Job Aid
Smart Apps
for Community Health Workers

Designing Technology for Resource-Constrained Environments
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Project overview

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

1. Check the outer temperature indicator and confirm the uniject is in one of these segments.
2. Open the lid 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. Insert the uniject into the port and ensure the needle shield and port are aligned.
6. Distribute the uniject:
   - Green: full dose
   - Yellow: half dose
   - White: quarter dose
   - No color: no dose
7. Draw up the dose:
   - Green: full dose
   - Yellow: half dose
   - White: quarter dose
8. Discard the used uniject:
   - Green: full dose
   - Yellow: half dose
   - White: quarter dose

What does the temperature indicator on the package look like?

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

Do not recap the used uniject.
Field work and initial prototypes

Work last quarter

• Interviews and rapid usability testing with 10 public health professionals.
• Two app prototypes built using ODK.

Important app elements

• Overview of steps before beginning
• Clear wayfinding—"next" button in addition to swipe
• Calculators
• Timers
• Animated images or videos
• Decision trees

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

• Smart apps may be challenging to use for some people and/or in certain contexts.
Implementation plan overview

Key goals
• Develop at least 2 job aid smart apps.
• Focus on key widgets: calculators, timers.
• Refine decision tree functionality.

Approach/architecture
• Android app loads job aids dynamically as mini web sites.
• WebView to display HTML, control flow in XML (in progress).
• Next steps: integration with "smart" widgets using Android Activity/Intent mechanism.

Change of plans
• We've decided that the app builder is too ambitious for this quarter, but we are keeping it in mind for future work.
What we’ve accomplished so far

Work so far

• Malaria rapid diagnostic test job aid initial draft prototype developed.
• Magnesium sulfate job aid in progress.
• Widgets in progress:
  o Magnesium sulfate dosage calculator
  o Timer

Work to do

• Branching work—decision trees.
• Integrating animated images or videos.

Interesting possibility

• Potential to integrate Nicki's work on optical recognition of rapid diagnostic test results.
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

Step 5 of 16
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.
Eclampsia prevention using magnesium sulfate

What is the % concentration of MgSO₄ available?

- 20%
- 50%
- 50%
- Other

What is the final % concentration of MgSO₄ required?

- 20%
- 50%
- 50%
- Other

**NOTE:** The IV solution injection should be given slowly for 5 minutes.

**Step 1/3:** Extract XXXX ml of YYYYY ml MgSO₄ solution into a new syringe from the vial.

**Step 2/3:** Add ZZZZZ ml of sterile water to the syringe.

**Step 3/3:** Give the IV solution slowly for 5 minutes.

Does the available IM Solution have a concentration greater than or equal to 50%?

- YES
- NO

**NOTE:** You should have IM solution available with concentration AT LEAST 50% to prepare an IM Solution. If not available, 1gm of 20% IV solution should be given as an injection to the patient.
Evaluation plan

How will we ensure that our solution solves the problem?
• User testing of app functionality in general.
• Comparison of paper job aids with apps—user preferences.

What criteria will you measure?
• Understanding the procedure overview before beginning.
• Ability to navigate while conducting the procedure (e.g., holding smart phone and syringe at the same time).
• Ability to complete complex tasks: calculations, reading test results.

Target users for the first build
• Health professionals in Seattle/King County area.

User testing dates
• Week 7

Target users for final build
• Eclampsia prevention app: community health workers.
• Malaria rapid diagnostic test app: community health workers in malarial regions (e.g., African countries) and Peru.
What’s left to do?

Components/capabilities not yet implemented
- How to localize the app easily (e.g., language settings).
- Setting up workflows that can eventually be scaled up to an app builder.

Anticipated problems?
- Availability of smart phones and maintaining the built application?
- Is this a worthwhile replacement/supplement with paper based job aids?

Remaining unknowns
- Usability issues that we haven't thought of yet:
  - For example, smart apps not ideal for older community health workers who are unfamiliar with a smart phone interface.
- How could this intervention play a role in health worker training?
- When and how could apps be feasible and cost-effective in global public health systems?

How we will address completing missing elements and mitigating risk?
- User testing, pilot feedback sessions, and interviews.
Timeline for remainder of quarter

Weeks 1-5:
- Finalize at least 2 job aid smart apps.
- Key widgets:
  - Magnesium sulfate dosage calculator.
  - Malaria rapid diagnostic test timer.
- Refine decision tree functionality.

Week 6:
- Job aids and widgets developed and ready for user testing.

Week 7:
- Conduct user testing of job aid smart apps (widgets).

Weeks 8-9:
- Refine based on user feedback.

Week 10:
- Have final prototypes complete.
Thanks!

Questions?