

# Investigating Cell Phone Usage in Improving Timely Vaccine Uptake in the KEMRI/CDC HDSS

Wakadha H<sup>1</sup>, Odhiambo F<sup>1</sup>, Obor D<sup>1</sup>, Were V<sup>1</sup>, Ijaa W<sup>1</sup>, Chandir S<sup>2</sup>,  
Wonodi C<sup>2</sup>, Rubin A<sup>1</sup>, Levine O<sup>2</sup>, Laserson KF<sup>1</sup>, Feikin D<sup>2</sup>

1. KEMRI/CDC Research & Public Health Collaboration
2. Johns Hopkins School of Public Health/International Vaccine Access Center

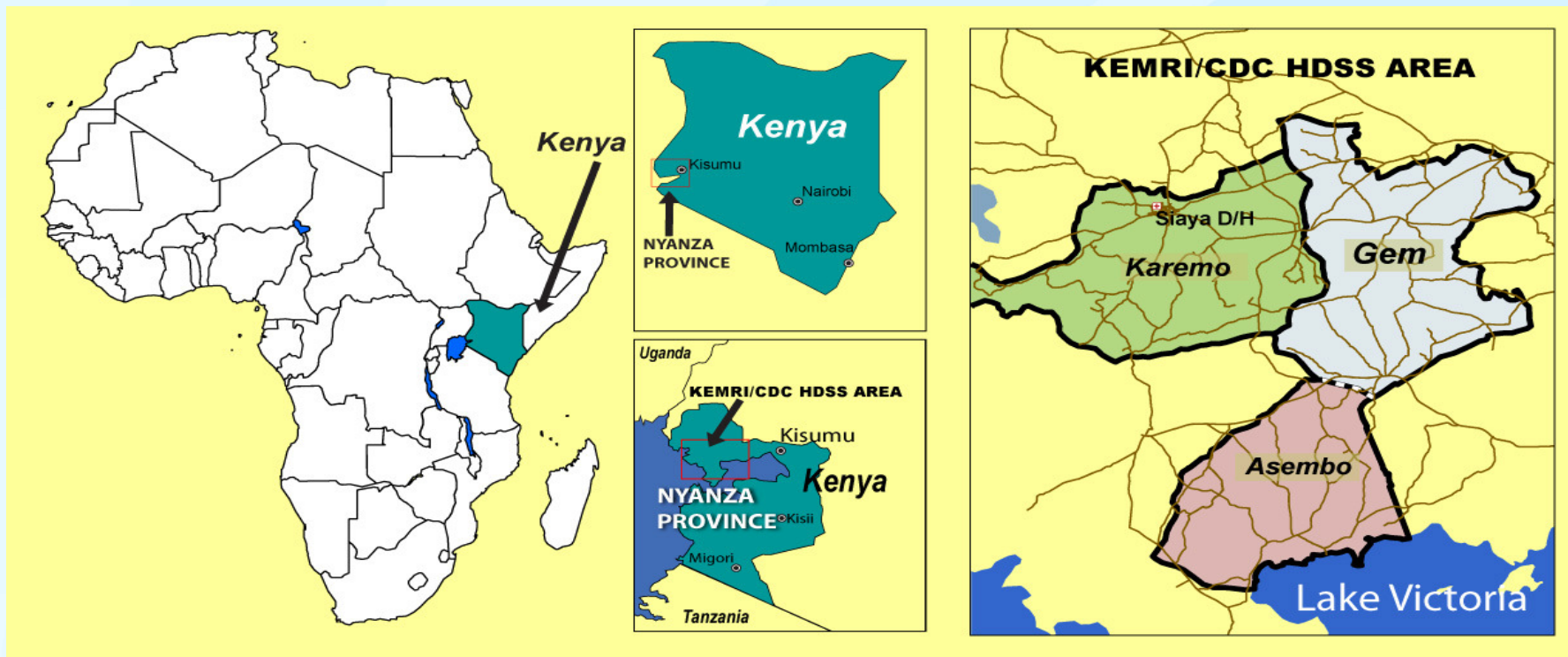
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KEMRI/CDC Research And Public Health Collaboration  
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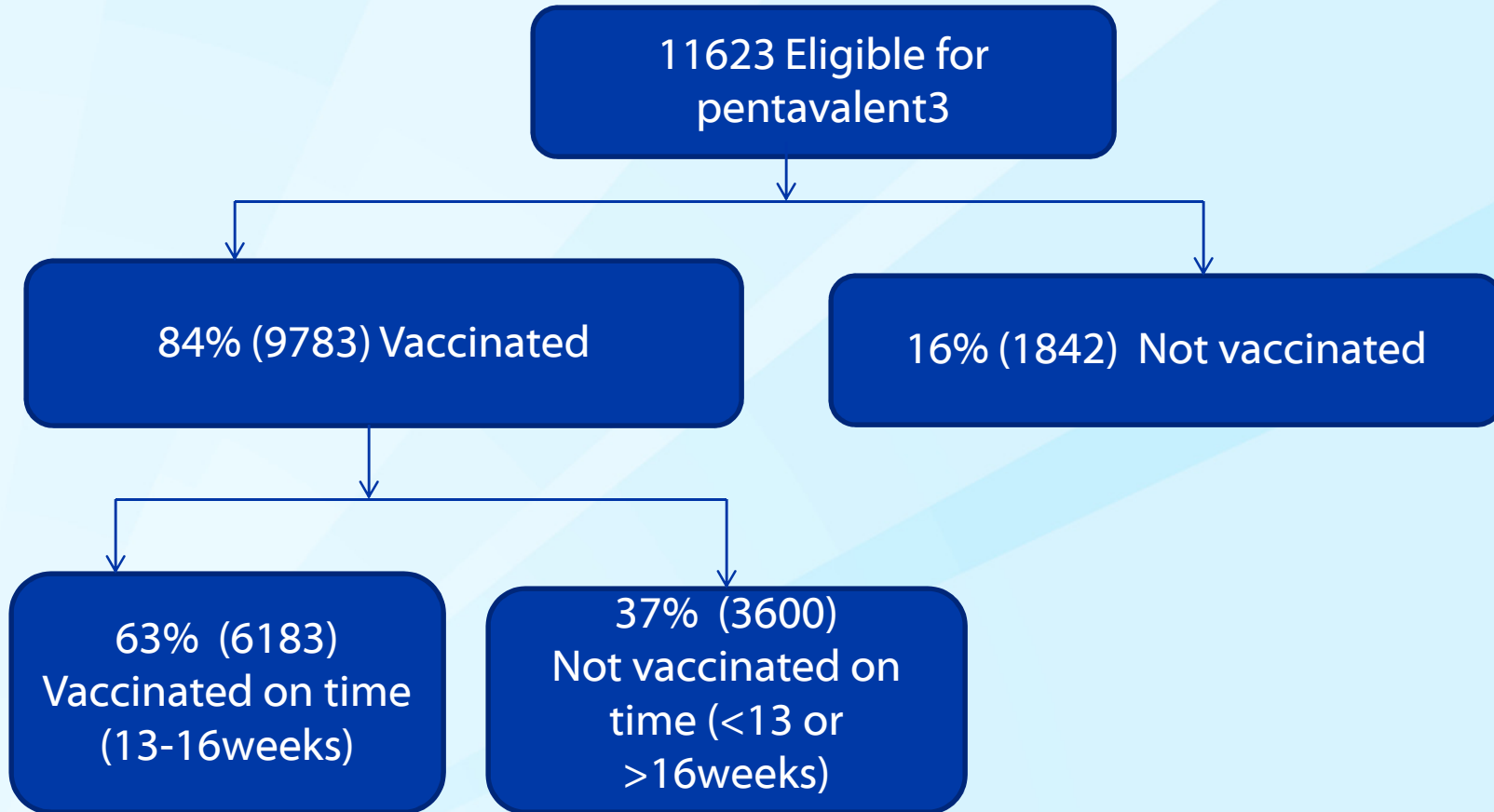


# KEMRI/CDC HDSS Surveillance Area



Approximate area: 700 km<sup>2</sup>  
Approximate population: 223,000  
Households 92,187  
Population children < 2 years: 22,324

## Pentavalent3 Vaccination Results (2009)



Eligible age  $\geq 14$  weeks

Timeliness within 2 weeks before or after scheduled vaccination date

## Measles Vaccination Results (2009)

8485 Eligible for measles

79% (6684) Vaccinated

21% (1801) Not vaccinated

91% (6092)  
Vaccinated on time  
(8-10 months)

7% (492)  
Not vaccinated on time  
(< 8 or >10 months)

Eligible age  $\geq 9$  months

Timeliness is within 1 month before or after scheduled vaccination date

## Background

- ❑ 69% of women (15-49 years) in the KEMRI/CDC HDSS reported having access to a cell phone (May - Sep 2010)
- ❑ A conditional cash transfer (CCTs) is a monetary incentive offered for completion of beneficial –related behaviors (immunization, HIV results, antenatal care visits)
- ❑ CCTs shown to improve health related behaviors
  - Increased number of people returning to obtain their HIV test results in Malawi
  - Improved immunization coverage in Latin America (Mexico, Nicaragua, Honduras, Columbia )

## **Study Objective**

- ❑ To investigate the feasibility of using cell phones and CCTs to improve timeliness and uptake of vaccines in children in the KEMRI/CDC HDSS

## Methodology

- ❑ Rapid SMS system
  - A web based text message framework that manages data collection, workflow and group coordination using cell phones
  
- ❑ Cell phone cash transfer system (CPCTS)
  - Electronic payment and storage of value system that is accessible through cell phones (MPESA, ZAP, YU-CASH)
  - Customers register, assigned individual electronic money account linked to the phone number and accessible through a SIM-card to enable them, deposit or withdraw cash from their accounts



## MPESA Automated Booth





# MPESA Retail Outlets



## Methodology

- ❑ Convenience sample size of 72 participants
- ❑ Evaluation of children eligible for pentavalent1 and pentavalent2 vaccines
- ❑ Eligibility criteria
  - Mothers with children aged 0-4 weeks
  - Who have access to a cell phone

## Methodology

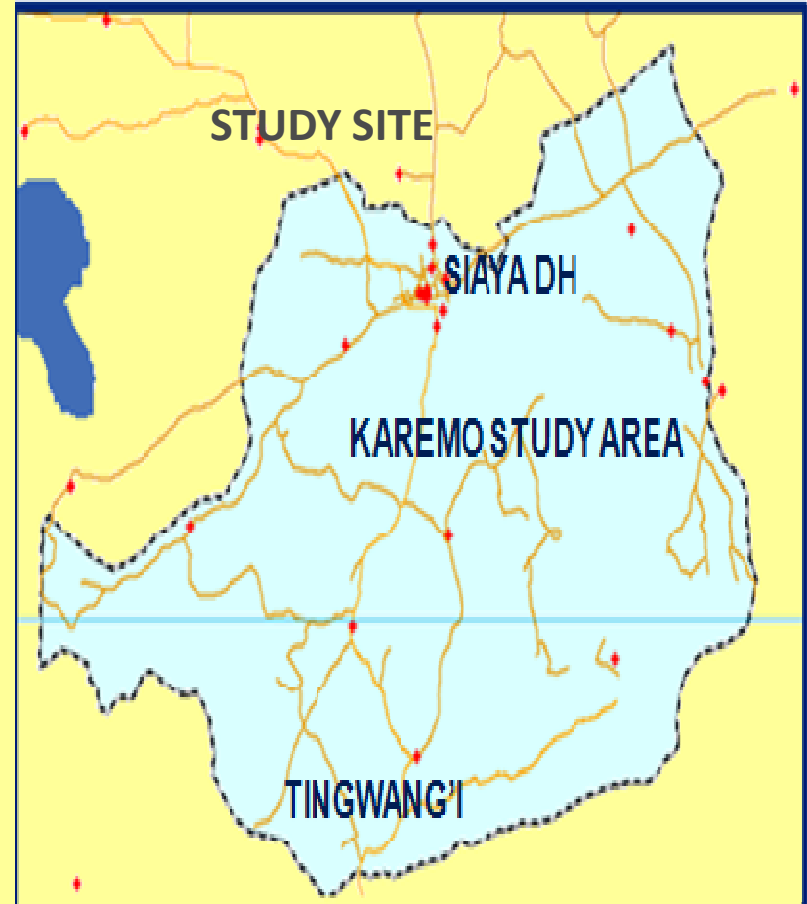
- ❑ Participants identified through two different systems
  - Routine household visits
  - Village reporters
- ❑ Descriptive analysis done using SAS software 9.2



# Village Reporters Training



## Study Site



Study area: 30 villages within 5km radius of Ting'wangi Health Center

Approximate population: 10,972

Population of children <2years : 1,113

# Methodology

Study site selection: 30 villages in 5 Km radius of Ting'wang'i Health Center

Identification of possible participants

Eligibility criteria

No

Exclude

Consent

No

Refusal

Yes

Enrollment

Text message reminder (3 days prior at 11.00 am and on the scheduled day at 9.00 am ) sent to registered participant cell phone

# Methodology

Participant visits Ting'wang'i health center for child vaccination

Health facility study staff sends text message to server

*IF VISIT WITHIN 4 WEEKS OF SCHEDULED DATE:  
Congratulations , baby has been vaccinated on time. You will receive CCT payment of \$1.50. Thank you for bringing your child on time for vaccination*

*IF VISIT NOT WITHIN 4 WEEKS:  
Thank you for bringing your child for vaccination .You will not receive the CCT payment because the child was not vaccinated on time*

Participant reimbursed/NOT reimbursed \$1.50



## Immunization Visit of Enrolled Child



# Participant Cashing Out CCT in an MPESA Outlet



## Preliminary Results

71 Participants approached

```
graph TD; A[71 Participants approached] --> B[97% (69) Consented]; A --> C[3% (2) Refused];
```

97% (69) Consented

3% (2) Refused

## Preliminary Results

45 Eligible for pentavalent1

```
graph TD; A[45 Eligible for pentavalent1] --> B[71% (32) Vaccinated on time]; A --> C[19% (11) Not vaccinated on time]
```

71% (32) Vaccinated on time

19% (11) Not vaccinated on time

Eligible  $\geq 6$  weeks of age

# Preliminary Results

18 Eligible for pentavalent2

```
graph TD; A[18 Eligible for pentavalent2] --> B[89% (16) Vaccinated on time]; A --> C[11% (2) Not vaccinated on time];
```

89 % (16) Vaccinated on time

11% (2) Not vaccinated on time

Eligible  $\geq 10$  weeks

## Challenges

- ❑ System delays caused by CPCTS in remitting payments
- ❑ Suspicions that vaccines were “experimental”
- ❑ Training of village reporters in use of cell phones to send text messages was difficult
- ❑ Lack of consent from husbands
- ❑ CCT not enough money
- ❑ Delays and failures in receiving text message:, in particular among those participants accessing cell phones through other parties (neighbour, husband, other person in compound)

## Discussion

- ❑ Community meetings to create awareness of the study increased immunization visits and led to acceptability of the study
- ❑ Most participants came in on time for vaccination after receiving the text message reminders
- ❑ All participants who came in on time for vaccination received their CCTs
- ❑ Of the participants failing to come for vaccination, most of them accessed cell phone through their husbands



## **Recommendation**

- ❑ If the findings of this pilot study show that using cell phones to improve timeliness and uptake of vaccines in children is feasible, we would recommend that a RCT to be conducted

## **Acknowledgement**

- ❑ HDSS residents
- ❑ KEMRI/CDC staff
- ❑ INDEPTH Network
- ❑ Ministry of Public Health and Sanitation

# Thank You

**For more information please contact:**

**KEMRI/CDC**

P.O. Box 1578

Kisumu, Kenya

E-mail: [info@ke.cdc.gov](mailto:info@ke.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



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