

CLUSTER BUSTERS : Student Note Sheet

CASE: Dr. Wanda B. Better

<http://swehsc.pharmacy.arizona.edu/coep/clusterbusters/>

I. DESCRIBE THE CLUSTER & VERIFY THE CASES:

Determine geographic locations, type, number of cases, ages, and time period.

Obtain medical records of disease cases and death certificates.

(You can obtain this information from the introduction, the interviews, your teacher, and the website)

INTERVIEW NOTES: Interview with Dr. Better

Type of Disease (be specific):

Total Number of Disease Cases Reported:

Approximate Ages of People with Disease:

Possible Cluster Locations:

Other Information from the Interview:

Map the Case Locations: Map addresses from the case summary table.

Define Cluster Region – Based on what you see, how might you define the cluster region?

[Outline the defined region with a highlighter or marker]

Cluster Details:

Based on your map and Case Summary Table, list the case numbers to be included in the “cluster” investigation:

What is the defined time period for your investigation? (This is based on the cases)



II. RISK ASSESSMENT

Characterize the disease group cases by age and time lived in the defined region. Determine the disease rate for comparison populations (e.g. state, county, zip code, and/or US)

(This information you obtain from the website)
(You may need to calculate some of the averages yourself)

Average Ages (for defined time period):

Age Ranges (for defined time period):

Range of Time Patients Lived at the Location When the Illness Occurred (include gestation time, i.e. 9 months + age):

Identify Some Comparison Populations You Can Use. Briefly Explain Why You Selected Those Populations:

Compare the disease rates of the “cluster” versus the comparison population to determine if you have a real “cluster.”

(This information you obtain from the website)

1. Find the disease incidence rates for the nation and the defined cluster region.
 - a. Disease Incidence Rate for the Nation:

III. EXAMINE POTENTIAL EXPOSURE & STATISTICAL ANALYSIS

1. List “potential” and “known” causes for pulmonary hemorrhaging and hemosiderosis.

2. Define “idiopathic”

3. Go to the website and click on the Environmental Quality Office to find the town’s environmental assessment reports to begin assessment of environmental exposures.
 - a. List locations of potential concern and the contaminant(s)

 - b. Map potential problem locations.

4. Describe the water quality supplied to Somewhere Town.

5. Were any of your defined cluster cases exposed or potentially exposed to any general environmental contaminants (i.e. generated outside of the home)?

Data Analysis & Statistics Activities

1. Calculate the *Average* and the *Standard Deviation* for the Fungi Air Sample for *Stachybotrys atra*. Use the table below to help guide you.

Year (=sample#)	Number of Cases	Deviation (cases – average)	Deviation Squared (deviation) ²
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	Sum = Average =		Sum of deviations ² =

Standard Deviation [sum of deviations/(n-1)]:
(n = the number of samples or years)

Are the case and control data significantly different from one another?
(You determine this by adding & subtracting the standard deviation from your sample averages and see if the ranges of the two samples overlap. If they do not overlap then they are different from one another).

2. Using EXCEL, find the *average* and the *standard deviation* for the rest of the fungi data and summarize your results below.

Stachybotrys atra surface samples

	<u>CASE DATA</u>	Control Data
Average		
Standard Deviation	±	±

Are the case and control data significantly different from one another?

Cladosporium spp. air samples

	<u>CASE DATA</u>	Control Data
Average		
Standard Deviation	±	±

Are the case and control data significantly different from one another?

Cladosporium spp. surface samples

	<u>CASE DATA</u>	Control Data
Average		
Standard Deviation	±	±

Are the case and control data significantly different from one another?

IV. DETERMINE CLUSTER SIGNIFICANCE

Determine if this investigation merits further action.

1. Answer the following questions:

- a. Does the cluster disease incidence rate significantly exceed the comparison population incidence rate?
- b. Was the disease population exposed to any known environmental or occupational contaminants?
- c. If an exposure did occur, is there a biological link between the disease and the contaminant?

2. Refer to your answers to the above questions and to the “Cluster Significance Chart” to determine if further action is recommended.

- a. High Disease Rate (Yes or No):
- b. Documented Exposure (Yes or No):
- c. Biologic Plausibility (Yes or No):
- d. Further Action Recommended (Yes or No):

V. REPORT RESULTS (Summary)

1. Write your conclusions about the presence of a disease cluster and your recommendations for further action. Justify your conclusions with the information and data you collected.

State Health Department Response Protocol for Reports on Disease Clusters

Adapted from: Fiore, B.J., Hanrahan, L.P., and Anderson, H.A. (1990) State health department response to disease cluster reports: A protocol for investigation. American Journal of Epidemiology, 132, supplement (1), S14-S21.

Use this protocol as a guide for your investigation

Describe the Cluster

Determine geographic locations, type, number of cases, age, time period

Verify the Cases

Obtain medical records of disease cases, death certificates

Risk Assessment

Characterize disease group cases by age and time lived in defined region. Determine comparison population's disease rate (via state, county, zip code, or US census)

Statistically Analyze Disease Rates

Compare the disease rates of the "cluster" vs. the comparison population

Examine Potential Exposure

Investigate environmental or occupational exposures

Determine if the Disease is

Biologically Plausible

Does the type of disease match the exposure?

Determine Cluster Significance

Determine if this investigation merits further action
Refer to the "Cluster Significance Chart"

Report Results

Write a report on the investigation. This is kept on file and used for future reference, especially if a full investigation is done.

Cluster Significance Chart

Use this chart to help you determine if further action is needed for your investigation. If you answer “yes” to more than one of the three criteria (high disease rate, documented exposure, or biologic plausibility), further action is probably needed. You may personally draw a different conclusion, which is fine, just be sure to justify your decision.

High Disease Rate +	Documented Exposure	+ Biologic Plausibility	= Further Action
Yes	Yes	Yes	Yes
Yes	No	Yes	Yes
No	Yes	Yes	Yes
Yes	Yes	No	Yes
No	No	No	No
Yes	No	No	No
No	Yes	No	No

Adapted from: Fiore, B.J., Hanrahan, L.P., and Anderson, H.A. (1990) State health department response to disease cluster reports: A protocol for investigation. American Journal of Epidemiology, 132, supplement (1), S14-S21.