

“Application of Smart Phone in “Better Border Healthcare Program” (BBHP)”

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Introduction: The project was awarded by the Microsoft Research in early 2008. The BBHP was proposed with expectation to find solution for healthcare system access especially in rural and remote communities. Major goal of the BBHP is to develop models for utilizing smart cell phone as health communication tool:

- (1) to improve maternal health focusing on antenatal care (ANC),
- (2) to reduce child mortality focusing on the Expanded Programme on Immunization (EPI),
- (3) to prevent/monitor disease incidence and to ensure treatment outcomes focusing on malaria due to malaria endemic in the border areas.

Method: The BBPH is implementing in the Thai-Myanmar border areas. The BBHP consists of 2 models: (1) Mother and Child Care Model (MCCM) and (2) Disease and Treatment Monitoring Model (DTMM). The target population comprise of Thai and non-Thai villagers of all ages. The Thailand Ministry of Public Health (MOPH) staff who serve as key human resource for Thailand health care system at the grass-root level are assigned to operate these two MCCM and DTMM models which are incorporated as part of their routine works.

Results:

MCCM – The model is implemented as an added on function to the existing MOPH standard healthcare information system. The modified system allows the health clinic (HC) personnel in identifying the mother’s ANC and child’s EPI status at the HC as well as at the household location when performing home visit. The program also generates appointment dates for each client on HC worker’s smart phone for visit follow-up and personal data capture. If the family members have listed phone numbers and allow to be called, the SMS will be automatically sent to them directly. Among 1100+ families, the MCCM has been following altogether 132 mothers for ANC visits and 151 children for EPI scheduled visits. In June 2009 alone, the SMS were sent out to parent’s phones for 40 of 54 EPI scheduled visit; 28 came on-time as per their vaccination schedule. For ANC visits, besides the mothers came to HC by themselves, the SMS were sent out to 23 out of 36 schedule visits, and the mothers who received call came on-time as per schedule.

DTMM - The model allows remote data transfer in both textual and geographic format. List of registered patients who visit malaria clinic (MC) and their treatment history can be examined in details. Based on the scheduled blood draw and medication, MC staff provided with phone loaded with follow up application will perform home visit. This module is capable of recording any clinical failure symptoms on- and off-line. On a weekly basis, the system generates SMS for the summary of cumulative malaria cases, and automatically feed to the predefined personnel involved. During January – June 2009, among 24,000+ residents within 29 target villages, the system has been capturing 236 *pf* and 87 *pv* cases; almost all were minority along the border. From SMS sent to the MC staff for case detection and follow-up; about 88% of cases were follow-up at day 14 whereas about 76% were reported at day 28 of required follow-up period.

Conclusion: Both MCCM and DTMM modules are still in operation; more data will be collected to evaluate the effectiveness of the system. Data before and after full one-year implementation of each module will be compared, and published by mid 2010. With support from WHO - BMGF, the module is currently modified and enhanced for Malaria containment in 7 provinces along Thailand-Cambodia borders and may get expanded to cover another 13 provinces along Thailand-Myanmar border in 2010.