Mobile Global Health Initiatives

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Texting4Health: Using SMS to Motivate Behavior Change
Session II - The Convergence of Mobile Health and Public Health
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Global Health

Information Pyramid

(Ideal v/s Actual needs a separate discussion)

Global Health Environm

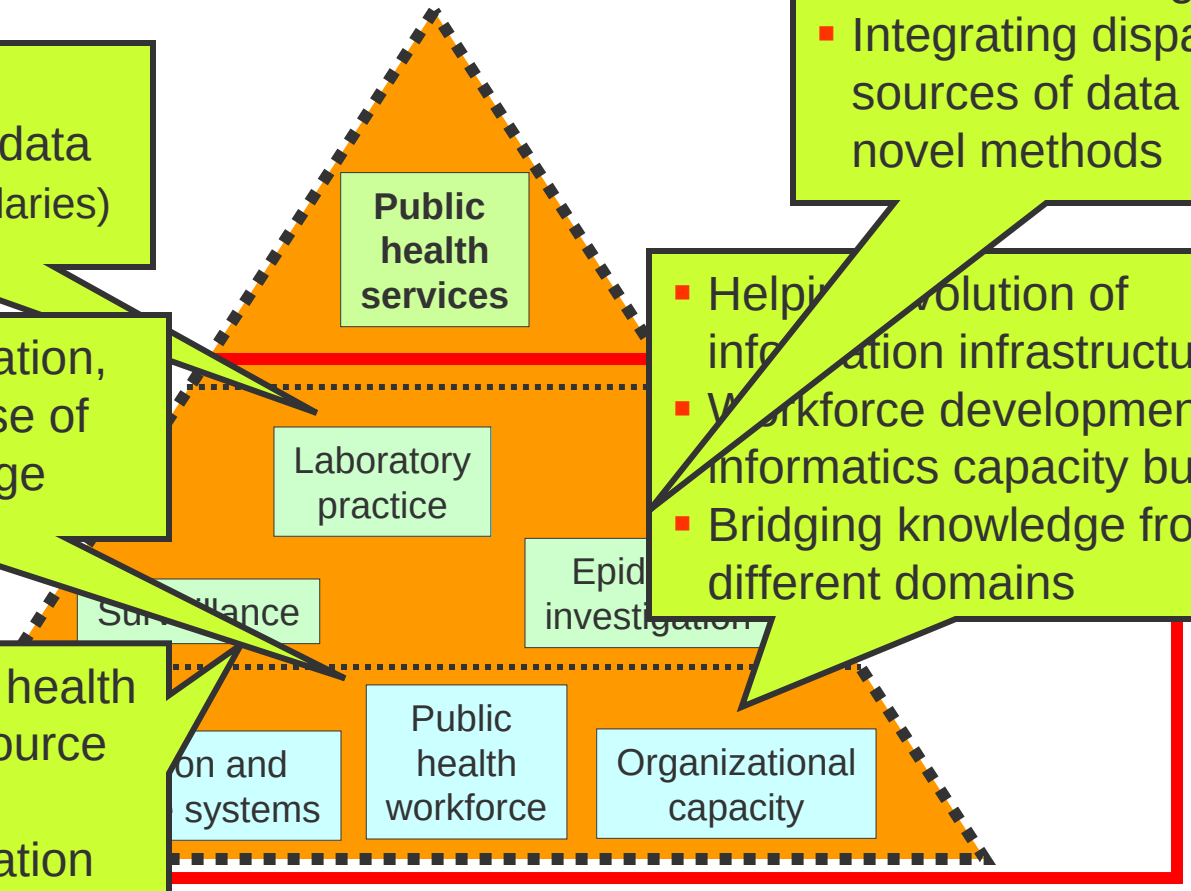
- Modeling the information environment to support decision making
- Integrating disparate sources of data through novel methods

- Exchange of lab information using data standards (vocabularies)

- Managing the creation, distribution and use of scientific knowledge

- Helpi volution of
  inf ation infrastructures
- W rkforce development and
  informatics capacity building
- Bridging knowledge from different domains

- Access electronic health records as data source for surveillance
- Managing the creation of large-linked datasets



MATION-DRIVEN ACTIVITIES

Baker EL, Potter MA, Jones DL. On public health infrastructure and our nation's health. *Annu. Rev. Public Health*. 2005; 26:303-18. ; Slide Source: Modified after, Tolentino, H. 2006.

Global Health
&
Major Data Collection Activities

Mobile Global Health Initiatives

- Public Health Data Collection
  - Surveys
    - (Regular/Irregular Short/Extended)
  - Surveillance/Laboratory
    - (Routine/Syndromic; Active/Passive)

Global Health Landscape

Example of Health Information Systems In Developing Countries

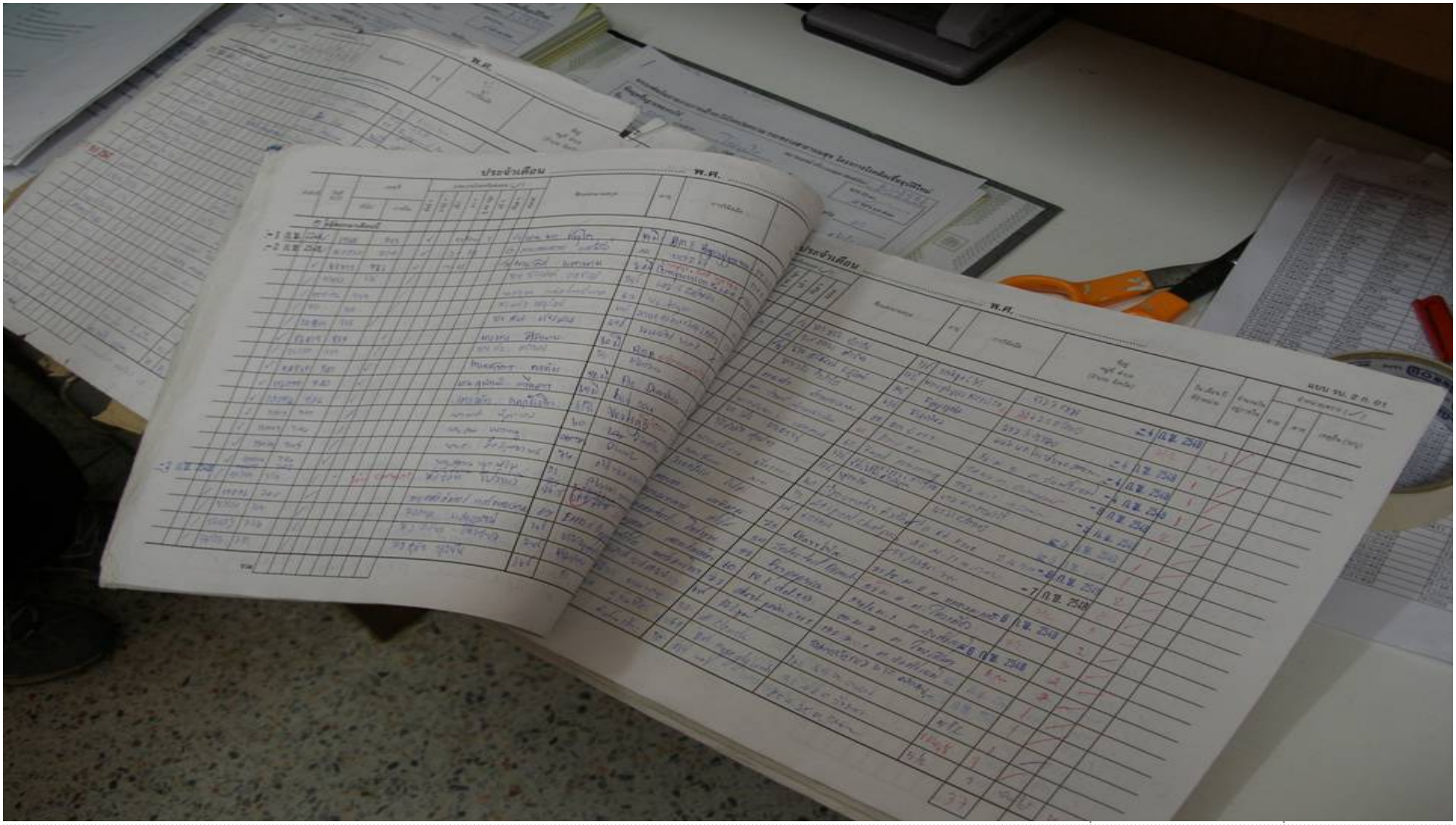
Appropriateness of SMS Application Development Depends on Host Country Capacity & Public Health Purpose

PH Surveillance Data Gathering

THAILAND

THAILAND

THAILAND



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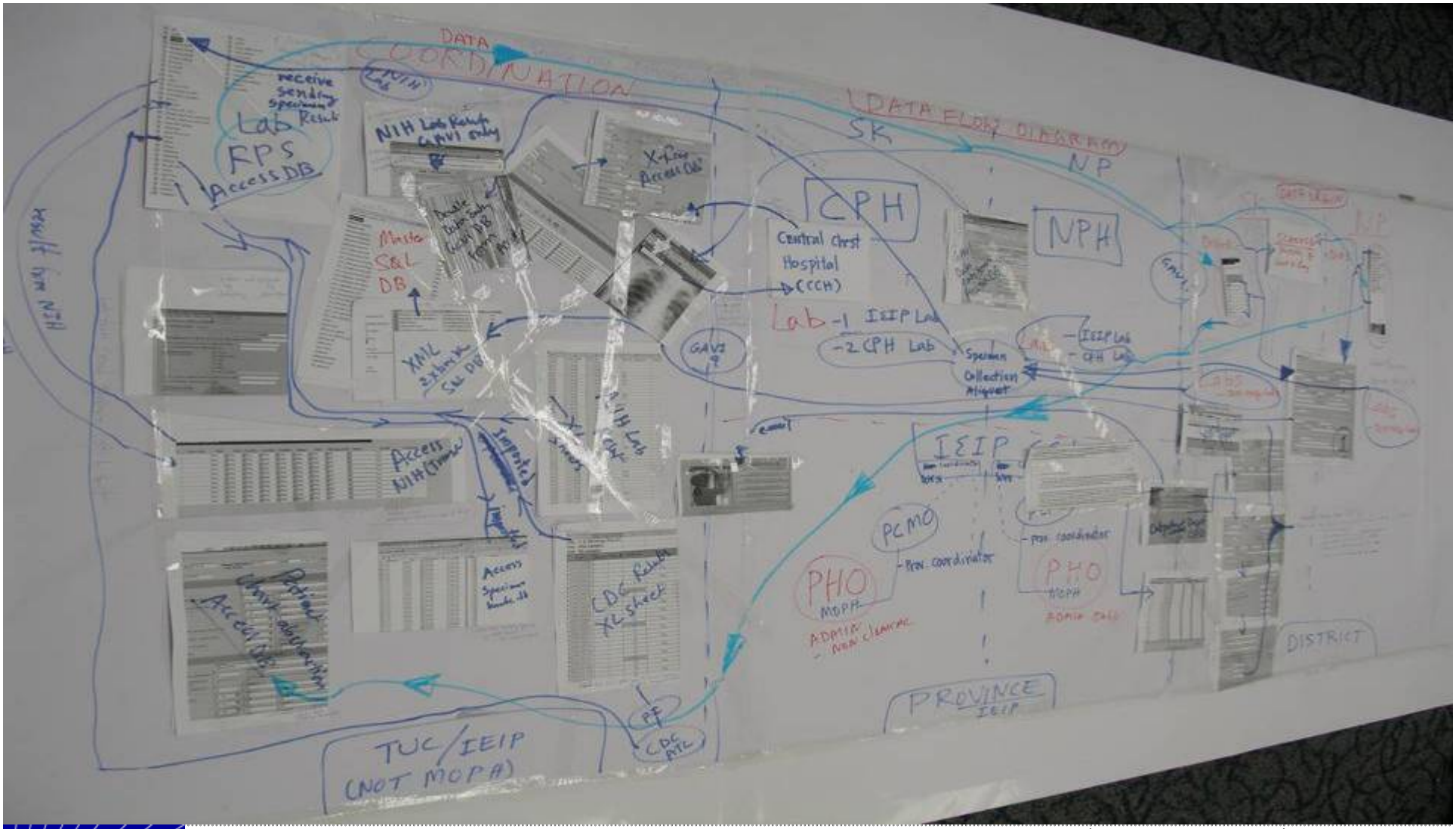
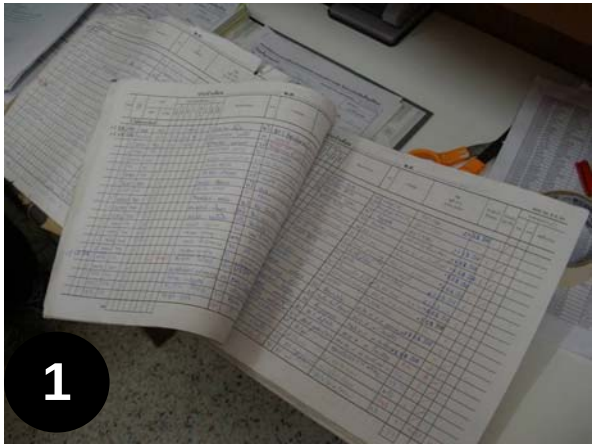

DATA COORDINATION
DATA FLOW DIAGRAM
SK
NP
Lab
RPS
Access DB
CPH
NPH
Central Chest Hospital (CCH)
Lab -1 IEIP Lab
-2 CPH Lab
Specimen Collection Aliquot
IEIP
PCMO
PHO
MOPH
Prov. coordinator
DISTRICT
PROVINCE IEIP
TUC/IEIP (NOT MOPH)
CDC ATC

THAILAND

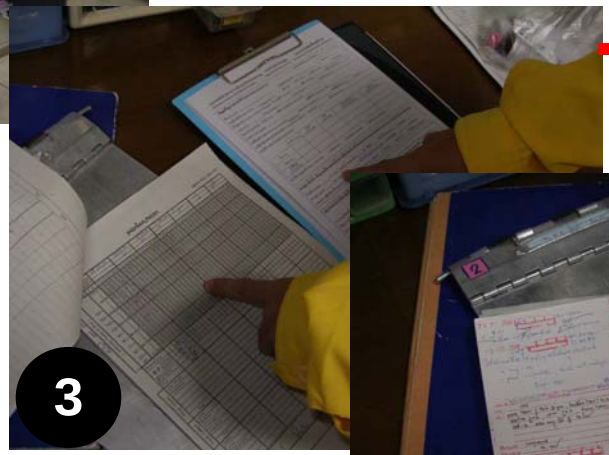
THAILAND

THAILAND

(Hospital Logbooks)


1

2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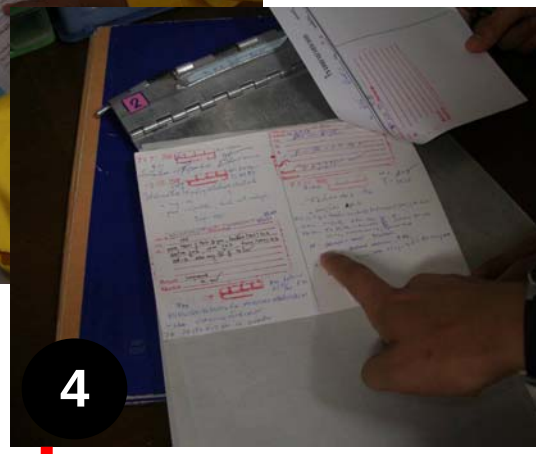
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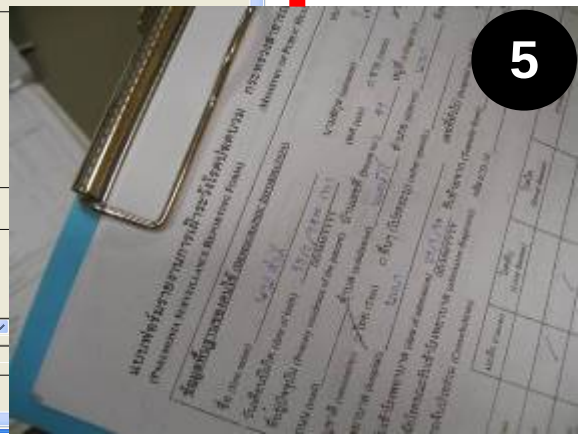
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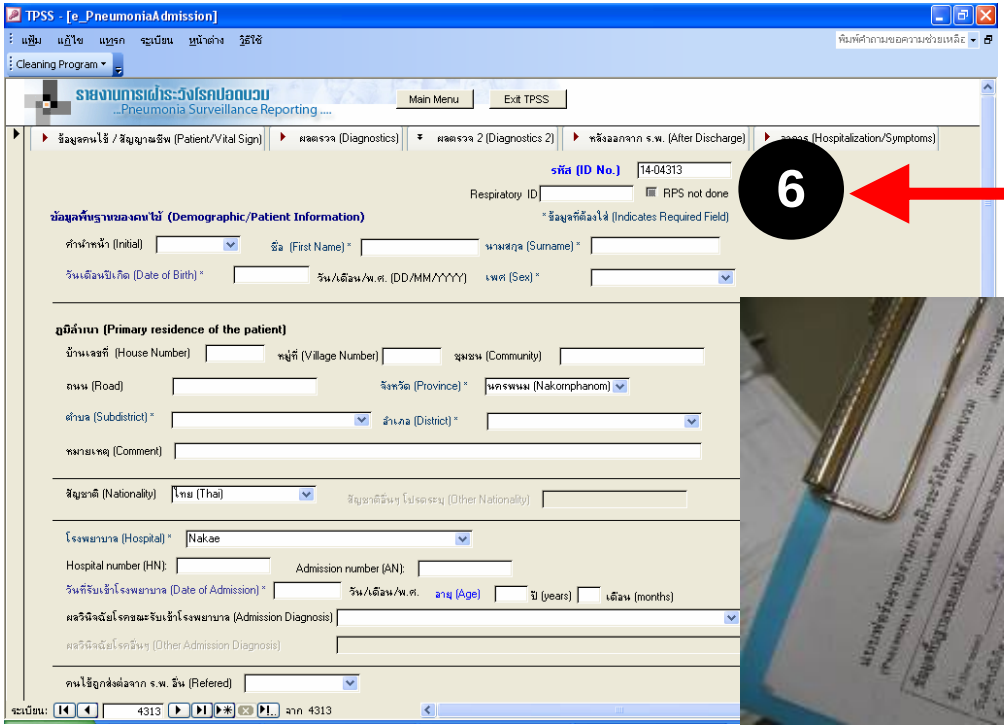
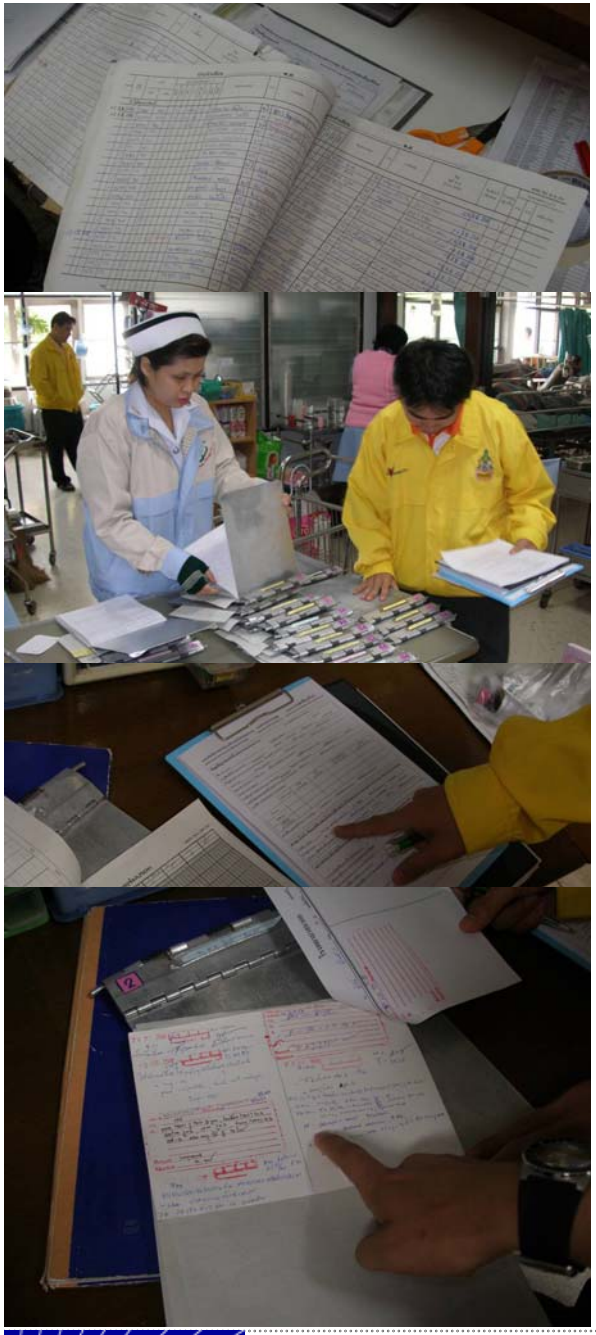
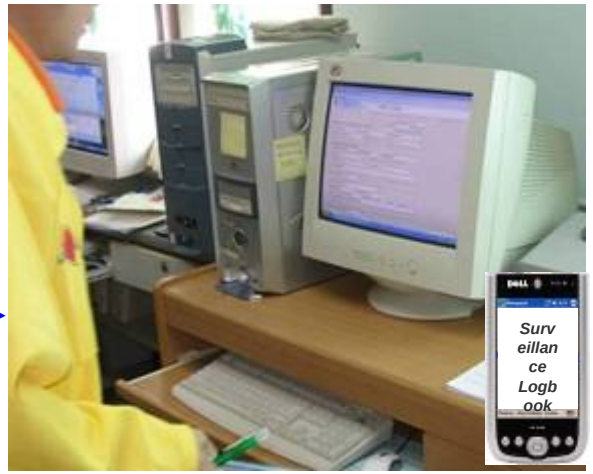
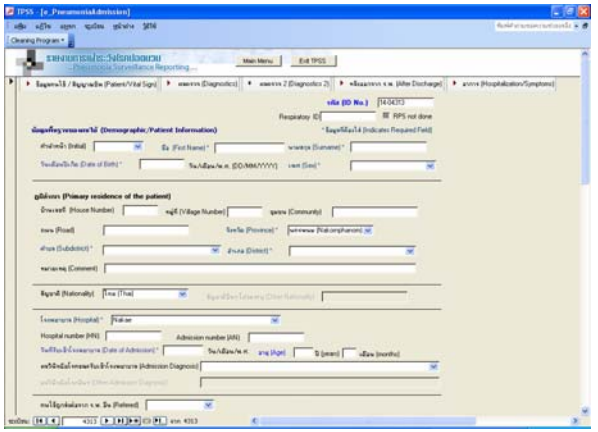

6
TPSS - [e_PneumoniaAdmission]
Cleaning Program
Main Menu
Exit TPSS
...Pneumonia Surveillance Reporting....
ข้อมูลพื้นฐานของคนไข้ (Demographic/Patient Information)
ภูมิลำเนา (Primary residence of the patient)

Tier 1





Data Transfer



Data Collection

THAILAND

Login: Version 1.0. 12:03
จังหวัดสระแก้วและนครพนม
ประเทศไทย
Thailand MOPH - US CDC
Collaboration
International Emerging Infections Program
TUC-IEIP
เจ้าของเครื่อง
WM_A
1.0.1
กรุณาคลิกเพื่อเริ่มต้น
>>
iPAQ

ระบบเฝ้าระวัง (2 rec 1:09
กรุณาเลือกการวินิจฉัยโรค
Q103
Admission Diagnosis
รหัส ICD-10
A15
ชื่อโรค Disease name
Respiratory tuberculosis,
bacteriologically and histologically
confirmed
<< Back
Next >>
Record Edit Option
iPAQ

Global Health and SMS Application Areas

TRACnet

Background - Rwanda

- ~9.3 million, size of Maryland
  - most densely populated country in Africa
- Three tiered health system with 400 facilities
  - (4 reference hospitals, 30 district hospitals, 366 health facilities)
- 41,000 people on ART (antiretroviral therapy)
- 156 health facilities offering ART
  - (supported by PEPFAR IP's, GFATM and PIH)

Content source: Kariisa, Eddie. 2007

TRACnet & Public Health Purpose

- Designed to support the monitoring of the national HIV/AIDS program
  - Direct response to shortcomings with the routine Health Information System
  - Health Information System was unable to produce program monitoring data in a timely manner

Content source: Kariisa, Eddie. 2007

TRACnet & Public Health Purpose

- Partners:
  - CDC, Treatment and Research AIDS Center (TRAC-Rwanda), National AIDS Commission, Rwanda Information Technology Authority (RITA), Voxiva Inc., Columbia University

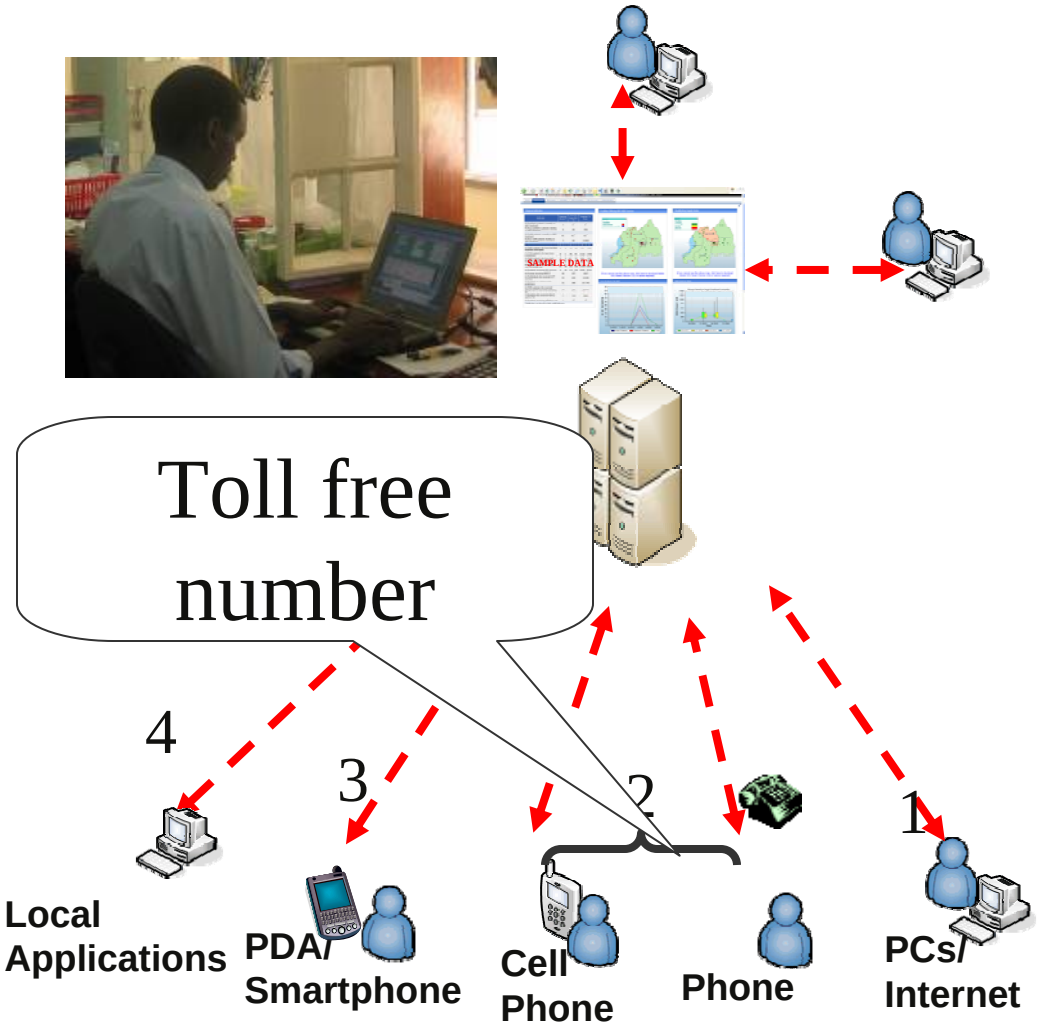
Content source: Kariisa, Eddie. 2007

Approach

- Two servers hosted at a local ISP
  - One phone server has voice response system that is accessed through 2 E1 lines (which allows up to 8 simultaneous calls)
  - One web server
- Reverse billing mechanism
  - Toll free number was set up to allow registered users to access phone server at no cost

Content source: Kariisa, Eddie. 2007

HOW TRACnet WORKS ?



TRACnet allows users to:

- **Collect** real-time information from the field via web, phone, mobile application.
- **View**, analyze and map the data in real-time to make more informed decisions.
- **Communicate** and send alerts and information back out to the field in a timely and systematic way.

Content source: Kariisa, Eddie. 2007

Developing a Framework
for Mobile Computing in Global Health

Principles & Approaches

Mobile Global Health Initiative

- Principles in a broader context
  - Standardization of Health Metrics *(HMN)*
  - Standardization of Approaches
  - Integration of SMS within the broader public health information systems / enterprise health information architecture

Health Metrics Network (HMN)

- HMN is the first global health alliance
  - focuses on strengthening health information and statistical systems rather than on a specific disease

- HMN brings together
  - producers and users of health information in support of country-led efforts to strengthen their health information systems

Source: Health Metrics Network, 2006.

HMN Road Map

Phase 1
Coordination, Leadership & Assessment

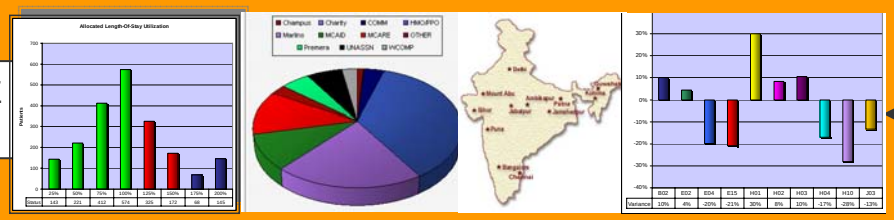
- Coordinate Stakeholders
- Assessment
- Gap Analysis

Phase 2
Planning and Priority Setting

- Vision
- Priorities & Costs
- Strategic Plan
- Implementation Plan

Secure Funding

Phase 3
Implementation



Partner M&E & Research

Information Services

Policy

Resources

Processes

Extract, transform and load data into warehouse

Common Data Warehouse

- Census
- Vital Event Registry
- Surveys
- Health Events & Risks
- Health Service Records
- Resource Tracking

Data Collection Forms & Methods

Phase 4
Evaluation

Source:: Health Metrics Network, 2007.

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Special emphasis SMS –based data collection approaches

Source:: Health Metrics Network, 2007.

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Special emphasis SMS –based data collection approaches

Source:: Health Metrics Network, 2007.

SMS Applications in Global Health

SMS Applications in GH

- Emergency Response
  - During the recent earthquake in Rwanda, general information alerts on *what to do during a tremor* were broadcast by SMS

SMS Applications in GH

- Program reporting/monitoring systems
  - Automated SMS reminders for report submission
    - to program administrators
  - Broadcast messages related to program or product
    - to patients, physicians, and health workers

SMS Applications in GH

Patient monitoring systems

- Patient reminders
  - treatment related reminders
  - upcoming or missed
- Information dissemination
  - upcoming public health campaign in a given area

Key Challenges

Mobile Global Health Initiatives

- Key Challenges
  - Limited message length (160 characters)
  - Bi-directional communication
    - Assurance of transmission and receipt of SMS data (crucial to public health)
    - SMS best works as a unidirectional tool in public health settings

Observations

- Bidirectional information flow
  - SMS based bidirectional information flow is hard to implement
  - Need for dedicated infrastructure
    - Human capacity tasked with responding to SMS queries
    - Automated systems (standard queries with a set of predefined responses)

Observations

- Successful SMS adoption in global health depends on transmitting and receiving **simple, brief, and actionable information**
  - SMS is not an appropriate technology to disseminate complex health information

Key Points

- **Application of SMS in global health needs**
  - ***Standardization of approaches**:* Standardize instruments and vocabularies
  - ***(Electronic) Data Integration**:* Create a common HIS framework and infrastructure to integrate SMS with existing enterprise systems
  - ***Human capacity building**:* Develop professional training to build informatics capacity to sustain SMS-based technical approach

Integration of SMS derived data with existing enterprise-level health information systems is critical to the long-term success of mobile computing in PH