MOBILE DIAGNOSTICS FOR CERVICAL CANCER

MILESTONE 2: NEEDS ASSESSMENT

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Cervical Cancer in Zambia

- Increasing at an alarming rate
- #1 killer of women in Zambia
- Approximately 30,000 women have been treated in the last 2 years out of 4.5 million

WHAT HAS BEEN DONE SO FAR?

Map: CIA World Factbook
FOCUS AREAS FOR SURVEY

DATA INPUT
- USER-FRIENDLY DEVICE
- RELIABILITY OF EQUIP
- EASE OF DATA COLLECTION

DATA PROCESSING
- UPLOADING IMAGES
- INFO. STORAGE AND ACCESS
- CONNECTIVITY
- EFFICIENCY OF WORKFLOW

OUTPUT/FEEDBACK
- DIAGNOSIS PROCEDURE
- FEEDBACK TIME/ RESULTS
- PRIVACY OF MEDICAL RECORDS
- SUSTAINABILITY ???
- SCALABILITY ???
CURRENT PROCESS FLOW

- Fill out paper form
- Nurse takes photographs
- Review on Camera LCD or TV
- Plug in USB or Flash Card
- Send paper document to office for Data entry
- Write file information on paper record
- Rename File(s)
- Download images to laptop
- Type up email, embed images, send to doctor
- Wait for Doctor feedback & return email
- Treat patient
PRESENT STATUS

- Solution is COMPLEX
- Low bandwidth (spotty connection in Zambia)
- Functioning prototype tested has excessive User Confirmation (Lengthy, annoying)
- Nurses sufficiently satisfied with current image quality. e.g. Olympus camera 7 MP
- Restriction to single image capture and transmission at a time

- Patient-ID-to-image indexing and matching currently done in a paper-based system
- Work flow is complicated, slow
- 11 pilot clinics but very few trained nurses
- Cell phones are extensively used
- Only 3 medical doctors at CIDRZ
- Small patient population reached
WHAT INFORMATION WE NEED?

SAMPLE QUESTIONS.....

FOR CIDRZ
• Sources of Funding? What’s the Budget?
• How is population being reached? Campaigns? Ads?
• Long term goals? Sustainability initiatives?

FOR NURSES
• Time spent during process? Current Challenges?
• Clinical Process description? How many images at a time?
• # patients per day? Per hour?
• Specialization of roles?
• Patient follow ups?

FOR DOCTORS
• Feedback Mechanism?
• # patients diagnosed per day? Time spent on ‘call’?
• Process workflow? Improvements?
• Effectiveness of Image Quality?
• Must get **IRB approval** to conduct the surveys!
• Working with partners in Zambia to deploy surveys (paper form)
• Conduct more intensive in-person interviews if members travel to Zambia
• Language is not an issue b/c English is the official language.

**Other Sources of Volunteers:**
• Community based healthcare workers e.g.
  - Lusaka family health trust
  - Bwafwano community organization
  - Churches health association of Zambia.
• Medical Students from University e.g UNZA university
Mobile Service Providers

- MTN, Cell Z, CELTEL are Main MSP’s
- The GPRS mobile Internet service was launched by CELTEL in late 2006 and covers all areas in Zambia where CELTEL operates.
- The access speed ranges from 30 to 160 kbps. To use GPRS one needs to have a PC-card (ZMK 950,000) or USB-card (ZMK 1,170,000).
- Cost of usage are ZMK 1,600/ MB and one can also purchase bundles of 100 MB for ZMK 85,000
- Post paid 1,600/MB Pay at the end of the month based on usage in MB
Proposed Improvements

Simplified Version

Input

Process
Data

Output
&
Feedback

Doctor’s Feedback

Web enabled

Central Server
Open MRS?

 Courtesy of OpenMRS. Used with permission.
Questions/ Suggestions!

We Can Do It!
MAS.965 / 6.976 / ES.S06 NextLab I: Designing Mobile Technologies for the Next Billion Users
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