Effectiveness of cellphone counseling on PMTCT retention and uptake of early infant diagnosis in Kisumu, Kenya

Avina Sarna, MD PhD; Jerry Okal, PhD,
James Matheka, MA; Lopamudra Ray Saraswati, MSc Mphil;
Nancy Reynolds, PhD; **Sam Kalibala, MD**

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Objective

- Evaluate the effectiveness of a structured counselor-delivered cell-phone counseling intervention to promote retention in care and adherence to ARV prophylaxis/treatment for HIV-positive pregnant women compared to standard care.
- Assess the acceptability of a counselor-delivered, cell-phone counseling strategy in a peri-urban community in Kisumu.

Methods

- 2-arm randomized controlled study
- HIV-positive pregnant women between 14 and 36 weeks of pregnancy recruited
- Intervention: Counselor-delivered cell-phone counseling
- Control: Standard care/usual care
- Participants followed till 14 weeks post delivery
- Outcome indicators:
  - Uptake of early infant diagnosis (EID) 6 weeks
  - Retention in care until 6 weeks, 14 weeks
  - Pharmacy-refill based treatment adherence
  - Other indicators: Institutional delivery, infant feeding

Eligibility

- At least 16 years of age and HIV positive
- Pregnant with gestational age between 14 and 36 weeks
- Able and willing to give informed consent for study participation
- Residing in Kisumu District and not planning to move out in the next 10 months
- Had access to a cell phone, provide phone numbers
- Willing to receive mother-to-child transmission ARV-prophylaxis regimen or ART
- Capable and willing to participate in all follow-up visits

Recruitment procedures

- Participants were recruited from MCH-ART clinics
- ANC/MCH nurse informed participants about the study
- Willing participants introduced to research assistants who screened participants for eligibility
- After completing informed consent procedures, eligible participants randomly allocated to the 2 arms
- Those allocated to the intervention→introduced to the counselor via a phone call
- Recruitment: May 2013 to Sept 2015
- Follow-up completed: April 2016

Cell Phone Delivered Counseling Intervention

Description of intervention

- Intervention drawn from Self-Regulation Theory (SRT) which involves guiding one's own thoughts, behaviors, and feelings to reach goals.
- Enables the patient to have frequent, personalized one-to-one contact with a counselor.
- Counselors were based in an office down-town (not at clinic) and contacted clients remotely (did not meet clients).
- Clients had their questions answered promptly and received counseling without additional travel and stigma and at a convenient time.

Counseling plan

Antenatal

- Week 1: **start of ART**

  2 calls/wk

- Week 2 until delivery:

  1 call/wk

- Maximum: 24 calls

Delivery

Postnatal

- Week 1: **after delivery**

  2 calls/wk

- Week 2 - 15: 1 call/wk

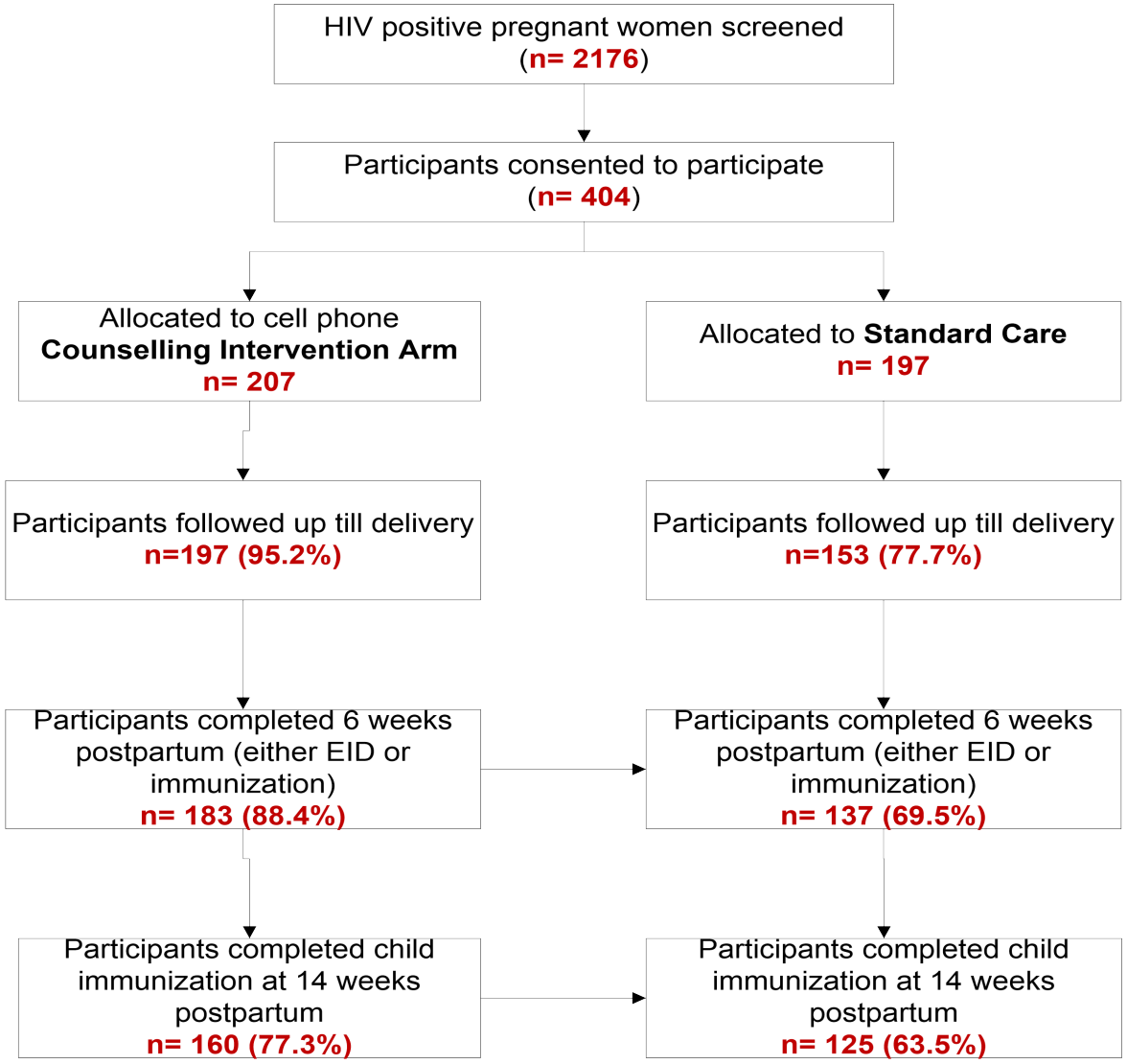
- Total: 16 calls

Counseling topics

- **Initial antenatal period** (14–32 weeks)
  - Retention and adherence to treatment
  - Partner disclosure, partner testing
- **Late antenatal period** (32–40 weeks)
  - Retention and adherence
  - Institutional delivery
  - Nutrition
  - Nevirapine initiation for baby
- **Postnatal period** (0–15 weeks)
  - Nevirapine for baby
  - Infant feeding–exclusive breastfeeding
  - PCR testing at 6 weeks
  - Immunization–DPT Polio at 6, 10, and 14 wks
  - Family planning

Results

Recruitment and retention



Recruitment took place between May 2013 and September 2015

Participant follow up ended in April 2016

Of those screened: 564 refused, 333 agreed but never returned, 875 were ineligible (355 did not have phones)

Baseline characteristics (1)

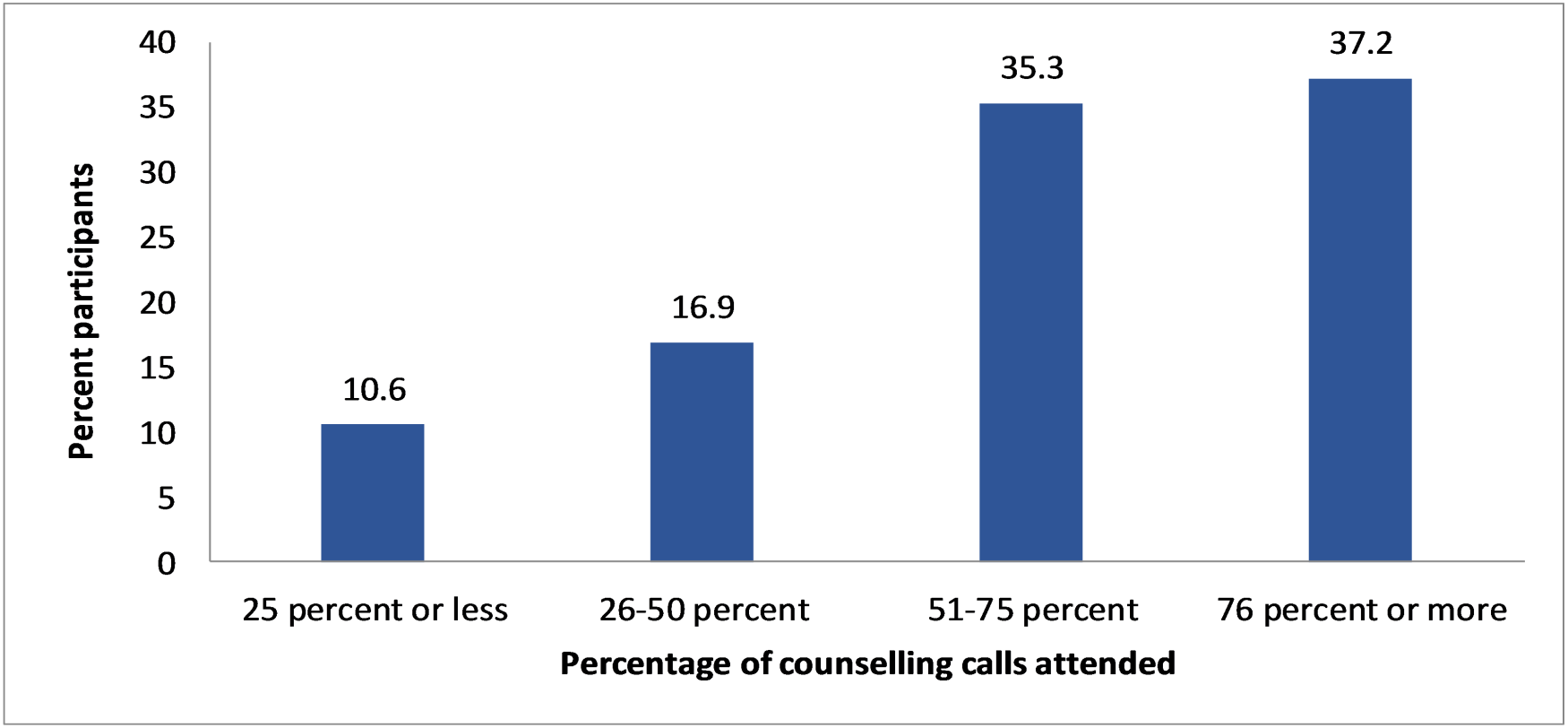
	Intervention % (n) n=207	Control % (n) n=197	Total % (n) N=404	p-value
Age (median)	24	25	25	
Marital status				
Married/Cohabiting	81.6	83.3	82.4	0.311
Never married	12.1	8.1	10.2	
Divorced/Separated/Widowed	6.3	8.6	7.4	
HIV status of spouse/partner				
Positive	37.2	38.8	38.0	0.925
Negative	15.9	14.8	15.4	
Don't know	46.9	46.4	46.7	
Pregnancy duration at recruitment				
14-28 weeks	77.8	78.7	78.2	0.826
29-36 weeks	22.2	21.3	21.8	
Total pregnancies, including current				
Median, IQR	3 (2,4)	3 (2,4)	3 (2,4)	0.379
Known HIV status				
1 year or less	65.7	67.0	66.3	0.633
2-4 years	23.7	20.3	22.0	
5 or more years	10.6	12.7	11.6	
Disclosed HIV status to spouse	57.9	58.9	58.4	

Baseline characteristics(2)

	Intervention (%) n=207	Control (%) n=197	Total (%) N=404	p-value
ART naïve before this pregnancy	57	57.4	57.2	0.942
ÀRT treatment assigned				
Option A (only AZT)	40.6	42.6	41.6	0.875
Option B HAART (3 ARVs)	59.4	57.4	58.4	
Stigma score (16-64)				
Low (16-40)	70.5	68.5	69.5	0.323
Moderate (41-52)	28.5	31.5	29.9	
High (53-64)	0.97	0.0	0.5	
Depression score (10-60)				
No depression (<16)	65.7	54.3	60.2	0.019
Sign of depression (≥16)	34.3	45.7	39.8	
Home district				
Kisumu	29	34	31.4	0.277

* 24 participants changed from Option A to Option B during the study.

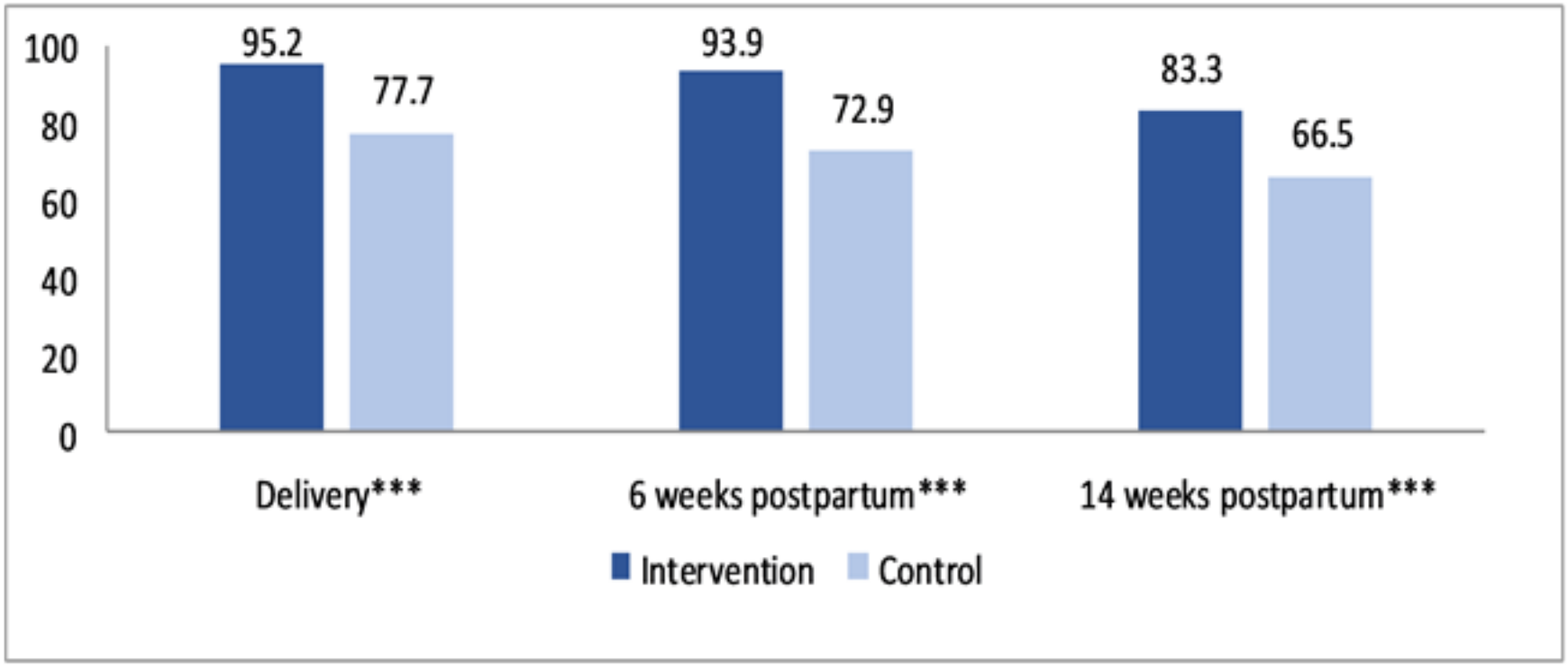
Counseling sessions attended by participants in the intervention arm (n=207)



Reaching intervention participants via phone calls was challenging

- 68% used own cell phones, 19% spouse's cell phones, 8% family member phones and 5% friends' phone.
- An average of 63.12% (SD 24.64) of required phone counselling sessions in ANC + PNC took place.
- Average duration of session was 9.2 minutes (SD 7.95).
- Counsellors made an average of 4.77 call attempts (SD 9.73) to make a successful call to a participant.
- Participants contacted in 1st, 2nd or 3rd attempt were more likely to attend a higher proportion (mean 71.7%, 73.2%, 64.7%) of required sessions compared to those contacted in 4th or more attempts (mean 50.2%).

The intervention improved retention in care



Delivery: I: 197/207; C: 153/197; 6 weeks: I: 183/195; C: 153/188; 14 weeks: I: 160/192; C: 125/188

Still births and infant deaths have been excluded at 6 weeks (I: 9 still births and 3 infant deaths; C: 8 still births and 1 infant death) and 14 weeks (I: 2 infant deaths and 1 maternal death) postpartum.

*** $p < 0.001$

Intervention improved ANC and PNC attendance

- **ANC**: 55% of participants in the intervention completed more than three-quarters of the required number of ANC visits compared to 42% in the control (p = 0.032).
- **PNC**: A higher proportion of participants in the intervention compared to control (20% vs. 13%; p = 0.04) completed all three required PNC visits: between 24 and 48 hours, 7 and 14 days; and at 6 weeks.
  - 82 % of participants in the intervention attended the six week PNC visit compared to 71% in the control (p = 0.006)

Intervention improved EID uptake

	Intervention % n=207	Control % n=197	Total % N=404	p-value
Early infant diagnosis*				
Done	**92.8** (181/195)	**68.6** (129/188)	96.9 (310/320)	**<0.001**
PCR result (294/310 results available)				
Positive	3.9 (7/180)	1.6 (2/124)	3.0 (9/304)	0.250
Negative	96.1 (173/180)	98.4 (122/124)	97.0 (295/304)	
Timing of EID testing				
Within 8 weeks	80.1 (145/181)	81.3 (104/128)	80.6 (249/ 309)	0.803
Beyond 8 weeks**	19.9 (36/181)	18.8 (24/128)	19.4 (60/309)	

*Excludes participants with still births (I: 9; C: 8) and with infant deaths before 6 weeks (I: 3; C:1)
** mean duration beyond 8 weeks: 12 days

Qualitative data shows that participants faced several challenges in accessing EID services, such as delays in receiving test results, failed results, repeat testing and gossip from health workers.

"……Yes, so when I went back and asked them they told me that the results were not in yet. When I went back again the result were not yet in, so they told me to go back for the child to be tested again……"

24-year-old widow, mother of 4 children who delivered at home, intervention arm

No difference in pharmacy refill-based adherence

	Intervention n/N (%)	Control n/N (%)	Total n/N (%)	p-value
Pharmacy coverage till delivery				
90% or less	41/197 (20.81)	31/153 (20.26)	72/350 (20.57)	0.899
More than 90%	156/197 (79.19)	122/153 (79.74)	278/350 (79.43)	
Pharmacy coverage till 6 weeks postpartum				
90% or less	52/183 (28.42)	43/137 (31.39)	95/320 (29.69)	0.565
More than 90%	131/183 (71.58)	94/137 (68.61)	225/320 (70.31)	
Pharmacy coverage till 14 weeks postpartum				
90% or less	28/160 (17.5)	29/125 (23.2)	57/285 (20)	0.233
More than 90%	132/160 (82.5)	96/125 (76.8)	228/285 (80)	

Conclusions

- Cell phone counseling intervention was effective in promoting:
  - **Retention in care** at all 3 time points (delivery, 6 & 14 weeks postpartum)
  - **Uptake of EID**
  - **ANC and PNC attendance**
- No significant difference between 2 groups with regard to pharmacy refill adherence at all 3 retention time points. [This analysis was conducted on those retained in the study and had attended the visits, during which those in the control were as likely to have collected their medications as those in the intervention.]
- Delivering the intervention came with several challenges: multiple calls needed, irregular access to phones, client availability, and stigma related issues.

Recommendations

- For roll out, in the case of limited resources, the intervention may target only high risk clients initially.
- Cell phones could be provided for needy clients at risk of being lost to follow up: based on assessment by facility based nurses.
- Since pharmacy refill records reflect clinic attendance, they may not be accurate for comparison of adherence among attendees. Consider triangulating with other adherence measures such as pill count and recall of missed doses.
- Need for costing/cost-effectiveness study.

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