

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



LINDA ROSEN, M.D., M.P.H.  
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STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 3378  
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In reply, please refer to:  
File:

November 3, 2014



MARLER CLARK LAW FIRM  
Attn: Patti Waller  
1301 Second Avenue, Suite 2800  
Seattle, Washington 98101

Reference: 2014 Royal Hawaiian Hotel Final Summary Report Submittal

Dear Ms. Waller,

This letter serves as notification of transmittal of a printed hard-copy of the 2014 Royal Hawaiian Hotel Final Summary Report.

Yours sincerely,

Michele N. Nakata  
Branch Chief  
Disease Investigation Branch  
DISEASE OUTBREAK CONTROL DIVISION  
1250 Punchbowl Street - #443  
Honolulu, Hawaii 96813



**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

**Investigation Summary Report**  
**Report Type: Final Report**

**Notification Date** 5/17/2014  
**Date Initiated** 5/17/2014  
**Date Closed** 6/12/2014  
**Investigation ID** 100353417  
**Investigation Type** Cluster or Outbreak  
**Condition** Norovirus  
**Specific Etiology** Norovirus GI.3B  
**Final Status** Laboratory confirmed

**First Onset Date** 5/14/2014  
**Last Onset Date** 5/26/2014  
**# Ill** 114 estimated  
**# Exposed** 184 estimated  
**# Lab-Confirmed** 7  
**# Probable** 107 estimated  
**# Visited Provider** 34  
**# Visited Emergency** 1  
**# Hospitalized** 1  
**# Deaths** 0

**Exposure Setting** Hotel  
**Specific Setting** The Royal Hawaiian  
**Island** Oahu  
**Transmission Mode** Foodborne  
**Specific Vehicle** Not determined  
**Control Measures** Workplace restriction; environmental controls

**Investigator Name** Myra Ching-Lee  
**Report Date** 6/13/2014

**Supervisor Name** Michele Nakata  
**Report Received** 10/30/2014  
**Report Approved** 10/30/2014 

**Comments**

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## BACKGROUND

On May 17, 2014, the General Manager of the Royal Hawaiian Hotel (RHH) informed the Hawaii Department of Health (HDOH), Disease Investigation Branch (DIB) Standby Duty Officer of acute gastrointestinal illness among eight hotel guests and 11 restaurant patrons, including attendees of a wedding dinner reception held at the Azure Restaurant, a guest food establishment at the hotel, on May 15, 2014. Several employees were also reported ill with similar symptoms. The manager stated that the first report of illness was received at 3:00 a.m. on May 16, 2014 from a hotel guest.

## INVESTIGATION & FINDINGS

The clinical case definition used to identify gastrointestinal illnesses potentially associated with exposure to food and/or environmental surfaces at the Royal Hawaiian was:

- Diarrhea and Vomiting; or
- Three or more loose stools in a 24 hour period; or
- Three or more vomiting episodes in a 24 hour period; or
- Diarrhea or Vomiting with two or more of the following additional symptoms:
  - Abdominal cramping and/or pain
  - Nausea
  - Low-grade fever (usually < 101F)
  - Myalgia (muscle aches)
  - Chills
  - Malaise (fatigue)
  - Headache

Ill persons were classified as follows:

- **Confirmed** – illness etiology confirmed by clinical laboratory testing.
- **Probable** – illness meets clinical case definition but was not confirmed by clinical laboratory testing.

Investigation focused on five separate groups [Table 1]:

- Azure Party 1 – Clinical Research Dinner Party on May 14, 2014
- Azure Party 2 – Wedding Dinner Reception on May 15, 2014
- Azure Party 3 – Tour Group Dinner on May 16, 2014
- Patrons of Azure Restaurant, and individual hotel guests\*
  - \*individuals who ate at other hotel venues or ordered room service
- Hotel employees, including kitchen staff

A total of 114 individuals reported illness compatible with the clinical case definition. Among ill persons, diarrhea was the most frequently reported symptom, followed by nausea and vomiting. Incubation periods ranged from 6 to 98 hours and duration of illness ranged from 2 to 120 hours [Table 1]. There were also four secondary cases identified in contacts of outbreak-related cases. Illness onset dates ranged from May 14 to May 26, 2014 [Chart 1].

Ill persons identified a wide variety of food exposures; individual parties consumed different food items that were prepared and served on different days. Therefore, no one common food item or employee was identified as a potential source of the infections. The only common factor was that ill persons had consumed food that had been prepared by the kitchen at the Royal Hawaiian Hotel.

A total of 10 stool specimens were submitted for laboratory analysis by the State Laboratories

Division (SLD), Laboratory Preparedness and Response Program, Biological Response Section. Of these, six were positive for Norovirus. One additional specimen was reported Norovirus positive by a private clinical laboratory. Four of the SLD positive specimens were sequenced and determined to be Norovirus GI.3B.

Of the individuals interviewed, ninety-one were Royal Hawaiian employees (kitchen and general staff). Of these, 17 reported having a gastrointestinal illness during the outbreak period. One ill employee reported an episode of diarrhea in the employee restroom at work on May 14, 2014, prior to dinner service. A second employee reportedly vomited into a kitchen area trash can on May 15, 2014. Ill employees were immediately sent home and were provided paid sick leave to remain home from work for three days after resolution of symptoms. Employees were reminded of proper hand hygiene procedures. The last employee illness onset was on May 20, 2014.

There are a total of three guest food establishments at the Royal Hawaiian. All three share one common kitchen/prep area and staff; however, each establishment has separate staff that host, serve, bartend, and/or stock. The hours of operation of each differ, but overlap to some extent. Employee meals are prepared by the same common kitchen and served at an employee cafeteria (Mokihana) which also provides meals for Sheraton Hotel employees. There were no illnesses reported among Sheraton Hotel employees during the outbreak.

Existing uncooked, ready-to-eat food items that had been prepared by Azure Restaurant on May 15, 2014 were submitted to the SLD, Foodborne Emergency Response Network laboratory for Norovirus testing. All food samples were negative for Norovirus [**Disclaimer:** "*A negative (not detected) result indicates only the absence of detectable analyte in the sample tested, and does not completely exclude the suspected condition.*"].

The hotel conducted environmental sanitation continuously from May 16, 2014 through May 28, 2014. Virex Tb Ready-to-Use Disinfectant Cleaner™ was used on May 16, 17, and 18 to sanitize guest rooms of ill persons, elevator buttons, and other common area surfaces. Ecolab Antibacterial All Purpose Cleaner™ was used to sanitize the restaurant kitchen and the employee cafeteria. In addition, the hotel contracted with Hawaii Care and Cleaning for supplemental sanitizing of all hotel areas including the employee dining area and the staff restrooms near the employee dining area on May 18, 2014.

The HDOH Sanitation Branch inspected the hotel kitchen on May 19, 2014 and observed violations of sanitizing procedures and cold holding temperatures. A follow-up inspection on May 21, 2014 verified correction of these violations. Due to additional reports of illness on May 24, 2014, the Sanitation Branch conducted a re-inspection of the kitchen on May 25, 2014 and directly supervised the discarding of prepared food items, sanitization of food preparation areas, and thorough facility cleaning from May 25 through 28, 2014. The Azure Restaurant was shut down during this period. No additional illness reports were received through June 12, 2014.

## **CONCLUSION & RECOMMENDATIONS**

This was a confirmed outbreak of Norovirus GI.3B associated with consumption of a meal prepared by the Royal Hawaiian Hotel. Although illnesses were focused among patrons of Azure Restaurant, patrons of the hotel's other food establishments (including room service) reported illness. Seven cases were laboratory-confirmed and 107 probable cases met clinical case definition. Four secondary cases in contacts of outbreak-related cases were also identified as a result of this investigation. Of the 114 primary ill persons identified, 17 were employees of

the Royal Hawaiian Hotel. Employee and guest illnesses began on the same date, May 14, 2014. Therefore, it is not possible to determine how Norovirus was introduced into the Royal Hawaiian Hotel. Illness among food handling personnel and coincident environmental contamination were likely contributing factors which served to propagate the infection among hotel guests and employees.

The hotel acted promptly to report the illnesses to the Hawaii Department of Health and also to implement a requirement for ill employees to remain off work for 72 hours after resolution of symptoms. Comprehensive sanitation of the environment was initiated on the evening of May 16, 2014 and the hotel voluntarily closed its main kitchen facilities from May 24 to May 28, 2014, for supervised sanitation. However, these control measures were not implemented until two days after the first reported illnesses and the delay may have postponed control of transmission. While the exclusion of infected persons is a highly effective means to interrupt Norovirus transmission, strict environmental control measures are equally important.

The Hawaii Sanitation Branch recently adopted new Administrative Rules restricting bare hand contact with foods<sup>1</sup>. However, gloves should not be viewed as a substitute for hand hygiene. These new rules should be implemented and enforced in conjunction with a strong emphasis on hand-washing. Additionally, as exemplified by the Royal Hawaiian during in this outbreak, a supportive sick leave policy can reinforce the requirement for employees with gastrointestinal illness to remain home from work, substantially reducing the risk of Norovirus transmission.

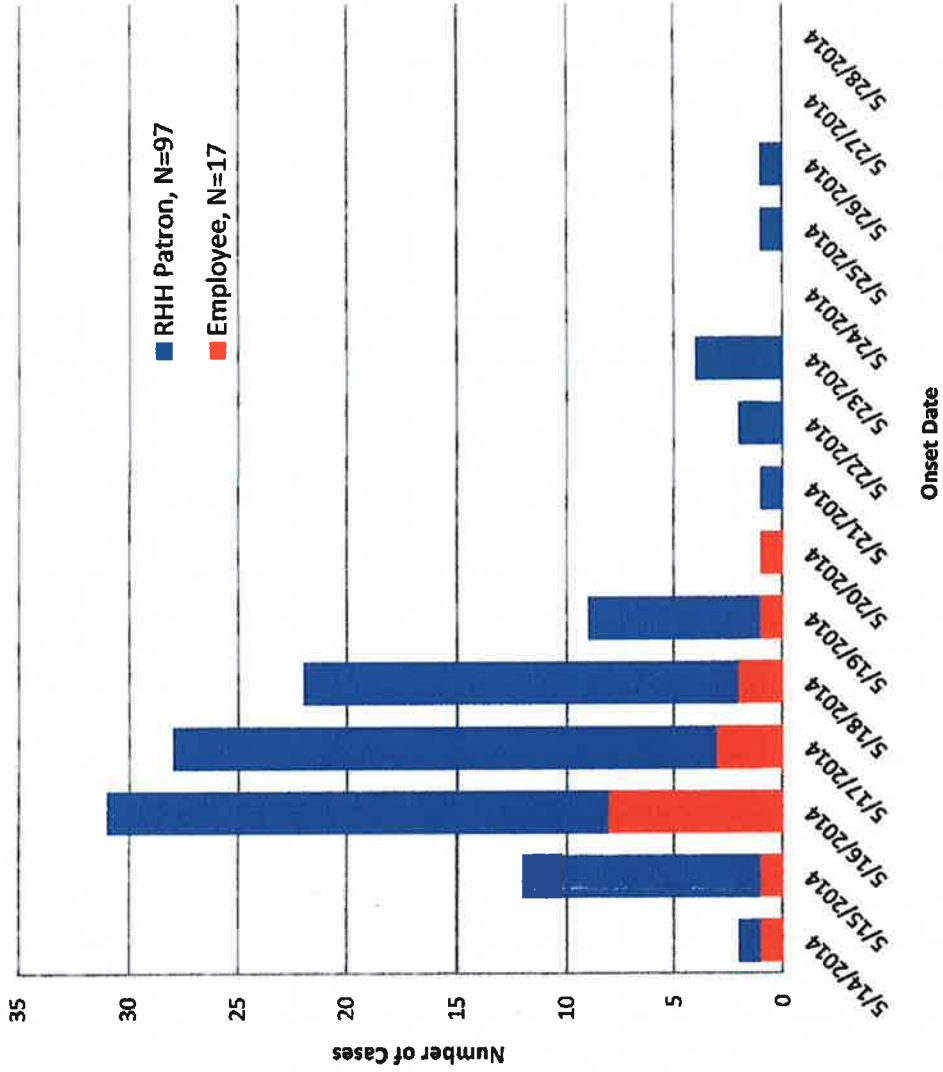
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<sup>1</sup> Hawaii Administrative Rules. Title 11. Department of Health. Chapter 50. Food Safety Code. February 24, 2014.

**Table 1. Reported Illness by Investigation Group**

Group Info	Azure Party 1	Azure Party 2	Azure Party 3	RHH Guests; Azure Patrons	RHH Employees	TOTAL
Total in Group	21	28	44	Not determined	91	184+
Total interviewed	21	11	19	48	17	116
Proportion Ill	19 (90%)	11 (39%)	19 (43%)	48/Not determined	17 (19%)	114/Not determined
Medical consulted	0	3	1	20	10	34
Hospitalized	0	0	0	1	0	1
Secondary illness	2	0	0	2	Not determined	4
<b>Symptom Frequency</b>						
Vomiting	12 (63%)	8 (73%)	17 (90%)	40 (83%)	11 (65%)	88 (76%)
Diarrhea	17 (89%)	10 (91%)	19 (100%)	43 (90%)	14 (82%)	103 (89%)
Fever	10 (53%)	3 (27%)	9 (47%)	22 (43%)	7 (41%)	49 (42%)
Abdominal Cramps	11 (58%)	8 (73%)	18 (95%)	34 (71%)	13 (76%)	84 (72%)
Abdominal Pain	11 (58%)	8 (73%)	1 (5%)	32 (70%)	13 (76%)	65 (56%)
Nausea	15 (79%)	7 (64%)	19 (100%)	35 (73%)	15 (88%)	91 (78%)
Fatigue	3 (16%)	2 (18%)	4 (21%)	12 (26%)	6 (35%)	27 (23%)
Chills	1 (5%)	3 (28%)	4 (21%)	11 (23%)	8 (47%)	27 (23%)
Incubation Period Range (Median)	16-72 hours (48 hrs)	6-98 hours (37 hours)	19-64 hours (33 hours)	Not determined	Not determined	
Illness Duration Range (Median)	24-120 hours (39 hrs)	5-98 hours (25 hrs)	24-96 hours (48 hrs)	Not determined	2-98 hours (25 hrs)	
Age Range (Median)	27-72 years (44 yrs)	34-78 (53 yrs)	34-85 years (72 yrs)	19-96 years (47 yrs)	21-57 years (41 yrs)	
Sex Distribution	F=12 (63%) M=7 (37%)	F=5 (45%) M=6 (55%)	F=13 (68%) M=6 (32%)	F=27 (55%) M=22 (45%)	F=4 (24%) M=13 (76%)	

**Chart 1. Epidemic Curve of Gastroenteritis Illness at Royal Hawaiian Hotel by Date of Onset (N=114\*)**



\*missing two cases without onset date