

Safer Deliveries



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Better Decisions Save Lives

What D-tree does



- Provide decision support tools for use by frontline health workers
 - Design, Test and Deploy applications
 - Partner with MOH and other health NGOs
- Focus areas:
 - Maternal and Child Health
 - Chronic Disease
 - Facility and community health workers

Safer Deliveries in Zanzibar



> 50% of births are at home

when transfer to hospital is needed there are 3 delays:

- The decision to seek care
- The transfer to a facility
- Treatment at the facility

Safer Deliveries in Zanzibar



- **Screening pregnant mothers** to identify risks or danger signs
- **Establishing community-based referral systems** to transport women in labor or in emergency situations
- **Coordinating payment of transport** to health facilities and hospitals using mobile banking
- **Following up with the family within 2-5 days** after delivery to ensure a continuum of care, including post-partum and post-natal care
- Funding from Gates Foundation and USAID through Jhpiego

How we use mobile money



- Transfer funds from D-tree to Community Birth Attendant (CBA) accounts
- CBA pays drivers from account using mobile money
- CBA withdraws their incentive at end of month
- Audit transactions using application records, mobile money accounts and sign-in books at health facilities



Phase I



- Developed 1st version of application and protocols with MOH
- Field refinement
- Established relationship with Zantel and mobile banking accounts
- Deployed in 2 districts with 24 TBAs

Results: Phase I



- Dramatic increase in facility delivery rates from 30% to 71%
- Over 1,000 women registered, 938 deliveries
- 82% of women had identified condition for which facility delivery is recommended
- Average cost per delivery \$22
- Won 2 GSMA Mobile Awards in 2012

Phase I - Challenges



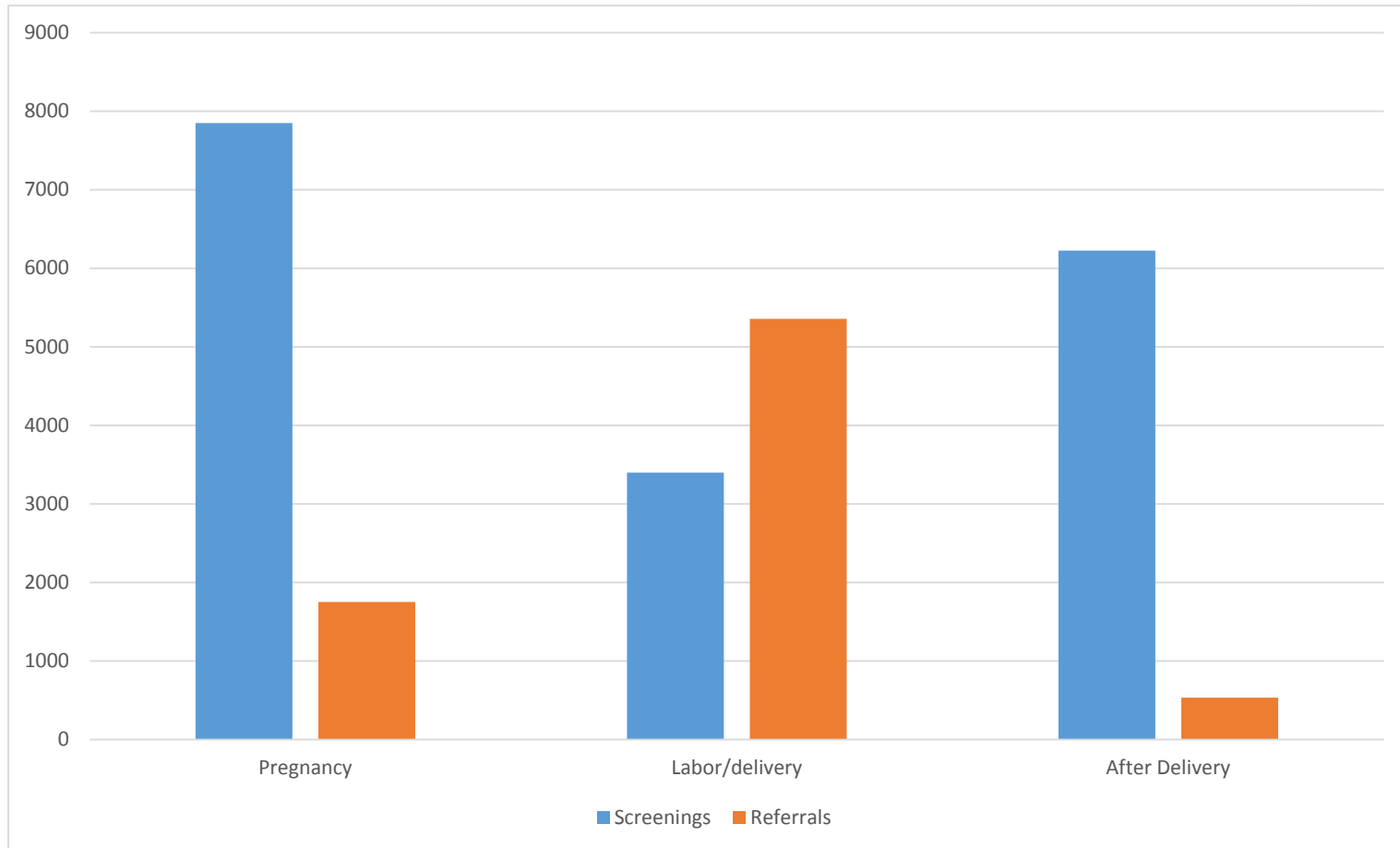
- Low post partum follow up rates
- Need for extension of mobile money network
- Manual reconciliation and financial tracking

Phase II



- Scaled up to 45% of rural population
- Scaled to 223 CHWs / TBAs and 51 supervisors
- Developed financial tracking system
- Developed web dashboards
- Improved birth plans
- Added 2nd post partum visit
- Incentive payment now tied to 2nd PP visit

Referral by period



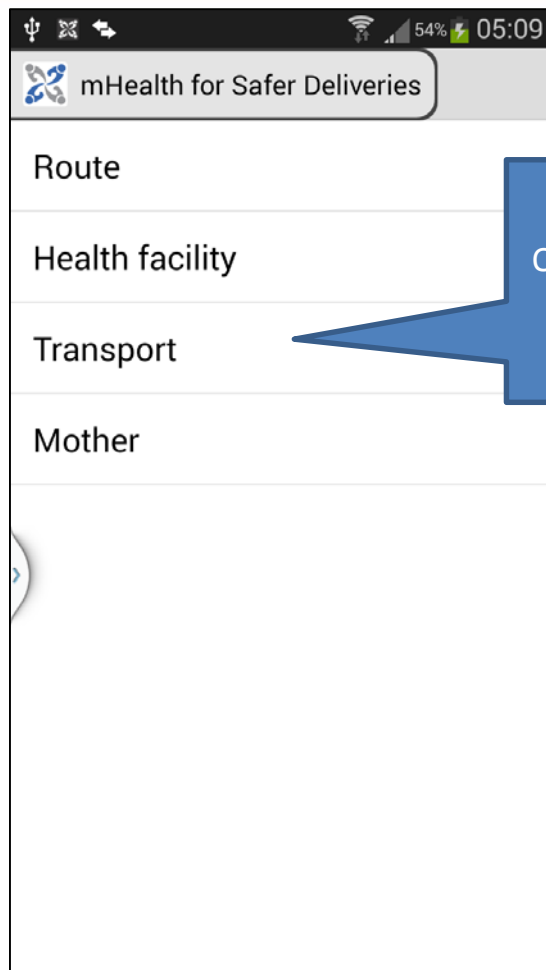
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The scale up process



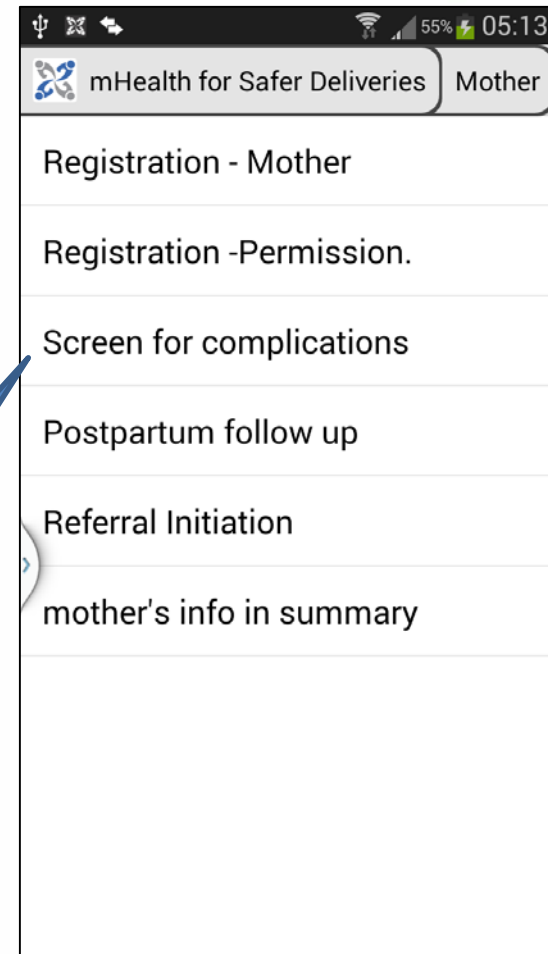
- Introductory meeting with DHMT
- Sensitization at community level (shehias)
 - Including TBAs not in program
- Negotiation and agreement of rates with drivers
- Training
 - 1 day MNCH / first aid and 1 day use of phones
 - 3 weeks of practice
- Go live!

Mobile Application



Options available
to TBA

Activities for each
mother



Mobile Application



iveries | Mother | Screen for complications

| | |
|------------------|------------|
| Phone number | 7778852365 |
| EDD | 2014-01-30 |
| RCH Name | CHEJU |
| Place delivery: | mnazi_moja |
| Nearest PHCC | wete |
| Nearest DC | mwembeladu |
| Nearest Hospital | mnazi_moja |

Select Client

Key information available for TBA, EDD and nearest primary, secondary and tertiary facilities

Screen for complications | ASHA CHEJU

pregnancy

Ask and observe is she has any of the following (check boxes)

- ☐ Dizziness
- ☐ Fatigue
- ☐ Tinnitus (tingling in ears)
- ☐ Palpitation

Danger signs check

Mobile Application



Screen for complications

INITIATE REFERRAL IMMEDIATELY:
Arrange transport, call health facility, fill referral form.

☒ OK. Please continue.

Referral based on
Danger sign
identified

Screen for complications

pregnancy > bp

ADVISE MOTHER: You are at higher risk because you have high blood pressure. You should plan to give birth at the hospital: mnazi_moja

☐ OK. Please continue.

Specific place of
delivery advice
based on medical
history

Additional Systems

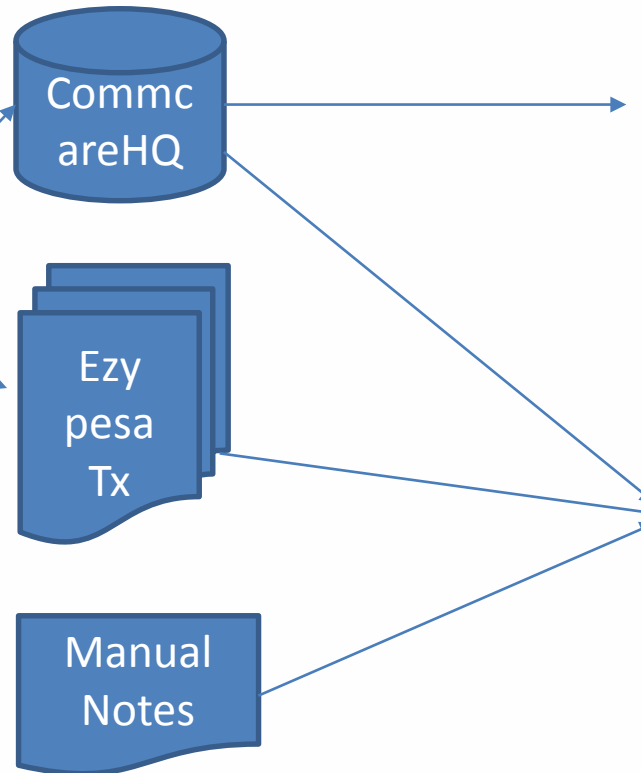


Zenji Dashboard



Financial Tracking

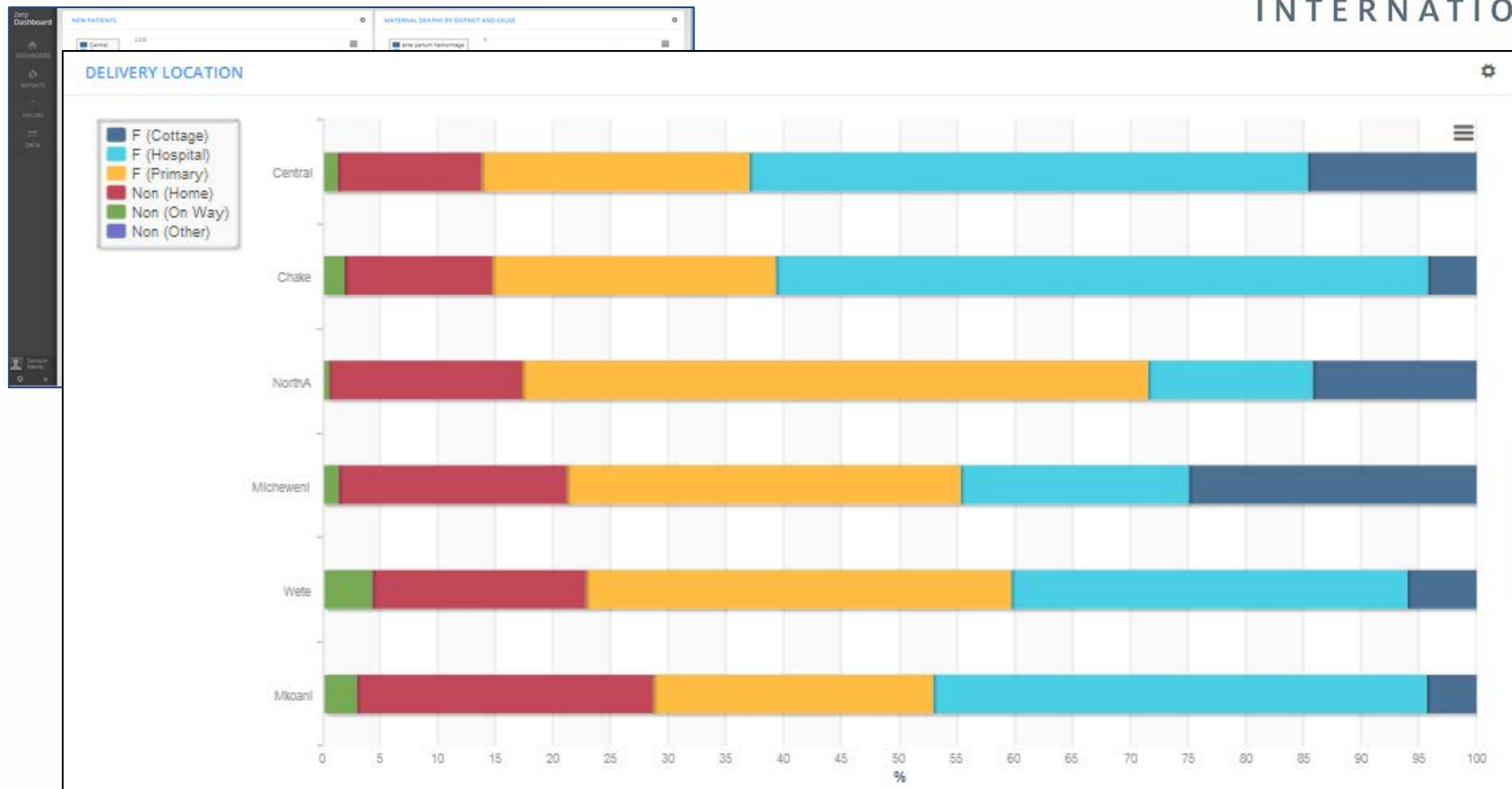
| Consolidated Transactions Referrals EzyPesa Manual Routes TDR PostPatent Incidents Costs | | | | | | | | | | | |
|--|-----------|-------|--------|------|---------|------|---------|--------|---------|---------|--|
| USERNAME | DISTRICT | PHONE | FUNDER | REF# | CREDITS | DATE | TX TYPE | AMOUNT | BALANCE | DATE | |
| abdalla abdalla | Miceni | | chr | 15 | 5 | | | | 32,000 | 70,000 | |
| afus ussi | Miceni | | iba | 136 | 27 | | | | 157,000 | 583,000 | |
| ahmed omar | Central | | chr | 10 | 5 | | | | 101,000 | 111,000 | |
| ali haji | Central | | chr | 20 | 7 | | | | 136,000 | 63,000 | |
| ali nassor | Central | | chr | 8 | 6 | | | | 113,000 | 37,000 | |
| ali shantif | Micheveni | | chr | 8 | 1 | | | | 121,000 | 21,000 | |
| alshamis ame | Central | | chr | 9 | 3 | | | | 120,000 | 153,000 | |
| ambae juma | Micheveni | | iba | 1 | 1 | | | | 124,000 | 7,000 | |
| amina aliini | Wite | | iba | 15 | 3 | | | | 63,000 | 176,000 | |
| amina bakar | NorthA | | iba | 46 | 8 | | | | 45,000 | 225,000 | |
| amina hashim | Miceni | | iba | 66 | 14 | | | | 102,000 | 356,000 | |



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Dashboard

Zenji Dashboard



Additional Systems

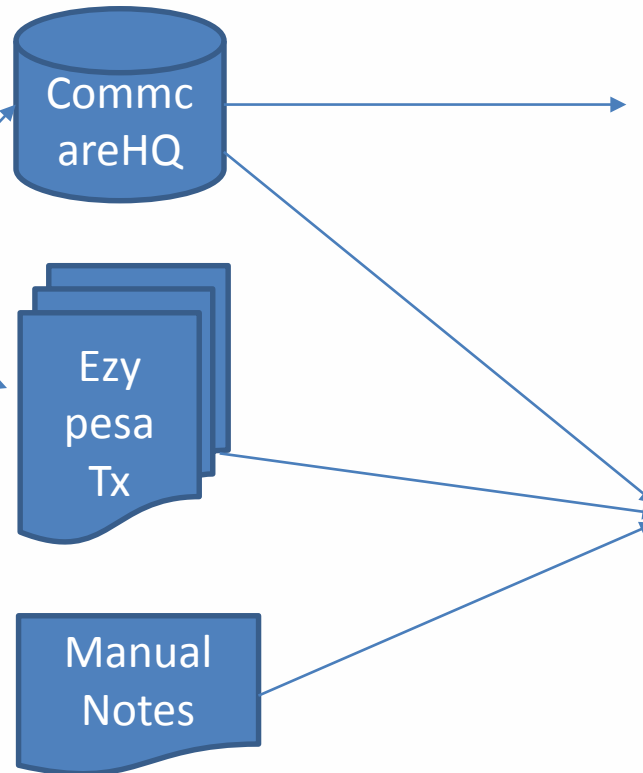


Zenji Dashboard



Financial Tracking

| Consolidated Transactions Referrals Exp/Pesa Manual Routes TDR PostPatent Incidents Costs | | | | | | | | | | |
|---|-----------|-------|--------|------|---------|------|---------|--------|---------|---------|
| USERNAME | DISTRICT | PHONE | FUNDER | REF# | CREDITS | DATE | TX TYPE | AMOUNT | BALANCE | BULK |
| abdalla abdalla | Miceni | | chr | 15 | 5 | | | | 32,000 | 70,000 |
| afus ussi | Miceni | | iba | 136 | 27 | | | | 157,000 | 583,000 |
| ahmed omar | Central | | chr | 10 | 5 | | | | 101,000 | 111,000 |
| ali haji | Central | | chr | 20 | 7 | | | | 136,000 | 63,000 |
| ali nassor | Central | | chr | 8 | 6 | | | | 113,000 | 37,000 |
| ali shantif | Micheveni | | chr | 8 | 1 | | | | 121,000 | 21,000 |
| alshamis ame | Central | | chr | 9 | 3 | | | | 120,000 | 153,000 |
| ambae juma | Micheveni | | iba | 1 | 1 | | | | 124,000 | 7,000 |
| amina alani | Wite | | iba | 15 | 3 | | | | 63,000 | 176,000 |
| amina bakar | NorthA | | iba | 46 | 8 | | | | 45,000 | 225,000 |
| amina hashim | Miceni | | iba | 66 | 14 | | | | 102,000 | 356,000 |



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Tracking: CHW Balances



Action needed

Consolidated Transactions Referrals EzyPesa Manual Routes TBAs Post Partum Incentives Costs

Export to CSV

| USERNAME | DISTRICT | PHONE | FUNDER | REFS | CREDITS | DATE | TX TYPE | AMOUNT | BALANCE | BURN |
|-------------------|-----------|-------|--------|------|---------|------|---------|--------|---------|---------|
| ▶ abdalla.abdalla | Mkoani | | chw | 15 | 5 | | | | 32,000 | 70,000 |
| ▶ afua.ussi | Mkoani | | tba | 139 | 27 | | | | 197,000 | 583,000 |
| ▶ ahmed.omar | Central | | chw | 10 | 5 | | | | 101,000 | 111,000 |
| ▶ ali.haji | Central | | chw | 20 | 7 | | | | 136,000 | 63,000 |
| ▶ ali.nassor | Central | | chw | 8 | 6 | | | | 113,000 | 37,000 |
| ▶ ali.shariff | Micheweni | | chw | 8 | 1 | | | | 121,000 | 21,000 |
| ▶ alkhamis.ame | Central | | chw | 9 | 3 | | | | 120,000 | 153,000 |
| ▶ ambae.juma | Micheweni | | tba | 1 | 1 | | | | 124,000 | 7,000 |
| ▶ amina.alawi | Wete | | tba | 15 | 3 | | | | 63,000 | 176,000 |
| ▶ amina.bakar | NorthA | | tba | 48 | 8 | | | | 45,000 | 225,000 |
| ▶ amina.hashim | Mkoani | | tba | 68 | 14 | | | | 102,000 | 358,000 |

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Tracking: Referrals



Action needed

| Apr 2014 | | | | | | | | | | | | Export to CSV |
|-----------|-----------------|-----------|-----------|-------------|-------------|--------------|--------------|------------------|-------------------|-----------|--------|---------------|
| DISTRICT | USERNAME | TYPE | TRANSPORT | DATE | ROUTE1_CODE | ROUTE1 PRICE | ROUTE2 PRICE | MOTHER_FIRSTNAME | MOTHER_FAMILYNAME | ALERT | DELETE | |
| Micheweni | hamida.suleiman | pregnancy | taxi | 27 Apr 2014 | TUM-CHA | 45,000 | 0 | | | | Delete | |
| Chake | asha.abdala | pregnancy | taxi | 14 Apr 2014 | CHG-CHA | 25,000 | 0 | | | | Delete | |
| Central | asha.khamis | pregnancy | taxi | 14 Apr 2014 | GHA-MWE | 34,000 | 0 | | | | Delete | |
| Central | asma.yussuf | L/D | taxi | 14 Apr 2014 | KAB-MNA | 43,000 | 0 | | | | Delete | |
| Micheweni | awena.kombo | L/D | taxi | 14 Apr 2014 | MAZ-MAZ | 7,000 | 0 | | | | Delete | |
| Micheweni | awena.kombo | pregnancy | taxi | 14 Apr 2014 | MAZ-MAZ | 7,000 | 0 | | | REF_COUNT | Delete | |
| Micheweni | awena.kombo | pregnancy | taxi | 14 Apr 2014 | MAZ-MAZ | 7,000 | 0 | | | | Delete | |
| Micheweni | awena.kombo | pregnancy | taxi | 14 Apr 2014 | MAZ-MAZ | 7,000 | 0 | | | | Delete | |
| Wete | biyumbe.othman | L/D | other | 14 Apr 2014 | | 0 | 0 | | | | Delete | |

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Tracking: Manual notes



| Upload (.csv) | | | | |
|---|-------------|---------|--------|---|
| <input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> | | | | |
| USERNAME | DATE | TX TYPE | AMOUNT | NOTE |
| ghanima.omar | 18 Mar 2014 | PAYMENT | 60,000 | user has 60000 more on phone than tracking unable to reconcile therefore adjusted |
| rehema.kombo | 02 Jun 2015 | PAYBACK | 25,000 | paid for time ramadhan haji to go KIE to MIC for 25000 |
| mtumwa.omar | 07 Mar 2015 | PAYBACK | 22,000 | paid for asia juma ali to go VIT to CHA for 22000 TEMP |
| wahida.seif | 07 Mar 2015 | PAYBACK | 20,000 | unable to reconcile user has 20000 less on phone than tracking so adjusted |
| afua.ussi | 03 Feb 2015 | PAYBACK | 27,000 | paid for tatu mohd to go KGN to MKO for 27000 TEMP |
| mtumwa.ame | 03 Feb 2015 | PAYBACK | 25,000 | paid for asha ali ussi to go to CHU to MKO for 25000 |
| thuwaiba.ali | 14 Apr 2014 | PAYBACK | 7,000 | paid for mbikao kombo zume to go MAZ to MAZ for 7000 TEMP |
| thuwaiba.ali | 14 Apr 2014 | PAYBACK | 7,000 | paid for sada iddi to go MAZ to MAZ for 7000 TEMP |
| thuwaiba.ali | 13 Apr 2014 | PAYBACK | 7,000 | paid for maryam said to go MAZ to MAZ for 7000 TEMP |
| thuwaiba.ali | 13 Apr 2014 | PAYBACK | 7,000 | paid for maimuna hassan to go MAZ to MAZ for 7000 TEMP |
| thuwaiba.ali | 13 Apr 2014 | PAYBACK | 7,000 | paid for fatma salum ali to go MAZ to MAZ for 7000 TEMP |
| fatma.ali | 09 Apr 2014 | PAYBACK | 40,000 | paid for asha hamad faki to go SHV to WET for 40000 TEMP |
| biubwa.ali | 08 Apr 2014 | PAYBACK | 13,000 | paid for mtumwa juma to go MSU to KON for 13000 TEMP |
| mwaka.salim | 06 Apr 2014 | PAYBACK | 27,000 | paid for khadija sleman to go KAN to MKO for 27000 TEMP |
| asha.said | 04 Apr 2014 | PAYMENT | 74,000 | user has 74000 on phone than tracking unable to reconcile therefore adjusted |
| sada.kombo | 02 Apr 2014 | PAYBACK | 15,000 | paid for hadija ali to go MAZ to MIC for 15000 TEMP |

Tracking: Post partum



Action needed

| Apr 2014 Export to CSV | | | | | | | | | | |
|-------------------------------------|------------------|---------------------------|-----------|-------------|----------|----------|-------------------|------------------|------------------|--------------|
| VISIT | USERNAME | PLACE_OF_DELIVERY | MODE | DELIVERY | FORM 1 | FORM 2 | MOTHER_FAMILYNAME | MOTHER_FIRSTNAME | STATUS_OF_MOTHER | CHILD_STATUS |
| 1 | wanu.ali | facility_primary | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | wanu.ali | facility_primary | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | amina.hashim | Hospital | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | siti.salumu | Home | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | jamila.juma | Hospital | normal | 10 Apr 2014 | + 2 days | | / | | alive | stillbirth |
| 1 | jamila.juma | facility_cottage_hospital | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | fatuma.mohamed | Hospital | c-section | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | mwana.omar | Home | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | mariam.habib | Home | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | hadia.suleiman | Home | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | rahma.alley | Hospital | c-section | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | maryam.kombo | facility_cottage_hospital | c-section | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | khadija.tiputipu | Hospital | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | hadia.shehe | facility_primary | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | halima.ali | facility_cottage_hospital | c-section | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | time.said | facility_cottage_hospital | normal | 10 Apr 2014 | + 2 days | | / | | alive | alive |
| 1 | khadija.pandu | Home | normal | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | asma.yussuf | Hospital | normal | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | sada.kombo | facility_primary | normal | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | hadia.rashid | facility_cottage_hospital | c-section | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | subira.haji | facility_cottage_hospital | normal | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | biyamu.mbarouk | facility_cottage_hospital | normal | 10 Apr 2014 | + 3 days | | / | | alive | alive |
| 1 | bimkubwa.khamis | Home | normal | 10 Apr 2014 | + 4 days | | / | | alive | alive |
| 1 & 2 | mwajuma.abdalla | facility_primary | normal | 10 Apr 2014 | + 4 days | + 4 days | / | | alive | alive |

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Tracking: CHW records



Record of all
referrals and
payments by client

| Apr 2014 | | | | | | | | | | | | | Export to CSV |
|----------|-------|---------------|-------|-------------------|--------|-------------|-------------|-------------|-------------------|------------------|------------------|--------------|---------------|
| AMOUNT | VISIT | USERNAME | PHONE | PLACE_OF_DELIVERY | MODE | DELIVERY | FORM 1 | FORM 2 | MOTHER_FAMILYNAME | MOTHER_FIRSTNAME | STATUS_OF_MOTHER | CHILD_STUTAS | REFS |
| ▼24,000 | | afua.ussi | | | | | | | | | | | |
| 10,000 | 1 & 2 | afua.ussi | | Hospital | normal | 26 Mar 2014 | 28 Mar 2014 | 02 Apr 2014 | | | alive | alive | 4 |
| 2,000 | 1 & 2 | afua.ussi | | Home | normal | 26 Mar 2014 | 28 Mar 2014 | 02 Apr 2014 | | | alive | alive | 5 |
| 10,000 | 1 & 2 | afua.ussi | | Hospital | normal | 31 Mar 2014 | 02 Apr 2014 | 10 Apr 2014 | | | alive | alive | 3 |
| 2,000 | 1 & 2 | afua.ussi | | Home | normal | 01 Apr 2014 | 03 Apr 2014 | 10 Apr 2014 | | | alive | alive | 3 |
| ►50,000 | | amina.alawi | | | | | | | | | | | |
| ►50,000 | | amina.bakar | | | | | | | | | | | |
| ►30,000 | | amina.hashim | | | | | | | | | | | |
| ►10,000 | | amina.mati | | | | | | | | | | | |
| ►104,000 | | asha.abdala | | | | | | | | | | | |
| ►30,000 | | asha.ali | | | | | | | | | | | |
| ►80,000 | | asha.haji | | | | | | | | | | | |
| ►30,000 | | asha.hamad | | | | | | | | | | | |
| ►40,000 | | asha.khamis | | | | | | | | | | | |
| ►6,000 | | asha.omar | | | | | | | | | | | |
| ►80,000 | | asha.othuman | | | | | | | | | | | |
| ►52,000 | | asha.said | | | | | | | | | | | |
| ►20,000 | | asia.farahani | | | | | | | | | | | |
| ►10,000 | | asia.isa | | | | | | | | | | | |

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Results: Phase II



- 77% facility delivery rate for over 5,800 women who delivered
 - Even higher (82%) in Pemba vs baseline (32%)
- For those where last delivery place was home, now 66% facility and 4% on the way
- Increased use of primary facilities, from 4% (HMIS) to 44% of deliveries
- Post-partum follow up rates from 36% to 91%

Stories from the field



- Unaware that she was pregnant with twins
- When labor started her family called the TBA who arranged transport immediately
- She began to have blood pressure problems and the hospital staff transferred her to Wete for a c-section
- She gave birth to two healthy baby boys, kept at the hospital for 5 days for continued evaluation
- She says that had she not been in the project, she would have given birth at home; was unsure if they would have found transport once problems began



Stories from the field

- Past home deliveries were all unsuccessful
- Referred by TBA to Micheweni cottage where she had a prolonged labour.
- This time, she was induced and successfully delivered a healthy baby boy
- She indicated that she will not consider delivering at home during future pregnancies.



Challenges



- Pockets of Home Births
 - *Community outreach*
- Late registrations
 - *Active case finding, community meeting attendance*
- Forecasting transport costs
 - *Use Burn rate vs EDD*
- Tracking funds
 - *Develop tracking system*
- Supervision at scale
 - *Remote supervision through dashboards / phone*
- Negotiating transport rates
 - *Move from group to individual negotiations*

Challenges



- Mobile money system reliability
 - *Improved communication with Zantel*
- Power and network connectivity
 - *Solar chargers and multiple networks*
- Hidden costs at health facilities
 - *Communicate with MOH and encourage savings*
- Increased facility workload
 - *Communicate with MCH stakeholders and advocate*
 - *Ensure facilities are notified of referrals*

Efforts to mainstream



- Discussions with iRCH unit (MOH)
- Discussions with each district
- Director of Planning
- Districts encouraged to include activities in their plans of action

Next steps



- Continue efforts to mainstream into MOH
- Continue to explore integration with other mHealth / maternal health interventions
- Adapt program as transport improves
- Explore various financial models
 - District funding
 - Mobile wallets
 - Additional partners

Lessons learned: mMoney



- Wide network coverage \neq wide mobile money network
- Need to work closely with Telecoms to strengthen network, market services
- Mobile money systems still have opportunity for improvement
 - Online systems could be more user friendly
 - Systems not always available
 - Cash management at pay points
- Learn about fees up front and be clear who will pay

Lessons learned: General



- Don't let technology push the program
 - Sometimes a phone is just a phone – and that's great!
- Field refinement key
- Importance of involving all stakeholders
- Continuous need for advocacy and to address pockets of behavioral resistance
- Make systems rules based but allow for flexibility

Recommendations



- Look for ways to integrate mMoney or mVouchers into programs
- Jointly define programmatic requirements for mMoney system and approach operators
- Identify opportunities to share resources across programs
 - Hardware, trainings, data, etc.

Thank you!



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