Case-Control Study
Hotel Guests Get Dermatitis
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In G. Tortora, B. Funke, C. Case, *Microbiology*, 8th ed. (Benjamin Cummings, 2004)

You will see questions as you read through this problem. The questions are those that epidemiologists ask themselves as they solve a clinical problem. Try to answer each question as an epidemiologist.

1. The Maine Bureau of Health was notified of 19 cases of dermatitis/folliculitis during a two week period. Case-patients had a rash for 7 days or less and/or draining otitis externa with onset between February 18 and March 3. A gram-negative rod was isolated from the draining ear of a 6-year-old child.

What is the most likely cause? What do you want to know about the patients?

2. All case-patients had stayed at Hotel A during February 18-27.

How will you determine the source of the infection?

3. Epidemiologists conducted a case-control study to compare the case-patients with 12 healthy controls who also stayed at the same hotel. The patients all had rashes, none of the controls had rashes. All 31 people were asked to complete a questionnaire about their activities at the hotel. The data collected are shown below.

Exposure	Exposed		Not exposed		Relative risk
	(a) Have rash	*(b)* No rash	*(c)* Have rash	*(d)* No rash	
Restaurant	18	11	1	1	1.24
Arcade	10	6	9	6	
Swimming pool	17	1	2	11	
Exercise room	11	5	8	7	
Hot tub	18	2	1	10	

Relative risk (RR) is a measure of the probability (risk) that an event will result in disease. RR is calculated in a 2×2 table (shown below). The relative risk must be calculated for each source of exposure. The calculation for the restaurant is filled in.

Complete the remaining calculations to determine the probable source of the infection.

Relative Risk Calculation using a 2×2 table			
	Ill	Not Ill	Relative Risk
Exposed to _____	*(a)*	*(b)*	$(e) = \dfrac{a}{a+b}$
Not exposed to ____	*(c)*	*(d)*	$(f) = \dfrac{c}{c+d}$
Relative risk = $\dfrac{e}{f}$ = Times more likely to become ill by going to this place.			

What was the source of this outbreak?

What factors might contribute to outbreaks of Pseudomonas *dermatitis from this source?*