A low-cost, cell phone application to track the vaccination status in developing countries.

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Design Principles

We propose a creative approach that combines simple and inexpensive technology to track the vaccination status of the target population using:
- Identity Cards
- Cell phone
- Bar code technology (e.g., QR code)

National identity cards are a necessary documentation in most developing nations to take advantage of government incentives and subsidies. The target population is, therefore, conscious of its importance.

A camera cell phone reads a bar code and extracts the information stored in it. It will also be used for generating bar codes.

Architectural Overview

The big idea:
- A health care provider will use the national id card information of the mother/father along with the date of birth of the child to produce a bar code.
- The bar code will be printed to produce stickers.
- The stickers will be affixed on the id card.
- A record will be created in a database stored by a cell phone that acts as an SMS gateway in the PHC.
- The communication will take place using simple low-cost, text messaging.

Our Vision

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The expected effect:
- Each time a child is vaccinated, the bar code is read (e.g., from the mother’s id card) by a cell phone to identify the child. The appropriate record in the remote database is updated by digitally capturing the vaccination status. A health official can query the database (using easy-to-use GUIs) to visualize the vaccination status.

References

- http://www.childinfo.org/immunization_status.html
- http://en.wikipedia.org/wiki/GAVI_Alliance
- http://vaxtrac.com/mission
- http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5518a4.htm

Distribution of Vaccine preventable diseases

Source: World Health Organization

Estimated vaccination coverage among children by age 12 months, by vaccine dose — worldwide, 1980–2009

Source: World Health Organization

Of the world’s 23.2 million children not immunized with DPT3, 16.2 million live in 10 countries

Source: www.childinfo.org

Potential Impact

We strongly believe that cell phones and bar code technology when combined with national id cards, can synergistically help track the vaccination status of children and provide developing countries a chance to maximize the effectiveness of their vaccination programs.

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Envisioned plan of action

The deployment of our idea is planned in three phases:
- Phase I: The proposed application will be coded and tested in our lab.
- Phase II: An onsite study at a family health clinic in Kansas City, KS that will host an SMS gateway.
- Phase III: An onsite study in rural India (Chitradurga, Karnataka). We will select 3 PHCs with about 5 midwives per PHC and each PHC will host an SMS gateway. We will study the use of our application for about 6 months. At the end of the study, we will analyze the database stored at the SMS gateway.

Reasons for anticipated success

- Low cost technology
- Simple and user friendly application
- The national id cards are durable and plays the role of an important documentation among target population around the world
- The bar code technology is well developed and minimizes the data entry time.