CD Summary

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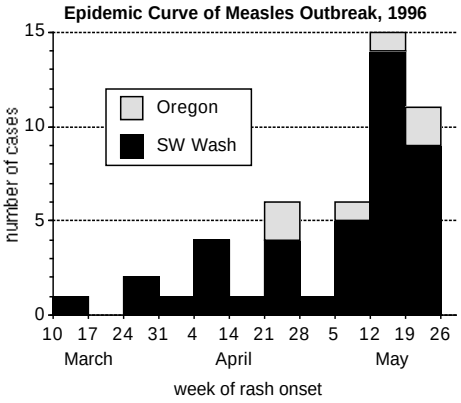
CENTER FOR DISEASE PREVENTION & EPIDEMIOLOGY • OREGON HEALTH DIVISION

MEASLES OUTBREAK UPDATE

THE PACE OF THE Portland-area measles outbreak has picked up dramatically since our first report two weeks ago. As of this date, six cases in Oregon (five in Marion County and one in Portland); and 42 cases in the Vancouver, Washington, area have been identified. Many of the Washington cases have direct links to Oregon, either personal or by coming over for medical treatment. The potential for cases to appear anywhere in the state, particularly in the Portland-Salem area, is very real at present. Notably, at least one-third of cases investigated to date were exposed in medical settings (either as workers, patients, or relatives of patients). This update expands on recommendations provided in the previous issue.

OUTBREAK NOTES

The number of cases has almost tripled in the last two weeks (see figure), including both new cases and some that were retrospectively identified. Epidemiological sleuthing has identified the "missing link" case, hypothesized in our last installment, that connects the Vancouver cluster with what seemed to be the immaculate inception of measles rash in a Portland hospital employee on April 23. Another measles case was identified with rash onset on April 16. This toddler had been in the ER of that hospital on April 10 for an unrelated illness—a day the hospital employee had worked. Review of ER logs for April 10 identified a hypotensive and dehydrated 18-year-old patient who had been evaluated for vomiting and a rash of one day's duration. The patient had been seen in Vancouver clinics on April 4 and 5 for "sore throat." The charted April 10 diagnosis was "viral exanthem—measles?"; and blood was drawn for measles serology. The physician failed to report the suspect case to the health department, however, and when the IgG test results came back negative a few days later, the matter was dropped. Of course the blood had been collected too soon to be very useful.* No precautions had been taken to isolate the 18-year-old, and no one was warned about a possible exposure. Two weeks later, the toddler and the hospital employee (at least!) were added to the honor roll.When retested on May 13, the 18-year-old was found to have a high IgG titer, confirming seroconversion.



This example illustrates several of the themes emerging from this outbreak. One, measles in the U.S. is no longer a disease of young children. Indeed the median age of the 48 cases to date is 22. Two, many cases, particularly adults, are pretty sick, often visiting different health care settings two or three times as their disease progresses. At least two patients have been hospitalized. Each visit represents not only an opportunity for diagnosis, but an opportunity for infection of susceptible health care workers, other patients, and their family members. Three, public health agencies are not always being informed promptly (or at all). "If you don't call us, we can't save you any headaches." Four, as we all know, measles is highly communicable. Direct contact is not required.

CLINICAL MEASLES

Measles should be suspected in a patient of any age† with the following constellation of signs and symptoms:

- generalized rash;
- fever ≥101˚F (38.3˚C); and
- one or more of the "3 C's": cough, coryza, and conjunctivitis.

Other effects may include headache, photophobia, lymphadenitis, vomiting, or diarrhea. The rash, which typically begins on the face and heads south, usually lasts 4-7 days. Koplik's spots, found on the buccal mucosa in the day or two before rash onset, are pathognomonic, albeit often absent by the time patients present for examination. A variable prodrome begins 2-6 days before rash onset, which occurs about 14 days after exposure. Although "classical" measles presents a very recognizable picture to the experienced clinician, rubella, roseola infantum (aka exanthem subitum, HHV-6 infection), and other rash illnesses should also be considered. (At least four rubella cases have been diagnosed in the Portland area in the last two months.)

LAB TESTING

An effort should be made to lab-confirm every suspected case. In their eagerness to make the diagnosis, however, many physicians make the mistake of drawing blood too soon. Resist the temptation to draw for IgM testing if patients present only a day or two after rash onset; a false negative may be all you get. Blood specimens for IgM testing should be collected 4-5 days after rash onset (ideally, anyway; specimens collected 3-25 days out are generally valid).

Beware of measles IgG assay reports that come back marked "immune." An elevated IgG may indicate recent seroconversion rather than pre-existing immunity. Without companion IgM tests, collected at an appropriate time, solitary IgG results from sick patients can be hard to interpret.

WHO ARE THE SUSCEPTIBLES?

They're all around us. Most of them were immunized once, but don't realize that they are in the ~5% of those whose primary vaccine didn't take. Some were never immunized, perhaps because their parents were philosophically challenged or watched too much Geraldo. And some of them were born before 1957 and just assume they were infected as a child. *Almost* everyone was in those pre-vaccine days.

*In fact the negative IgG should have been an indicator that the patient was susceptible to measles—never infected as a child and either not immunized or unsuccessfully immunized.

† albeit unlikely in someone over 50.

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SECOND CLASS POSTAGE
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INFECTION CONTROL PROCEDURES

Review your institution's isolation procedures for patients who telephone or show up with possible measles. Do you have an isolation room? A side door entrance? How do you protect your other patients and staff? (If necessary, ask possible measles patients to wait outside.)

Are you and your staff (including clerical, volunteers, etc.) immune, with either a history of disease or two immunizations? While the latter are not required for health care workers, experience suggests that a two-dose policy may be the cheapest way to ensure near-100% immunity rates. In general, the ACIP recommends that persons born in 1957 or later be immunized. The Health Division recommends that even older health care workers who cannot verify their immune status be immunized, preferably twice. Recent moves to a two-dose policy, required for all schoolchildren in Washington, and in Oregon for 4-year- and some 2-year-college students, are aimed at catching the minority of people who do not respond to that first shot.

ABOUT REPORTING

Given the number of cases in Clark County, several Oregon cases have probably been missed. We anticipate more cases in the near future. Any physician who sees a patient that they *suspect* may have measles should report those suspicions within 24 hours (sooner, if possible) to their local health department. Do not wait for laboratory test results. Do not rely on the lab to report for you. Without your reports, we cannot initiate our investigations, nor can we institute timely control measures. Delay can prove costly—in every sense. Call now; operators are standing by.

Occupational Lead Poisoning

IF ABSORBED, lead can affect the nervous, hematologic, renal, gastrointestinal and reproductive systems. Because symptoms may be subacute or nonspecific, occupational lead poisoning is frequently overlooked in a diagnostic work-up or in taking a history. Short term effects may include a metallic taste, stomach pain, vomiting, diarrhea, and black stools. Lead accumulates in the body, and continued exposure can lead to anorexia, constipation, nausea, stomach pain, pallor, fatigue, weakness, weight loss, insomnia, headache, nervous irritability, fine tremors, numbness, dizziness, hyperactivity, and possibly hypertension.

DANGER ON THE JOB

Many workers are still being exposed to high levels of lead—often over long periods of time. In Oregon, 1106 elevated blood lead level (EBLL) reports from 470 different patients were reported in 1994 and 1995. All but 12 of these individuals were occupationally exposed. Eighty-five percent of occupational EBLLs fell in the 25-39 µg/dl range; the balance higher. Of the 458 occupational EBLLs, 215 (46.9%) were in the manufacture of storage batteries, 97 (21.2%) worked in various metal trades, 58 (12.7%) worked in auto repair shops, and 36 (7.9%) worked in construction.

The most important route of workplace exposure is inhalation of lead fumes and dust. Lead is also absorbed via the GI tract or by inhalation, but not through the skin. Health effects depend on absorbed dose, not route of entry.

WORKING UP PATIENTS

Consider lead exposure (occupational and other) for patients with compatible signs or symptoms. High risk occupations include:

- producing or smelting lead (including sinkers and bullets);
- battery manufacturing or reclamation;
- foundry work;
- radiator repair;
- scraping or sanding old painted structures;
- indoor firing range workers;
- building or bridge renovation/demolition.

Blood lead levels (BLLs) are the best indicator of current lead absorption. Zinc protoporphyrin tests are useful in distinguishing acute and chronic exposures.

HEALTH DEPARTMENT FOLLOW-UP

In Oregon, reporting is required for BLLs ≥25 µg/dl for adults (18 or older); ≥10 µg/dl for children. Local health departments do follow-up on all EBLLs ≥40 µg/dl, and will investigate lower level reports as resources allow. The Health Division takes the lead in investigating cases with higher levels, or where there are workplace clusters. Education is a big part of most interventions, including recommendations for hazard reduction and worker safety. Workplace lead hazards are reported to the Oregon Occupational Safety and Health Division. Of note, individual reports are often sentinel events that can lead to the discovery of lead-poisoned co-workers or family members.

The Health Division welcomes inquiries about occupational lead toxicity, including technical assistance to practitioners interested in workplace follow-up for their intoxicated patients. Lead toxicity case studies, as well as medical guidelines from the Oregon Lead Standard, are available on request. Call the Environmental, Occupational and Injury Epidemiology Program (503/731-4025) for more information.