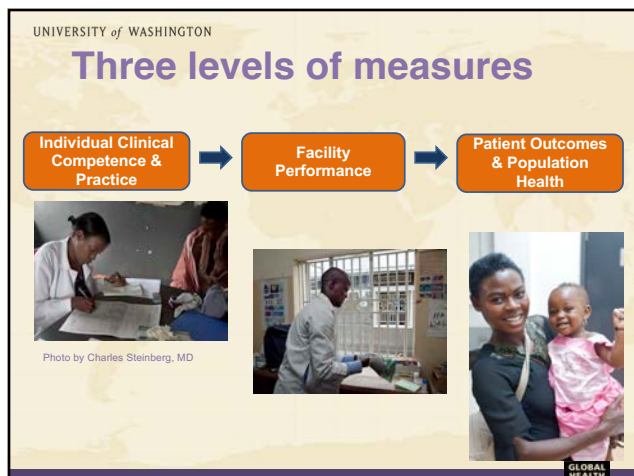
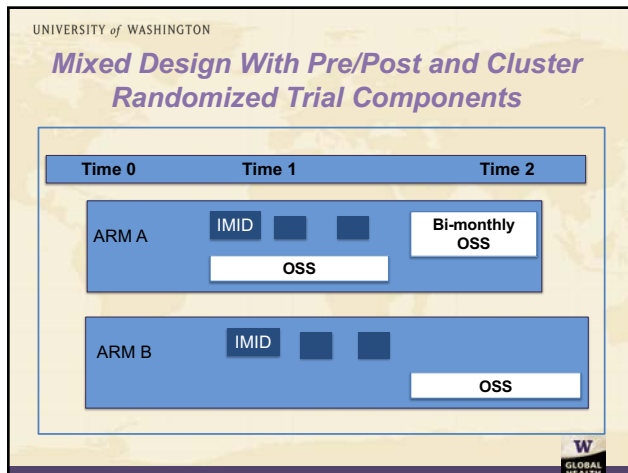
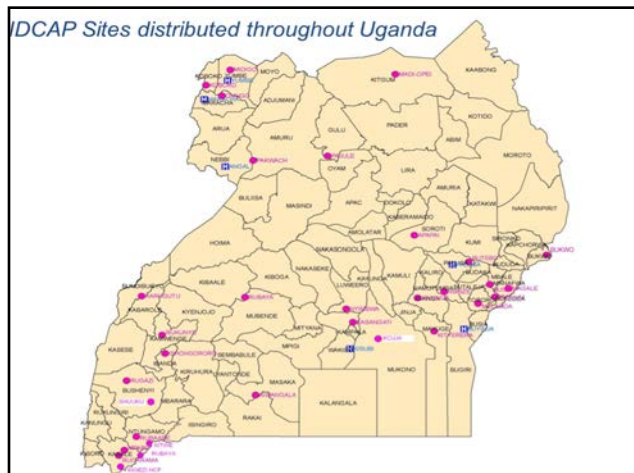
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### OSS Schedule

Day One	Day Two
<ul style="list-style-type: none"> <li>• Multidisciplinary Team Session (1 hour)</li> <li>• Breakout Sessions (1 hour)</li> <li>• Clinical Coaching (2 - 4 hours)</li> </ul>	<ul style="list-style-type: none"> <li>• CQI trainings (90 minutes)</li> <li>• Clinical Coaching (2 - 3 hours)</li> <li>• Data Review / Validation (1 - 2 hours)</li> </ul>

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### Summary

- IDCAP was one of the first randomized trials of OSS in Africa.
- IMID built on existing curricula and recent advances medical education.
- OSS focused on individual clinical practice and team-based approach to quality improvement.

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## Data Surveillance System



Photo courtesy of IDCAP



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## Data surveillance system supported high quality data

**Infrastructure and equipment**

- Computer hardware and software
- Reliable power sources



**Personnel**

- Data entry assistants
- Central team with data technicians, managers and statisticians




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## Comprehensive outpatient record form collected consistent data

- Triage
- Patient identification
- History and exam findings
- Laboratory requests and results
- Diagnoses
- Drugs – name and availability
- Referrals
- Clinician




<b>Triage Status (Circle if abnormal)</b> A      B      C      Cm      Cn      Cf      D      O <input type="checkbox"/> Pink (E) <input type="checkbox"/> Yellow (P) <input type="checkbox"/> Green (Q)		
e	Other Names	<input type="checkbox"/> New Attendance <input type="checkbox"/> Re-attendance
___ Mths ___ days	Sex <input type="checkbox"/> Male <input type="checkbox"/> Female	Weight ___ ___ ___ kg
<i>... and other details on History and other Exam Findings)</i>		
If Child, Recent Contact with someone who has TB? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Night Sweats?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Bp. _____ Temp. _____ Height _____
Offered HIV Test	Yes <input type="checkbox"/> No <input type="checkbox"/>	Known Status <input type="checkbox"/> Not Eligible <input type="checkbox"/>
<b>amination</b>		
<i>(that apply)</i>		

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## Data surveillance system built on existing MOH registers for other care settings


<p><u>Maternal &amp; Child Health</u></p> <ul style="list-style-type: none"> <li>• ANC Register</li> <li>• Maternity Register</li> <li>• PNC Register</li> </ul> <p><u>HIV Care</u></p> <ul style="list-style-type: none"> <li>• HIV/ART Care Cards</li> <li>• Pre-ART Register</li> <li>• ART Register</li> <li>• DBS DNA PCR Lab</li> </ul>	<p><u>Tuberculosis</u></p> <ul style="list-style-type: none"> <li>• NTLP Register</li> <li>• TB Lab Register</li> <li>• Sub-county TB Register</li> </ul> <p><u>Emergency Treatment, Assessment and Triage</u></p> <ul style="list-style-type: none"> <li>• In-patient Register</li> </ul>
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## 23 Facility performance indicators


- Emergency triage, assessment and treatment (ETAT)
- Case management of fever
- HIV prevention
- HIV Care
- ART
- Respiratory illness
- TB/HIV



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## Summary

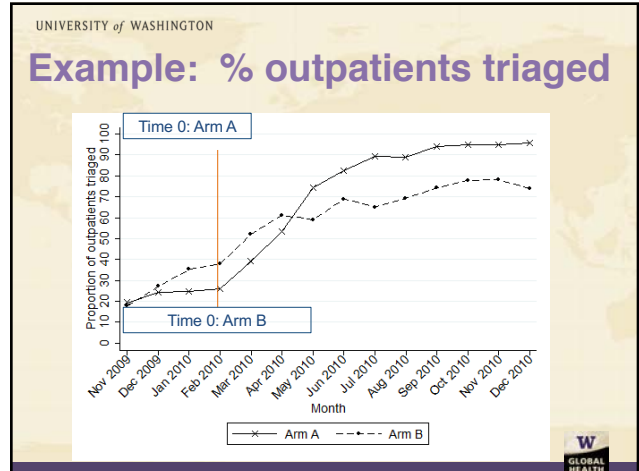
- Comprehensive outpatient record form collected consistent data
- Built on existing MOH registers for other care settings
- 23 facility performance indicators



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## Outline


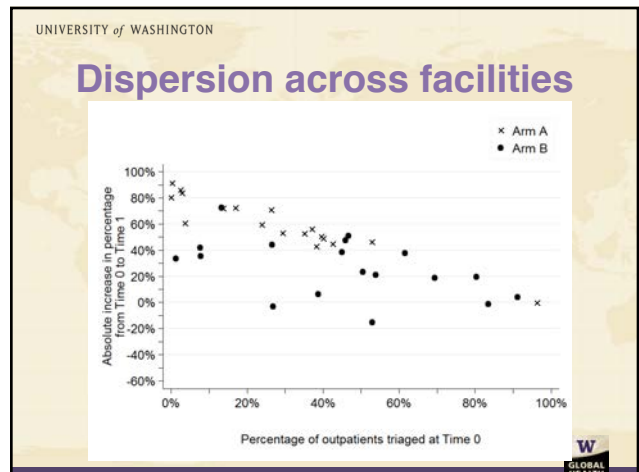
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## Significantly pre/post increase in % of outpatients triaged

	% of Outpatients Triaged RR (CI)
Arm A	
Time 1 – Time 0	2.03 (1.13, 3.64)*
Arm B	
Time 1 – Time 0	1.29 (1.01, 1.64)*
Arm A vs. Arm B: Time 1 – Time 0	1.58 (0.82, 3.01)



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## Outline

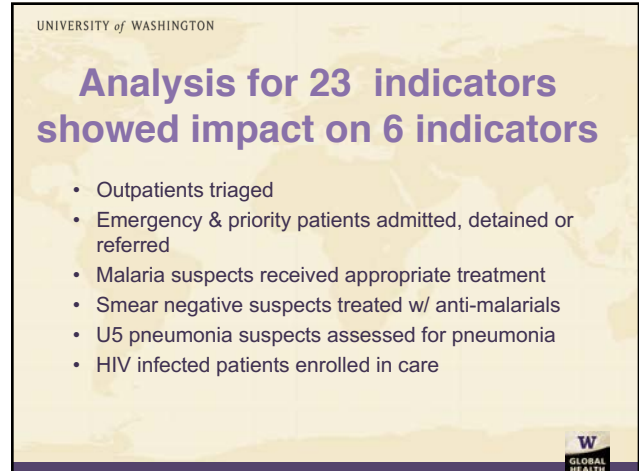

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## Analysis for 23 indicators showed impact on 6 indicators

- Outpatients triaged
- Emergency & priority patients admitted, detained or referred
- Malaria suspects received appropriate treatment
- Smear negative suspects treated w/ anti-malarials
- U5 pneumonia suspects assessed for pneumonia
- HIV infected patients enrolled in care

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PLOS ONE

## Improving Facility Performance in Infectious Disease Care in Uganda: A Mixed Design Study with Pre/Post and Cluster Randomized Trial Components


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**Abstract**

**Background:** The effects of two interventions, Integrated Management of Infectious Disease (IMID) training program and On-Site Support (OSS), were tested on 23 facility performance indicators for emergency triage assessment and treatment (ETAT), malaria, pneumonia, tuberculosis, and HIV.

**Methods:** The trial was implemented in 36 primary care facilities in Uganda. From April 2010, two mid-level practitioners per facility participated in IMID training. Eighteen of 36 facilities were randomly assigned to Arm A, and received OSS in 2010 (nine monthly two-day sessions); 18 facilities assigned to Arm B did not receive OSS in 2010. Data were collected from Nov 2009 to Dec 2010 using a revised Ministry of Health outpatient medical form and nine registers. We analyzed the effect of IMID training alone by measuring changes before and during IMID training in Arm B, the combined effect of IMID training

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## Cost Analysis

**Intervention**

- Curriculum Development
- IMID
- On-site Support

**Treatment**

- Drugs



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## Prospective cost data collection

Assigned activity code to every expenditure

- Curriculum Development
- IMID
- On-site Support
- Data surveillance system and evaluation
- Administration

Tracked attendance at OSS activities


Tracked patient care with the Data Surveillance System



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## Cost analysis, \$US

	IMID + OSS (Arm A)	IMID (Arm B)	Incremental cost of OSS
<b>Grant</b>			
Curriculum	\$ 16,994	\$12,610	
IMID	22,047	22,047	
OSS	49,230		
Total	\$88,271	\$34,656	
<b>MOH Salaries</b>			
IMID	\$ 464	\$ 456	
OSS	533		
Total	\$ 997	\$ 456	
Malaria drug savings	(523)	(77)	
Net cost	\$88,745	\$35,036	\$53,709




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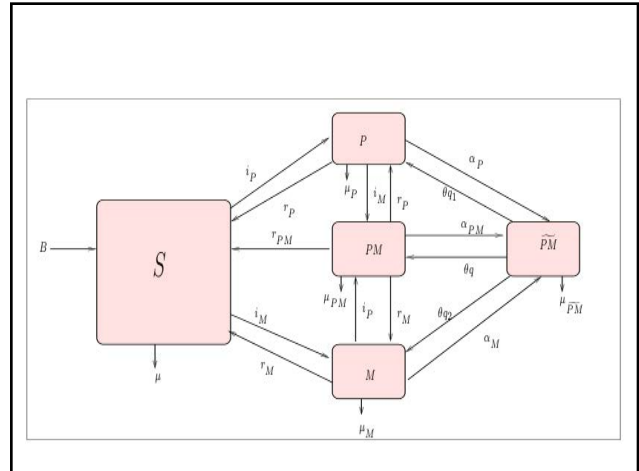
## Integrated Epidemiological Model

Use trial parameters for the effect of interventions on treatment received

Use epidemiological parameters for the effect of treatment on patient morbidity and mortality







	IMID + OSS	IMID	Incremental
Net cost	\$88,745	\$35,035	\$53,710
Lives saved	23	15	8
\$/Life	\$3,875	\$2,336	\$6,799
DALYs Saved	729	484	245
\$/DALY	\$122	\$72	\$219

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## Summary

- Integrated epidemiological model combines most indicators to provide one aggregate measure of the effect IMID and OSS across three age groups.
- Uganda's GDP in 2011 was roughly US\$ 487 per capita, suggesting IMID and OSS were highly cost-effective interventions both individually and in combination by WHO standards

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