REPORTED MORBIDITY
MAY/JUNE, 1987

LOUISIANA MORBIDITY REPORT

EPIDEMIOLOGY

PUBLIC HEALTH STATISTICS

DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF PREVENTIVE AND PUBLIC HEALTH SERVICES
DIVISION OF RECORDS AND STATISTICS
P.O. BOX 60630 NEW ORLEANS, LOUISIANA 70160

SANDRA L. ROBINSON, M.D., M.P.H.
SECRETARY AND STATE HEALTH OFFICER
504/342-6711

Blastomycosis is a human illness caused by the dimorphic fungus Blastomyces dermatitidis. The organism is inhaled and typically causes an acute pulmonary infection. However, cutaneous and disseminated forms occur as well as asymptomatic self-limited infections. The endemic area in the United States has been defined by case reporting alone, but is thought to include the Mississippi River basin, the Great Lakes area and south central and south eastern portions of the United States. Seventy-eight of 94 (83 percent) of outbreak-related cases to date have occurred in Wisconsin, Minnesota, and Illinois (1).

BLASTOMYCOSIS IN WASHINGTON PARISH
1976 - 1985

Dr. Phillip Lowry
Karen Y. Kelso, R.N.
Epidemiology Section

Washington parish has long been suspected of having a high rate of blastomycosis. Our study reviewed all cases occurring among residents in the parish between 1976 and 1985 and included a case-control study to ascertain risk factors for infection.

The parish encompasses a largely rural area; the southern border lies 70 miles due north of New Orleans and the eastern border is shared with Mississippi. The population of Washington parish is 44,207 (1980 census data) with 30,753 (69.6%) white residents and 13,308 (30.1%) black residents. The largest town is Bogalusa with a population of 16,976; 11,271 (66.4%) are white and 5,615 (33.1%) are black. There is only one other community in the parish with a sizeable population; Franklinton has 4,119 residents of which 2,134 (51.8%) are white and 1,981 (48.1%) are black.

Much of the parish is covered with pine forest and lumbering is one of the chief industries in the area; Bogalusa contains a paper mill which is located in the center of town. The elevation of the parish varies between 100 to 350 feet above sea level. The soil is generally fine, sandy, and acidic with a pH averaging about 4.6. The average annual rainfall varied between 50 and 76 inches during the years studied.

A case of blastomycosis was defined by isolation of the organisms in a culture specimen or its pathologic identification in a tissue specimen.

As blastomycosis is not one of the diseases on the required reportable disease list in Louisiana, mycology and pathology laboratories were contacted in an effort to estimate the statewide incidence of the disease. Questionnaires were mailed to 63 Louisiana hospitals with mycology and/or pathology laboratories. In addition, questionnaires were mailed to 18 private pathology laboratories in Louisiana and the three in Mississippi most likely to receive specimens from Washington parish.

Case ascertainment in Washington parish was performed by means of a telephone survey of all general practitioners and internists practicing in Washington parish; we also reviewed mycology isolates received at the Louisiana DHHR laboratory and Charity Hospital in New Orleans (the two state reference labs) looking specifically for Washington parish residents. Outpatient records were reviewed at each of the three hospitals in Washington parish (as well as referral hospitals elsewhere in Louisiana if the patient was transferred).

A case-control study was performed in Washington parish to assess risk factors for infection with B. dermatitidis. All cases entered in the study had resided in Washington parish at least 3 months prior to their symptom onset. Cases were matched by sex, race, and age (within ten years) to three neighborhood controls. If a case had moved, controls were selected from the case's neighborhood at the time of his diagnosis of blastomycosis.

The following information was collected: past and present occupation(s), proximity to earth-moving projects, frequencies of camping, hunting, and gardening, underlying medical illnesses, steroid usage, and tobacco and alcohol consumption. Cases provided information about the specific year before their diagnosis; controls provided information about the preceding year (1986-1987).

Excluding Washington parish cases, 67 cases were reported among residents of 31 out of 64 (48.4%) parishes in Louisiana. Annual rates were highest for Jackson parish (4.04 cases/100,000), Caldwell parish (1.86/-100,000), Lincoln parish (1.51/100,000), Winn parish (1.16/100,000) and St. Helena parish (1.02/100,000). These parishes are clustered in north-central and eastern Louisiana (Figure 1 - Map of Louisiana). The remaining parishes with cases had annual incidence rates less than 1.00/100,000. As case reporting was not complete for all areas of the state, a state-wide incidence rate was not calculated.

A total of 30 cases were detected among residents of Washington parish during 1976-1985, making for an annual incidence rate of 6.79/100,000. Sixteen patients (53.3%) were female, and 14 were male (46.7%). Eighteen were white (60.0%), and 12 were black (40.0%). The age at diagnosis ranged from 3 weeks to 81 years: the median age was 32.0 years. Twenty (66.7%) of patients resided in Bogalusa and 7 resided in Franklinton (23.3%); the other three cases resided outside of both communities.

Twenty-six of 29 patients (89.7%) were hospitalized, excluding one who died in the emergency room. Five patients (16.7%) died as a result of blastomycosis. Of these, one was an infant who may have been infected

in utero, and another developed clinical symptoms compatible with Adult Respiratory Distress Syndrome (ARDS). See Table 1 and 2 for presenting symptoms and organ involvement.

Among the 25 patients who recovered, 11 received Amphotericin B alone, seven were treated with ketoconazole alone, five received both Amphotericin B and ketoconazole, one underwent surgery alone, and one was observed without therapy. Of the five patients receiving combination therapy, two patients with skin lesions alone and one patient with disseminated disease failed a trial of ketoconazole before being started on Amphotericin B.

Interviews were conducted for 22 cases and 64 controls (in two instances family members provided information for deceased cases). Among the 22 cases included in the study, 13 resided in Bogalusa, 6 resided in Franklinton, and 3 resided in other areas of Washington parish. There was no geographic clustering among cases we investigated and the case-control study failed to identify specific activities or host factors which may have predisposed to infection.

Washington parish has been suspected of having an unusually high incidence of blastomycosis; our investigation confirms these suspicions. For the decade from 1976 to 1985, Washington parish had an average annual incidence rate of 6.8 cases per 100,000 population. To our knowledge, this is the highest annual average incidence rate ever documented for a population in a non-outbreak setting. Highest county rates (per 100,000 population) for Mississippi have been reported as 5.1 cases (Leake County), for Kentucky 4.9 cases (Powell County), for Wisconsin 3.6 cases (Vilas County), and for Arkansas 3.3 cases (Drew County) (2,3). Although our high rate may in part reflect the active case-seeking which was conducted, Washington parish certainly appears to be a hyperendemic area for blastomycosis.

Several investigators have suggested that high rates of blastomycosis occur in forested regions of low elevation with higher than average precipitation, and contain acidic soil of high organic content (1,4,5). These findings are supported by observations in the laboratory that growth of B. dermatitidis is impeded under drying conditions, and that alkaline soil is fungistatic (6,7). Washington parish is one of the few predominantly forested parishes in Louisiana; given its other attributes (acidic soil, low elevation, relatively high rainfall), the environmental conditions seem particularly favorable for growth of B. dermatitidis.

Blastomycosis was previously thought to be more common among blacks; recent opinion suggests the racial composition of cases tends to reflect that of the population under study (as was the case in Washington parish) (8). Other studies have shown a male predominance, with sex ratios varying from 1.8:1 to 6.9:1; ours appears to be the first series in which slightly more females were affected (ratio 1.1:1) (3,5). In the setting of an acute outbreak when the exposure is known, males and females are equally susceptible to infection. Investigators have theorized that more sporadic cases occur among males because they are more frequently exposed through such activities as hunting or farming (5,8). Among Washington parish cases, only three males attested to any hunting and all denied occupational contact with the

Table 1

BLASTOMYCOSIS CASES
BY PRESENTING SYMPTOMS - 30 CASES
WASHINGTON PARISH, 1976 - 1985

SYMPTOMS	NUMBER CASES	SYMPTOMS	NUMBER CASES
Cough	15	Hemoptysis	3
Skin Lesions	13	Arthritis	3
Fever	12	Chills	2
Dyspnea	7	Draining Ear	1
Chest Pain	5	Rectal Pain	1
Weight Loss	5	Bone (arm) Pain	1
Anorexia	4		

Table 2

BLASTOMYCOSIS CASES
BY ORGAN INVOLVEMENT - 30 CASES
WASHINGTON PARISH, 1976 - 1985

ORGAN	NUMBER CASES	PERCENTAGE OF TOTAL CASES
Lungs	19	63.3%
Skin	14	46.7%
Bone	6	20.0%
Joints	2	6.7%
Urinary Tract	2	6.7%
Prostate	1	3.3%
Lungs Only	10	33.3%
Skin Only	6	20.0%
Multiple Organ	10	33.3%

Figure 1

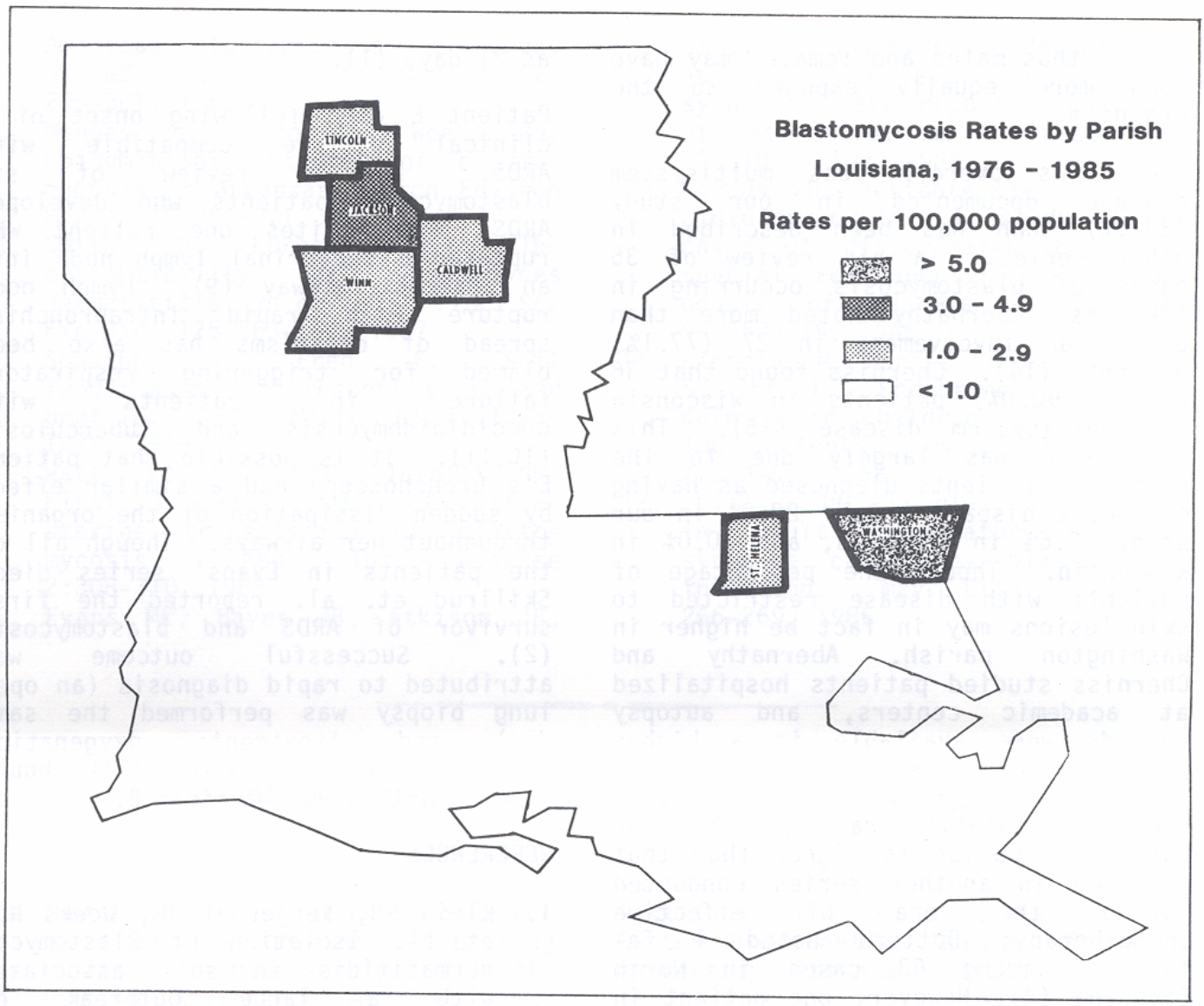

Table 3

CHARACTERISTICS OF FATAL CASES OF BLASTOMYCOSIS
WASHINGTON PARISH, LOUISIANA 1976 - 1985

PATIENT	AGE	SEX	RACE	PRESENTING SYMPTOMS	TREATMENT	DISTINGUISHING CHARACTERISTIC
A	3 WKS	M	B	died in ER	none	reported as first case of intrauterine transmission
B	18 yrs	M	B	draining ear with ruptured sinus	ketoconazole, then AB	disseminated disease; ketoconazole failure
C	49 yrs	M	B	cough, chest pain, weight loss	surgery	died following right middle and lower lobectomies
D	52 yrs	F	W	hemoptysis, dyspnea	partial course of AB 1 yr previously	respiratory arrest 36 hrs after admission
E	71 yrs	F	W	joint swelling	none	died with probable ARDS

Abbreviations:

AB = Amphotericin B
ARDS = Adult Respiratory Distress Syndrome
ER = Emergency Room

soil - thus males and females may have been more equally exposed to the organism.

There was overall less multisystem disease documented in our study (33.3%) than has been described in other series. In his review of 35 cases of blastomycosis occurring in Arkansas, Abernathy noted more than one organ involvement in 27 (77.1%) patients (14). Cherniss found that 36 of 40 (90.0%) patients in Wisconsin had multisystem disease (15). This difference was largely due to the number of patients diagnosed as having cutaneous disease only: 20.0% in our study, 8.6% in Arkansas, and 10.0% in Wisconsin. Though the percentage of patients with disease restricted to skin lesions may in fact be higher in Washington parish, Abernathy and Cherniss studied patients hospitalized at academic centers, and autopsy records were available in a higher percentage of cases.

The case fatality rate (16.7%) for Washington parish is higher than that observed in another series conducted during the era of effective chemotherapy; Duttera noted 4 fatalities among 63 cases in North Carolina (4). However, one patient in our series died on presentation and another probably developed ARDS. The former patient (A) was reported as the first case of intrauterine tranmission of blastomycosis (8). The mother developed skin lesions one month prior to delivery, and was diagnosed as having disseminated blastomycosis two weeks after the infant's death. A common source exposure may also have occurred, as person-to-person transmission (of any type) has not been clearly documented for blastomycosis, and the incubation period has subsequently been shown to be as short as 21 days (1).

Patient E died following onset of a clinical picture compatible with ARDS. In a review of six blastomycosis patients who developed ARDS, Evans cites one patient who ruptured a subcarinal lymph node into an adjacent airway (9). Lymph node rupture with rapid intrabronchial spread of organisms has also been blamed for triggering respiratory failure in patients with coccidioidomycosis and tuberculosis (10,11). It is possible that patient E's bronchoscopy had a similar effect by sudden dissipation of the organism throughout her airways. Though all of the patients in Evans' series died, Skillrud et. al. reported the first survivor of ARDS and blastomycosis (2). Successful outcome was attributed to rapid diagnosis (an open lung biopsy was performed the same day) and treatment; oxygenation improved markedly within 24 hours after starting Amphotericin B.

REFERENCES

1. Klein BS, Vergeront JM, Weeks RJ, et al. Isolation of Blastomyces dermatitidis in soil associated with a large outbreak of blastomycosis in Wisconsin. N Engl J Med 314:529-534, 1986
2. Furcolow ML, Busey JF, Menges RW, et al. Prevalence and incidence studies of human and canine blastomycosis II: yearly incidence studies in three selected states, 1960-1967. Am J Epidemiol 92: 121-131, 1970
3. Klein BS, Davis JP. A laboratory-based surveillance of human blastomycosis in Wisconsin between 1973 and 1982. Am J Epidemiol 122:897-903, 1985
4. Duttera MJ, Osterhout S. North

American blastomycosis: a survey of 63 cases. South Med J 62: 295-301, 1969
5. Menges RW, Doto IL, Weeks RJ. Epidemiologic studies of blastomycosis in Arkansas. Arch Environ Health 18:956-971, 1969
6. Smith CD, Furcolow ML. The susceptibility of Blastomyces dermatitidis to drying. Proc Soc Exp Biol 125:263-266, 1967
7. Schuepp H, Fred E. Soil fungistasis with respect to pH and profile. Can J Microbiol 15:1273-1279, 1969
8. Watts EA, Gard PD, Tuthill SW. First reported case of intrauterine transmission of blastomycosis. Ped Inf Disease 2:308-310, 1983
9. Evans ME, Hayes JB, Atkison JB, et.al. Blastomycosis dermatitidis and the adult respiratory distress syndrome: case reports and review of literature. Am Rev Respir Dis 126:1099-1102, 1982
10. Forbus WD, Bestebreutje AM. Coccidioidomycosis: a study of 95 cases of disseminated type with special reference to the pathogensis of disease. Milit Med 99:653-719, 1946
11. Lincoln EM, Harris LC, Bovornkitti S, et.al. Endobronchial tuberculosis in children: a study of 156 patients. Am Rev Respir Dis 77:39-61, 1958
12. Skillrud DM, Douglas WW. Survival in adult respiratory distress syndrome caused by blastomycosis infection. May Clin Proc 60: 266-269, 1985

1987 NATIONAL IMMUNIZATION CONFERENCE

The National Immunization Conference was held in New Orleans celebrating the 25th anniversary of the Vaccination Assistance Act of 1962. This historic legislation was the first multi-year authorization for financial support to state and local health agencies to conduct immunizations programs against DTP and Polio. Theme of the conference was "Looking Back . . . Taking Stock . . . Moving Ahead". Key note speakers were Dr. Donald R. Hopkins, Deputy Director, CDC, Dr. David J. Sencer, Executive Vice-President, Management Sciences for Health and former Director CDC 1966-1977 and Mr. William Watson, former Project Manager, The Task Force for Child Survival at the Carter Presidential Center of Emmory University, Atlanta, Georgia.

Of particular interest to the participants was a paper presented on Acellular and Whole-Cell Pertussis Vaccine. The available data indicate that fever and other common systemic reactions will be less common with the use of acellular pertussis vaccines. Although the data from the Japanese experience with acellular pertussis vaccines is exciting, further study and eventual licensure and use of similar vaccines will not be available until all the studies and data have been evaluated.

NEW RECOMBINANT DNA HB (Hepatitis B) VACCINE*

Formulation

In July 1986, a new genetically engineered HB vaccine (Recombivax HB®; Merck Sharp & Dohme) was licensed by the United States Food and Drug Admininstration. This vaccine, as formulated, has an immunogenicity comparable to that of the currently available plasma-derived vaccine (Heptavax B®; Merck Sharp & Dohme). The two vaccines are also comparably effective when given with HBIG to prevent perinatal HBV transmission. The new vaccine provides an alternative to the plasma-derived HB vaccine for almost all groups at risk of HBV infection.

The recombinant vaccine is produced by Saccharomyces cerevisiae (common baker's yeast) into which a plasmid containing the gene for the Hepatitis B surface antigen (HBsAg) subtype adw has been inserted(1). HBsAg is harvested by lysing the yeast cells and is separated from yeast components by hydrophobic interaction and size-exclusion chromatography. The purified HBsAg protein undergoes sterile filtration and treatment with formalin prior to packaging. The vaccine is packaged to contain 10µg HBsAg protein per ml, absorbed with 0.5 mg/ml aluminum hydroxide; a 1:20,000 concentration of thimerosal is added as a preservative.

The recombinant HBsAg takes the form of 17-25 nm spherical particles, similar in appearance to human plasma-derived HBsAg. The recombinant particles differ in that the HBsAg is not glycosylated, whereas up to 25% of plasma-derived HBsAg is glycosylated. The vaccine contains more than 95% HbsAg protein. Yeast-derived protein can constitute up to 4% of the final product, but no yeast DNA is detectable in the vaccine.

Immunogenicity and Efficacy

The immunogenicity of the recombinant HB vaccine is comparable to that of the plasma-derived product (2). When given in a three-dose series (10µg per dose), recombinant HB vaccine induces protective antibodies (anti-HBs*) in over 95% of healthy adults 20-39 years of age. Studies comparing antibody responses of healthy adults show equal rates of seroconversion following the three doses of either the recombinant vaccine (10µg per dose) or the plasma-derived vaccine (20µg per dose). However, the geometric mean titers (GMT) of antibodies developed by recipients of the recombinant vaccine have ranged from equal to to 30% as high as those developed by recipients of the plasma-derived vaccine. The recombinant vaccine, like the plasma-derived vaccine, produces a somewhat lower antibody response in older adults than in younger adults (2).

In studies using three 5-µg doses of recombinant vaccine for children <12 years of age, over 99% of the recipients have developed protective levels of antibodies. Hemodialysis patients develop a poorer response to

* Greater than 10 milli-International Units (mIU)/ml of anti-HBs, approximately equal to 10 sample ratio units by radioimmunoassay or positive by enzyme immunoassay.

* SOURCE: MMWR, Centers for Disease Control, June 19, 1987, Vol.36, No. 23, selected text from pp. 355-366.

the recombinant vaccine than do healthy adults. For example, in one study using three 40-µg doses of recombinant HB vaccine, only 64% of vaccine recipients developed protective levels of antibodies.

The recombinant HB vaccine has been shown to prevent HBV infection of vaccinated chimpanzees challenged intravenously with HBV of either adw or ayr subtypes. In studies of infants born to HBsAg- and HBeAg-positive mothers, the combination of HBIG (0.5 cc at birth) and recombinant HB vaccine (5µg in each of three doses) protected 94% of infants from developing the chronic carrier state, and efficacy equalling that of HBIG plus plasma-derived HB vaccine (3). The simultaneous administration of HBIG did not interfere with induction of anti-HBs antibody response by the recombinant HB vaccine.

There have been no large-scale efficacy trials of recombinant vaccine in adults. Nevertheless, the immunogenicity studies, the challenge studies using chimpanzees, and the efficacy trials of the HB vaccine and HBIG in infants born to mothers who are carriers of HBV strongly suggest that the efficacy of recombinant HB vaccine in adults is comparable to that of the plasma-derived product.

Safety

Because only the portion of the HBV viral genome that codes for the surface coat of the virus (HBsAg) is present in the recombinant yeast cells, no potentially infectious viral DNA or complete viral particles can be produced. No human or animal plasma or other blood derivative is used in the preparation of recombinant HB vaccine.

During prelicensure trials, approximately 4,500 persons received at least one dose, and 2,700 persons completed the vaccine series (2). Reported side effects were similar in extent and variety to those following administration of the plasma-derived vaccine. Seventeen percent of those vaccinated experienced soreness at the injection site, and 15% experienced mild systemic symptoms (fever, headache, fatigue, and nausea). To date, no severe side effects have been observed, nor have significant allergic reactions been reported. Although yeast-derived proteins may constitute up to 4% of the protein in the vaccine, no adverse reactions that could be related to changes in titers of antibodies to yeast-derived antigens occurred during clinical trials.

Early concerns about safety of plasma-derived HB vaccine, especially the concern that infectious agents such as human immunodeficiency virus (HIV) present in donor plasma pools might contaminate the final product, have proven to be unfounded (4). There are no data to indicate that the recombinant vaccine is potentially or actually safer than the currently licensed plasma-derived product.

Dosage and Schedule

The recombinant HB vaccine is given in a series of three doses over a 6-month period. The second dose is administered 1 month after the first, and the third dose, 5 months after the second. For normal adults and children >10 years of age, the recommended dose is 10µg (1 ml) intramuscularly in each of the three inoculations. Children <11 years of

age should receive a 5-µg dose (0.5 ml) by the same schedule. Newborns of mothers who are carriers of HBsAg should receive the three-dose series (5µg per dose) by the same schedule; however, the first dose, which is given at birth, should be combined with a single dose of HBIG (0.5 ml) given intramuscularly at another site.

The recommended dose of recombinant HB vaccine for hemodialysis patients or other immunosuppressed persons is 40µg, which is identical to the dose of plasma-derived vaccine recommended for these groups. A specially formulated preparation (40µg HBsAg protein/ml adsorbed with 0.5 mg aluminum hydroxide) is being developed for these patients. At present, it is not advisable to administer the standard formulation of recombinant HB vaccine to these patients because this would require a large volume (4.0 cc), which is inconvenient for injection in the deltoid muscle, and would contain more aluminum hydroxide (2.0 mg) than currently recommended as an adjuvant in vaccines (1.25 mg per dose). Only plasma-derived vaccine should be used for these patients.

As with plasma-derived vaccine, recombinant HB vaccine should only be given to older children and adults in the deltoid muscle and to neonates or infants in the anterolateral thigh muscle. The vaccine should be stored at 2 C to 6 C (36 F to 43 F) and should not be frozen; freezing destroys the potency of this vaccine.

The response to vaccination by the standard schedule using one or two doses of plasma-derived vaccine followed by the remaining doses of recombinant vaccines has not been studied. However, because the

Table 1
PERSONS FOR WHOM HEPATITIS B VACCINE
IS RECOMMENDED OR SHOULD BE CONSIDERED *

Preexposure

Persons for whom vaccine is recommended:

- Health-care workers having blood or needle-stick exposures
- Clients and staff of institutions for the developmentally disabled
- Hemodialysis patients
- Homosexually active men
- Users of illicit injectable drugs
- Recipients of certain blood products
- Household members and sexual contacts of HBV carriers
- Special high-risk populations

Persons for whom vaccine should be considered:

- Inmates of long-term correctional facilities
- Heterosexually active persons with multiple sexual partners
- International travelers to HBV endemic areas

Postexposure

- Infants born to HBV positive mothers
- Health-care workers having needle-stick exposures to human blood

* Detailed information on recommendations for HB vaccination is available (MMWR 1985; 34:313-24, 329-35).

immunogenicities of the two vaccines are similar, it is likely that the response will be comparable to that induced by three doses of either vaccine alone. The response to revaccination with the recombinant vaccine following nonresponse to an initial series of plasma vaccine has not been evaluated.

Indications for Use

The indications for use of the recombinant HB vaccine are identical to those for the plasma-derived product, except that the present formulation of the recombinant HB vaccine should not be used for hemodialysis patients or other immunosuppressed persons (Table 1)(MMWR 1985;34:313-24, 329-35). For other groups, including persons with Down's syndrome, there are no data indicating that the recombinant HB vaccine is either superior or inferior to the plasma-derived HB vaccine for any preexposure or postexposure indication.

Precautions

The recombinant HB vaccine contains only noninfectious HBsAg particles; therefore vaccination of a pregnant woman should entail no risk to either the woman or the fetus. Furthermore, HBV infection in a pregnant woman can result in severe disease for the mother and chronic infection of the newborn. Pregnancy should not be considered a contraindication for women in high-risk groups who are eligible to receive this vaccine.

Recommendations for Booster Doses

Adults and children with normal immune status. For adults and children with normal immune status, the antibody response to properly administered vaccine is excellent, and protection lasts for at least 5 years. Booster doses of vaccine are not routinely recommended, nor is routine serologic testing to assess antibody levels in vaccine recipients necessary during this period. The possible need for booster doses after longer intervals will be assessed as additional information becomes available.

Hemodialysis patients. For hemodialysis patients, in whom vaccine-induced protection is less complete and may persist only as long as antibody levels remain above 10 mIU/ml, the need for booster doses should be assessed by semiannual antibody testing (5). Booster doses should be given when antibody levels decline below 10 mIU/ml.

Postexposure Prophylaxis of Persons Exposed to HBsAg Positive Needle Sticks

In vaccinated persons who experience percutaneous or needle exposure to HBsAg positive blood, serologic testing to assess immune status is recommended unless testing within the previous 12 months has indicated adequate levels of antibody. If the exposed person is tested and found to have an inadequate antibody level, treatment with HBIG and/or a booster dose of vaccine is indicated, depending on whether vaccination has been completed and whether the person is known to have previously responded to HB vaccine. Detailed recommendations on prophylaxis in this situation are provided in the previous recommendations for HB vaccine (MMWR 1985;34:313-24, 329-35).

Dosage

When indicated, HB vaccine recipients

can be given booster doses of either plasma-derived or recombinant HB vaccine. Booster doses of either vaccine induce prompt anamnestic responses in over 90% of persons who initially respond to vaccine but subsequently lose detectable antibody (6,7). The booster dose for normal adults is 20µg of plasma-derived vaccine or 10µg of recombinant vaccine. For newborns and children <10 years of age, the dose is half that recommended for adults. For hemodialysis patients, a dose of 40µg of plasma-derived vaccine is recommended; a formulation of recombinant HB vaccine is not yet available for this group. Vaccine should be given in the deltoid muscle. Buttock injection does not induce adequate levels of antibody.

Precautions

Reported adverse effects following booster doses have been limited to soreness at the injection site. Data are not available on the safety of the vaccine for the developing fetus, but there should be no risk because both plasma-derived and recombinant HB vaccines are inactivated and do not contain live virus particles. Booster doses need not be withheld from pregnant women who are at ongoing risk of HBV infection.

REFERENCES:

1. Emini EA, Ellis RW, Miller WJ, McAleer WJ, Scolnick EM, Gerety RJ. Production and immunological analysis of recombinant hepatitis B vaccine. J Infection 1986;13 (suppl A):3-9.
2. Zajac BA, West DJ, McAleer WJ, Scolnick EM. Overview of clinical studies with hepatitis B vaccine made by recombinant DNA. J Infection 1986;13(suppl A):39-45.
3. Stevens CE, Taylor PE, Tong MJ, et al. Yeast-recombinant hepatitis B vaccine: efficacy with Hepatitis B immune globulin in prevention of perinatal hepatitis B virus transmission. JAMA 1987;257:2612-6.
4. Francis DP, Feorino PM, McDougal S, et al. The safety of hepatitis B vaccine: inactivation of the AIDS virus during routine vaccine manufacture. JAMA 1986;256:869-72.
5. Stevens CE, Alter HJ, Taylor PE, et al. Hepatitis B vaccine in patients receiving hemodialysis: immunogenicity and efficacy. N Engl J Med 1984;311:496-501.
6. McLean AA, Hilleman MR, McAleer WJ, Buynak EB. Summary of worldwide clinical experience with H-b-Vax® (B, MSD). J Infection 1983;7 (suppl):95-104.
7. Davidson M, Krugman S. Recombinant yeast hepatitis B vaccine compared with plasma-derived vaccine: immunogenicity and effect of a booster dose. J Infection 1986;13 (suppl A):31-8.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS REPORTED MORBIDITY MAY, 1987	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	LEGIONELLOSIS	MALARIA	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE 1987)
	MEASLES	RUBELLA	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 1986	0	0	0	4	0	17	45	74	1	4	12	10	163	0	53	2	7914	372	7
TOTAL TO DATE 1987	0	0	186	10	0	20	50	221	2	0	10	118	95	0	352	0	6635	284	5
TOTAL THIS MONTH	0	0	15	1	0	9	11	54	0	0	0	30	20	0	77	0	1336	54	1
ACADIA								1									6		
ALLEN			3																
ASCENSION															1		7		
ASSUMPTION																	4	1	
AVOYELLES																	6		
BEAUREGARD																	7		
BIENVILLE							1										1		
BOSSIER													1		3		21		
CADDO												7			12		168	4	2
CALCASIEU															5		57		
CALDWELL																	9		
CAMERON																			
CATAHOULA																			
CLAIBORNE																	3	1	1
CONCORDIA												1	1				1		
DESOTO								1				1							
EAST BATON ROUGE			6			1	1	5							4		139	6	
EAST CARROLL													1				10		
EAST FELICIANA																	1		
EVANGELINE																	1		
FRANKLIN																	3		
GRANT																	3		
IBERIA								1							1		14		
IBERVILLE							1	1									2		
JACKSON													2				4		
JEFFERSON						1	1	12				2	1		8		78	5	
JEFFERSON DAVIS																	1		
LAFAYETTE			1			1		3				1			8		52	2	
LAFOURCHE																	5	2	
LASALLE								1											
LINCOLN																	5		1
LIVINGSTON			1														2		
MADISON			1					1									9	2	
MOREHOUSE							3	1									3		
NATCHITOCHES																	6		
ORLEANS			1			3		19				4	8		20		381	16	
OUACHITA							2					8	2		2		64		
PLAQUEMINES																			
POINTE COUPEE																	5	1	
RAPIDES												2	1		4		56	9	1
RED RIVER																			
RICHLAND																	17		
SABINE															1				
ST. BERNARD								1									4		
ST. CHARLES				1													4	1	
ST. HELENA																			
ST. JAMES																	2		
ST. JOHN			1														11		
ST. LANDRY						1		1									11		
ST. MARTIN								1					1				4		
ST. MARY													2				4		
ST. TAMMANY						1	2								2		24	1	
TANGIPAHOA																	14	2	
TENSAS																	6		
TERREBONNE								1				4			1		19		
UNION								1							1		4		
VERMILION								1							2		11		
VERNON								1									40		
WASHINGTON																	7		
WEBSTER															1		10		
WEST BATON ROUGE															1		2		
WEST CARROLL																	1		
WEST FELICIANA						1		1									1		
WINN			1														5	1	
OUT OF STATE																	1		

From January 1, 1987 - May 31, 1987, the following cases were also reported:
2-Amebiasis, 1-Brucellosis, 2-Leptospirosis, 3-Reye Syndrome, 2-Tularemia.

* Includes Rubella, Congenital Syndrome.

** Includes 6 cases of Hepatitis Non A, Non B.

*** Acquired outside United States unless otherwise stated.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS REPORTED MORBIDITY JUNE, 1987	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	LEGIONELLOSIS	MALARIA	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE 1987)
	MEASLES	RUBELLA	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 1986	2	0	2	6	1	25	56	98	1	4	12	15	200	0	68	3	8984	429	13
TOTAL TO DATE 1987	0	0	198	12	0	28	69	255	2	0	10	143	124	0	393	0	7649	334	9
TOTAL THIS MONTH	0	0	12	2	0	8	19	34	0	0	0	25	29	0	41	0	1022	50	4
ACADIA							2	1					2		2		3		
ALLEN			2												1				
ASCENSION						1											3		
ASSUMPTION															1		1		
AVOYELLES				1													7		1
BEAUREGARD							1										3		
BIENVILLE																	2		
BOSSIER						1							1		1		4		1
CADDO				1		1		2				1	1		6		84	4	2
CALCASIEU							1	3				1	1		4		37	1	
CALDWELL																			
CAMERON													1				1		
CATAHOULA																	4	1	
CLAIBORNE																	1		1
CONCORDIA			1														1	3	
DESOTO													1				5		1
EAST BATON ROUGE			4			2	1	1				1			2		53	4	
EAST CARROLL								1									4		
EAST FELICIANA																	1		
EVANGELINE							1					3					2		
FRANKLIN																	3		
GRANT																	4		
IBERIA							2	1							1		16		
IBERVILLE								1									1		
JACKSON																	1		
JEFFERSON						1	2	4				1	3		5		44	4	
JEFFERSON DAVIS													1				12	1	
LAFAYETTE								1					2				26	2	
LAFOURCHE																	8		
LASALLE																	1		
LINCOLN																	3		2
LIVINGSTON			1																
MADISON																	21	1	
MOREHOUSE																	12	1	
NATCHITOCHES																	3		
ORLEANS						2	2	14				3	3		6		364	19	
OUACHITA												12	6				62	2	
PLAQUEMINES																	1		
POINTE COUPEE																			
RAPIDES							1					2	1				80	1	1
RED RIVER																			
RICHLAND																	1		
SABINE							3												
ST. BERNARD															1		3		
ST. CHARLES																	3		
ST. HELENA																			
ST. JAMES													2				8		
ST. JOHN																	14		
ST. LANDRY							1	1					3		2		3	1	
ST. MARTIN																	4		
ST. MARY																	3	1	
ST. TAMMANY			2				2	2							1		15		
TANGIPAHOA															1		1	1	
TENSAS																	1		
TERREBONNE												1			5		22		
UNION													1		1		2		
VERMILION								2							1		2		
VERNON																	39	1	
WASHINGTON																			
WEBSTER																	16	2	
WEST BATON ROUGE																	2		
WEST CARROLL																	1		
WEST FELICIANA																			
WINN			2														2		
OUT OF STATE																	2		

From January 1, 1987 - June 30, 1987, the following cases were also reported:
2-Amebiasis, 1-Brucellosis, 2-Leptospirosis, 1-Reye Syndrome, 2-Tularemia.

* Includes Rubella, Congenital Syndrome.

** Includes 9 cases of Hepatitis Non A, Non B.

*** Acquired outside United States unless otherwise stated.

LOUISIANA AIDS UPDATE

	CASES	DEATHS	PERCENT
1987	89	27	30
TOTAL, ALL YEARS as of 6/30/87	473	318	67

Department of Health and Human Resources
Office of Preventive and Public Health Services
P.O. Box 60630, New Orleans, LA 70160

This public document was published at a total cost of $1825. 6500 copies of this public document were published in this first printing at a cost of $572. This document was published for the Office of Preventive and Public Health Services by the Office of Management and Finance, Printing Operations, Baton Rouge, Louisiana to inform physicians, hospitals, and the public of current Louisiana morbidity status under authority of R.S. 40:36. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31.