Tourism and Health Information System (THiS)

Lisa Indar and Ayanna Alexander
Tourism and Health Program
Caribbean Public Health Agency (CARPHA)
Objective

To monitor in real-time for health threats in Caribbean tourism accommodations to trigger early warnings to prevent and/or minimize the spread and impact of disease.
Tourism Health Information, Surveillance, Monitoring and Response system

- Early Warning and Response Travel Health System
  Web-based, real time, (THiS.carpha.org)
- Real time info for early response, to reduce/stop spread, reputation & economic damage
- ALL data is CONFIDENTIAL
- No names persons/accommodations would NOT be targeted
- Data is NOT published
- Not a hotel tracking system
- Internal health monitoring and alert system for facility, country

Preventing disease, promoting and protecting health
Surveillance Pathway

Regional (CARPHA)
- Review de-id total alerts reported from countries

National (Ministry of Health)
- Receive facility alerts
- Review facility level to investigate alerts
- Review national aggregate data to identify trends

THiS web app
- Data entry
- Data analytics

Facility (Accomodations)
- Report cases of illness in real-time
- Access to data analytics for their facility

Alert notifications
System generated when syndrome thresholds are reached

Self-reporting
- Guests/Staff to anonymously report illness from a Facility
Symptoms under Surveillance (CARPHA Regional Guidelines)

1. Diarrhea (≥3 stools, 24 hrs)
2. Vomiting and/or nausea
3. Fever (>38.0°C or 100.4°F)
4. Cough or sore throat
5. Bleeding (gums, nose, sputum, under skin, stool) *not caused by trauma
6. Headache
7. Joint or muscle pains
8. Eye pain/facial pain
9. Generalized rash
10. Blurred vision or convulsions or altered consciousness
1. Diarrhea, ≥3 loose stools 24hrs
2. Vomiting and/or nausea
3. Fever (sudden onset, >38.0°C or 100.4°F)
4. Cough/sore throat/breathing difficulties
5. Bleeding (gums, nose, sputum, under skin, stool) not caused by trauma
6. Headache
7. Joint or muscle pains
8. Eye pain/headache/facial pain
9. Generalized rash
10. Blurred vision or convulsions or altered consciousness

**Gastroenteritis**
- Diarrhea (1) **OR**
- Diarrhea (1) + Vomiting/nausea (2)

**Undifferentiated Fever**
- Fever (3) **AND at least two of:**
  - Headache (6)
  - Joint or muscle pains (7)
  - Eye Pain/headache/facial pain (8)
  - Vomiting and/or nausea (9)

**Fever & Hemorrhagic Symptoms**
- Fever (3) **AND** Bleeding (5)

**Fever & Neurologic Symptoms**
- Fever (3) **AND** Blurred vision or convulsions or altered consciousness (10)

**Fever & Respiratory Symptoms**
- Fever (3) **AND** cough/sore throat/difficulty breathing (4)

**Fever & Rash**
- Fever (3) **AND** generalized rash (9)
## Monitoring & Alert Thresholds

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Threshold</th>
<th>Alert</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroenteritis</td>
<td>( \geq 2% ) of staff and guests</td>
<td><strong>System generated email alert to users</strong></td>
<td></td>
</tr>
<tr>
<td>Undifferentiated Fever</td>
<td>Ministry of Health reviews data for trends to alert Hotels to potential issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever &amp; Hemorrahgic Symptoms</td>
<td>1 case</td>
<td><strong>System generated alert to users</strong></td>
<td>Established between Facility and Ministry of Health</td>
</tr>
<tr>
<td>Fever &amp; Neurologic Symptoms</td>
<td>1 case</td>
<td><strong>System generated alert to users</strong></td>
<td></td>
</tr>
<tr>
<td>Fever &amp; Respiratory Symptoms</td>
<td>Ministry of Health reviews data for trends to alert Hotels to potential issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever &amp; Rash Symptoms</td>
<td>1 case</td>
<td><strong>System generated alert to users</strong></td>
<td></td>
</tr>
</tbody>
</table>
Types of Users

1. Facility Users (hotels, guesthouses, medical center)
   – Administrative staff/hotel nurses (reporting/data entry)
   – Hotel management and nurses? (data analytics)

2. Country Users/Ministry of Health
   – Epidemiologists/surveillance officers at National and Regional offices (data analytics)

3. CARPHA
   – THP Epidemiologist and Unit Head (data analytics)
### Accommodation Registration

**Information for secure access to Data Analytics Dashboard:**

| Name of Hotel Manager: | James Edwards  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Email of Hotel Manager:</td>
<td><a href="mailto:jedwards@paradiseinn.com">jedwards@paradiseinn.com</a></td>
</tr>
<tr>
<td>Mobile # for Hotel Manager:</td>
<td>(1) 868-359-7502</td>
</tr>
</tbody>
</table>
| Name & Contact Information for secondary person (if applicable): | Richard Yates,  
| | ryates@paradiseinn.com, (1) 868 349 7512 |

**Information to develop hotel specific thresholds for illness alerts**

<table>
<thead>
<tr>
<th>Number of Rooms in Facility:</th>
<th>102</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Staff at Facility:</td>
<td>205</td>
</tr>
</tbody>
</table>
| Low Season*  
(Please include month ranges) | May 1 - Oct 31 |
| Estimated Average Occupancy rate for Low Season  
(i.e. X% rooms occupied) | 64% |
| High Season*  
(Please include month ranges) | Nov 1 - Apr 30 |
| Estimated Average Occupancy rate for High Season  
(i.e. X% rooms occupied) | 77% |

*Low and high season month ranges should occur sequentially, as in the example above*
## Report Case - The Phoenix Resort

**Instructions:** Please complete the following questions to reflect your experience as accurately as possible and to answer factual questions to the best of your knowledge.

Some fields are optional (required fields to submit a report are questions 1, 2, 10). All information submitted will be kept strictly confidential.

1. Are you a guest?
   - Please select...

2. In which country is the facility that you were staying when you began to feel unwell in?

3. Which type of facility is this?
   - Facility Name
   - Please select the facility name from the list above (if "Other", please specify in the Additional Notes field at the end of the page)

4. What is your age?
   - Age Group
   - <1

5. What is your gender?
   - Please select...
Example of a case report

1. *Guest or Staff:* Guest
2. **Country of hotel:** [auto gen at login]
3. **Type of facility:** [auto gen at login]
   - **Facility Name:** [auto gen at login]
4. **Age:** 24
   - **Age Group:** [auto gen based on ‘Age’] or user can enter an approximate age group if ‘Age’ is not provided by person reporting
5. **Gender:** Female
6. *Home Country:* Canada
7. *Recent Travel:* U.S., Mexico
8. **Reported date:** [auto gen]
9. **Symptom onset date:** 2016/09/19
10. **Symptoms:** Fever, Sore Throat
11. **Additional Notes:** person fainted, went to see Dr. Jones

Some fields are pre-populated based on user login (Country, Facility Type & Name, Reported Date)

*Only four fields are required to submit a report*
Once a hotel completes a Data Entry report, the data is used to populate a Report Dashboard.

The symptoms that are reported during Data Entry are analyzed by the system to generate 6 syndromes that are displayed in the Report Dashboard. These 6 syndromes are:

1. **Gastroenteritis** (*potential illnesses include Salmonellosis, Campylobacteriosis*)
2. **Fever & Rash** (*potential illnesses include Zika Virus*)
3. **Fever & Respiratory** (*potential illnesses include Influenza, Legionellosis*)
4. **Fever & Neurologic** (*potential illnesses include Malaria, Mumps*)
5. **Fever & Hemorrhagic** (*potential illnesses include Yellow Fever*)
6. **Undifferentiated Fever** (*potential illnesses include Typhoid, Hantavirus*)
Dashboard - Overview

For registered facilities the Dashboard:

- Accessible to (2) members of management who have been provided a separate secure username and password
- Provides overview of demographics and syndromes reported by guests; filters provide ability to modify time period of data displayed
- Interactive using mouse to hover over figures for additional data

Users can apply filters to modify the time period visualized in the Dashboard. Users must hit ‘Apply Filters’ to update the Dashboard.

Year: can change the Year shown
Start of EPI Weeks: First week for which you would like data shown
End EPI Weeks: End week for which you would like data shown
Dashboard - Demographics

Overview of all reported syndromes over specified Time period (shown here is epi weeks 1-52)

Breakdown of syndromes by Age Group
Charts of each individual Syndrome stratified by Guest vs. Staff over specified Time period (shown here is epi weeks 1-52)
To date in 2018 (Epi week 28) there have been 83 syndromic cases reported using the THiS web app. Table 3 below outlines the details on the cases reported. Like 2017, Gastroenteritis was the most frequently reported syndrome at an 84% frequency in 2018. There have been no reported cases of other syndromes thus far.
Thank you!

CARPHA Tourism and Health Program
www.carpha.org/tourism
Carpha-tourismandhealth@carpha.org