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Donald R. Stern, M.D., M.P.H., Acting Commissioner
Grayson B. Miller, Jr., M.D., Epidemiologist

Editor: Elizabeth Eustis Turf, Ph.D.
Layout Editor: Vickie L. O'Dell

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U.S. Public Health Service Recommendations for Human Immunodeficiency Virus Counseling and Voluntary Testing for Pregnant Women

Editor's Note: *The following article includes excerpts from the Centers for Disease Control and Prevention (CDC) publication entitled "U.S. Public Health Service Recommendations for Human Immunodeficiency Virus Counseling and Voluntary Testing for Pregnant Women" (MMWR Vol. 44:No. RR-1). These recommendations supplement those published in 1994 and reprinted in the July 1994 issue of the* Virginia Epidemiology Bulletin. *The entire MMWR article can be received by calling the Virginia Department of Health, AIDS Hotline at 1-800-533-4148.*

In support of the recommendations, the Virginia General Assembly enacted a new law, effective July 1, 1995, requiring every physician providing prenatal care to routinely advise all pregnant patients of the importance of testing for HIV infection and to request consent for such testing. Physicians are also required to counsel those pregnant patients who test positive for HIV infection about: 1) the risk of transmitting HIV to the fetus; and 2) the advisability of receiving treatment to reduce the risk of such transmission. Any pregnant woman may refuse consent for testing or any recommended treatment. In that case, documentation of that refusal must be maintained in the patient's medical record.

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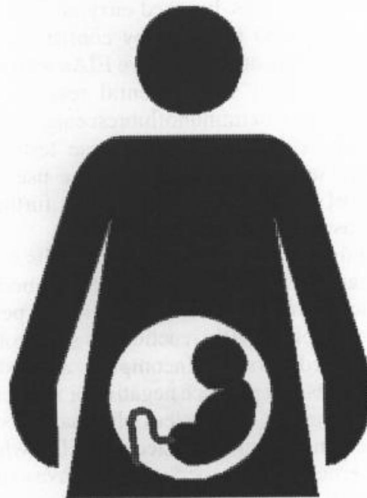
SUMMARY

These recommendations were developed by the U.S. Public Health Service to address the increasing epidemic of human immunodeficiency virus (HIV) infection among women and their infants. The recommendations stress the importance of early diagnosis of HIV infection for the health of both women and their infants and are based on advances made in HIV related



treatment and prevention. The most significant advance for this population has been the results from a placebo-controlled, clinical trial that indicated that administration of zidovudine (ZDV) to HIV-infected pregnant women and their newborns reduced the risk for perinatal transmission of HIV by approximately two thirds (1). This document recommends routine HIV counseling and voluntary testing for all pregnant women and is intended to serve as guidance for health-care providers in educating women about the importance of knowing their HIV infection status. For uninfected women, such HIV counseling and testing programs can provide information that can reduce their risk for acquiring HIV. For women who have HIV infection, these programs can enable them to receive appropriate and timely medical interventions for their own health and for reducing the risk for perinatal (i.e., mother to infant) and other modes of HIV transmission. These programs also can facilitate appropriate follow-up care and services for HIV-infected women, their infants, and other family members.

BACKGROUND

HIV Infection and AIDS in Women and Children

HIV infection is a major cause of illness and death among women and children. Nationally, HIV infection was the fourth leading cause of death in 1993 among women 25-44 years of age and the seventh leading cause of death in 1992 among children 1-4 years of age. Blacks and Hispanics have been disproportionately affected by the HIV epidemic. In 1993, HIV infection was the leading cause of death among black women 25-44 years of age and the third leading cause of death among Hispanic women in this age group. In 1991, HIV infection was the second leading cause of death among black children 1-4 years of age in New Jersey, Massachusetts, New York, and Florida and among Hispanic children in this age group in New York (CDC, unpublished data).

By 1995, CDC had received reports of 58,000 AIDS cases among adult and ado-

lescent women and 5,500 cases among children who acquired HIV infection perinatally. Approximately one half of all AIDS cases among women have been attributed to injecting-drug use and one third to heterosexual contact. Nearly 90% of cumulative AIDS cases reported among children and virtually all new HIV infections among children in the United States can be attributed to perinatal transmission of HIV. An increasing proportion of perinatally acquired AIDS cases has been reported among children whose mothers acquired HIV infection through heterosexual contact with an infected partner whose infection status and risk factors were not known by the mother.

Data from the National Survey of Childbearing Women indicate that in 1992, the estimated national prevalence of HIV infection among childbearing women was 1.7 HIV-infected women per 1,000 childbearing women. Approximately 7,000 HIV-infected women gave birth annually for the years 1989-1992. Given a perinatal transmission rate of 15%-30%, an estimated 1,000-2,000 HIV-infected infants were born annually during these years in the United States. Although urban areas, especially in the northeast, generally have the highest seroprevalence rates, data from this survey have indicated a high prevalence of HIV infection among childbearing women who live in some rural and small urban areas -- particularly in the southern states.

Perinatal Transmission of HIV

HIV can be transmitted from an infected woman to her fetus or newborn during pregnancy, during labor and delivery, and during the postpartum period (through breastfeeding), although the percentage of infections transmitted during each of these intervals is not precisely known. Although transmission of HIV to a fetus can occur as early as the 8th week of gestation, data suggest that at least one half of perinatally transmitted infections from non-breastfeeding women occur shortly before or during the birth process. Breastfeeding may increase the rate of transmission by 10%-20%.

Several prospective studies have reported perinatal transmission rates ranging from 13% to 40%. Transmission rates may differ among studies depending on the prevalence of various factors that can influence the likelihood of transmission. Several maternal factors have been associated with an increased risk for transmission, including low CD4+ T-lymphocyte counts, high viral titer, advanced HIV disease, the presence of p24 antigen in serum, placental membrane inflammation, intrapartum events resulting in increased exposure of the fetus to maternal blood, breastfeeding, low vitamin A levels, premature rupture of membranes, and premature delivery. Factors associated with a decreased rate of HIV transmission have included cesarean section delivery, the presence of maternal neutralizing antibodies, and maternal ZDV therapy.

Laboratory Testing Considerations

The HIV-1 testing algorithm recommended by PHS comprises initial screening with an FDA-licensed enzyme immunoassay (EIA) followed by confirmatory testing of repeatedly reactive EIAs with an FDA-licensed supplemental test (e.g., Western blot or immunofluorescence assay [IFA]). Although each of these tests is highly sensitive and specific, the use of both EIA and supplementary tests further increases the accuracy of results.

Indeterminate Western blot results can be caused by either incomplete antibody response to HIV in sera from infected persons or non-specific reactions in sera from uninfected persons. Incomplete antibody responses that produce negative or indeterminate results on Western blot may occur in persons recently infected with HIV who are seroconverting, persons who have end-stage HIV disease, and perinatally exposed infants who are seroreverting (i.e., losing maternal antibody). In addition, non-specific reactions producing indeterminate results in uninfected persons have occurred more frequently among pregnant or parous women than among persons in other groups characterized by low HIV seroprevalence. No large-scale studies to estimate the prevalence of indeterminate test results in pregnant women have been conducted.

RECOMMENDATIONS

The following recommendations have been developed to provide guidance to health-care workers when educating women about HIV infection and the importance of early diagnosis of HIV. The recommendations are based on the advances made in treatment and prevention of HIV infection and stress the need for a universal counseling and voluntary testing program for pregnant women. These recommendations address a) HIV-related information needed by infected and uninfected pregnant women for their own health and that of their infants, b) laboratory considerations involved in HIV testing of this population, and c) the importance of follow-up services for HIV-infected women, their infants, and other family members.

HIV Counseling and Voluntary Testing of Pregnant Women and Their Infants

- Health-care providers should ensure that all pregnant women are counseled and encouraged to be tested for HIV infection to allow women to know their infection status both for their own health and to reduce the risk for perinatal HIV transmission. Pretest HIV counseling of pregnant women should be done in accordance with previous guidelines for HIV counseling. Such counseling should include information regarding the risk for HIV infection associated with sexual activity and injecting-drug use, the risk for transmission to the woman's infant if she is infected, and the availability of therapy to reduce this risk. HIV counseling, including any written materials, should be linguistically, culturally, educationally, and age appropriate for individual patients.
- HIV testing of pregnant women and their infants should be voluntary. Consent for testing should be obtained in accordance with prevailing legal requirements.
- Health-care providers should counsel and offer HIV testing to women as early in pregnancy as possible so that informed and timely therapeutic decisions can be made. Specific strategies and resources will be needed to communicate with women who may not obtain prenatal care because of homelessness, incarceration, undocumented citizenship status, drug or alcohol abuse, or other reasons.
- Uninfected pregnant women who continue to practice high-risk behaviors (e.g., injecting-drug use and unprotected sexual contact with an HIV-infected or high-risk partner) should be encouraged to avoid further exposure to HIV and to be retested for HIV in the third trimester of pregnancy.

• The prevalence of HIV infection may be higher in women who have not received prenatal care. These women should be assessed promptly for HIV infection. Such an assessment should include information regarding prior HIV testing, test results, and risk history. For women who are first identified as being HIV infected during labor and delivery, health-care providers should consider offering intrapartum and neonatal ZDV according to published recommendations. For women whose HIV infection status has not been determined, HIV counseling should be provided and HIV testing offered as soon as the mother's medical condition permits. However, involuntary HIV testing should never be substituted for counseling and voluntary testing.

• Some HIV-infected women do not receive prenatal care, choose not to be tested for HIV, or do not retain custody of their children. If a woman has not been tested for HIV, she should be informed of the benefits to her child's health of knowing her child's infection status and should be encouraged to allow the child to be tested. Counselors should ensure that the mother provides consent with the understanding that a positive HIV test for her child is indicative of infection in herself. For infants whose HIV infection status is unknown and who are in foster care, the person legally authorized to provide consent should be encouraged to allow the infant to be tested (with the consent of the biologic mother, when possible) in accordance with the policies of the organization legally responsible for the child and with prevailing legal requirements for HIV testing.

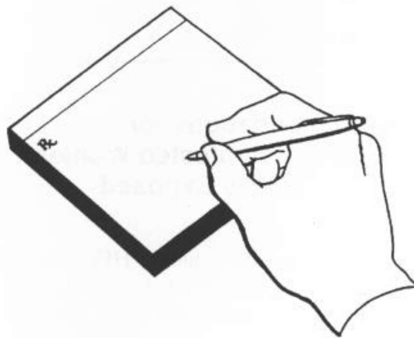
• Pregnant women should be provided access to other HIV prevention and treatment services (e.g., drug-treatment and partner-notification services) as needed.

Interpretation of HIV Test Results

• HIV antibody testing should be performed according to the recommended algorithm, which includes the use of an EIA to test for antibody to HIV and confirmatory testing with an additional, more specific assay (e.g., Western blot or IFA).

• HIV infection (as indicated by the presence of antibody to HIV) is defined as a repeatedly reactive EIA and a positive confirmatory supplemental test. Confirmation or exclusion of HIV infection in a person with indeterminate test results should be made not only on the basis of HIV antibody test results, but with consideration of a) the person's medical and behavioral history, b) results from additional virologic and immunologic tests when performed, and c) clinical follow-up. Uncertainties regarding HIV infection status, including laboratory test results, should be resolved before final decisions are made concerning interventions.

• Pregnant women who have repeatedly reactive EIA and indeterminate supplemental tests should be retested immediately for HIV antibody to distinguish between recent seroconversion and a negative test result. Additional tests (e.g., viral culture, PCR, or p24 antigen test) to diagnose or exclude HIV infection may be required for women whose test results remain indeterminate -- especially women who have behavioral risk factors for HIV, have had recent exposure to HIV, or have clinical symptoms compatible with acute retroviral illness. In such situations, confirmation by an FDA-licensed IFA kit may be helpful because IFA is less likely to yield indeterminate results than Western blot.



• Women who have negative EIAs and those who have repeatedly reactive EIAs but negative supplemental tests should be considered uninfected.

Recommendations for HIV-Infected Pregnant Women

•HIV-infected pregnant women should receive counseling as previously recommended. Posttest HIV counseling should include an explanation of the clinical implications of a positive HIV antibody test result and the need for, benefit of, and means of access to HIV-related medical and other early intervention services. Such counseling should also include a discussion of the interaction between pregnancy and HIV infection, the risk for perinatal HIV transmission and ways to reduce this risk, and the prognosis for infants who become infected.

• HIV-infected pregnant women should be evaluated according to published recommendations to assess their need for antiretroviral therapy, antimicrobial prophylaxis, and treatment of other conditions. Although medical management of HIV infection is essentially the same for pregnant and nonpregnant women, recommendations for treating a patient who has tuberculosis have been modified for pregnant women because of potential teratogenic effects of specific medications (e.g., streptomycin and pyrazinamide). HIV-infected pregnant women should be evaluated to determine their need for psychological and social services.

• HIV-infected pregnant women should be provided information concerning ZDV therapy to reduce the risk for perinatal HIV transmission. This information should address the potential benefit and short-term safety of ZDV and the uncertainties regarding a) long-term risks of such therapy and b) effectiveness in women who have different clinical characteristics (e.g., CD4+ T-lymphocyte count and previous ZDV use) than women who participated in the trial. HIV-infected pregnant women should not be coerced into making decisions about ZDV therapy. These decisions should be made after consideration of both the benefits and potential risks of the regimen to the woman and her child. Therapy should be offered according to the appropriate regimen in published recommendations. A woman's decision not to accept treatment should not result in punitive action or denial of care.

• To reduce the risk for HIV transmission to their infants, HIV-infected women should be advised against breastfeeding. Support services should be provided when necessary for use of appropriate breast-milk substitutes.

• To optimize medical management, positive and negative HIV test results should be available to a woman's health-care provider and included on both her and her infant's confidential medical records. After obtaining consent, maternal health-care providers should notify the pediatric-care providers of the impending birth of an HIV-exposed child, any anticipated complications, and whether ZDV should be administered after birth. If HIV is first diagnosed in the child, the child's health-care providers should discuss the implication of the child's diagnosis for the woman's health and assist the mother in obtaining care for herself. Providers are encouraged to build supportive health-care relationships that can facilitate the discussion of pertinent health information. Confidential HIV-related information should be disclosed or shared only in accordance with prevailing legal requirements.

FYI:

AFDC Recipients' Children Now Required to Show Proof of Immunization

As of July 1, 1995, recipients of Aid to Families with Dependent Children (AFDC) are required to show that their children are adequately immunized. Parents will be given a form by their AFDC-eligibility worker that must be completed by a physician or health department employee. This form will document whether or not the child is up to date with his/her shots and when the next shots are due. Parents who fail to show proof of their childrens' immunizations at semi-annual AFDC-eligibility visits may face a reduction in their financial award of $50 for the first child and $25 for each additional underimmunized child. Awards will be reinstated at the next eligibility visit where the parent shows proof of immunization. Children in school or licensed daycare are exempt from the requirement because they show proof of immunization prior to enrollment.

• Counseling for HIV-infected pregnant women should include an assessment of the potential for negative effects resulting from HIV infection (e.g., discrimination, domestic violence, and psychological difficulties). For women who anticipate or experience such effects, counseling also should include a) information on how to minimize these potential consequences, b) assistance in identifying supportive persons within their own social network, and c) referral to appropriate psychological, social, and legal services. In addition, HIV-infected women should be informed that discrimination based on HIV status or AIDS regarding matters such as housing, employment, state programs, and public accommodations (including physicians' offices and hospitals) is illegal.

• HIV-infected women should be encouraged to obtain HIV testing for any of their children born after they became infected or, if they do not know when they became infected, for children born after 1977. Older children (i.e., children 12 years of age) should be tested with informed consent of the parent and assent of the child. Women should be informed that the lack of signs and symptoms suggestive of HIV infection in older children may not indicate lack of HIV infection; some perinatally infected children can remain asymptomatic for several years.

Recommendations for Follow-Up of Infected Women and Perinatally Exposed Children

• Following pregnancy, HIV-infected women should be provided ongoing HIV-related medical care, including immune-function monitoring, antiretroviral therapy, and prophylaxis for and treatment of opportunistic infections and other HIV-related conditions. HIV-infected women should receive gynecologic care, including regular Pap smears, reproductive counseling, information on how to prevent sexual transmission of HIV, and treatment of gynecologic conditions according to published recommendations.

• HIV-infected women (or the guardians of their children) should be informed of the importance of follow-up for their children. These children should receive follow-up care to determine their infection status, to initiate prophylactic therapy to prevent PCP and, if infected, to determine the need for antiretroviral and other prophylactic therapy and to monitor disorders in growth and development, which often occur before 24 months of age. HIV-infected children and other children living in households with HIV-infected persons should be vaccinated according to published recommendations for altered schedules.

• Because the identification of an HIV-infected mother also identifies a family that needs or will need medical and social services as her disease progresses, health-care providers should ensure that referrals to these services focus on the needs of the entire family.

Reference

1. Connor EM, Sperling RS, Gelber R, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type 1 with zidovudine treatment. N Engl J Med 1994;331:1 173-80.

Availability of Electronic MMWR on Internet*

Since January 27, 1995, the MMWR series has been available in an electronic format on the Internet (1); current and past copies (since January 15, 1993) of the electronic MMWR series are available. To access CDC's Internet file servers, users must have Internet access and software that retrieves files by file transfer protocol (FTP) or software that will access the World Wide Web (WWW). As of May 1, changes have been made in the names of some directories used to access the electronic MMWR files and Adobe™ Acrobat™ Reader software (produced by Adobe, Inc.) required to view the electronic MMWR in Adobe™ Acrobat™ portable document format (**.pdf**). Following are the revised instructions.

Where to Obtain MMWR Through the Internet

Users can receive MMWR by connecting to the following servers:

CDC FTP server. Use FTP to connect to CDC's file server **ftp.cdc.gov**. Supply user name anonymous, and give the user's Internet e-mail address in response to the prompt for the password. Select the subdirectory **/pub/publications**, then subdirectory **mmwr**. Select subdirectory **wk** for the MMWR (weekly), subdirectory **ss** for CDC Surveillance Summaries, or subdirectory **rr** for MMWR Recommendations and Reports. Then view the listing, and download the files of interest. Each **.pdf** file represents a single issue of MMWR and is named according to the publication, volume, and issue number. For example, **mm4301.pdf** contains all pages for the MMWR (weekly) Volume 43, Number 1. Files with the prefix **rr** or **ss** represent MMWR Recommendations and Reports or CDC Surveillance Summaries, respectively.

CDC WWW server. Programs that browse the WWW (e.g., Mosaic) allow particularly easy navigation of the Internet. Use WWW software to connect to the MMWR WWW pages at either of the following addresses:

- **http://www.cdc.gov/** Go to Publications, Products, and Subscription Services, then Morbidity and Mortality Weekly Report (MMWR) to find the MMWR, OR
- **http://www.crawford.com/cdc /mmwr/mmwr.html** To access the MMWR, follow the instructions that appear on the screen.

How to Obtain MMWR from the Public E-Mail List.

An automatic service is available for receiving a weekly notification of the contents of the MMWR and instructions on how to electronically retrieve the complete MMWR file through e-mail. To subscribe, send an e-mail message to **lists@list.cdc.gov**. The body content of the e-mail should read subscribe **mmwr-toc**. The subscriber will be added automatically to the mailing list and receive a weekly table of contents and other announcements regarding the electronic MMWR. Subscribers will also receive instructions about additional e-mail commands, such as retrieving documents, sending messages to the system operator, canceling a subscription, or sending an e-mail change of address.

Some sites may have to process the received mail attachments with a uudecode utility to create an acceptable binary file readable by Acrobat™. If the user's e-mail system does not have uudecode, the user should contact his/her e-mail administrator. Uudecode software is available free of charge at many FTP sites on the Internet. Questions about the list service should be sent to **mmwr-questions@list.cdc.gov** by e-mail.

How to Obtain Free Reader Software

Adobe™ Acrobat™ Reader software is required to view the contents of the MMWR electronic files. Free Adobe™ Acrobat™ Reader software is available on the Internet from CDC and Adobe, Inc.

From CDC FTP server. To download Adobe™ Acrobat™ Reader software through the Internet, use FTP to connect to CDC's file server **ftp.cdc.gov**. Supply the user name anonymous and your Internet e-mail address when prompted for the password. Select the subdirectory **pub**, then the subdirectory **Acrobat**. Download the appropriate file (DOS, Macintosh®, UNIX®, Windows™).

From CDC WWW server. Free software also can be downloaded by connecting to the WWW. Using WWW software, connect to the following addresses for MMWR documents:

- **http://www.cdc.gov/** Choose Publications, Products, and Subscription Services, then Morbidity and Mortality Weekly Report (MMWR), and finally Adobe™ Acrobat™ Reader. Read the instructions. Then choose Obtain a free copy of the Adobe™ Acrobat™ Reader. Select "download to disk" from the WWW software, and download the appropriate DOS, Macintosh®, UNIX®, or Windows™ reader(s).
- **http://www.crawford.com/cdc /mmwr/mmwr.html** Choose Adobe™ Acrobat™ Reader. Read the instructions. Then select Obtain a free copy of the Adobe™ Acrobat™ Reader. Select "download to disk" from the WWW software, and download the appropriate DOS, Macintosh®, UNIX®, or Windows™ reader(s).

From Adobe, Inc., FTP server. Free Adobe™ Reader software is available by connecting to the anonymous FTP site **ftp.adobe.com** to download the software.

Adobe, Inc., also has a dial-in electronic bulletin board (BBS) at (206) 623-6984. Connecting to the BBS requires a modem and a terminal emulation program that supports VT-100 or ANSI emulation. **Modem settings should be 8 data bits, 1 stop bit, and no parity**. Adobe's BBS will support modems with speeds up to 14.4 kb. To use the BBS, the user should log in with his/her own name as the user ID, and select a password. Adobe BBS will not accept a blank as either the user ID or the password.

From Adobe, Inc., WWW server. Using WWW software, connect to **http://www.adobe.com/** and follow the instructions.

Adobe Software Support

Adobe™ Acrobat™ software installation and use questions should be directed to Adobe™ Acrobat™ software support. Assistance is available Monday-Thursday 6 a.m.-5 p.m. and Friday 6 a.m.-2 p.m. (Pacific time) at the following telephone numbers: Adobe™ Acrobat™ Reader Support, (900) 555-2362; Adobe™ Acrobat™ Technical Support, (408) 986-6580; Adobe™ Technical Support BBS, (206) 623-6984.

Users should not call CDC's MMWR office for software support.

Reference

1. CDC. Availability of electronic MMWR on Internet. MMWR, 1995;44:48-50.

**MMWR 44(22);429-431, Jun 09, 1995*

Cases of Selected Notifiable Diseases, Virginia, June 1 through June 30, 1995.*

	Total Cases Reported This Month						Total Cases Reported to Date in Virginia		
		Regions							
Disease	State	NW	N	SW	C	E	This Yr	Last Yr	5 Yr Avg
AIDS	222	8	29	28	38	119	703	657	512
Campylobacteriosis	68	22	13	11	17	5	222	276	247
Gonorrhea	991	52	99	113	345	382	5399	6215	7414
Hepatitis A	15	1	10	1	0	3	95	72	89
Hepatitis B	9	1	2	1	2	3	46	60	89
Hepatitis NANB	1	0	1	0	0	0	5	18	21
Influenza	0	0	0	0	0	0	861	822	683
Kawasaki Syndrome	4	0	1	1	0	2	14	13	13
Legionellosis	2	1	0	0	0	1	7	4	6
Lyme Disease	5	0	3	1	0	1	16	28	30
Measles	0	0	0	0	0	0	0	2	21
Meningitis, Aseptic	23	4	4	1	2	12	92	83	91
Meningitis, Bacterial†	5	2	3	0	0	0	71	37	60
Meningococcal Infections	5	0	1	1	1	2	33	42	32
Mumps	1	0	0	0	1	0	14	24	38
Pertussis	1	0	1	0	0	0	8	15	11
Rabies in Animals	40	12	1	14	4	9	199	191	155
Reye Syndrome	0	0	0	0	0	0	0	1	1
Rocky Mountain Spotted Fever	1	0	0	1	0	0	1	3	3
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	76	15	15	14	21	11	389	388	425
Shigellosis	13	0	3	1	0	9	87	327	181
Syphilis, Early‡	84	0	3	13	10	58	628	724	746
Tuberculosis	27	0	13	1	3	10	136	157	176

Localities Reporting Animal Rabies: Accomack 6 raccoons; Alleghany 1 cow, 1 raccoon; Arlington 1 raccoon; Bath 1 raccoon; Caroline 1 cat; Chesterfield 1 skunk; Cumberland 1 raccoon; Franklin County 1 raccoon; Frederick 1 raccoon; Grayson 1 cow, 3 raccoons; Halifax 1 fox; Henry 1 raccoon; Isle of Wight 1 cat; King William 1 raccoon; Louisa 2 raccoons; Middlesex 1 fox; Montgomery 1 raccoon; Orange 1 cow; Page 1 raccoon; Pittsylvania 1 skunk; Prince George 1 raccoon; Roanoke City 1 squirrel; Rockbridge 1 cat; Rockingham 1 cat, 1 raccoon; Russell 2 skunks; Stafford 1 raccoon; Warren 1 raccoon; Washington 1 skunk.

Occupational Illnesses: Asbestosis 3; Carpal Tunnel Syndrome 48; Coal Workers' Pneumoconiosis 22; De Quervain's Syndrome 1; Lead Poisoning 1; Loss of Hearing 19.

*Data for 1995 are provisional.

†Other than meningococcal. ‡ Includes primary, secondary, and early latent.

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