

Job Aid Smart Apps for Community Health Workers

Change seminar
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Project overview: paper to app

How To Do the Rapid Test for Malaria

Modified for training in the use of the **Generic Pf Test** for falciparum malaria

Collect:

- 1. **NEW** unopened test packet
- 2. **NEW** unopened alcohol swab
- 3. **NEW** unopened lancet
- 4. **NEW** pair of disposable gloves
- 5. Buffer
- 6. Timer

READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN.

- Check the expiry date on the test packet.
- Put on the gloves. Use new gloves for each patient.
- Open the packet and remove:
 - i. Test
 - ii. Capillary tube
 - iii. Disposable buffer
- Write the patient's name on the test packet.
- Open the alcohol swab. Grasp the 4th finger on the patient's left hand. Clean the finger with the alcohol swab. Allow the finger to dry before pricking.
- Open the lancet. Pick patient's finger to get a drop of blood.
- Discard the lancet in the Sharps Box immediately after pricking. **Do not set the lancet down before discarding it.**
- Use the capillary tube to pick the drop of blood into the square hole marked "A".
- Use the capillary tube to put the drop of blood into the square hole marked "B".
- Add buffer into the round hole marked "B".
- Wait **15** minutes after adding buffer. **Count correct number of drops.**
- Read test results. **(NOTE: Do Not read the test sooner than 15 minutes after adding the buffer. Increase per FALSE results.)**

14. How to read the test results:

POSITIVE
A line near letter "C" and a line near letter "T" means the patient is POSITIVE for malaria.

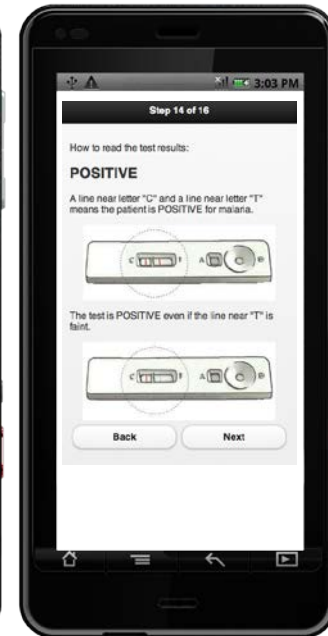
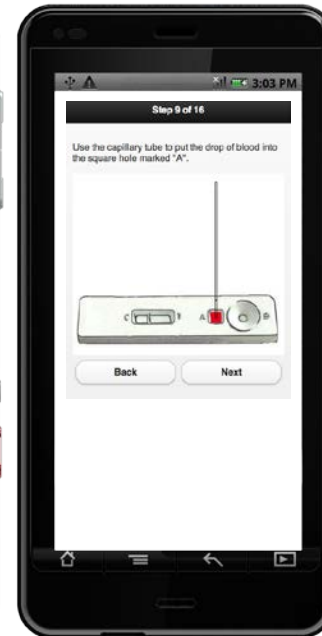
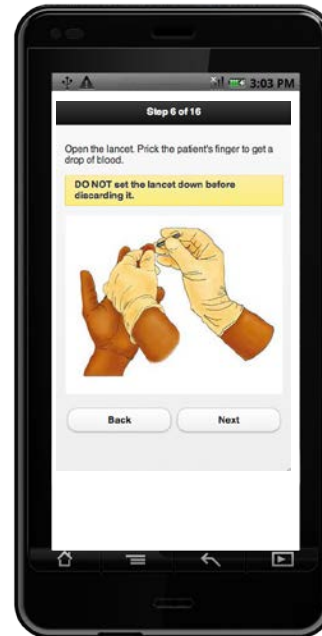
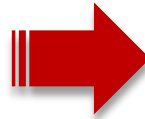
NEGATIVE
A line near letter "C" and **NO LINE** near letter "T" means the patient **DOES NOT** have malaria.

INVALID RESULT
NO LINE near letter "C" and one or no line near letter "T" means the test is INVALID. Repeat the test using a new **TEST** if no control line appears.

NOTE: Each test can be used ONLY ONE TIME.
Do not try to use the test more than once.

15. Dispose of the gloves, alcohol swab, sharps and test kit and packaging in a non-sharp waste container.

16. Record the test results in your CMM register. Dispose of cassette in non-sharp waste container.



Field work

Winter quarter work

- Interviews and testing with public health professionals.
- Two app prototypes built using ODK.

Important app capabilities

- Clear wayfinding—"next" button and swipe
- Decision trees
- Calculators
- Timers
- Animated images or videos




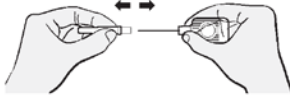
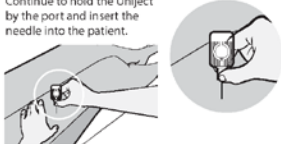



Paper job aids are still important

- Still important to have paper as back up.
- Some job aids are just as good (or better) in paper format.



Usability

- Apps may be challenging for some users.

Using Oxytocin in the Uniject™ Injection System (10 IU in 1 ml)

- 1** Check the time-temperature indicator and confirm the oxytocin is ok to use. If not, discard and get a new Uniject containing oxytocin.

- 2** Open the foil pouch and remove the Uniject.

- 3** Activate the Uniject.
 - Hold the Uniject by the port with the forefinger and thumb.
 - With a firm, rapid movement push the needle shield into the port.
 - Continue to push firmly until the gap between the needle shield and port is closed.
- 4** Remove the needle cap.

- 5** Continue to hold the Uniject by the port and insert the needle into the patient.

- 6** Squeeze the reservoir firmly to inject the oxytocin. After the reservoir completely collapses, remove the Uniject.

- 7** Do not re-cap the used Uniject.

- 8** Discard the used Uniject according to established medical waste disposal procedures.


* Uniject is a trademark of BD.
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Implementation

Key goals

- Develop three job aid smart apps.
- Focus on key widgets:
 - Calculators, timers, decision trees.
- Refine decision tree functionality.

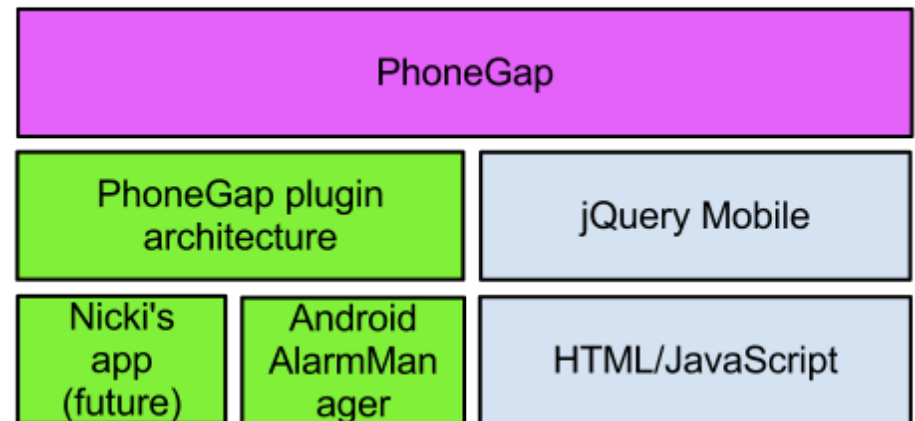
Architecture

- Rapid diagnostic test apps:
 - Web apps using jQuery Mobile.
 - Deployed as Android app using PhoneGap
- Eclampsia prevention app:
 - Native Android app

Future work

- App builder for non-programmers (templating system).
- Integrate Nicki's optical recognition of rapid diagnostic test results.

Rapid diagnostic test app architecture



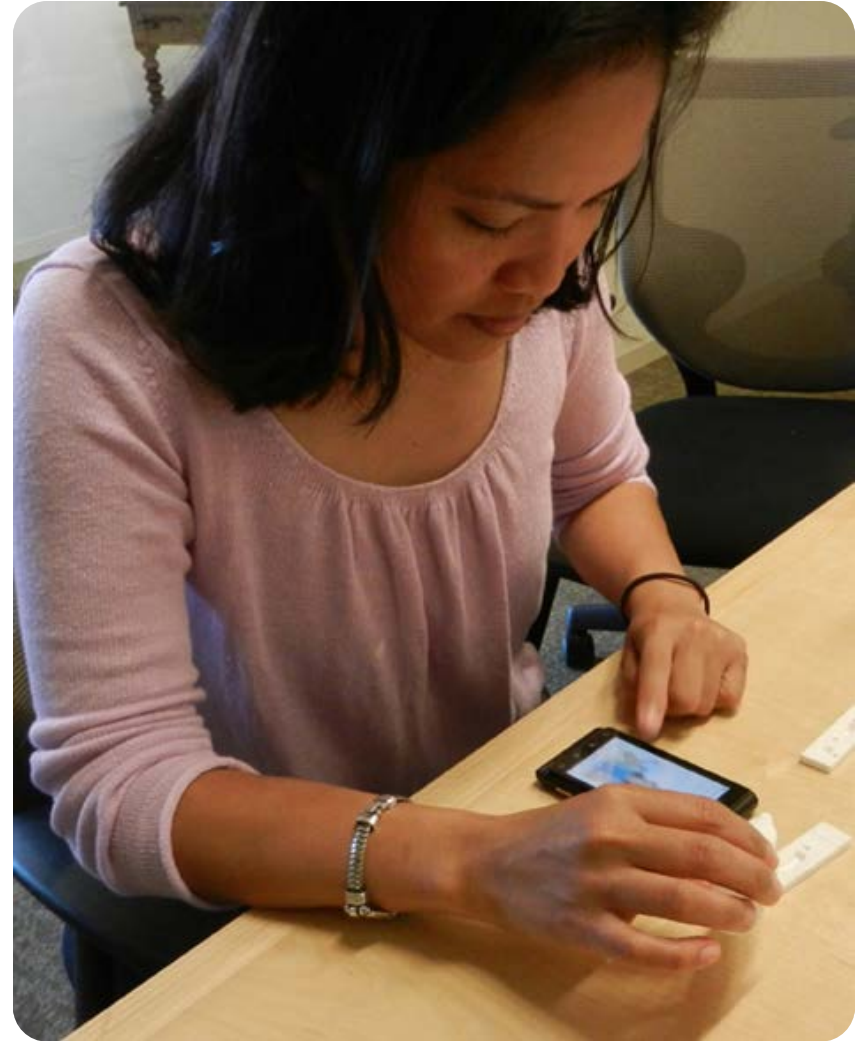
Job aid apps built so far

Job aid apps

- Malaria rapid diagnostic test
- HIV rapid diagnostic test
- Eclampsia prevention/treatment

Key widgets

- Dosage calculator
- Timers
- Decision trees



Malaria rapid diagnostic test

How To Do the Rapid Test for Malaria

Modified for training in the use of the **Generic Pf Test** for *falciparum* malaria

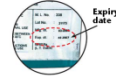


- Collect:
- NEW** unopened test packet
 - NEW** unopened alcohol swab
 - NEW** unopened lancet
 - NEW** pair of disposable gloves
 - Buffer
 - Timer



READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN.

- Check the expiry date on the test packet.
- Put on the gloves. Use new gloves for each patient.
- Open the packet and remove:
- Write the patient's name on the test.



Expiry date



- Test
- Capillary tube
- Desiccant sachet



- Open the alcohol swab. Grasp the 4th finger on the patient's left hand. Clean the finger with the alcohol swab. Allow the finger to dry before pricking.
- Open the lancet. Prick patient's finger to get a drop of blood.
- Discard the lancet in the Sharp Box immediately after pricking finger. **Do not set the lancet down before discarding it.**
- Use the capillary tube to collect the drop of blood.



- Use the capillary tube to put the drop of blood into the square hole marked "A."
- Discard the capillary tube in the Sharp Box.
- Add buffer into the round hole marked "B."
- Wait **15 minutes** after adding buffer.



Count correct number of drops



14. How to read the test results:

POSITIVE
A line near letter "C" and a line near letter "T" means the patient is **POSITIVE** for malaria.



P. falciparum

The test is **positive** even if the line near "T" is faint.)



P. falciparum (faint +)

NEGATIVE
A line near letter "C" and **NO LINE** near letter "T" means the patient **DOES NOT** have malaria.



Negative

INVALID RESULT
NO LINE near letter "C" and one or no line near letter "T" means the test is **INVALID**.



Repeat the test using a new RDT if no control line appears.



If no line appears near the letter "C," repeat the test using a **NEW unopened** test packet and a **NEW unopened** lancet.

- Dispose of the gloves, alcohol swab, desiccant sachet and packaging in a non-sharp waste container.
- Record the test results in your CHW register. Dispose of cassette in non-sharp waste container.



NOTE: Each test can be used ONLY ONE TIME.
Do not try to use the test more than once.



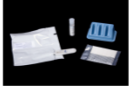






OraQuick HIV rapid diagnostic test

OraQuick HIV Rapid Test

For use with oral fluids
Store Kits: 2 - 30° C

- Check kit before use. Use only items that have not expired or been damaged.
- Bring kit and previously stored specimens to room temperature prior to use.
- Always use universal safety precautions when handling specimens. Keep work areas clean and organized.

This outline is not intended to replace the product insert or your standard operating procedure (SOP).

-  1. Collect test items and other necessary lab supplies.
-  2. Set reusable stand on a flat, level surface. Partially remove device from package and label device and developer vial with client identification number.
-  3. Carefully uncup the developer vial and place vial into the stand.
-  4. Instruct the client to use the pad end of the test device to swab completely across the outside of the upper and lower gums, one time around.
-  5. Insert the device pad completely into the vial with the result window facing forward.
-  6. Wait 20 minutes (no longer than 40 min.) before reading the results.
-  7. Read and record the results and other pertinent info on the worksheet.

OraQuick HIV Rapid Test Results

- Reactive**
2 lines of any intensity appear in both the control and test areas.
- Non-reactive**
1 line appears in the control area and no line in the test area.
- Invalid**
No line appears in the control area. Do not report invalid results. Repeat test with a new test device even if a line appears in the test area.



Use of trade names and commercial sources is for identification only and does not imply endorsement by WHO, the Public Health Service, or by the U.S. Department of Health and Human Services (2005).












OraQuick HIV Rapid Test

For use with whole blood, serum or plasma
Store Kits: 2 - 30° C

- Check kit before use. Use only items that have not expired or been damaged.
- Bring kit and previously stored specimens to room temperature prior to use.
- Always use universal safety precautions when handling specimens. Keep work areas clean and organized.

This outline is not intended to replace the product insert or your standard operating procedure (SOP).

-  1. Collect test items and other necessary lab supplies.
-  2. Set reusable stand on a flat, level surface. Partially remove device from package and label device and the developer vial with client identification number.
-  3. Carefully uncup the developer vial and place vial into the stand.
-  4. Collect approximately 5 µl of specimen using a new disposable loop.
-  5. Transfer the collected specimen to the vial.
-  6. Stir the specimen in the vial with the loop.
-  7. Insert the device pad completely into the vial with the result window facing forward.
-  8. Wait 20 minutes (no longer than 40 min.) before reading the results.
-  9. Read and record the results and other pertinent info on the worksheet.

OraQuick HIV Rapid Test Results

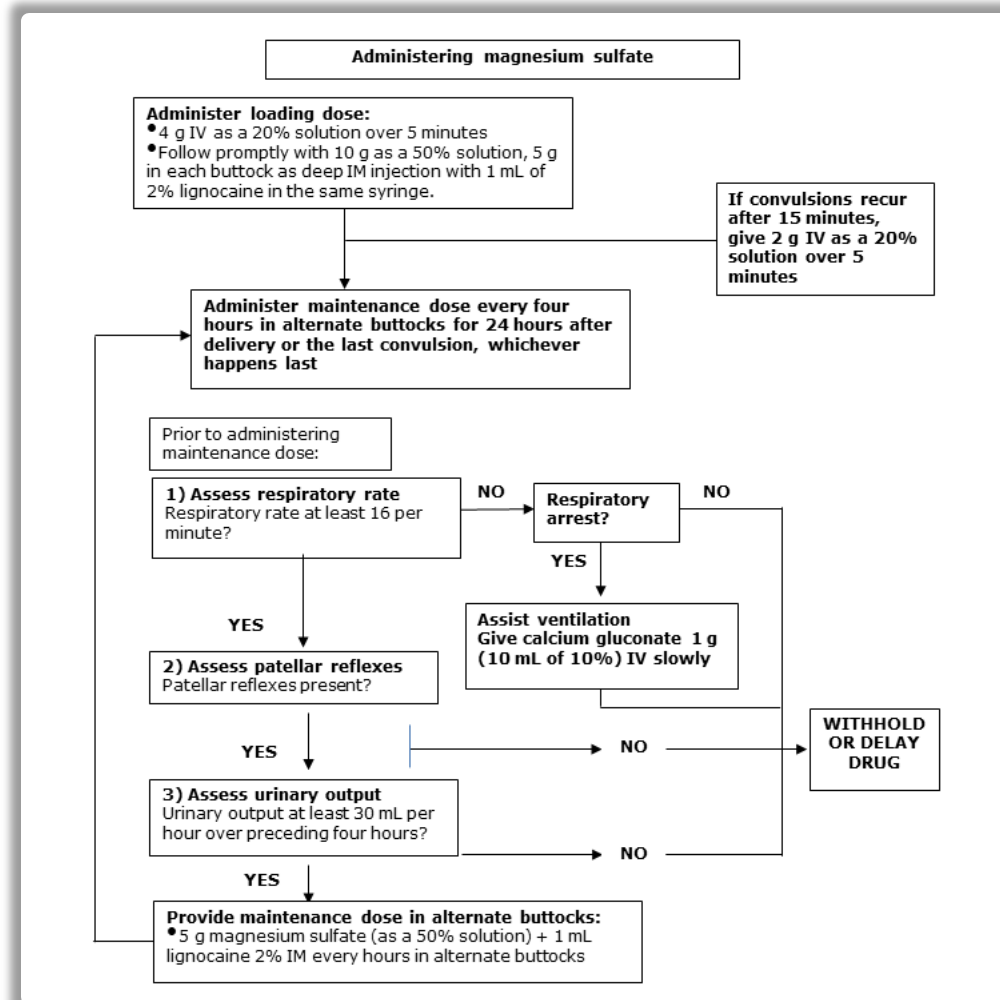
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Eclampsia prevention using magnesium sulfate



Evaluation

Testing our solution

- User testing of app functionality.
- Comparison of paper job aids with apps—user preferences.

Criteria we are measuring

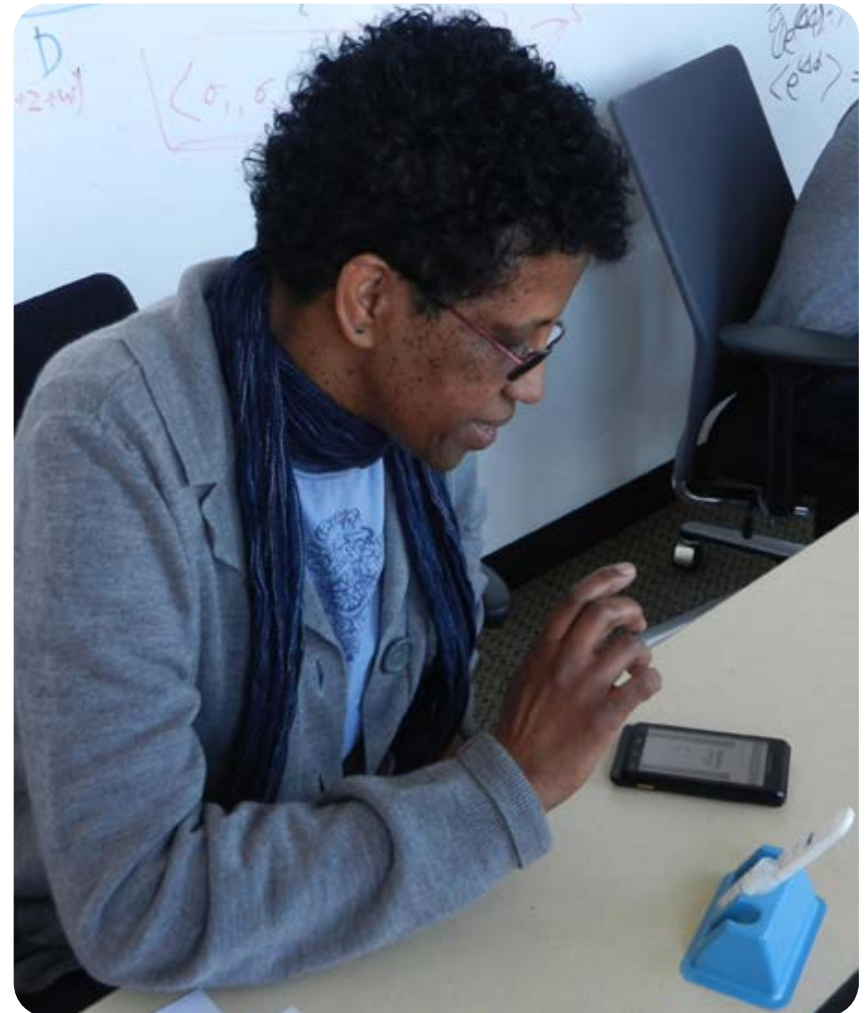
- Ability to navigate app while conducting procedure.
- Ability to complete complex tasks—calculations and reading test results.
- General usability issues.

Usability test participants

- Users familiar with international and/or health contexts.

Target users for final build

- Community health workers in low-resource settings.



Future work

Work not yet implemented

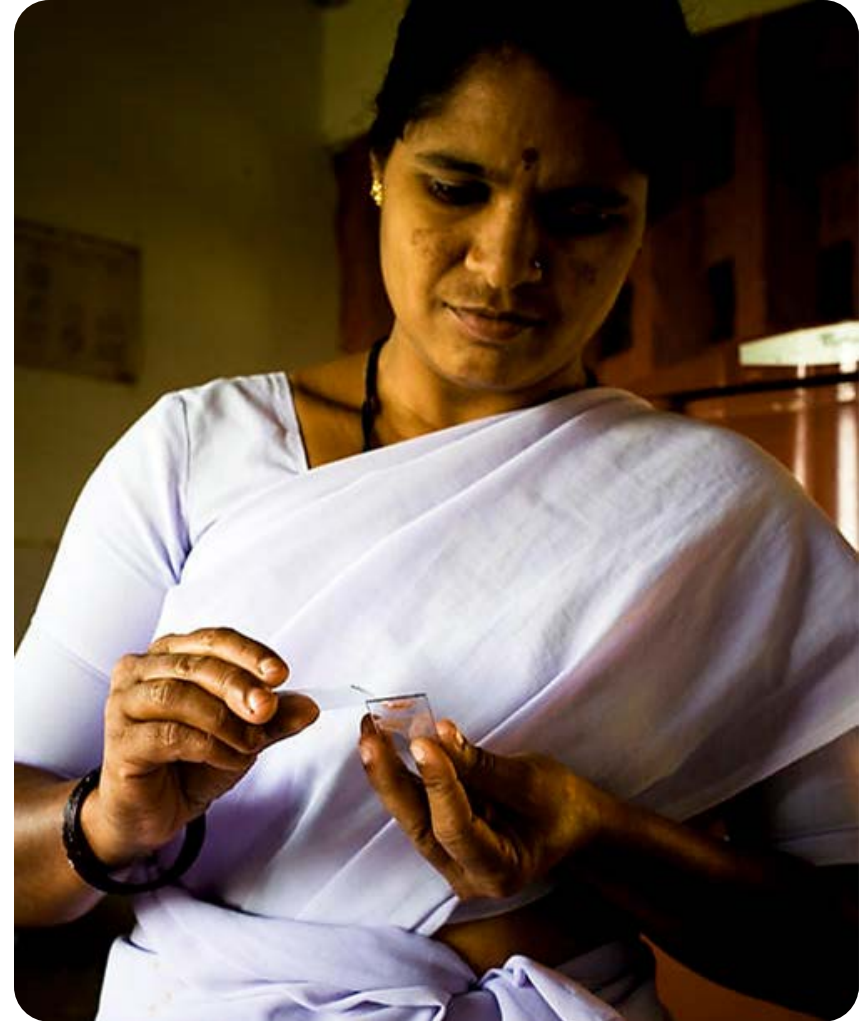
- Setting timers to run in the background and later notify users.
- How to localize the app easily (e.g., language settings).
- Workflows that can be scaled up to an app builder.

Anticipated problems

- Availability of smart phones.
- Maintaining the built application.
- Determining with *which users* and in *what context* this is worthwhile.

Remaining unknowns

- How could apps play a role in health worker training?
- When and how could apps be feasible and cost-effective in global public health systems?



Thanks!
Questions?

