

Real Time Biosurveillance Program **Interim Findings Discussion** **Workshop Report**

Kurunegala District, Sri Lanka – 12th of July 2010



Table of Contents

1. Introduction	3
2. Objectives	3
3. Participants for the Interim Workshop	3
4. Participating Organizations	4
5. Outline of the program	4
6. Outcomes	6
6.1 Session I – Inauguration	6
6.2 Session II – Project Overview	7
6.3 Session III – Data Collection	10
6.4 Session IV – Data Analysis and Event Detection	11
6.5 Session V – Alerting	13
7. Other Events	14
7.1 Objectives.	14
7.2 Participants of the meeting.	14
8. Gallery	15
8.1 Session I – Inauguration	15
8.2 Session II – Project Overview	15
8.3 Session III – Data Collection	16
8.4 Session IV – Data Analysis and Event Detection	16
8.5 Session V – Alerting	17
9. Acknowledgement	18
10. References	19

1. Introduction

This report is mainly focused on discussing the interim workshop and its findings which has been conducted on 12th of July 2010 at Blue sky hotel in Kurunegala, Sri Lanka, organized by Sarvodaya collaboration with LIRNEasia and Provincial Director of Health Services.

2. Objectives.

1. Give an overview of the project goals and outcomes
2. Present the research findings to decision-makers and policy advocates
3. Investigate the strategies for policy influence to scale RTBP
4. Outline the actions for the future of RTBP in Sri Lanka

3. Participants for the Interim workshop.

- Dr.R.M.S.K. Ratnayake - Provincial Director of Health services (PDHS) - North Western Province.
- Dr. E.A.L.C.K. Edirisinghe - Assistant Director planning, North West Province.
- Dr. Hemachandra – Regional Epidemiologist, North west Province.
- Dr. Vinya Ariyaratne – General secretary, Sarvodaya Sri Lanka.
- Prof. Artur Dubrawski – Auton lab, Pennsylvania, USA
- Dr. W.G.A. Fernando – PDHS office
- Dr. Amerasekara – MOH, Kuliyaipitiya
- Dr. Subasinghe – MOH, Udubadawa
- Dr. Fernando – MOH, Pannala
- Dr. Disyanayaka – MOH, Wariyapola
- Other non - medical PDHS staff.
- MOH staffs of Kuliyaipitiya, Pannala, Udubeddawa, Wariyapola –
Public Health Inspectors (PHI)
Senior Public Health Inspector (SPHI)
PPA
- Mr. Ariyawansa – Provincial director, Sarvodaya, North west
- Mrs. N. Abeysinghe – Assistant, Sarvodaya, Kuliyaipitiya
- Mr. Micheal Baysek – System administrator, Auton Lab, Carnegie Mellon University, Pennsylvania, U.S.A
- Mr. Nuwan Waidyanatha- Senior researcher, LIRNEasia
- Dr. G.C.S. Weerasinghe- Researcher, LIRNEasia
- Volunteers- Sarvodaya, Kuliyaipitiya

4. Participating Organizations

Department of Health – North West Province	(Kurunegala, Sri Lanka)
Regional Epidemiology Unit	(Kurunegala, Sri Lanka)
Medical Officer of Health Division	(Kuliyapitiya , Sri Lanka)
Medical Officer of Health Division	(Pannala, Sri Lanka)
Medical Officer of Health Division	(Udubaddawa, Sri Lanka)
Medical Officer of Health Division	(Wariyapola , Sri Lanka)
Carnegie Mellon University's Auton Lab	(Pittsburgh, USA)
Sarvodaya	(Sri Lanka)
LIRNEasia	(Colombo, Sri Lanka)
Department of Health – North West Province	(Kurunegala, Sri Lanka)
Sarvodaya	(Kurunegala, Sri Lanka)
Auton Lab	(Pittsburgh, USA)
LIRNEasia	(Colombo, Sri Lanka)

5. Outline of the program

PROGRAM Monday, 12 th July, 2010		
SESSION I – Inauguration		
9.00-0910	Lightening of traditional oil Lamp	
9.10-0935	Welcome comments & introduction	Mr. Ariyawansa (Sarvodaya)
0935-0945	Inaugural speech	Dr.Vinya Ariyaratne (Sarvodaya)
SESSION II – Project Overview		
0945-1005	Comparison between RTBP and Present Paper based- Disease Surveillance system.	Dr. R.M.S.K.Rathnayaka (PDHS)
1005-1015	Overview of the RTBP implementation – country synergies, goals and main outcomes	Dr. G.C.S. Weerasinghe (LIRNEasia)
1015-1025	RTBP evaluation framework	Dr. G.C.S. Weerasinghe (LIRNEasia)
1025-1040	Discussion	Dr. E.A.L.C.K. Edirisinghe (PDHS Office)

SESSION III – Data Collection

1040-1050	mhealthSurvey R&D challenges	Mr.Nuwan Waidyanatha (LIRNEasia)
1050-1100	Data collection: lessons learned	Mr. Ilangakoon (Sarvodaya)
1100-1110	Discussion	Chair – Dr. Fernando (MOH)

SESSION IV – Data Analysis and Event detection

1110-1120	T-Cube Web R&D challenges	Dr. G.C.S. Weerasinghe (LIRNEasia)
1120-1130	Event detection: lessons learned	Mr. C.Muthukuda (PHI)
1130-1140	Discussion	Chair – Dr. P. S. Hemachnadra (RE)

SESSION V – Alerting

1140-1150	Sahana messaging/alerting R&D Challenges	Dr. G.C.S. Weerasinghe (LIRNEasia)
1150-1200	Alerting/Situational-Awareness lessons learned	Mr.R.M.K. Rajapaksha (PHI)
1200-1210	Field implementation challenges	Mr. Ariyawansa (Sarvodaya)
1210-1220	Cost benefit analysis	Dr. G.C.S. Weerasinghe (LIRNEasia)
1220-1230	Discussion	Dr. Amerasekara (MOH)
1230-1300	Closing remarks	Dr. R.M.S.K.Rathnayaka (PDHS)
1300-1400	Lunch	

6. Outcomes....

Interim workshop was mainly directed to provide a stage for the Health officials, Health workers and the RTBP researchers to discuss the research findings and the progress of the

project so far. This event was commenced with the lightening of the traditional Oil lamp. There were 5 sessions.

6.1 Session I –Inauguration

Inauguration session was started with the well come speech of Mr. Ariyawanasa, as a District coordinator, he made a clear picture about how the project was started, how it was progress and well come all the contributors for this event cordially.

Dr. Vinaya Ariyarathna, the General Secretary of Sarvodaya opened a gate way for the discussion by stating the importance of a quicker disease surveillence system and the capability of this pilot – RTBP in achieving it.

6.2 Session II – Project Overview

Dr. Rathnayaka, the Provincial Director of the Health Services in Wayamba, summarized the present paper based system (Figure 1) and the pit and falls in it. He highlighted that most of the data for the surveillance system comes only from the Inward set up, therefore there is a necessity for expand it in to other health facilities (Figure 2). He also emphasized RTBP project has proven its capability of real time disease surveillence therefore it is a must to incorporate it in to the government sector.

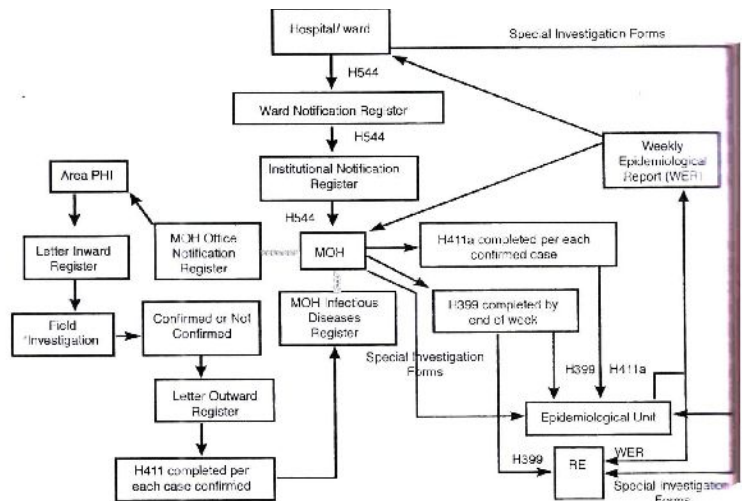


Figure 1: present system work flows

Project overview and the evaluation frame work of the research were described by Dr. Weerasinghe, the research assistance, LIRNEasia. He briefly highlighted the process of the RTBP (Figure 3), Setup (Figure 4) and evaluation frame work (figure 5).



Figure 2: expansion plans

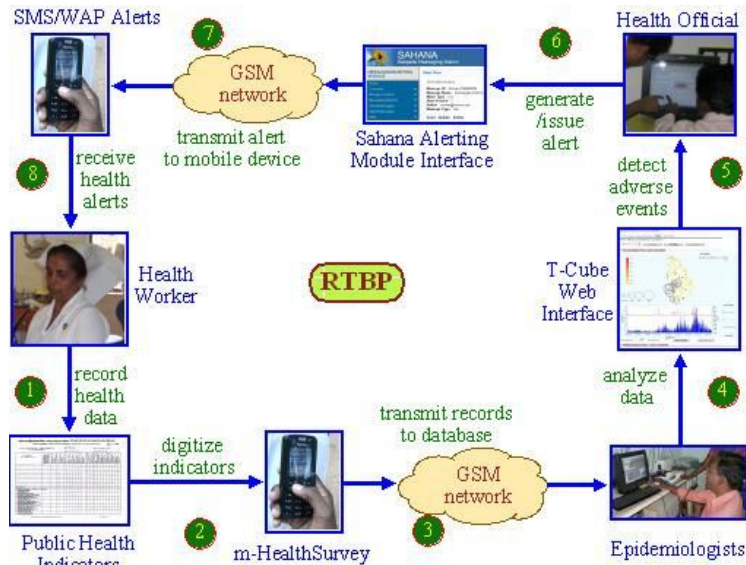


Figure 3: RTBP process flow

Then Dr. Edirisinghe, from PDHS office was invited to be chaired and he opened the overview session for the discussion. He directed the discussion mainly to identify challengers and plan out implementation. Dr. Hemachandra, the Regional Epidemiologist of Kurunegala district, noted the importance in paying more attention into the syndromic surveillance for detecting emerging new diseases and the importance in monitoring the escalating fever states in the region. Prof. Dubrawski, from Auton Lab, replied that TCWI was originally designed for syndromic surveillance, but it was neglected and only paying attention towards the disease surveillance. But he agreed automated function of syndromic surveillance need to be added for the next update, to improve the user friendliness. He highlighted that already escalating fever states are monitoring through TCWI, therefore health officials must pay more attention towards this new paradigm.

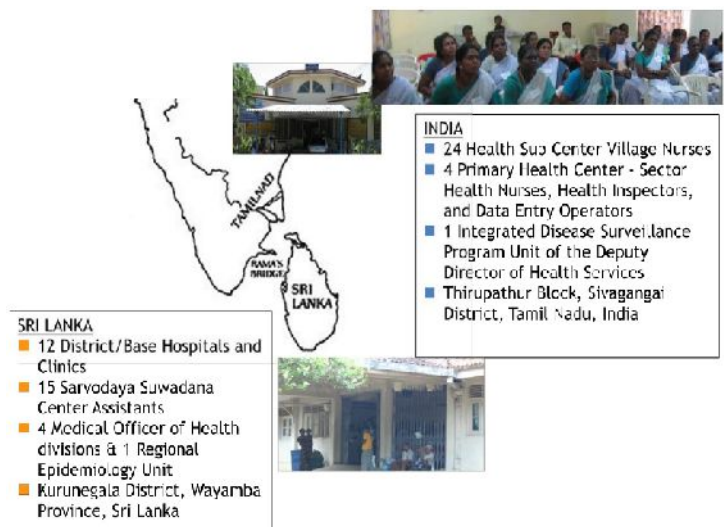


Figure 4: RTBP research design

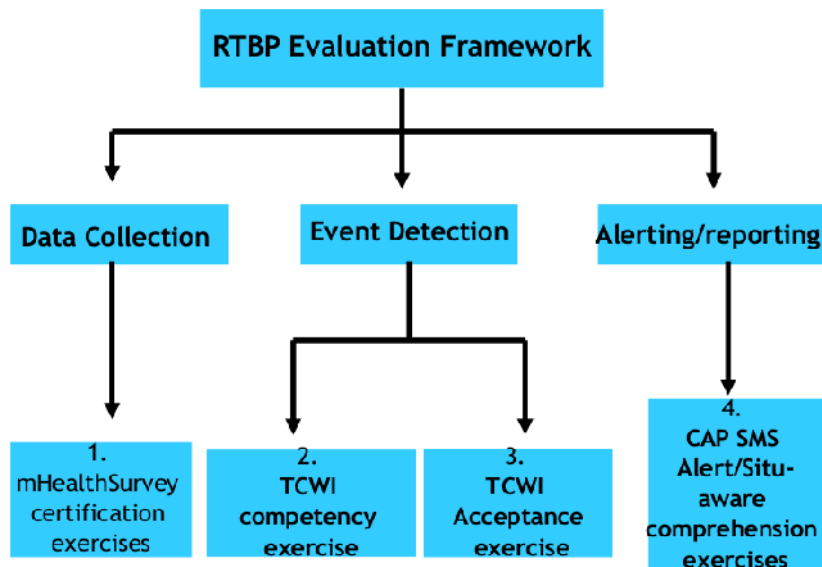


Figure 5: RTBP evaluation framework

6.3 Session III – Data collection

Session III on Data collection was started with brief theoretical description on how the software operated and basic requirements by Dr. Weerasinghe (Figure 6). Mr. Illangakoon, a Volunteer from Sarvodaya, brought out the challenges and the reality in the backstage of RTBP during data collection. He mentioned that initially they were lagged in entering quantitative and qualitative data in real time due to the lack of medical knowledge and unfamiliarity to the hospital setup. But with the supplementations from the project and the support from the government helped them a lot to get rid of these errors and improve the noises in the data. He also highlighted practical usage of each option in mHealthsurvey¹ mobile phone software. With the appreciation for the outstanding contribution from the volunteers in collecting data, as the basement of the pilot, Dr. Fernando, the MOH – Pannala, started the discussion on data collection. During the discussion the main attention was focused that how we are going to implement this in the hospital setup with the government workers. So Dr. Hemachandra brought out that we need to find out “Who, When, Where” for data collecting. Infection Control Nurses (ICN) were proposed as a candidate for data entry, but practicability of it was questionable. Then health officials decided that they will take the responsibility in handling this and comes out with practicable plan in near future. All the participants agreed that this should be expanded to the inward setup as well and in the whole Kurunegala District as soon as possible. Mr. Nuwan Waidyanatha, the project manger of RTBP revealed that Dialog GSM will be providing free mobile phones for the data collection and reasonable data packages for the implementation

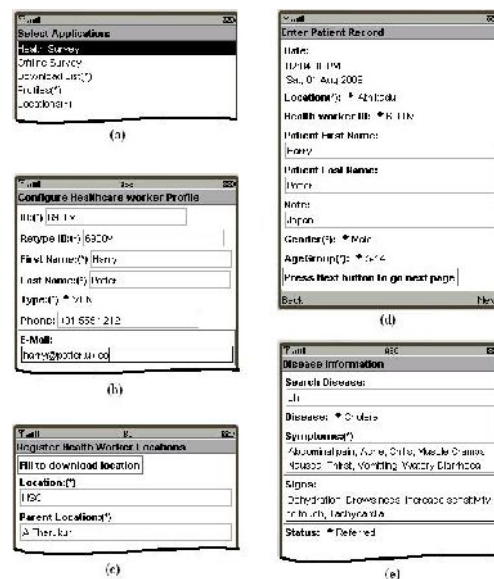


Figure 6: mHealthSurvey screens

phase. He stated that LIRNEasia and Auton Lab will help them in implementation and government must handle the main role.

6.4 Session IV- Data analysis and Event Detection

Next session on Data analysis was started with the sharing of the experiences in the field during introduction of T Cube Web Interface² (Figure 7) by Dr. Weerasinghe. He highlighted the introduction of automated scan and simplifying the complex statistics to the health workers had improved the usability. Mr. Muthukuda, a PHI from Wariyapola demonstrated outbreak detection by using TCWI, confirming the success story of the project. He insisted TCWI is a user-friendly data mining tool which will make reduces the work load but increases the quality of the health service by early detection of events. He requested to make the server always available because it was the only error they are facing. Mr. Nuwan Waidyanatha offered our gratitude for the all TCWI users and explained the reason for frequent server errors due to the power failures and frequent stormy weather in Colombo and will try to find solutions for it soon.

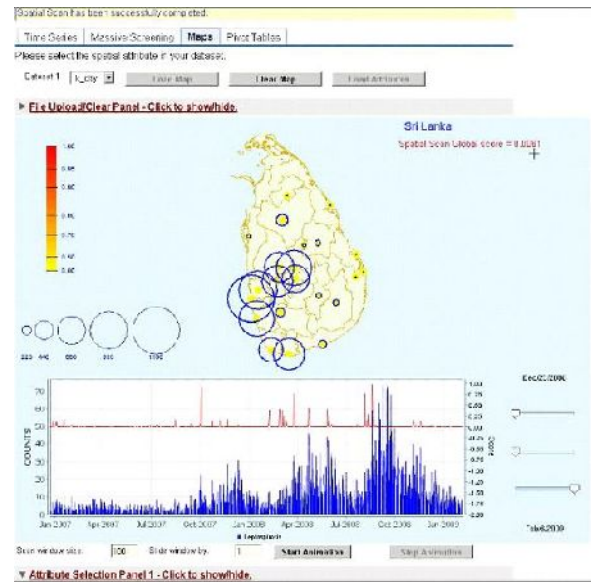


Figure 7: Screen of TCWI

Dr. Hemachandra was invited to chair this session as he is the most responsible person for the outbreak detection in this region. He agreed with the PHIs comments and he showed the necessity of learning and practicing TCWI by all medical officials. During the discussion main problem brought up was who is going to monitor the TCWI daily. So, at least one person from each MOH area must be needed for it. PPAs, PHIs and Data recording Officers at Regional epidemiology unit were appointed for this task without any objections. But the necessity of mastering TCWI by all decision makers was highlighted.

Dr. Edirisinghe introduced the idea of using GIS mapping in TCWI and its importance. Mr. Nuwan Waidyanatha replied that will be a future step and it's just a matter of technology, but even for that researchers need more government recruitments. Health officials requested that their main worry about the notifiable category only and if even a one patient present from notifiable category before it generate an alert for outbreak, it should be notified through it. Prof. Dubrawski again insisted that TCWI is a detection statistical tool not a reporting tool, but if it's really required he said they will incorporating the reporting of presence of cases only for the notifiable category.

PHIs highlighted the importance in adding the personal information of the patients during implementation for the easiness in traceability in the field level.

6.5 Session V- Alerting

The screenshot displays the 'Real Time Biosurveillance Program' interface. On the left is a navigation menu with sections: 'MESSAGING/ALERTING MODULE' (containing links like Home, Contacts, Query Messages, Reports, Alerts, View/View Alerts, Issue U/LASL Alerts, Create New Alerts, View Alerts, and Alert Templates) and 'MAIN MENU' (containing links like Messaging/Alerting Module, Biosurveillance, User Preferences, and Administration). The main content area is titled 'Creating CAP' and contains a form with the following fields: 'Alert' (Information, Resource, Alert), 'Language' (English), 'Category' (Health), 'Event' (Notifiable disease incidence / ? IIR), 'Priority' (dropdown), 'Optional' section with 'Sender Name' (text), 'Send time' (dropdown: Publishing (disease) in (h)), 'Description' (text area), and 'Audience' (text area). Below this is the 'Response type' section with 'Media', 'Onset', and 'Expires' (each with a time zone dropdown), and an 'Instructions' text area. At the bottom, there are 'Web' (http://s.l.i.r.t.b.i.h.s.i.r.t.t.), 'Contact' (3047210675), and 'Cap Message Info - Event Code'.

Figure 8: Screen of Sahana Alerting Module

Final session on alerting was started with brief introduction on challengers we met during the introduction of Sahana Alerting Module³ (figure 7) to the field level by Dr. Weerasinghe. Again ensuring the success story, PHI from Udubedawa, Mr. Kapila demonstrated how Sahana is using for alerting and he also insisted that this is a quicker and easier method of alerting multiple individuals via multiple ways at once. He appreciated the user friendliness, capability of sending alert in SMS, Emails and as Web publications and the traceability of the record. Then Dr. Amerasekara the MOH Kuliypitiya was invited to chair this session and he accepted the capability of Sahana alerting and appreciated the efforts. Therefore this rapid alerting network allows attending the outbreaks quickly and sparing the time for the health workers to pay their attention more towards preventive works not for the paper works.

Finally interim workshop ends with closing the chapters in a Successful story – RTBP pilot, but with the signs of a dawn of implementation.

7. Other events

7.1 Meeting with Provincial Director of Health Services of Sabaragamuwa.

With the hope of expanding the project in to the other provinces, this meeting was held at the Ministry of Health Sabaragamuwa province on 13th of July 2010.

Participants

- 1). Dr. Kapila Kannangara (Provincial Director of Health Sabaragamuwa)
- 2). Member of Health Planning in Kegalle District
- 2). Prof. Artur Dubrawski (Director CMU Auton Lab)
- 3) Mr. Nuwan Waidyanatha (Project Director, Senior Researcher, LIRNEasia)
- 4). Dr. G.C.S.Weerasinghe (Research Assistant, LIRNEasia)
- 5). Mr. Michael Baysek (Systems Administrator, CMU Auton Lab)

Outcomes: Project goals and overviews were described by Mr. Nuwan Waidyanatha and elaborate the successful story at the Kurunegala district. Prof. Artur Dubrawski also added the importance of RTBP and the capabilities of it. Practical demonstration of data collecting software – mHealthsurvey, event detection tool – TCWI, and alerting module – Sahana were done. Dr. Kapila Kannangara was accepted the invitation for incorporating RTBP in the Kegalle district. He said health ministry of Sabaragamuwa will play the main role in the pilot including necessary financial contributions and Kegalle district was selected for the initiation of the Pilot. LIRNEasia and Auton Lab will play the facilitating role, helping them in training trainer team for mHealthsurvey, TCWI and Sahana, in workshops and in other technological issues like mapping the hospitals ect.

Finally meeting was ended with the hope of new chapter for Kegalle district in the RTBP story.

Meeting with World Health Organization

Another meeting was held at the head office of WHO in Colombo on the 16th of July 2010 with the purpose of introducing the RTBP and its research findings, Dr. Palitha Abeykoon from WHO, Prof. Artur Dubrawski from Auton Lab and Mr. Nuwan Waidyanatha from LIRNEasia was participated for this event,

8. Photo Gallery

8.1 Inauguration



8.2 Session II – Project Overview



8.3 Session III – Data collection



8.4 Session IV- Event detection





8.5 Session V- Alerting



9. ACKNOWLEDGEMENTS

Authors wish to acknowledge the funding agencies: International Development Research Center (IDRC) of Canada for the grant (105130) in full support of the project titled – Evaluating a Real-Time Biosurveillance Program The authors are grateful for the enthusiastic participation and support of the Wayamba Provincial Director of Health Services office (North Western Province) and the Lanka Jathika Sarvodaya Society in Sri Lanka.

10. References

1. Kannan T, Seebha R. Real-Time Biosurveillance Program: m-HealthSurvey Software Requirement Specifications [Internet]. 2009 Jan. Available from: http://lirneasia.net/wp-content/uploads/2009/06/srs_mobile_application_rtbp_v20.pdf
2. Ray S, Michalska A, Sabhnani M, Dubrawski A, Baysek M, Chen L, *et al.* T-Cube Web Interface: A Tool for Immediate Visualization, Interactive Manipulation and Analysis of Large Sets of Multivariate Time Series. AMIA Annual Symposium; 2008; Washington DC.
3. Gow G, Waidyanatha N. Common Alerting Protocol for Sahana Messaging Module: Real-Time Biosurveillance Program Software Requirement Specifications [Internet]. 2009. Available from: <http://lirneasia.net/wp-content/uploads/2009/05/Sahana-CAP-Msg-Mod-v0.2.pdf>