HEARING LOSS SCREENING THROUGH CELL PHONES

MIT and UFRN – UERN Collaboration

Cell Phone Hearing Loss Screening

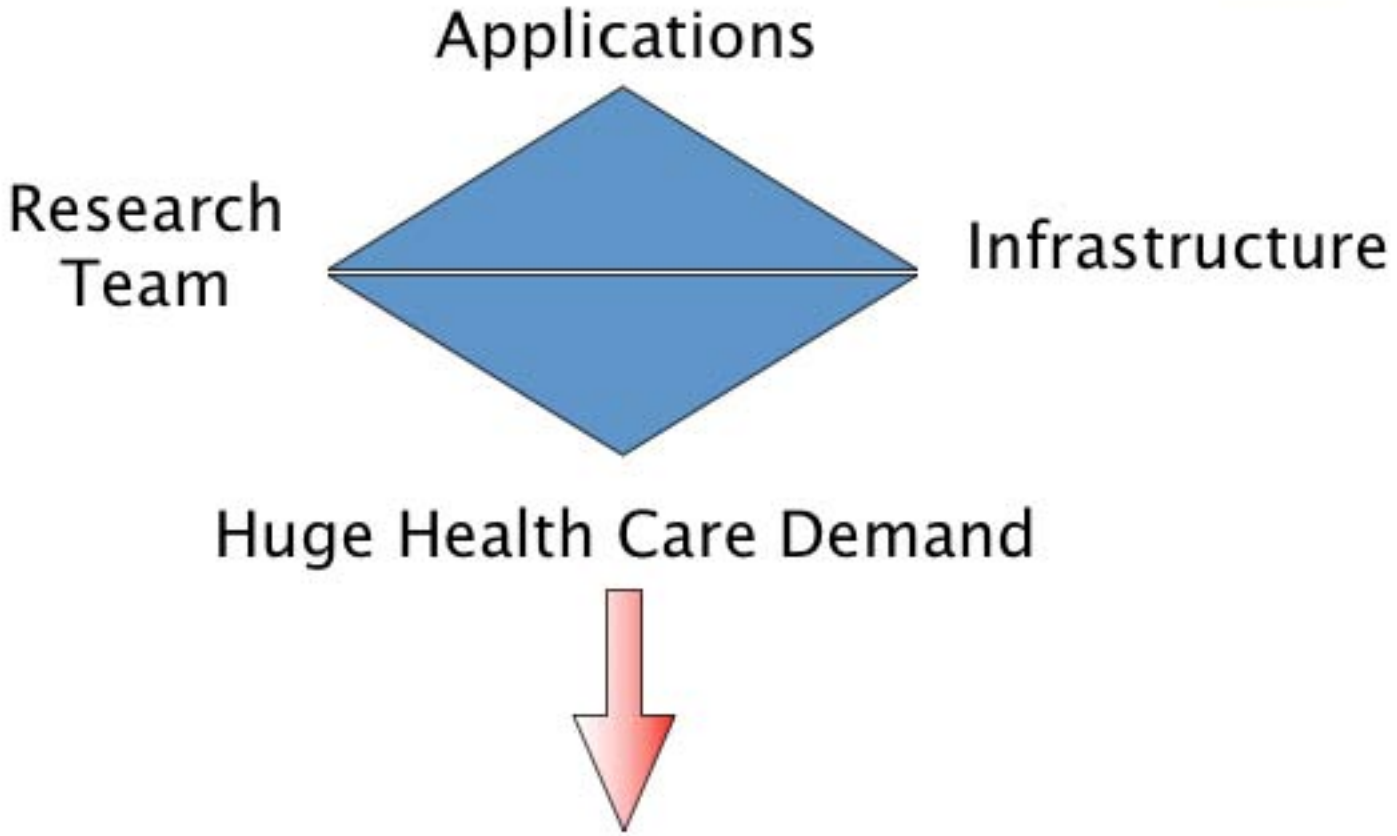
- Brazilian federal law requires a hearing test to be done in the first week of birth

- ~5.7 million Brazilians have some degree of hearing loss

- 6% of children have hearing loss in first three years of life

- Costs in Brazil are high/ equipment always an import

Motivation


Applications
Research Team
Infrastructure
Huge Health Care Demand
Development of New Technology to Improve Health Care of Poorly Assisted Communities

Rio Grande do Norte (RN)

RN at a glance

1) Area - Total 52,796.791 km²
2) Population 2010 - Estimated 3,168,027
3) Density - 60 habitants / km ²
4) Economy - GDP R $ 25.481 billion
5) GDP per capita - U.S. $ 8,203
6) Life expectation 2008 - 70.8 years
7) Child mortality 2008 - 3.35%
8) Illiteracy Rate - 20.0%
9) Birth Rate 2009 - ~47K per year

UFRN – Hospitals

There are four hospitals that belongs to the university:

- Onofre Lopes University Hospital
- Ana Bezerra University Hospital
- Januário Cicco Maternity School
- Children Hospital

Cell Phone Network

Cell Provider	Cities with Coverage	Population with Net
VIVO	3.702	90.7%
CLARO	3.568	90.6%
OI	3.316	87.9%
TIM	3.211	89.6%
CTBC	99	1.9%
AEIOU	5	7.6%
SERCOMTEL	2	0.3%
Brazil	5.564	99.99%

Image by MIT OpenCourseWare.

Growing of Cell Phones

Growing Numbers of the Cell Phones in Brazil

Brazil is a huge market, 242.2 millions of cells phones in 2011, representing 123.9 cel/100 hab.

Graph showing increasing number of cell phone users over time (2010, 2011) in Brazil has been removed due to copyright restrictions.

Hearing Loss Screening Through Cell Phones

(1)
Hearing Assessment Questionnaire

(2)
Distortion Product Acoustic Emissions (DPOAE)

Hearing Assessment Questionnaire

GOAL: Obtain Risk Factors:

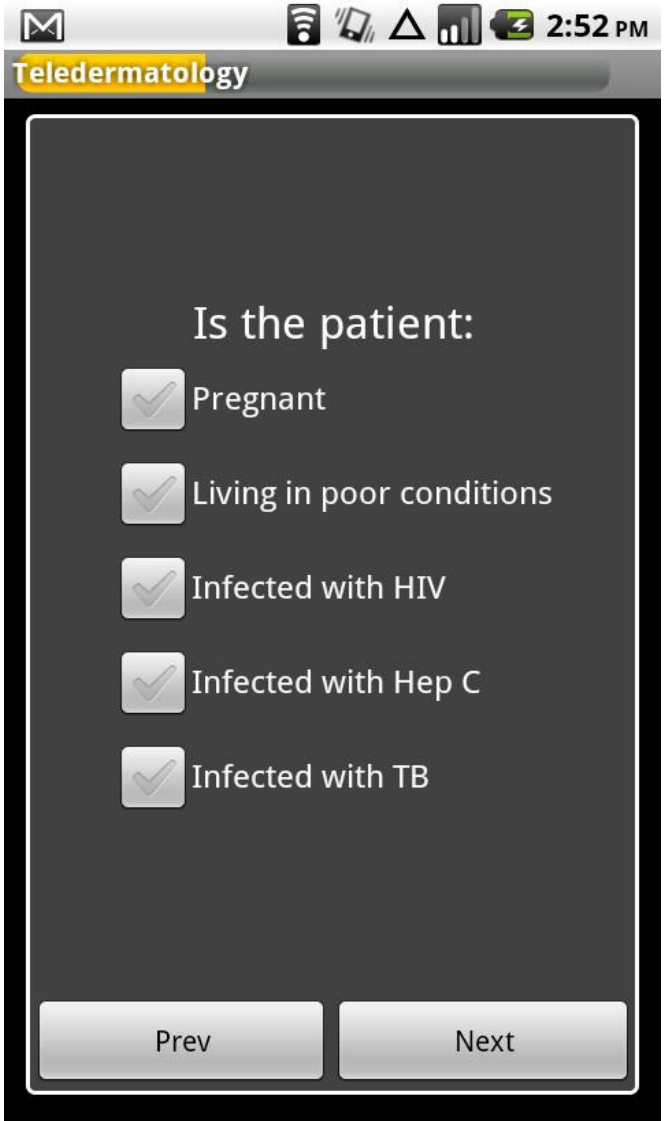
Family History

Hospital stay > 5 days

utero infections

Ototoxic drugs

Syndromes related to hearing loss



DPOAE Test

DPOAE Test

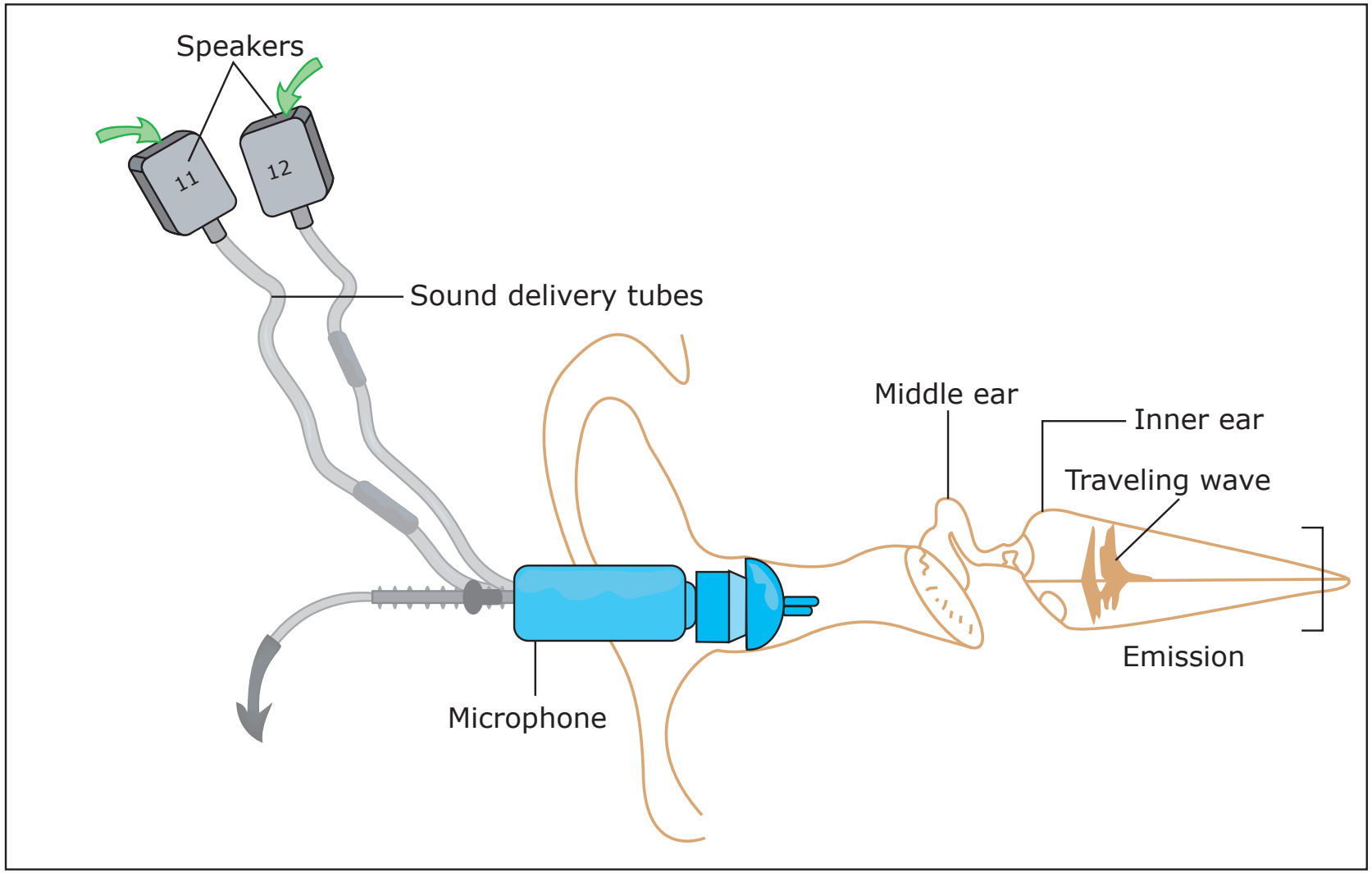
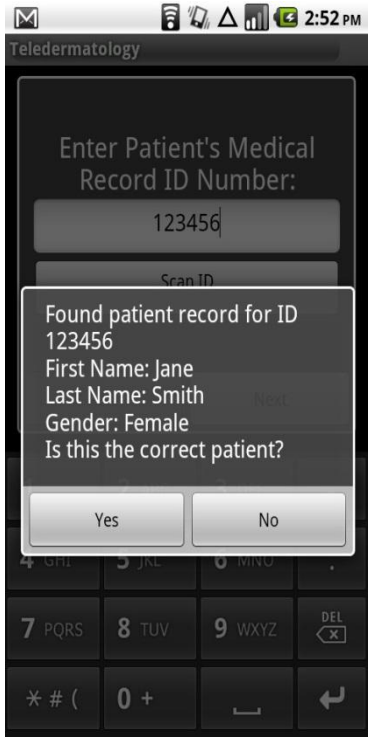
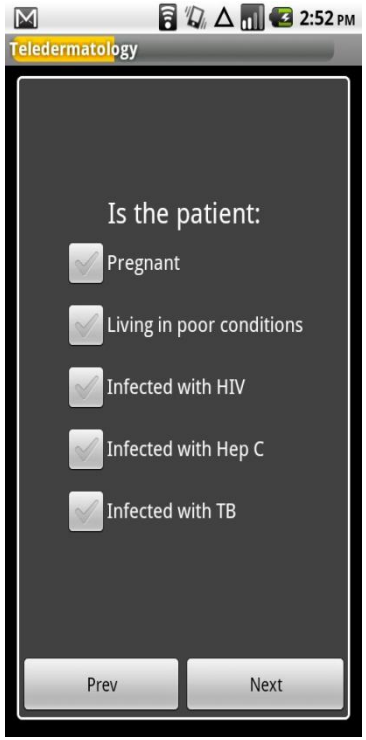
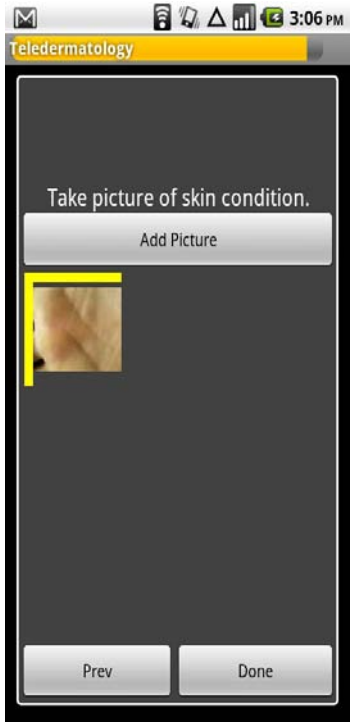


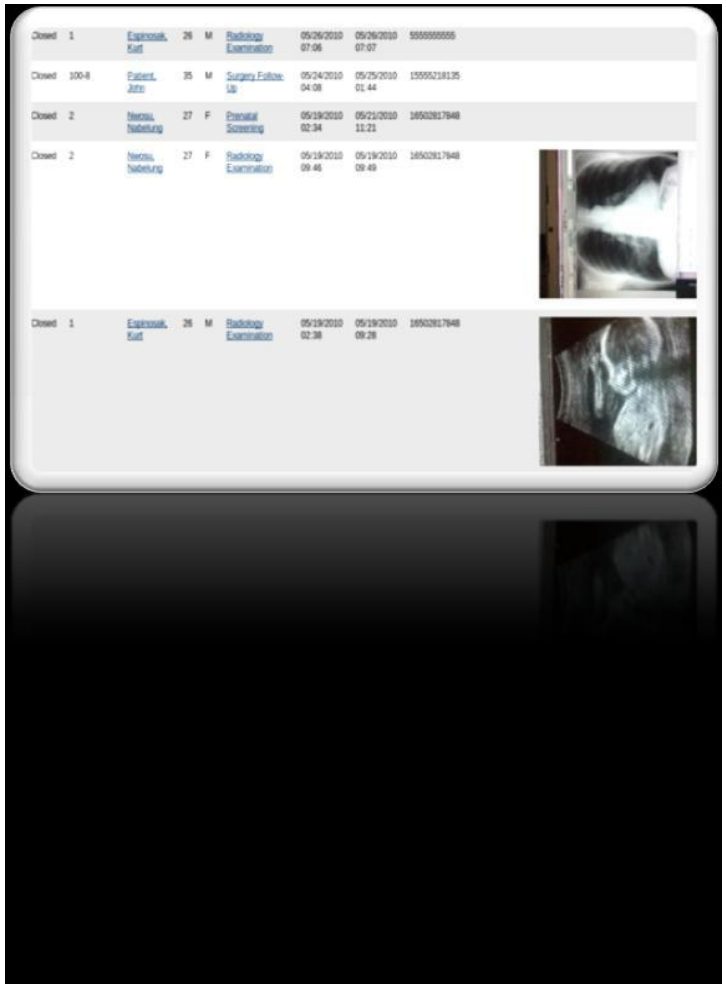
Image by MIT OpenCourseWare.

Goal


2:52 PM
Teledermatology
Enter Patient's Medical Record ID Number:
123456
Scan ID
Found patient record for ID 123456
First Name: Jane
Last Name: Smith
Gender: Female
Is this the correct patient?
Yes
No


2:52 PM
Teledermatology
Is the patient:
Pregnant
Living in poor conditions
Infected with HIV
Infected with Hep C
Infected with TB
Prev
Next


3:06 PM
Teledermatology
Take picture of skin condition.
Add Picture
Prev
Done



Possible Project Goals

1) Propose a plan with metrics for evaluating and quantifying the cost-effectiveness of the project based on the current practices in Brazil.

2) Propose sustainable business plan for a global market place

3) Developing the APP

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HST.S14 Health Information Systems to Improve Quality of Care in Resource-Poor Settings
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