

BLOODY DIARRHEA IN JACKSON COUNTY

TWO OUTBREAKS OF BLOODY DIARRHEA, ONE IN OREGON AND THE OTHER IN MICHIGAN, RECENTLY RECEIVED MEDIA ATTENTION. THIS LED TO A TEMPORARY TRADING SUSPENSION OF ONE FAST-FOOD CHAIN'S STOCK ON THE NEW YORK STOCK EXCHANGE. THE STOCK MARKET REACTION WAS INAPPROPRIATELY DRAMATIC, BUT INVESTIGATIONS OF THE TWO OUTBREAKS WERE IMPORTANT IN THAT THEY PROVIDED NEW CLINICAL LABORATORY AND EPIDEMIOLOGIC INFORMATION ABOUT A NEWLY RECOGNIZED POSSIBLE CAUSE OF BLOODY DIARRHEA.

THE OREGON OUTBREAK A Medford physician notified the Jackson County Public Health Center of a cluster of bloody diarrhea cases in early February. This report ultimately led to the identification, during February and March, of 25 bloody diarrhea cases in the Medford area. These cases were characterized by having severe abdominal cramps with bloody diarrhea and stool examinations that were negative for *Salmonella*, *Shigella*, *Campylobacter* and parasites. Most cases had little or no fever and most had negative stool cultures for *Yersinia*. Barium enemas, when done, revealed marked edema with spasm and a thumb printing pattern in the ascending and transverse colon, but no evident pathology in the left colon. Sigmoidoscopic findings ranged from normal to moderately hyperemic mucosa.

Nineteen (73%) of the patients required hospitalization. The duration of illness ranged from 2 to 9 days with a mean of 4.6 days. Eleven patients received tetracycline or erythromycin; the average duration of illness was not significantly different between those who received antibiotics and those who did not.

The ages of cases ranged from 8 to 76 years. No secondary cases were identified. No household was found with more than one case. An extensive epidemiologic investigation by the local health department, the Health Division, and the Centers for Disease Control identified only one common factor among the cases: eating a hamburger at a particular fast-food chain.

THE MICHIGAN OUTBREAK AND SPORADIC CASES The Michigan outbreak occurred in late May and June and involved 21 cases. Investigation there found the same association of eating hamburgers at the same fast-food chain as was seen among the Oregon cases.

In July, the Centers for Disease Control requested that gastroenterologists around the U.S. report cases of blood diarrhea that met the case definition. Twenty-one such cases have been reported so far. Most of them had no recent contact with the fast-food chain associated with the Oregon-Michigan outbreaks. Many had eaten undercooked hamburgers shortly before onset of their illnesses.

THE SEARCH FOR THE CAUSE The Public Health Laboratories in Oregon and Michigan and the Centers for Disease Control laboratory conducted extensive tests of the patients' stool specimens. No known pathogen was identified except for the finding of *Yersinia enterocolitica* in the stool of one Michigan case. The CDC's laboratory, however, did identify *E. coli* 0157:H7 from the stool of 3 of 6 Oregon cases and none of the Oregon controls. The same organism was isolated from 6 of 14 specimens from the Michigan cases. It is of interest that this organism was isolated from 9 of 12 stool specimens collected within 4 days after the onset of illness, while it was isolated in none of the cases' stool specimens which were collected 7 or more days after onset of illness. *E. coli* 0157:H7 was also isolated from one raw hamburger patty from a lot of hamburger used at the Michigan fast-food outlets during the outbreak period there. The patty had been stored at a processing plant in another state as part of a quality control program and had never been in the restaurants.

Before these investigations, the only previous time *E. coli* 0157:H7 had been identified in a human stool specimen was from a patient with an illness identical to that identified in these outbreaks.

Pathogenic serogroups of *E. coli* can cause diarrhea by direct invasion of the intestinal mucosa or by elaboration of toxins. The laboratory studies at CDC show that strain 0157:H7 does not cause disease by either of those mechanisms. It has been shown to produce non-bloody diarrhea in infant rabbits. *E. coli* 0157:H7 has not yet been definitely established as the cause of this unique bloody diarrhea syndrome. The Centers for Disease Control laboratory, however, is continuing further studies to try to work out the relationship between this organism and the outbreaks that have occurred.

To assist in this effort, the Oregon Health Division invites Oregon physicians to notify us (229-5792 or use the toll-free number, 1-800-452-7813 and ask for 229-5792) if they identify a patient who meets all of these criteria:

- Severe abdominal cramps and bloody diarrhea;
- Negative stool cultures for *Salmonella*, *Shigella*, *Campylobacter*, and *Yersinia*;
- Non-infectious causes of bloody diarrhea have been ruled out.

We would appreciate receiving aliquots of the initial stool specimens from such patients so that they can be tested for the presence of *E. coli* 0157:H7.

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COMMUNICABLE DISEASE SUMMARY

Portland, Oregon
SECOND CLASS
POSTAGE
PAID

BACKGROUND FOR THE POLICY

HISTORY OF TOXOPLASMO- SIS TESTING IN OREGON

The Oregon Public Health Laboratory began routine screening of pregnant women for toxoplasmosis in 1973, when that year's legislature required it to do so. The routine testing served as the basis for some useful laboratory and epidemiologic studies. It is doubtful, however, that it provided any clinical benefit to patients tested, for there is no available treatment known to be safe and effective for infected pregnant women.

Recognizing that routine screening of pregnant women lacked clinical usefulness, the 1981 legislature repealed the law which required the Public Health Laboratory to provide such screening. It was discontinued during the summer of 1981.

RISKS OF MATERNAL AND FETAL INFECTIONS

Toxoplasma gondii infection of a pregnant women is significant to the fetus only if the initial infection occurs during pregnancy. (The degree of significance of acute maternal toxoplasmosis to the fetal outcome varies with the trimester of initial maternal infection.)

According to data collected during the Oregon's testing program, the attack rate of acute toxoplasmosis in pregnant women is approximately 2.8 per 1000.

The table shows that the earlier in pregnancy the mother is infected, the less likely it is that the neonate will also be infected. However, if a neonate is infected as a result of a first trimester maternal infection, a severe clinical

outcome is more probable than if the maternal infection occurs during the third trimester.² Questionnaire surveys by the Health Division regarding the outcome of the pregnancies of infected women have not identified infants with serious congenital toxoplasmosis.

LACK OF ACCEPTABLE TREATMENT FOR PREGNANT WOMEN

European researchers have used a combination of sulfonamides and pyrimethamine for the treatment of acute toxoplasmosis in pregnant women. The results suggest that such treatment may be useful for preventing congenital infection. Critical appraisal, however, does not permit the definite conclusion that the treatment is efficacious. Furthermore, pyrimethamine is a folic acid antagonist and has been shown in animal studies to be teratogenic. Its safety for use in pregnancy has not been established.²

Other European researchers have used spiramycin. On theoretical grounds this drug should be effective, and less likely to be teratogenic than pyrimethamine. Its effectiveness and safety, however, have not been definitively established and the drug is not commercially available in the U.S.²

At this time, therefore, no safe and effective regimen is available in the United States for treating infected women to prevent congenital toxoplasmosis.

TABLE 1: INCIDENCE AND SEVERITY OF CONGENITAL INFECTION ACCORDING TO TRIMESTER OF PREGNANCY DURING WHICH MATERNAL TOXOPLASMO-
SIS WAS ACQUIRED

Trimester of Maternal Infection	Number of Women Infected	Number & Percent of Infants Infected	Severity of Congenital Infection		
			Severe	Mild	Asymptomatic
1st	29	5 (17%)	3 (10) [60]*	1 (3) [20]	1 (3) [20]
2nd	79	20 (25%)	6 (10) [30]	5 (6) [25]	9 (11) [45]
3rd	37	24 (65%)	0	2 (5) [8]	22(59) [92]

* () =percent of all infants born to women in the trimester category; [] =percent of all infected infants in the trimester category