EPIDEMIOLOGY BULLETIN

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Turkey Processing Plant Workers

Outbreak of Respiratory Illness

On November 16, the Central Shenandoah District Health Director received a call concerning a possible outbreak of Legionnaires' Disease in a poultry processing plant in the Shenandoah Valley. An investigation was initiated by local, regional and central office epidemiologists. After interviewing and examining fifteen hospitalized patients, a medical epidemiologist confirmed that these individuals had a similar clinical illness. All had the onset of symptoms between November 8 and November 13. The illness was characterized by the abrupt onset of high fever, severe headache, gastrointestinal complaints and non-productive cough. Despite minimal respiratory complaints, 12 of 15 had infiltrates on chest x-ray. Thirteen of these cases worked at one turkey processing plant and the remaining two worked at another local processing plant. Although it was too soon to have serologic information, clinically the illness resembled psittacosis (ornithosis).

Additional case ascertainment was performed through hospital infection control personnel, emergency room physicians, and local private practitioners. Review of hospital emergency room logs and examination of school and poultry processing plant absenteeism records indicated that this was not a community-wide outbreak of illness; the illness appeared clustered in workers in several poultry plants.

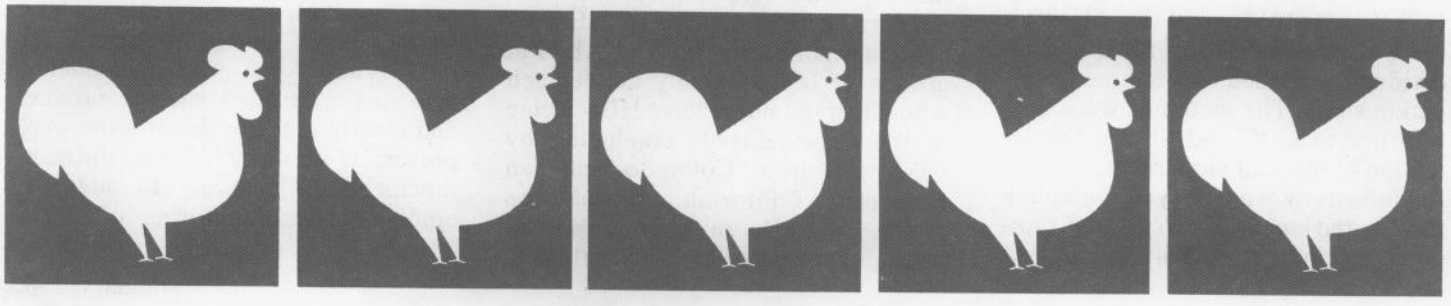
Fifty-one (33%) of 153 workers at Plant A became ill and 13 were hospitalized. Questionnaire data and paired serum specimens obtained from all workers showed that working in the evisceration and sizing areas of the plant increased the risk of illness [29/55 (53%) versus 22/98 (22%), RR = 2.4, $p<0.001$]. Serum specimens processed to date show that of 16 ill workers, 12 (75%) had a fourfold titer rise to complement fixing antibodies to chlamydia group antigens compared with none of 12 well workers ($p<0.001$). Active surveillance identified additional ill workers at other processing plants: 16 (2%) of 755 at Plant B, four (1%) of 440 at Plant C and two rendering plant workers who handled material from Plant A. By comparing the suppliers' rates of condemnation of turkey carcasses, it was obvious that the infected turkeys most likely came from one flock. The condemnation rate was nine times greater for this flock than for others (14.8% versus 1.7%). No turkeys were available for testing. Data on the transmission of psittacosis from person-to-person are sparse. Investigators were able to obtain clinical and exposure information and paired serum specimens (results pending) from 33 household contacts of symptomatic cases and from 35 nurses who cared for hospitalized cases. This information should allow investigators to estimate the risk of secondary person-to-person spread of psittacosis.

Most human cases of ornithosis are sporadic. Poultry processing plants, however, have been associated with several outbreaks of human disease in the U.S. during the last 10 years.

The reservoir for *Chlamydia psittaci* is birds, including parakeets, parrots, pigeons, turkeys, and ducks. Infection is acquired by inhaling the organism in bird droppings or when processing infected poultry. The disease has not been transmitted to humans by consumption of meat from infected poultry. Transmission from person-to-person is rare, but has been reported occasionally in hospital personnel who care for coughing patients with ornithosis.[1]

Reference

1. Broholm K. Bottiger M, Jernelius H, Johansson M, Grandien M, Solver K. Ornithosis as a nosocomial infection. Scand J Infect Dis 1977; 9: 263-7.

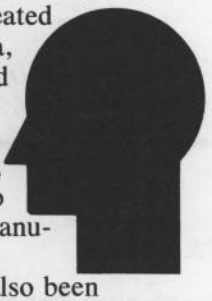


Hepatitis B Vaccine:

Evidence Confirming Lack of AIDS Transmission

Recent studies have provided important additional assurances concerning the safety of hepatitis B (HB) vaccine. The vaccine currently licensed in the United States is produced from pooled plasma of hepatitis B surface antigen-positive individuals, some of whom are also in high-risk groups for acquired immunodeficiency syndrome (AIDS). Concern has been expressed that the etiologic agent of AIDS might be present in the vaccine and survive the inactivation steps used in the manufacturing procedure. The concerns persisted, despite the fact that these steps were reportedly able to inactivate representative members of all known virus groups. The recent identification of a retrovirus as the etiologic agent of AIDS has allowed workers to (1) directly test the inactivation of the AIDS virus by the inactivation steps used in the vaccine manufacturing procedure; (2) look for the AIDS virus' nucleic acid sequences in the vaccine; and (3) look for serologic markers of infection from the AIDS virus in vaccine recipients. Concurrently, monitoring of AIDS patients and high-risk groups has continued in order to look for any epidemiologic evidence of an association between HB vaccine and AIDS.

The effect of the HB vaccine inactivation process on the AIDS virus and two other human retroviruses (HTLV-I and HTLV-II) was studied. Three separate inactivation steps are used in the manufacture of the U.S.-licensed HB vaccine: (1) 1 μg/ml pepsin, pH 2, 37 C (98.6 F), 18 hours; (2) 8 molar urea, 37 C (98.6 F), 4 hours; and (3) 0.01% formaldehyde, 37 C (98.6 F), 72 hours. In separate studies conducted between CDC and the vaccine manufacturer Merck, Sharp & Dohme (MSD), and between State University of New York (SUNY) Upstate Medical Center and MSD, cell culture supernatant fluid containing the AIDS virus and cultured cells containing HTLV-I, HTLV-II, and the AIDS virus were transported to MSD and individually exposed to the three inactivation steps. The materials were then returned to CDC and SUNY for detection of residual viral infectivity. Virus infectivity was assayed by adding the treated material to cultured lymphocytes and periodically monitoring these for signs of viral replication (reverse transcriptase activity and virus antigen expression) (*1*) and in the case of HTLV-I and HTLV-II, transformation (*2,3*). No residual virus was detected in material treated with formalin or urea, while material treated with pepsin at pH 2 did have residual virus present. Heat, an inactivation step used in vaccines manufactured outside the United States, has also been shown to inactivate the AIDS virus (*4*).



The second approach, which attempted to detect AIDS virus-related nucleic acid sequences using dot blot hybridization analysis of the vaccine with an AIDS virus deoxyribonucleic acid (DNA) probe, was done at MSD using as a positive control infected cellular (ribonucleic acid) RNA preparations provided by CDC. The vaccine contained no detectable AIDS virus-related sequences at a sensitivity of less than one picogram of DNA per 20-μg dose of vaccine.

The third approach attempted to detect seroconversion to AIDS virus antibodies in paired sera of HB vaccine recipients. Paired sera were examined at CDC using a highly sensitive and specific ELISA assay for the AIDS virus. No seroconversions were detected in 19 individuals who had received vaccine manufactured from plasma pools that contained plasma of homosexual men. Previous workers have reported that sera of HB vaccine recipients did not show helper-T/suppressor-T ratio inversion, a finding common in AIDS patients (*5*).

Epidemiologic approaches to detect an association between HB vaccine and AIDS have included analysis of data on AIDS cases reported to CDC concerning their receipt of HB vaccine and monitoring rates of AIDS in groups of homosexually active men who did or did not receive HB vaccine in the vaccine trials conducted by CDC in Denver, Colorado, and San Francisco, California. To date, 68 AIDS cases have been reported among approximately 700,000 U.S. vaccine recipients; 65 have occurred among persons with known AIDS risk factors, while risk factors for the remaining three are under investigation. In addition, the rate of AIDS for HB vaccine recipients in CDC vaccine trials among homosexually active men in Denver and San Francisco does not differ from that for men screened for possible participation in the trials but who received no HB vaccine because they were found immune to HB.

Editorial Note: The Immunization Practices Advisory Committee (ACIP) (*6*) has recommended preexposure HB vaccination for susceptible members of the following groups in the United States: health-care workers (medical, dental, laboratory, and support groups) judged to have significant exposure to blood or blood products; clients and selected staff of institutions for the mentally retarded; hemodialysis patients; homosexually active males; users of illicit, injectable drugs; recipients of certain blood products (patients with clotting factor disorders); and household and sexual contacts of HB virus (HBV) carriers. In addition, vaccine may be warranted for classroom contacts of deinstitutionalized mentally retarded HBV carriers; special high-risk populations (Alaskan Eskimos and immigrants and refugees from areas with highly endemic disease); inmates of long-term correctional facilities; and some U.S. citizens living or traveling abroad (*7*). The ACIP has also recommended screening all pregnant women belonging to high-risk groups for HB and treating their newborn infants with hepatitis B immune globulin and HB vaccine (*8*).

HB vaccine acceptance in the United States has been seriously hindered by the fear of possible AIDS transmission from the vaccine. The recent identification of AIDS' etiologic agent has made possible direct laboratory measurement of virus inactivation, nucleic acid presence, and serologic evidence of infection. These studies were unable to detect the AIDS virus' viral protein or nucleic acid in the purified vaccine product and clearly indicate that if virus were present, it would be killed by the manufacturing procedures. In addition, epidemiologic monitoring of AIDS

cases and high-risk groups confirms the lack of AIDS transmission by HB vaccine. This information should remove a major impediment to vaccine use. Reprinted from MMWR 1984;33:685-7.

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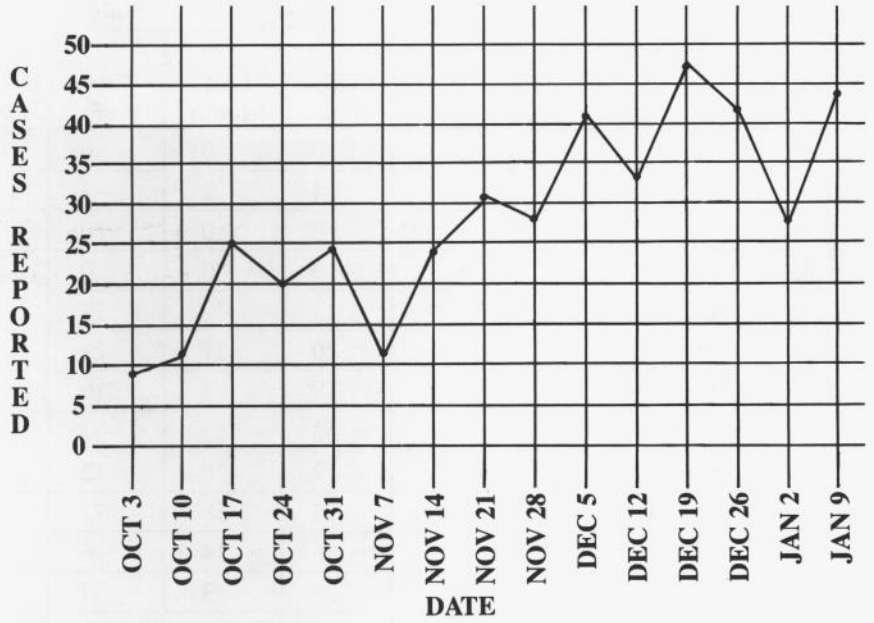
1. Feorino PM, Kalyanaraman VS, Haverkos HW, et al. Lymphadenopathy associated virus infection of a blood donor-recipient pair with acquired immunodeficiency syndrome. Science 1984;225:69-72.
2. Poiesz BJ, Ruscetti FW, Gazdar AF, Bunn PA, Minna JD, Gallo RC. Detection and isolation of type C retrovirus particles from fresh and cultured lymphocytes of a patient with cutaneous T-cell lymphoma. Medical Sci 1980; 77:7415-9.

3. Kalyanaraman VS, Sarngadharan MG, Robert-Guroff RM, et al. A new subtype of human T-cell leukemia virus (HTLV-II) associated with a T-cell variant of hairy cell leukemia. Science 1982;218:571-3.
4. CDC. Update: acquired immunodeficiency syndrome (AIDS) in persons with hemophilia. MMWR 1984;33:589-91.
5. Jacobson IM, Dienstag JL, Zachoval R, Hanrahan BA, Watkins E, Rubin RH. Lack of effect of hepatitis B vaccine on T-cell phenotypes. N Engl J Med 1984;311:1030-2.
6. ACIP. Inactivated hepatitis B virus vaccine. MMWR 1982;31:317-22, 327-8.
7. CDC, Adult immunization: recommendations of the Immunization Practices Advisory Committee (ACIP), MMWR 1984;33:1S-68S.
8. ACIP. Post-exposure prophylaxis of hepatitis B. MMWR 1984;33:285-90.

The editor welcomes any reports of cases, outbreaks, or public health problems of interest to the Bulletin's *readers. Such accounts and any other comments or suggestions regarding the* Bulletin *should be addressed to: Editor,* Epidemiology Bulletin, *Office of Health Protection and Environmental Management, Room 700, 109 Governor Street, Richmond, Virginia 23219.*

Influenza Surveillance 1984-85



Influenza-like illness reports received from 30 sentinel physicians were slightly more numerous in December than during the October-November period. No outbreaks or laboratory confirmed cases, however, were reported. For the U.S., isolates of type A(H3N2) influenza virus have been reported to the Centers for Disease Control (CDC) by 12 states, three in connection with outbreaks. Isolates of type B virus have been reported to CDC by four states. Only one state (Texas) has reported isolation of type A (H1N1) virus (MMWR 1985; 34: 6,11).

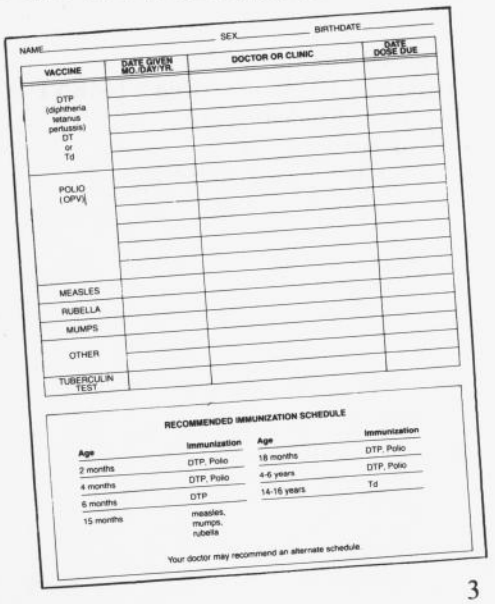
Latebreaker—Flu Reports Up

As we go to press (2/1/85) there are early indications of an increase in influenza activity. National surveillance indicates there are outbreaks of influenza type A(H3N2) in numerous states. Similarly, reports of influenza-like illness from sentinel physicians in Virginia demonstrate a considerable increase in (central) regional activity during the last week of January.

Immunization Cards Available

Copies of an individual immunization record card can still be obtained, at no charge, by any physician in Virginia for his patients. Every state has a similar card so that if a child moves to another locality the record will be familiar to the new physician and school. Cards may be requested in writing from the Immunization Program, 109 Governor Street, Richmond, Virginia 23219. Health departments should continue to order cards from Central Supply.

Since March of 1981, when the card was first used, over 500 physicians have requested approximately 90,000 cards.


NAME _____ SEX _____ BIRTHDATE _____

VACCINE	DATE GIVEN MO./DAY/YR.	DOCTOR OR CLINIC	DATE DOSE DUE
DTP (diphtheria tetanus pertussis) DT or Td			
POLIO (OPV)			
MEASLES			
RUBELLA			
MUMPS			
OTHER			
TUBERCULIN TEST			

RECOMMENDED IMMUNIZATION SCHEDULE

Age	Immunization	Age	Immunization
2 months	DTP, Polio	18 months	DTP, Polio
4 months	DTP, Polio	4-6 years	DTP, Polio
6 months	DTP	14-16 years	Td
15 months	measles, mumps, rubella		

Your doctor may recommend an alternate schedule.

Month: January, 1985

Disease	State				Mean 5 Year To Date	Regions				
	This Month	Last Month	Total to Date 1985	1984		This Month N.W.	N.	S.W.	C.	E.
Measles	0	0	0	0	4	0	0	0	0	0
Mumps	4	2	4	1	7	0	0	0	1	3
Pertussis	0	0	0	4	1	0	0	0	0	0
Rubella	0	0	0	0	1	0	0	0	0	0
Meningitis—Aseptic	13	22	13	18	14	3	3	5	1	1
*Bacterial	20	31	21	33	25	1	2	5	9	3
Hepatitis A (Infectious)	19	22	19	7	17	1	0	16	1	1
B (Serum)	52	62	52	41	41	10	19	12	5	6
Non-A, Non-B	12	16	12	9	4	2	4	1	3	2
Salmonellosis	75	58	75	66	71	13	11	15	19	17
Shigellosis	6	14	6	41	20	0	4	0	0	2
Campylobacter Infections	27	83	27	24	17	7	6	3	3	8
Tuberculosis	9	64	9	473	—	—	—	—	—	—
Syphilis (Primary & Secondary)	25	31	0	38	45	1	7	0	7	10
Gonorrhea	1448	1967	1,448	1,660	1,701	—	—	—	—	—
Rocky Mountain Spotted Fever	0	0	0	0	0	0	0	0	0	0
Rabies in Animals	5	12	5	13	17	2	3	0	0	0
Meningococcal Infections	4	8	4	5	6	1	0	1	0	2
Influenza	21	6	21	21	719	0	0	20	1	0
Toxic Shock Syndrome	0	0	0	0	0	0	0	0	0	0
Reyes Syndrome	0	0	0	0	1	0	0	0	0	0
Legionellosis	1	6	1	0	1	0	0	1	0	0
Kawasaki's Disease	5	10	1	0	2	3	0	0	1	1
Other:										

Counties Reporting Animal Rabies: Fauquier 1 skunk; Louisa 1 raccoon; Fairfax 1 raccoon; Loudoun 2 raccoons.

Occupational Illnesses: Pneumoconiosis 18; Carpal tunnel syndrome 7; Asbestosis 4; Hearing loss 3; Dermatoses 1; Mesothelioma 1.

*other than meningococcal

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