

Alert and Situational-Awareness

Standard Operating Procedures

Real-Time Biosurveillance Program

Version 1.0

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Sarvodaya



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1 DEFINITIONS AND ABBREVIATIONS

Table 1: List of acronyms and descriptions

BSM	(Sahana) Biosurveillance Module
CAP	Common Alerting Module
CSM	Clerical Staff Member
DBA	Database Administrator
EDXL	Emergency Data Exchange Language
MAM	RTBP Messaging/alerting Module
mHS	mHealthSurvey
MO	Medical Officer
MOH	Medical Officer of Health
MOIC	Medical Officer In-Charge
PD	Provincial Director
PDHS	Provincial Director of Health Services
PHI	Public Health Inspector
PHM	Public Health Midwife
R-Epid	Regional Epidemiological Unit
RA	Research Assistant
RE	Regional Epidemiologist
RTBP	Real-Time Biosurveillance Program
SHN	Sector Health Nurse
SOP	Standard Operating Procedures
SPHI	Supervising Public Health Inspector
Suwacevo	(Sarvodaya) Suwadana Center Volunteers
SysAdmin	System Administrator
TCWI	T-cube Web Interface
URL	Uniform Resource Locator

2 ALERT AND SITUATIONAL-AWARENESS MESSAGING

Trained and certified health department personnel entrusted with the task of notifying health officials and health workers on health threats that require response actions or inactions should read this section. This section covers the procedures involving the RTBP Messaging/Alerting Module (MAM) and dissemination of alert and situational-awareness (situ-aware) messages via SMS, Email, and Web.

2.1 Roles and Responsibilities

Purpose: define the roles and responsibilities of the actors involved with the alert and situ-aware messaging process.

- 2.1.1 **Decision-Maker:** is the head or responsible person in each of the health jurisdictions assigned for making decisions on disease surveillance and response actions. The same person will be the authority to decide whether or not a alert or situ-aware message should be issued for a particular detected health event. Following are the decision-makers in Sri Lanka.
- (a) R-Epid office → RE
 - (b) MOH office → MOH or SPHI or both
- 2.1.2 **Message-Issuer:** is a health official or a person with authority granted by the Government of Sri Lanka who will be responsible for the issuing of the message within that particular jurisdiction. The name of this responsible person will be identified in the **senderName** field of the CAP message. This person may be the same person as the Decision-Maker but should not be confused with the person creating the message in 2.1.3.
- (a) R-Epid office → RE
 - (b) MOH office → MOH
- 2.1.3 **Message-Creator:** is a technically competent and trained IT person capable of manipulating the RTBP messaging/alerting module to generate a CAP message and disseminate the message to the intended recipients.
- (a) R-Epid office → CSM (Clerical Staff Member)
 - (b) MOH office → PPA, PHI or SPHI
- 2.1.4 **Message-Recipient :** is a health official or health worker: PD, RE, MOH, MOIC, MO, SPHI, PHI, PHM, the message is intended for and received through one or more of the delivery channels such as SMS, Email, or Web.

2.2 Training

Purpose: orient and mobilize health departments with issuing health category alerts and situational reports, conducting surveys, and other messaging requirements.

- 2.2.1 Users must receive training through the RTBP to operate the MAM for the purpose of issuing health category situational awareness and alerting messages using the CAP standard.
- 2.2.2 Only trained and certified health workers or health officials should be authorized to issue alert and situational awareness CAP messages. Alerting and situational awareness messaging is a quite sensitive and should be executed with caution because these alerts or situational awareness messages should not cause any panic or mislead those receiving the messages. Moreover, only designated health departments have the jurisdictional authority to issue alert and situational awareness messages.
- 2.2.3 All personnel involving in the decision-making, message-creation, message-issuing, and message-receiving are encouraged to read the CAP Alerting for **Sahana Messaging Module - Real-Time Biosurveillance Program Software Requirements Specifications v1.1** (to download a copy - <http://lrneasia.net/wp-content/uploads/2009/05/Sahana-CAP-Msg-Mod-v0.2.pdf>) or latest to get an in-depth understanding of the CAP elements and the selection of values.
- 2.2.4 A copy of the user manual: “Sahana Alerting using the Common Alerting Protocol: User Guide version 1.0” describing the step by step process of initializing and issuing CAP messages can be obtained through –
 - (a) RTBP web interface at <http://www.scdmc.lk/> → Messaging/Alerting Module → Read Me → CAP Alerting User Manual
 - (b) Directly from the web link – http://www.scdmc.lk/docs/rtbp_cap_user_guide_v1_3.pdf
 - (c) Requesting a copy from an RTBP support staff or other member listed in Table 2.
- 2.2.5 At present RTBP is a pilot, users should be given training on providing feedback (or reporting) the acceptability of issues related to CAP, usability of the software, performance of the application and any bugs/fault encountered with the MAM applications. The feedback can be sent via email to the **General Complaints and Inquiries** or **Messaging/Alerting General Support** staff members listed in Table 2.

2.3 Prerequisites

Purpose: basic requirements for accessing MAM for health department personnel to use.

- 2.3.1 The health departments intending to use the MAM should have a strong stable Internet connection to the personal computer they are accessing MAM through. To access the RTBP web interface use the URL – <http://www.scdmc.lk>.
- 2.3.2 Health officials authorized to use the MAM, through the RTBP web interface, should be granted access with a user name and password. The username and



Figure 1: User login

password must be entered in text fields shown in Figure 1.

- 2.3.3 To access the MAM the user must first log in to the RTBP web interface and then click on the menu item titled - Messaging/Alerting Module (Figure 2).

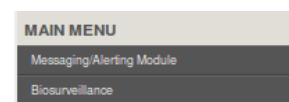


Figure 2: Menu screen

2.4 Initializing messaging templates

Purpose: setup of message templates and recipient lists that need to be configured in the MAM prior to issuing health category alerts.

- 2.4.1 To add or edit a template, the users can access the user interface by clicking on the add new template or edit template respectively (Figure 3).

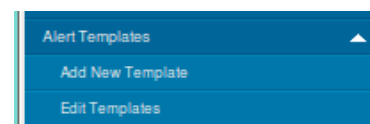


Figure 3: menu for templates

- 2.4.2 RTBP team and Health departments in the respective project sites (Kurunegala District) will develop a set of CAP message templates in the MAM to issue both manual and automated alerts. The templates carry only a subset of the CAP message attributes with respect to the alert information, and resource segments that can be predefined. By clicking on each of the tabs the user may view and edit the respective attributes of the three segments (Figure 4).

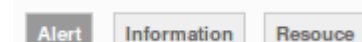


Figure 4: three segments

- 2.4.3 For the purpose of the RTBP four main templates have been developed based on the policy and procedures assessment conducted during the months of April 2010 (Figure 5):

- **Notifiable disease ACTION alerts** (action is required for the H544 list of diseases)
- **Other-communicable disease ACTION alerts** (action is required for communicable disease not included in the H544 list of diseases)
- **Notifiable disease awareness** (no action required, it is simply to make the health officials and health workers aware of the rise in H544 list of diseases)
- **Other-communicable disease awareness** (no action required, it is simply to make the health officials and health workers aware of the rise in communicable disease not listed in the H544 list of diseases)

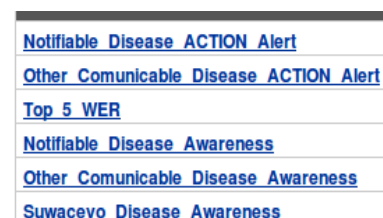


Figure 5: List of templates

- 2.4.4 In addition to the four main templates, the project has introduced two templates (Figure 5):
- **Top 5 WER** (Weekly Epidemiological Report) for MOH to issue a situational awareness message, once a week, to the health officials and health workers in their jurisdictions, to inform them of the diseases with the top five counts (i.e. first five diseases when sorted in descending order by disease count).
 - **Suwacevo disease awareness** is a template reserved to issue alert and situational awareness messages to Sarvodaya Suwadana Centers for maintaining a bulletin board in their communities, designated for notifying community members of any relevant health threats.

- 2.4.5 Templates must be saved with the CAP alert **status** set to “Draft” (Figure 6). When issuing

the alert the status should be set the appropriate value: *actual*, *exercise*, *test*, or *system* (see section 2.6.8)

- 2.4.6 The **scope** of the message templates should be clearly distinguished between public, private, or restricted alerts. The RTBP will only issue restricted alerts in this phase of the project where the audience will comprise health workers and health officials. The set of designations of the recipients should be provided in the restriction field (Figure 6).

Figure 6: Attribute selection in the Alert segment

- 2.4.7 In the information segment of the CAP template, the **category** = “Health” and **Language** = “English”. The **event** is a mandatory element must be pre-populated for the issuers convenience (Figure 7).

Figure 7: set the language, category, and event

- 2.4.8 The **headline** and **description** are partially defined with user having to complete these two elements in the Information segment of the CAP message at the time of issuing a message (see section 2.6.12). All words bounded by square brackets [] must be replaced with actual content pertaining to the particular incident (Figure 8). Any other values that should be populated at the time of issuing the message to complete the content in a meaningful manner should be demarcated with square brackets []. Example the message issuer would replace the word disease with the dengue, if that was the relevant disease of concern.

Figure 8: partly defined headline and description

- 2.4.9 A URL to a website and a phone number should be predefined in the CAP template's information segment attributes: **web** and **contact**, respectively, The web URL and the contact number can be changed at the time of issuing a message (Figure 9).

Figure 9: web and contact attributes

2.5 Establishing recipients and groups

Purpose: maintain recipient lists and groups of recipients to speed up the process of selecting recipients instead of looking up and entering them at the time of issuing a message.

- 2.5.1 Health department should register the recipients and create recipient groups to efficiently selecting message recipients at the time of sending the messages. To add or edit the recipients email and phone numbers, click on the menu item **Contacts** (Figure 10).

Figure 10: contact menu

- 2.5.2 A designated staff member at each of the health departments should be responsible for the upkeep of the recipients list and groups. If a recipient changes his or her email or phone number, they should notify the staff member to update the system. Proposed staff members

R-Epid office → CSM

MOH office → PPA

[Kuli PHIs](#)
[Pann PHIs](#)
[Wari PHIs](#)
[Udub PHIs](#)
[Pann MOs](#)
[Kuli MOs](#)
[RTBP Staff](#)
[Kuru Dist MOH](#)
[Suwacevo](#)
[Udub MOs](#)
[Wari MOs](#)
[Wariyapola PHMM](#)

- 2.5.3 For the purpose of the project the following individuals and groups have been identified: Provincial Director (PD), Regional Epidemiologist (RE), Medical Officer of Health (MOH), Medical Officer In Charge (MOIC), Public Health Inspector (PHI), Public Health Midwives (PHM).

Figure 11:
recipient groups

- 2.5.4 For the purpose of the project groups have been created for each jurisdiction and designation (Figure 11). Examples: Wari_PHIs (Wariyapola MOH area Public Health Inspectors

2.6 Creating a CAP Alert and situ-aware messages

Purpose: communicate diseases alert and situ-aware messages to the respective health officials and health workers for the purpose of choosing to respond to those communicated events.

- 2.6.1 Only trained and authorized users should be granted permission to issue alert and situational awareness messages. Only alert and situ-aware messages that are authorized by the designated decision-maker should be issued.
- 2.6.2 Health events detected manually through the T-Cube Web Interface (TCWI) or events detected through other processes must be, first, verified and authenticated by the disease-event-detection analysts and then receive authorization by the designated Decision-Makers of that health department before creating and issuing an alert or situ-aware message.
- (a) R-Epid office: detection analysis done by R-Epid CMS and decision to issue the message is granted by the RE.
 - (b) MOH office: detection analysis done by PPA, SPHI, or PHI and decision to issue the message is granted by the SPHI or MOH.
 - (c) Suwadana Centers: detection analysis done by RTBP RA and decision to issue the message is granted by the Head of the *Sarvodaya Suwadana Centers*.
- 2.6.3 The Decision-Maker should instruct the Message-Creator of the alert type; as to whether it is a Notifiable disease action alert, Other-communicable disease action alert, Notifiable disease situational-awareness, Other-communicable disease situational-awareness, Top 5 WER, or Suwacevo Situational-Awareness .

- 2.6.4 Messages that are authorized for issuing should be relayed through the RTBP MAM; specifically the “Alert” submodule that uses the **CAP** standard (Figure 12). To access the CAP alerting module, Message-Creator should, first, login and navigate in to the RTBP

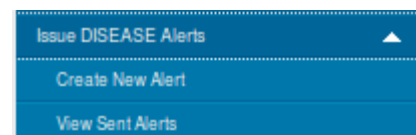


Figure 12: Issue disease alert menu

Messaging/Alerting Menu; see section 2.3 and procedures 2.2.2 and 2.2.3, illustrated in Figure 1 and Figure 2. Thereafter, click on on the sub menu titled: **Issue DISEASE Alerts** followed by **Create New Alert** (Figure 12).

- 2.6.5 Each alert issued must be given a name to identify that alert during an audit or when wanting reuse that same alert to issue an update, acknowledgement, or cancellation of the message. The naming convention should be **jurisdiction-disease-date** (Figure 13). The

Select Mode ☒ CAP ☐ EDXL
 Name
☒ Existing Alert Template ☐ New Alert

Figure 13: selecting CAP, name, and existing template

jurisdiction can be the abbreviation or acronym of the jurisdiction name concatenated with the first 3 to 4 characters of the location (village, town, division, district, or province name). The disease name can be the full name or a short form like ADD for Acute Diarrhea or RTI for Respiratory Tract Infection. The date can be a single string concatenation of the four digit year, two digit month, and two digit day (leading zero if 1 - 9), Example – mohwari-rti-20100502.

- 2.6.6 Although it is permissible to issue just-in-time fabricated CAP messages, it is highly recommended, in order to preserve the integrity, completeness, unambiguity of the message to use predefined templates to issue the CAP messages. Click on **Existing Alert Template** for this choice, which would present the templates as shown in Figure 15.

- 2.6.7 **Sender** field is a mandatory element and without filling this the Message-Creator could not proceed further. It is recommended that the email address, of the message-issuer, decision-maker or responsible health official for that jurisdiction, is given (Figure 14). Message-Creator may allow other fields in the initial screen of the message creation (Figure 14) remain with the default values.

Message Identifier
 Date Created
 Sender
 File Type
 File Version

Figure 14: fill in the sender only

- 2.6.8 The Message-Creator must remember to set the **messageType** and **status** (Figure 15) in the tab titled: **Alert**. The status must be changed from the value “Draft”, which is set at the time of creating the template (see section 2.4.5), to either “Actual”, “Exercise”, or “Test” based on your intentions. Similarly, the messageType must be set to “Alert”, “Update”, “Cancel”, or “Ack” based on the intention (Figure 16).

- 2.6.9 The **restriction** list, also in the Alert tab, should be edited to correctly reflect the list of actual recipients (Figure 15 is edited such that the message is restricted for PHIs only). Thus, in case the message is received by health official, health worker, or any other person not on the list, for that matter, they know that the message may have been sent to them by accident and that they may chose to disregard the message or choose to inquire from the sender as to whether the message was intend for him or her. All other attributes may remain as per the default values.

Message Identifier ? HELP
 Sender ? HELP
 Message Type ? HELP
 Status ? HELP
 Source ? HELP
 Scope ? HELP
 Restriction [Restricted]

Figure 15: Alert segment elements

2.6.10 Of the attributes in the **Information** tab – **language**, **category**, and **event** should not be changed and allowed to remain with the default values (Figure 16). These values are predefined at the time of creating the template as per the policy and procedures gathered from the interviews with the health department officials.

Language: English
Category: Health
Event: notifiable disease incidence

Figure 16: default Info elements

2.6.11 It is essential that the **priority** of the message is set based on the severity, certainty, and urgency of the message (Figure 17). An **urgent** priority message requires immediate action, **high** priority message requires execution of response plans if the threat is eminent, and a **low** priority message is simply a awareness where recipients are recommended to be vigilant of the event escalating. The reader should refer to the RTBP CAP Guidelines mentioned section 2.2.3 to understand the scope of the message priority.

Priority: High
Urgency: Expected
Severity: Severe
Certainty: Observed

Figure 17: setting the priority

2.6.12 The **sender name**, **headline**, and **description** must be changed to fit the particular incidence. Sender name is the actual name (example first name and last name) of the Message-Issuer. Headline requires that the [disease] name and the [area] affected be properly replaced. Description requires the [number] of cases, [disease] name, [age groups], [genders], and affective geographic [areas] are replaced with the appropriate words bounded by square brackets []. Figure 18 illustrates an example:

Sender Name: Dr. Subasinghe
Headline: Calating RTI in Udubeddawa
Description: 14 cases of RTI for all age groups and all genders were reported by the Katupotha district hospital.

Figure 18: sender, headline, and description

14 cases of Respiratory Tract Infection applicable to all genders and all age groups was reported by the Katupotha District Hospital.

2.6.13 Based on the priority level of the incidence a response action must be indicated. A set of fixed **response type** values are given in the drop down list; where **prepare**, **monitor**, **execute**, **assess**, or **none** are the most appropriate values to select one (Figure 19).

2.6.14 Alert and situ-aware messages are not intended to be internal. Therefore, the message must specify the **effective** and **expire** date of the message; meaning what is the date rang, start and end, of the message validity (Figure 19). It is to the discretion of the health departments of Message-Issuer to decided the effective period of the alert (i.e. the number of day Expires = Effective + Num-days). A date time calendar will pop-up when the user clicks inside the text field of the effective or expire date boxes. The time zone is by default set to reflect the UTC shift for India and Sri Lanka; hence the Message-Creator need not change the value and may leave it as default.

Response Type: Monitor
Effective: 2010-04-29T12:34:00+05.30 Time Zone: +05.30
Onset: 2010-04-26T12:34:00+05.30 Time Zone: +05.30
Expires: 2010-04-30T12:34:00+05.30 Time Zone: +05.30

Figure 19: response type with effective, onset, and expire dates

2.6.15 The **onset** date is the date and time of when the incident began, which is intuitively on or before the effective date of the alert or situ-aware message. To set the onset date click inside the text box for the calendar to appear. Similar to the effective and expire date the UTC time shift is, by default, set to Indian and Sri Lankan time zones and need not be changes (Figure 19).

2.6.16 The **instruction** text box can be used to provide additional information with respect to the description or response (Figure 20). A default set of instructions are indicated at the time of creating the template; however, can be changed based on the incidence such as mentioning the set of actions that should be applied specific to the particular disease.

2.6.17 The recipient can be directed to a **web** page that carried a complete description of the alert or situ-aware message or a web page carrying additional information. The **contact** is a telephone number (or hotline) for the message recipients to verify the message or receive further information. By default the web URL points to the complete CAP message published on the web and the contact number is the R-Epid office number. These two values may be changed; for example, if a MOH office is issuing the message, then the contact phone number can be the MOH office phone number opposed to the default R-Epid phone number (Figure 20).

Figure 20 shows three input fields. The 'Instruction' field contains the text: 'This is to notify PHI, MO, and MOH of the incidence NO ACTIONS required.' The 'Web' field contains the URL: 'http://www.scdmc.lk/index.l'. The 'Contact' field contains the phone number: '+9437222278'.

Figure 20: instruction, web, and contact

2.6.18 The Area segment of the CAP message describes the geographic area for which the message is issued to. This **area description** is different from the area indicated in the description or headline, which indicates the locations the disease was reported from. Whereas the area to which the alert or situ-aware message is issued is wider areas. For example, the disease incidence may be reported from two neighboring hospitals in a MOH division but the alert or situ-aware message may be issued to the entire district. The Message-Creator should first select the location category followed by the location type. Thereafter, type in the name of the geographic area for which the message is intended. When typing the name, the software application will recommend similar names that are in the database from which the Message-Creator may select one or more locations (Figure 21).

Figure 21 shows three input fields. The 'Location Category' dropdown menu is set to 'Health'. The 'Location Type' dropdown menu is set to 'PHI'. The 'Area Description' text box contains the text: 'Dunakadeniya-PHI'.

Figure 21: area description (locations message is for)

2.6.19 After all values pertaining to the message have been completed, the Message-Creator should click in the **update** button, located at the bottom of the entry forms, to save the values to the database prior to disseminating the message. Message-Creator may save the work during any time of the message-creation process.

2.7 Delivering the Alert and Situ-Aware messages

Purpose: select the appropriate recipients or groups of recipients and disseminate the message through the available SMS, Email, and Web publishing channels.

2.7.1 Once the created message is successfully saved (or updated), a message will appear at the top of the form as in Figure 22. The Message-Creator or Message-Issuer can click on the blue hyper-link to begin sending the message.

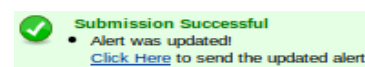


Figure 22: warning message

2.7.2 Overall the Message-Issuer should check all values before sending a message because once the message is sent it cannot be revoked. In the event a user does want to correct or amend

an issued message, then they should re-issue the same message but changing the Message Type to “Update” or “Cancel”.

- 2.7.3 Alert and situ-aware messages should be issued only to those **recipients**: health workers and health officials the message is intend for. To deliver the message via SMS and email the mobile phone number and email address of the recipient is required. Recipient phone numbers and email addresses can be directly entered in to the recipients text box (Figure 23). Each phone number and email address must be separated by a comma. All phone numbers should preceded with 00 (for international dialing) followed by the country code (e.g. 0094 or 0091 for Sri Lanka and India, respectively).

Figure 23: recipients list

- 2.7.4 To add include groups of recipients, simply click on the group name (e.g. Pann_PHIs), shown in Figure 24. This would automatically include those recipients in to the delivery list, similar to the group id - {r7l2msg-22:Pann_PHIs:team} (Figure 23).

Figure 24: groups

- 2.7.5 Once all recipients are included in the recipients list (Figure 23), click the button labeled “Next → Alert Type” to proceed to the next page for selecting the **delivery types**. Select each of the delivery types SMS, Email, and Web through which the message should be disseminated. There are three delivery types: long-text, short-text, and voice-text messages. The RTBP will use short-text and long-text delivery types only with **SMS**, **Email**, and **Web** as the three different delivery technologies (Figure 25). The difference between the short-text email and the long-text email is that the long-text email will attach the CAP XML file in the email.

Delivery Category	Delivery Type	Select
Short Text	SMS	<input checked="" type="checkbox"/>
	HF	<input type="checkbox"/>
	RDF	<input type="checkbox"/>
	Email	<input type="checkbox"/>
Long Text	Email	<input checked="" type="checkbox"/>
	Web	<input checked="" type="checkbox"/>

Figure 25: delivery types

- 2.7.6 Click “Next → Transform Message”, which will transform the CAP message to an SMS, Email, and Web as defined by the Implementers. The resembling transformed messages to be delivered via SMS, Email, and Web will be displayed in the next screen, as shown in Figure 26. The Message-Issuer has one last chance to edit the message, if necessary, before clicking the “Send Message” button, which would deliver the message.

Figure 26: transformed messages

- 2.7.7 To change the appearance and the structure of the SMS or email alert or situ-aware messages, consult the Implementers or Support Staff mentioned in Table 2.

2.8 Reporting bugs and problems

Purpose: ensure uninterrupted use of application with less ambiguity, maximum functionality and minimal down time.

- 2.8.1 Any bugs, problems, or observations, or enhancement requests with respect to the MAM

should be reported to an RTBP member in Table 2.

- 2.8.2 The Research Assistant will meet with the users each month to assess the workability, problems, and performance of the MAM.

2.9 Contact information

- 2.11.1 Health officials should be provided with a list of important contact information

Table 2: Contacts list for health officials

Role	Name	Email	Mobile Phone	Fixed Phone
General complaints and inquiries	Priyadarshini Perera	pppriyadarshani@gmail.com	+94723633470	+94372281198
Messaging/Alerting general support	Chamindu Sampath	chamindusampath@gmail.com	+94718081434	
Messaging/Alerting technical support	Pradeeper Damendra Mahesh Kaluarachchi	pradeeper@respere.com mahesh@respere.com	+94772928456	+94112500511