

## **Agranulocytosis (neutropenia) associated with levamisole in cocaine British Columbia UPDATE: April 9<sup>th</sup>, 2009**

Public Health in British Columbia continues to receive reports of agranulocytosis related to levamisole tainted cocaine. The BC investigation is coordinated by the BC Centre for Disease Control. A standard case report form has been developed to collect case details; urine testing for levamisole (when urine sample obtained within 48 hours of last cocaine use) can be arranged; please contact your local Medical Health Officer for more details.

### **Background**

Levamisole was previously used as an antihelmithic and colon cancer treatment, but has not been available in Canada since 2005. Previously levamisole was found to cause neutropenia associated with an autoimmune response and HLA-B27 antigen.

A cluster of cases were identified in Alberta in November 2008 and cases subsequently confirmed in BC. An alert was sent out in BC on December 11<sup>th</sup> 2008; 21 individuals with levamisole associated agranulocytosis have been reported in BC occurring between January 1<sup>st</sup> 2008 and March 31<sup>st</sup> 2009. Many individuals have had repeat episodes of severe neutropenia - defined as neutrophil count < 0.5 per 10<sup>9</sup>/L.

### **Summary of cases**

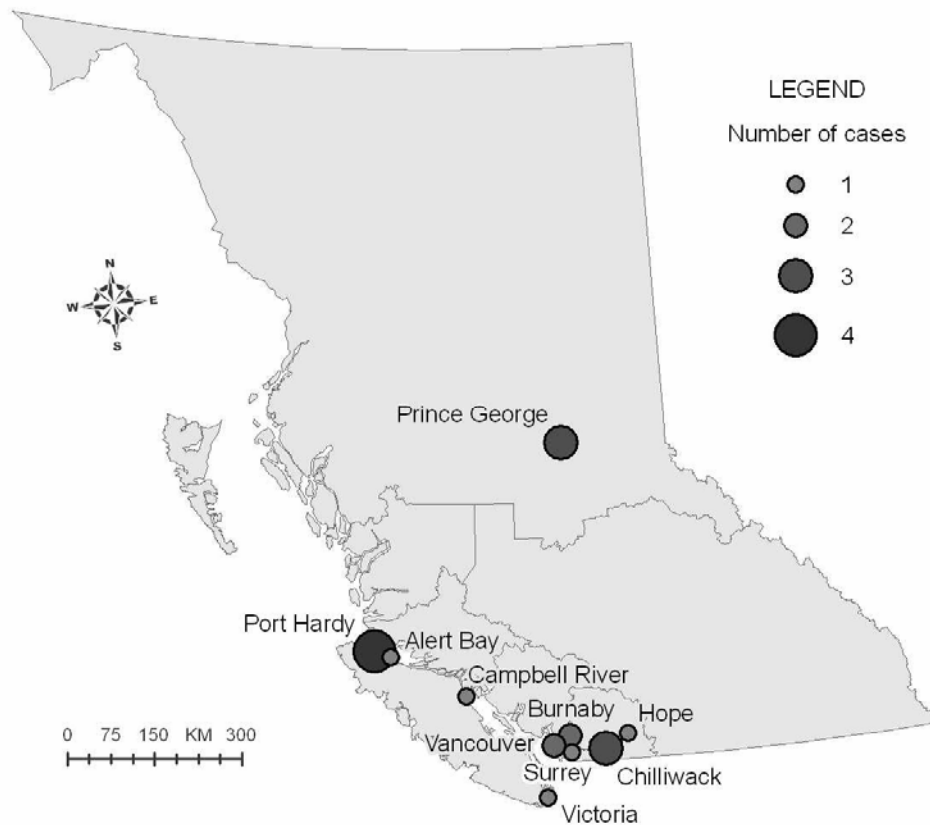
The following summarizes the details of the 19 individuals for whom report forms have been received. 2 case reports from Vancouver Island in 2008 are pending.

**Sex:** Majority female, 13/19 (68%)  
**Age:** Age range 22 to 63 years; (median 32 years; mean 36 years)  
**Ethnicity:** 3 Caucasian; 13 First Nations; 3 unknown  
**Location:** Residence of cases are shown in the figure attached. Few cases have occurred in the Downtown Eastside of Vancouver  
**Repeat episodes:** In total 36 episodes have been reported in the 19 BC cases  
9 cases had 1 episode each reported  
10 cases had recurrent episodes reported  
4 cases had 2 episodes; 3 cases had 3 episodes  
1 case had 4, 7 and 8 episodes each  
**Cocaine type:** 11 crack only; 2 powder only; 1 crack and powder  
5 unknown  
**Route use:** 9 smoking; 6 snorting; 1 smoking and snorting  
1 injection; 2 unknown  
**Laboratory:** Levamisole was confirmed in the urine of 4 cases – 2 samples pending.  
Levamisole was identified in a sample of cocaine provided by another case.

Through laboratory data review Alberta has identified cases dating back to 2006. Details can be found at: <http://www.capitalhealth.ca/EspeciallyFor/HealthProfessionals/default.htm>  
Cases have also recently been reported in US (New Mexico and New Brunswick). We are working closely with the other jurisdictions.

Jane Buxton  
Physician Epidemiologist, BCCDC

**Individuals identified in BC with agranulocytosis associated with levamisole**  
1<sup>st</sup> January 2008- 31<sup>st</sup> March 2009, n = 19



**Clinical notes: Agranulocytosis associated with levamisole in cocaine**

**Suspect** in persons with cocaine use and signs of infection- skin abscess, pneumonia, fevers etc which develop or progress rapidly

**Diagnostic tests**

- Urgent CBC and differential to identify neutropenia
- Urine collected within 48 hours of last cocaine use can be tested for levamisole  
Please contact your local Medical Health Officer (MHO) for more details

**Suggested management**

- If neutrophil count is  $<1.0$  and patient febrile with an active infection patient will require urgent hospital admission and referral to haematologist.
- Perform infectious work-up including blood cultures; administer broad spectrum antibiotics (e.g. Piperacillin/Tazobactam, Imipenem or Ceftazidime)
- Filgastrim (G-CSF) should not be started until after consultation with haematologist

**Recovery** generally occurs in 7-10 days, but monitor closely. Recurrence is common and neutropenia may recur in about half of cases.

**BC report form** can be obtained from local MHO or from <http://www.bccdc.org/>

**BCCDC Contact:**

Dr. Jane Buxton

Physician Epidemiologist

604-660-6061

[jane.buxton@bccdc.ca](mailto:jane.buxton@bccdc.ca)