

ERADICATION OF POLIO IN KHYBER PAKHTUNKHWA VIA E-POLIO

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Despite global success in Polio eradication, Pakistan remains one of the last pockets where the problem of Polio persistence has yet to be properly addressed.¹⁻³

A previous recent study outlined several important problem areas in Polio eradication in Khyber Pakhtunkhwa province.⁴ Low socioeconomic classes have neither awareness nor proper counseling, and also that most of them are not vaccinated at all.⁵ The refusals are often due to perceived apprehensions about reproductive sterility induced by vaccination.⁶ EPI workers complain of payment delays, which in turn increased the burden due to the dwindling number of volunteers.⁷ Computerized data of locality are not available with the on-field polio workers.

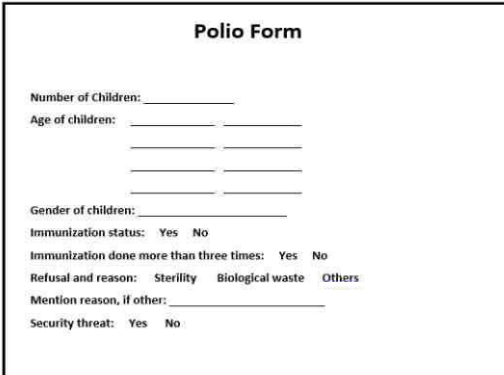
The management of the vaccination system is not controlled with efficient staff on the lower levels of the hierarchy. Even though experienced and qualified individuals might be in the whole chain of command but on the level where the actual practical work is done, there is neglect due to poor supervision.

A modern solution would be to develop an Android application (e-Polio) that is able to document these visits and integrate it with the concept of geotagging. The app will allow us to pinpoint locations on the map with the help of GPS available on every other mobile device. A preliminary data entry form with a set of fields is to be filled out by the volunteer; this can be modified according to the needs of the operation and incorporated into the app.

Problem 1: Data Entry & House Maps

Visits are documented with the help of a tele sheet which are saved in the form of a hard copy which are inconvenient to retrieve,

usually misplaced and requires a long amount of time.



Polio Form

Number of Children: _____

Age of children: _____

Gender of children: _____

Immunization status: Yes No

Immunization done more than three times: Yes No

Refusal and reason: Sterility Biological waste Others

Mention reason, if other: _____

Security threat: Yes No

Figure 1: Sample Polio Data Entry Form

Problem 2: Tele-sheet entry data not available

§ Record keeping is solely based on the integrity of the volunteer because he is the only one who documents the daily schedule.

§ Due to the complications in the payments to the workers the record keeping is compromised and also increases chances of errors.

Problem 3: Changing volunteers for the same area for consecutive campaigns

§ Usually, in every campaign, the volunteer teams change thus prior knowledge of the area hence the transfer of data is not available to the new teams.

§ Areas which are being neglected or are inaccessible due to whatever reason will not be properly tagged and will be repeatedly missed on successive campaigns.

Problem 4: Full coverage of the volunteer cannot be documented

Issues in follow up: One of our own colleagues who helped us develop this idea

was motivated enough to do a follow up of the houses where there was a refusal to take the vaccine. It took him three days to find the house and we were not sure whether it was the same house or not.

Solutions:

- § All the houses can be tagged with the help of this app and can be mapped. This gives us an overview into the areas of interest with any respect (Figure 2).
- § Each house can be marked with the help of latitude and longitudes and be tagged with respect to its status on whether or not the members of that house have been immunized or not. Information other than the address can be filled out on other fields which will be programmed into the app.

- § When properly tagged houses are known, resources should be allocated on the basis of increasing or decreasing demand hence they should not be wasted on areas which can be managed with low manpower or other requirements.
- § This way more manpower and time can be invested in covering areas which might have been missed in previous campaign.
- § Now look at these two aspects collectively, taking a picture of the house and marking the location on the app with the help of mobile GPS simultaneously will enable us to identify the houses easily on follow up (Figure 3).
- § This is the part where the data entry comes into play. With the click of a mouse or the touch of your finger you can bring up the status of the house regarding its immunization (Figure 4).

Table 1: Problems in Polio eradication and their suggested solutions.

Problem	Solution
Non availability of data	Data present electronically on the app
Repeated campaigns with inconsistent records	Data starting from a point where we left off with the deficiencies
Full coverage details, volunteer information dependent	App dependent information, reliable
Uniform resource allocation, not requirement based	Identification of neglected areas, focus direction can be managed

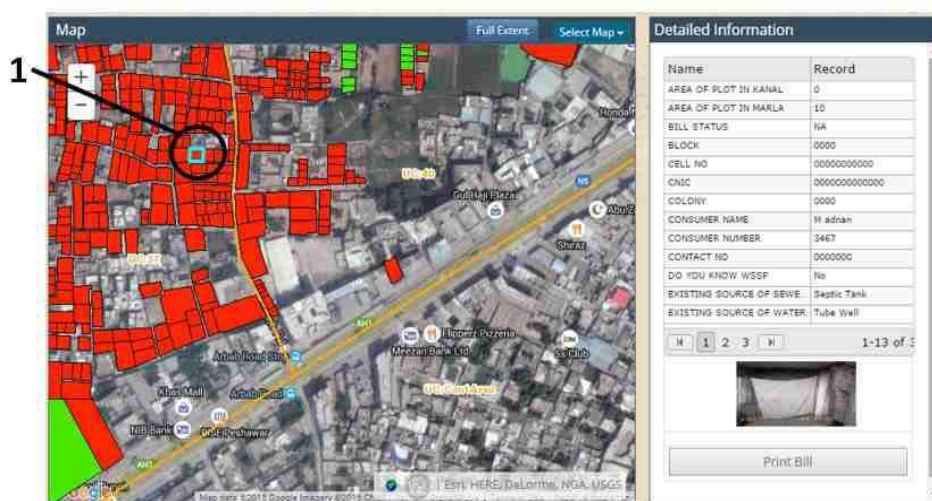


Figure 2: House marking with E-polio App.

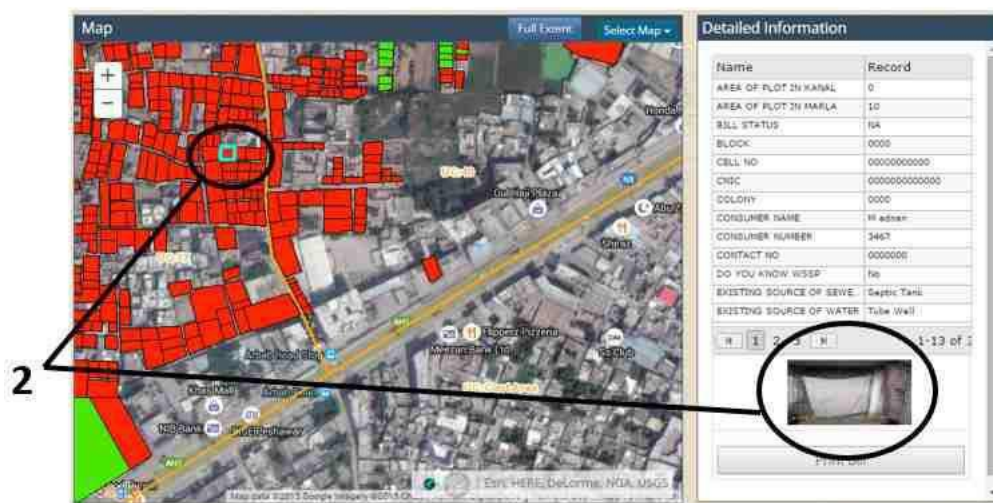


Figure 3: Easy identification of the houses on Follow up.

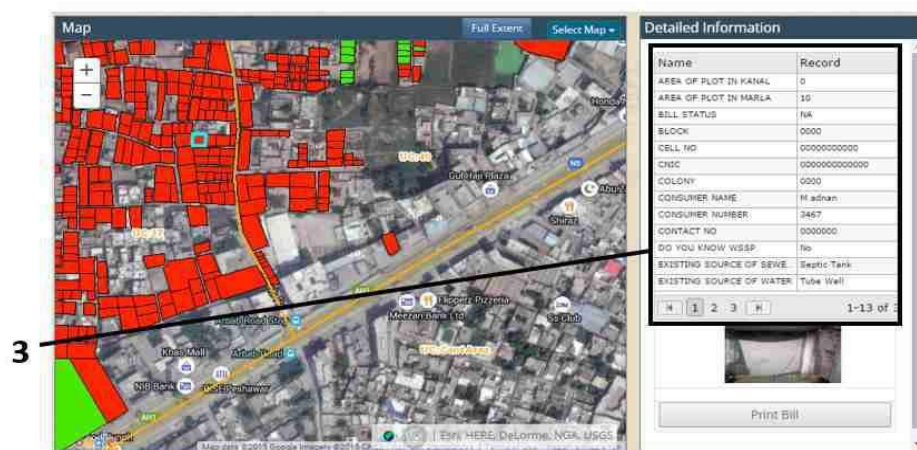


Figure 4: All relevant recorded data can be easily retrieved through E-polio App.

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