CRADLE software platform

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The problem

300,000 maternal deaths = 2 x Boeing 747 per DAY
The problem

80% of maternal deaths occur in low income settings
With monitoring & early detection of deteriorating vital signs the majority of these deaths are preventable.

But this is a CHALLENGE in LMICs, due to a lack of functional, accurate blood pressure machines and inadequate training of frontline health workers.
The CRADLE Vital Signs Alert
A solution: The CRADLE Vital Signs Alert

A hand held, portable vital signs alert device

Accurately measures BLOOD PRESSURE, HEART RATE & calculates SHOCK INDEX.

Early warning ‘traffic light’ system to alert user (& patient) to abnormal reading
CRADLE VSA 1 of 30 innovations selected for PATH’s Innovation Countdown 2030 report as a lifesaving innovation with great promise to transform global health by 2030.

Up to 60% reduction in maternal mortality & 40% reduction in major morbidity in sites where CRADLE VSA incorporated into routine maternity care.
A solution: The CRADLE Vital Signs Alert: integrated into maternity care & NCD monitoring
A solution: The CRADLE Vital Signs Alert: 865 CRADLE devices distributed; 647 health workers trained.

CHALLENGES identified:
1. Lack of solar charging
2. Lack of health education in VHTs & pregnant women
3. Lack of safe, efficient referral pathways
Lack of safe, efficient referral pathways...

**Choke point**
Incomplete referral forms
Forms lost

**Choke point**
Health workers don’t complete referral forms.
Forms not returned to VHTs

**Choke point**
VHTs unaccountable & UNHCR unable to collate data
A solution: Challenges to implementation. Multiple choke points can lead to...
The CRADLE Capture App
A MODIFIED solution: the CRADLE Capture App

882 measurements logged so far during our pilot
A MODIFIED solution: the CRADLE Capture App

882 measurements logged so far during our pilot
Where YOU come in
A MODIFIED solution: CRADLE Software Platform.

Minimum Viable Product:

System Components

1. **Android App ‘CRADLE VSA Support App’**: Allows VHTs in the field to take readings and sync with server. Works well offline.

2. **Web interface**: Allows health care workers to login, upload readings & manage their patients.

3. **Server**: back-end to store data, server web interface, and sync with app.
A MODIFIED solution: CRADLE Software Platform.

Minimum Viable Product: referral tool

★ VHTs sync cradle readings that they have collected and recorded on App with server.
  ○ App uploads (syncs) reading to server when VHT takes or edits (if internet connection).
  ○ App periodically downloads (syncs) readings from server and other details accessible to VHT.
  ○ App uploads (syncs) reading to server when VHT makes referral, (internet connection (if possible), or SMS (if not).

★ Healthworkers (at facility) can access referral in real time.

★ Healthworkers (at facility) can login to enter readings, diagnosis/treatment +/- follow-up required by VHT to ‘close referral loop’.

★ Inbuilt decision support algorithm to prompt most appropriate management depending on age/pregnant/non-pregnant/ethnicity/suspected diagnosis etc.
A MODIFIED solution: CRADLE Software Platform.

Minimum Viable Product: Individual patient monitoring

★ Multiple readings for one patient stored on platform and graphs can be created to show blood pressure trends over time.

★ Record medication, date started/ discontinued/ dose/ side effects.

★ Alert function for abnormal readings.

★ Alert function to remind VHTs to check bp. (for example if a patient is having weekly bp monitoring). - VHT can select ‘daily’, ‘alternate day’, ‘weekly’ or ‘monthly’ etc reminders, depending on how regular monitoring is needed.
A MODIFIED solution: CRADLE Software Platform.

Minimum Viable Product: VHT activity & community BP stats monitoring

- VHT/ supervisor can generate monthly reports.

  For each referral the VHT has made, they can see:
  Health centre referred to
  Distance from health facility
  Mode of transport to reach health facility
A MODIFIED solution: CRADLE Software Platform.

Minimum Viable Product: Education tool

- Access to learning materials (and so have access and permission to use all of their films in addition to the CRADLE training video.)
  - App includes videos with advice for VHTs
  - Web interface includes videos with advice for health care workers.
A MODIFIED solution: CRADLE Software Platform.

Important (not essential) features:

- Feature to enable handover between VHTs - sometimes VHTs go on leave. This would allow them to allocate a VHT colleague to monitor their patients, for example daily BP measurements.
- App/server can track GPS location of readings & health centres.
A MODIFIED solution: CRADLE Software Platform.

Future ‘Unicorn’ features:

★ Interactive advice platform. Virtual Consultation

★ Feature to link to other important health services in the settlement. (Vaccinations, malnutrition screening, malaria prevention.

★ Inclusion of guidelines for community health workers/common conditions? For example: malaria, pneumonia.
Thank you

Put simply, your work could help save lives.

Questions?
Useful resources

CRADLE Capture App

Cradle Training Videos:

Pregnant patients: CRADLE training video

Non Pregnant patients: CRADLE training video non-pregnant

Health worker version: CRADLE training video skilled healthworker