VIRGINIA
EPIDEMIOLOGY BULLETIN

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December 2004 Volume 104, No. 12

Virginia's Isolation and Quarantine Regulations

Introduction

The restriction of movement of sick people and animals to control the spread of disease in humans is a traditional public health activity. States and localities are the main sources of these public health powers.[1] However, for many states the laws supporting these activities are antiquated and predate modern public health science as well as modern constitutional law and civil liberties. Inconsistencies in the laws and uncertainties in authorization have also raised concerns over potential challenges.[1,2] In addition, recent events such as the intentional anthrax releases, the emergence of diseases such as Severe Acute Respiratory Syndrome (SARS) and monkeypox, and the concern over pandemic influenza have stimulated efforts to address these issues to ensure effective public health responses.[3]

As a result, in April, 2004 Virginia enacted House Bill 1483 that amends Chapter 2 of Title 32.1 of the *Code of Virginia* to address isolation and quarantine. The Board of Health promulgated emergency regulations in response to the new laws in November of 2004. This article provides a general outline of the new regulations related to isolation and quarantine to assist healthcare providers in understanding the range of responses to serious public health events available within the Commonwealth of Virginia.

Isolation and Quarantine

Isolation involves restricting the activities of people who are infected with a communicable disease to prevent the transmission to those who have not been infected. This method is relatively familiar to healthcare providers (e.g., isolation for active tuberculosis). Quarantine differs in that it involves restricting the activities of persons who have been exposed to an infectious agent in order to prevent transmission if they are infected but have not yet become symptomatic.[4] While quarantine is sometimes used for animals (e.g., following a possible rabies exposure in an unvaccinated cat or dog) it is less commonly used for humans as it may require coercive action for people who do not appear to have (or do not believe that they have) an illness.

Isolation and quarantine restrictions may not need to be "all or none" to be effective. Depending on the situation, modifications can be made to ensure that such limitations are the least restrictive possible, while still protecting the health of the public. For example, during the SARS outbreak in Toronto in 2003, "work quarantine" was used to allow some healthcare workers to continue to work as long as they remained well, followed home quarantine precautions and notified their local health department if they developed symptoms.[5]

A Brief History of Isolation and Quarantine

Isolation and quarantine are not new concepts. The Bible refers to the use of isolation to control the spread of Hansen's disease (leprosy). In the 14th-15th centuries Venice imposed a harbor quarantine (from the Italian *quarante*—the 40-day period during which arriving ships were detained) to control the spread of plague. In the U.S., as early as 1647 the Massachusetts Bay Colony restricted ships from the West Indies due to plague, and by the 1660s the first colonial quarantine laws were in place. In the 1880s New York City officials inspected ships, passengers and cargo for contagion—Staten Island had an isolation hospital/quarantine station. One well-known case occurred in New York City in 1907 with Mary Mallon ("Typhoid Mary") who required life-long involuntary isolation to prevent her from working as a cook and infecting others.[4]

In This Issue:

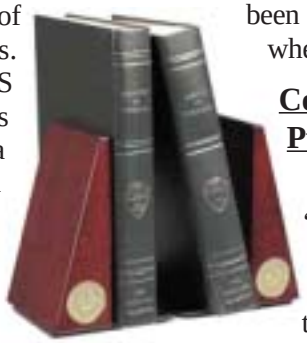
Modern Isolation and Quarantine

The government's restriction of a person who is not guilty of a crime is a form of civil commitment. Civil commitments must balance the right of the community to be protected from harm by individuals against the constitutionally protected freedoms of individuals.[6] The authority to initiate civil commitments resides at several levels of government.

Isolation and Quarantine: Lessons Learned from the SARS Outbreak

Toronto's experience with the SARS outbreak in 2003 suggests that the vast majority of both quarantined and isolated individuals complied voluntarily. As many as 29,000 people may have been isolated or quarantined through directives from health department staff, private physicians, or employers—only 27 legal orders were required to deal with non-compliant cases. Such high levels of compliance with voluntary measures may have been due in large part to extensive community education efforts.[8]

The federal government has "enumerated powers" that allow it to regulate movement under the Commerce Clause of the Constitution. This provides the basis for federal regulations to prevent the spread of disease between states. For example, 42 US Code, Sec. 264 enables the President to order a quarantine if there is a danger that specific diseases (cholera, diphtheria, infectious TB, plague, smallpox, yellow fever, viral hemorrhagic fevers, and SARS) could spread across state lines.[7]



However, under the 10th Amendment the states have "reserved powers" that include the "police powers". As a result, states have the responsibility to "enact laws…that safeguard the health, welfare, and morals of [their] citizens"—the authority to regulate private interests for the public good. Therefore, states are generally responsible for public health matters within their borders, including restricting a person's personal liberty or ability to work.[3] These laws support the regulations used by state agencies that are responsible for protecting the public health.

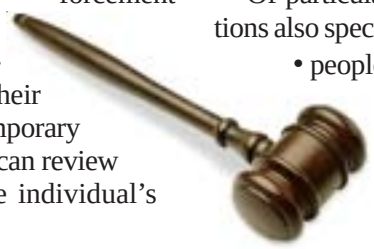
Regulations for Isolation and Quarantine

Local health department (LHD) staff work to prevent the spread of communicable diseases such as HIV, infectious syphilis and active tuberculosis in the community. In the course of their work, LHD staff may recommend appropriate public health control measures, including quarantine, isolation, immunization, decontamination or treatment. When a person voluntarily complies with these recommendations no additional intervention is necessary. However, the regulations have been designed to address the situations where voluntary compliance fails.

Communicable Disease of Public Health Significance

Virginia's regulations define a "communicable disease of public health significance" as an illness caused by an infectious agent transmitted directly or indirectly from one individual to another. This includes infections caused by HIV, bloodborne pathogens, and tubercle bacillus. Virginia's public health system has extensive regulations for addressing these diseases.

Under the regulations, a person with a communicable disease of public health significance can be involuntarily isolated if the health director for a district, with the approval of the state health commissioner ("Commissioner"), finds the person is not voluntarily following appropriate disease control instructions and is placing others at risk for infection. The health director would then work with the Commissioner and the office of the attorney general to develop an emergency detention order and a petition for court ordered isolation. The health director would also work with local law enforcement officials (police, sheriff, etc.) to conduct the person to the court or to their home or a facility for temporary detention until the court can review the case. To protect the individual's rights, the person would have access to legal counsel.



If the court review finds that the person is infected with a communicable disease of public health significance, that the person is engaging in at-risk behavior with an intentional disregard for the health of others, and that there is no other reasonable means of reducing the risk to the public an order for isolation to a residence or institution (including a jail, if necessary) may then be issued. Such an order for isolation would be valid for no more than 120 days. While the law does allow for a person to appeal a court order for isolation, during the appeal process the person is still bound by the order.

Communicable Disease of Public Health Threat

The November 2004 amendments to the Virginia Administrative Code (VAC) were developed largely to address "communicable diseases of public health threat". These would be serious infections that could spread rapidly in the community. Some examples include smallpox, pneumonic plague or viral hemorrhagic fever. In the event that a communicable disease of public health threat is identified, voluntary compliance with isolation or quarantine recommendations would be critical, especially during large-scale events. However, if a person places others at risk, or if exceptional circumstances exist, then involuntary isolation or quarantine may be considered.

In these situations, LHDs provide the Commissioner with the information required to prepare an order of isolation and/or quarantine. In the case of a large area affected by a communicable disease of public health threat and where the governor declares a state of emergency then orders of isolation or quarantine could also be applied to all persons within the affected area.

Of particular note, these new regulations also specify that:

- people must be informed of the reason, duration and conditions of the order of isolation or quarantine;
- the orders must use the least restrictive means

available (i.e., allow the most possible freedom of movement and communication with family members and other contacts, while effectively protecting unexposed and susceptible individuals);

- the site of any quarantine or isolation must be safe and clean, with adequate food, clothing, and health care; and,
- a person must be released immediately if the person poses no risk of infecting others.

If there is reason to believe that a person subject to an order of isolation or quarantine may not comply, the Commissioner may also issue an emergency detention order requiring the person to be taken immediately into custody by law-enforcement agencies and detained for the duration of the order or until the Commissioner determines that the risk of noncompliance is no longer present. Penalties for noncompliance with an order of isolation or quarantine may also include civil penalties up to $25,000 and/or 12 months in jail and/or a fine of up to $2,500.

After implementing the order, the Commissioner must then file a petition for a court review and confirmation of the order(s) of isolation or quarantine. The court may grant the petition for the order upon finding probable cause that isolation or quarantine was the necessary means to contain the disease of public health threat and is being implemented in the least restrictive environment to address the threat effectively. An order of isolation or quarantine is then in effect until the Commissioner determines that an individual no longer poses a threat to the public health, the order expires, or the court vacates the order. Although a person subject to an order of quarantine or isolation may contest the order, the filing of an appeal does not stay the order.

Local health departments would play an important role in this process by:

- providing information to the Commissioner on the evolving situation;
- identifying the least restrictive means locally available and selecting places of isolation/quarantine;
- delivering orders to the affected people;
- ensuring that law-enforcement personnel are informed of measures to take to protect themselves;
- monitoring the health status of people under an order of isolation or quarantine; and,
- working with local emergency management resources to provide for meeting the essential needs to the people affected by the order.

Conclusions

Public health officials use alternatives to involuntary isolation and quarantine whenever possible. Lessons from the SARS outbreaks in Toronto suggest that voluntary and "work" quarantine are effective. And many other public health responses are available, including primary and secondary preventive interventions [e.g., vaccination, prophylactic antibiotics, personal protective equipment (masks, gloves, etc.)], cancellation of public events, enhanced disease surveillance and symptom monitoring, and rapid diagnosis and treatment for those who become ill, to minimize the duration of restrictions.[4]

However, experience has shown that the middle of an epidemic is not the best time to be rewriting laws and developing plans.[8] Methods to improve the Commonwealth's ability to respond to acts of bioterrorism (e.g., anthrax), the spread of zoonotic diseases (e.g., avian influenza), the global spread of highly contagious diseases (e.g., pandemic influenza), and new diseases or disease strains (e.g., SARS) are necessary. These new laws and regulations will help the Commonwealth to act rapidly and effectively to minimize threats to the health of the public, while addressing issues related to fairness and personal liberty.

Ensuring the best possible response to the control of communicable diseases will continue to require further effort. For example, public health personnel need tools (e.g., guidelines, forms, etc.) and training to navigate the legal and procedural aspects of quarantine and isolation. In addition, specific plans need to be developed for meeting the essential needs of people who have been isolated or quarantined, for monitoring large numbers of people for signs and symptoms of infection, for coordinating responses within and between agencies, for providing legal counsel to large numbers of people in a short time-frame, and for ensuring public communication and enforcement on a large scale.

Therefore, while the recent changes to Virginia's regulations provide a good foundation for an effective public health response to communicable disease, many challenges remain. Addressing these will require strong partnerships between local, state, federal and non-governmental (e.g., media, Red Cross) stakeholders in the future.[2,8]

For more information about public health and the law, go to the Centers for Disease Control and Prevention Public Health Law website at http://www.phppo.cdc.gov/od/phlp/. Regulations on disease reporting and control in Virginia are available at http://www.vdh.virginia.gov/epi/regs.pdf.

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Submitted by:
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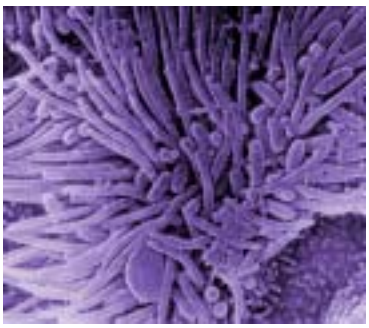
Pertussis on the Rise



Pertussis, or "whooping cough," is a highly communicable vaccine-preventable disease caused by the toxins produced by the bacterium *Bordetella pertussis*. The organism can be transmitted by airborne bioaerosols, direct contact and fomites (contaminated inanimate objects). Pertussis represents a clinical challenge since diagnosis, especially in the early stages, can be difficult. The illness usually appears insidiously, starting with "cold-like" symptoms (runny nose, fever, cough, sneezing). The cough continues for many weeks, evolving gradually into severe paroxysmal spasms that are often followed by a high-pitched inspiratory effort ("whoop") and post-tussive vomiting. However, the whoop is rare in infants less than 6 months of age and in adults.

Complications of pertussis are most common among infants and young children and can include hypoxia, apnea, pneumonia, seizures, encephalopathy and malnutrition. Groups at highest risk for severe illness include children who are too young to be fully vaccinated and those who have not completed the primary vaccination series.

Although levels of pertussis have been dramatically reduced through immunization, an upward trend that began in the early 1990s continues today (Figure 1). According to the Centers for Disease Control and Prevention (CDC), more than 17,339 cases of pertussis have been reported nationally as of December 2004 compared to 9,784 for the same period in 2003[1] (a 77% increase). A similar pattern has been observed in Virginia, with 233 cases reported as of December 1, 2004, compared to 91 by the same date in 2003 (a 156% increase).

The December 2002 issue of the Virginia Epidemiology Bulletin, available on the Virginia Department of Health (VDH) website at www.vdh.virginia.gov/epi_news/vebdec02.pdf, contains a detailed discussion of pertussis. However, as a result of changing laboratory technologies and available therapies, questions have arisen recently regarding appropriate laboratory testing and treatment of cases and contacts. This article will address these issues in an effort to assist in the control of pertussis in Virginia.

Laboratory Testing

Patients should be tested for pertussis if the clinical criteria listed below are met:

- cough for 14 days or more AND at least one of the following:
  - paroxysms of coughing, or
  - inspiratory whoop, or
  - post-tussive vomiting.

Testing should also be considered for infants with cough illness associated with **apnea**, as infants may not demonstrate classic symptoms of pertussis.

Several techniques have been developed for the detection of *B. pertussis* infections, including:

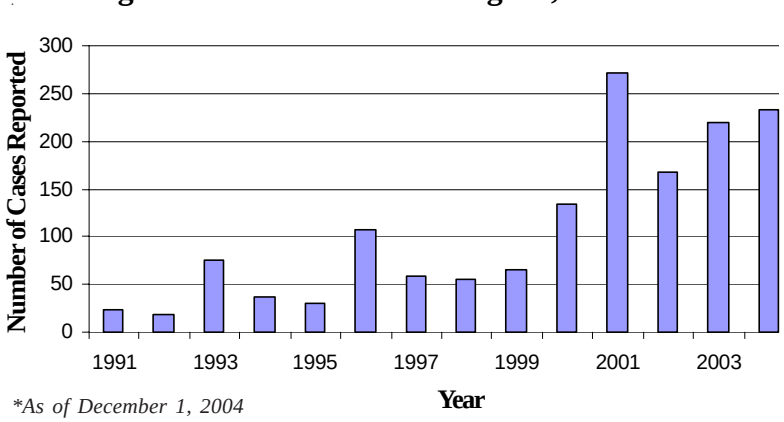
- culture;
- direct fluorescent antibody (DFA);
- polymerase chain reaction (PCR); and,
- serological tests (see Table 1).

Culture remains the gold standard for diagnosis, but it is well recognized that this method lacks sensitivity due to the fastidious growth requirements of this organism and the diminishing number of bacteria in the nasopharnyx beyond the first three weeks of illness. Direct fluorescent antibody testing of nasal secretions routinely demonstrates low sensitivity and variable specificity and cannot be relied upon as the sole criterion for laboratory confirmation of a pertussis infection.

Amplification based techniques such as PCR offer a rapid, highly sensitive and specific approach to the detection of *B. pertussis* even after antibiotic therapy has been initiated. Results from the Virginia Division of Consolidated Laboratory Services (DCLS) demonstrate the ability to detect *B. pertussis* DNA in patients who have been coughing up to three weeks and in rare circumstances up to 10 weeks (DCLS, personal communication). It must be emphasized that a positive PCR test result in a patient not meeting the clinical criteria outlined above is not considered a case of pertussis according to the CDC definition. In addition, VDH and DCLS strongly support the CDC recommendation that PCR testing should be used in combination with culture-based testing approaches. These tests, when used in combination, allow for rapid detection and the ability to further characterize and track pertussis strains using DNA fingerprinting.

Testing for antibodies to various *B. pertussis* antigens in the blood is also available in some laboratories, although it is not offered by DCLS. These tests have proven useful in selected epidemiological and clinical studies but are not yet standardized and results are difficult to interpret in immunized or partially immunized individuals. Serologic testing appears to be most helpful in situations where the patient has been coughing for an extended period of time (>30 days) and other tests are unlikely to detect the presence of the organism. If serological testing must be performed, IgG and/or IgA antibody measurements appear to be the most useful. Cases that meet

Figure 1. Pertussis Cases in Virginia, 1991-2004*



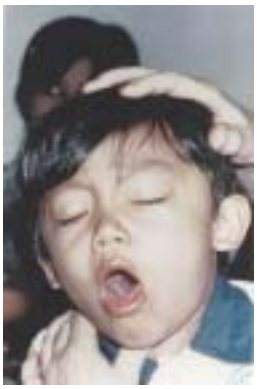
**As of December 1, 2004*

the clinical definition for pertussis and that are serologically positive but are not also positive either by culture or PCR are counted as "probable" cases.

If a symptomatic individual has been in close contact with a person who has a laboratory-confirmed case of pertussis, testing is not necessary. The diagnosis is considered confirmed by "epidemiologic-linking." In addition, asymptomatic contacts of a case should not be tested.

Treatment of Cases and Contacts

Treatment of cases is only beneficial if started within three weeks of cough onset in persons aged one year and older. Initiating treatment more than three weeks after cough onset has limited benefit to the patient or the contacts. An exception is during pregnancy, when treatment is recommended up to six weeks after cough onset in late pregnancy. Cases should be excluded from work/school for the first five days of treatment.



Contacts should be considered for prophylaxis regardless of their immunization status. If the exposure to the case occurred more than three weeks previously, asymptomatic contacts do not routinely need chemoprophylaxis. However, chemoprophylaxis should be considered for high-risk contacts (e.g., infants) up to six weeks after the last exposure to a case of pertussis.

The agent of choice for both treatment and prophylaxis continues to be erythromycin (Adults: 2g/day divided in four divided doses; Children: 40-50 mg/kg per day orally in four divided doses; maximum: 2 g/day) for 14 days (note: some experts prefer the estolate preparation). If a patient cannot tolerate erythromycin, one of the alternatives listed below may be used.

- Trimethoprim (TMP)-Sulfamethoxazole (SMX): 8 mg/kg/day TMP-40 mg/kg/day SMX in two divided doses in children and 320 mg/day TMP-1,600 mg/day SMX in two divided doses for adults, for 14 days; **or,**
- Azithromycin: 10-12 mg/kg per day orally in one dose (maximum 500 mg/day) for 5 days may be effective according to American Association of Pediatrics (AAP) guidelines. CDC recommends 10 mg/kg for day 1 (maximum 500 mg for adults) followed by 5 mg/kg (maximum 250 mg for adults) for the next 4 days. For children, CDC recommends 10 mg/kg for all 5 days of treatment; **or,**
- Clarithromycin: 15-20 mg/kg per day orally in two divided doses (maximum 1 g/day) for 7 days may be effective according to AAP guidelines. CDC recommends treatment for 10-14 days.

It is important to note that while other medications have demonstrated efficacy *in vitro*, the clinical efficacy of these medications has not been well established.

Table 1. Laboratory Testing for Pertussis

Test	Sensitivity	Specificity	Comments
DFA	30-71%	66-100%	Should be used only as a screening test in conjunction with culture and PCR
Culture	11-73%	100%	Organism is fastidious; requires prompt transport and plating; sensitivity best when specimen is collected during the catarrhal stage of the disease
PCR	61-99%	88-100%	No single technique is universally accepted or validated; no FDA cleared test available; culture should also be performed whenever PCR testing is performed
Serological Tests			Difficult to interpret, especially in immunized people; no FDA cleared test available; lack of standardized interpretive criteria

Conclusions

In an effort to enhance control efforts for pertussis transmission in Virginia, healthcare providers are encouraged to:

1) Suspect pertussis in any patient (including an adult) with a cough lasting more than 14 days without an alternative diagnosis; and,
2) Report all suspected cases of pertussis to the local health department without waiting for laboratory confirmation to be received.

In the event that a case of pertussis is identified, it is very likely that many others have been infected. By working with the local health department to limit the spread of pertussis, significant morbidity in Virginia can be prevented.

For more information see the CDC National Immunization Program's *Guideline for the Control of Pertussis* (available at www.cdc.gov/nip/publications/pertussis/guide.htm), or contact the VDH's Division of Immunization at 804-864-8055.

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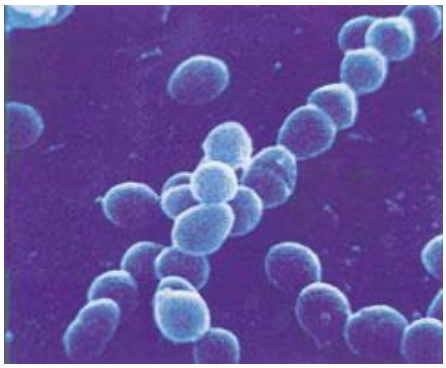
Pneumococcal Polysaccharide Vaccine Recommendations

Each year the Virginia Department of Health encourages all adults aged 65 and over to get vaccinated against pneumococcal disease if they have not previously received the vaccination. This year, in light of the influenza vaccine shortage, pneumococcal vaccination may be more important than ever.

Pneumococcal disease (including pneumonia, bacteremia and meningitis) causes thousands of hospitalizations and deaths each year. Nationwide, pneumococcal pneumonia causes about 175,000 hospitalizations annually, with a case-fatality rate of 5%-7% (higher in the elderly). More than 50,000 cases of pneumococcal disease result in bacteremia with an overall death rate ranging from 20% in healthy adults to 60% in elderly patients. In the U.S., approximately 4,500 cases of pneumococcal meningitis occur each year. The mortality rate for pneumococcal meningitis ranges from 30% in healthy adults to 80% in elderly individuals.

A safe and effective vaccine may prevent morbidity and mortality from pneumococcal disease. As a result, it is recommended that pneumococcal polysaccharide vaccine (PPV23) should be administered routinely to all adults 65 years of age and older. The vaccine is also indicated for persons two years of age or older who have a chronic illness, including cardiovascular disease, pulmonary disease, diabetes, alcoholism, cirrhosis, or cerebrospinal leak. In addition, anyone two years of age or older who has a disease or condition that lowers the body's resistance to infection, or anyone who is taking an immunosuppressive drug should be vaccinated.

More than 80% of healthy adults who receive PPV23 develop antibodies against the serotypes contained in the vaccine, usually within 2 to 3 weeks after vaccination. Older adults and persons with some chronic illnesses or immunodeficiency may not respond as well. Elevated antibody levels following vaccination persist for at least 5-10 years in healthy adults, but may fall more quickly in persons with certain underlying illnesses.



However, the relationship between antibody titer and protection from invasive disease is not certain (*i.e.*, higher antibody level does not necessarily mean better protection), so the ability to define the need for revaccination based on serology is limited. In addition, currently available pneumococcal polysaccharide vaccines elicit a T-independent response, and do not produce a sustained increase ("boost") in antibody titers. Therefore, routine revaccination of immunocompetent persons previously vaccinated with PPV23 is not recommended. However, revaccination is recommended for persons 2 years of age and older who are at highest risk for serious pneumococcal infection and for those who are likely to have a rapid declines in pneumococcal antibody levels. (e.g., those with chronic illness or immunosuppresion). Of note:

- Only a single PPV23 **revaccination** dose is recommended for high risk persons;
- Revaccination should be administered five or more years after the first dose;
- Revaccination three years after the previous dose may be considered for children at high risk for severe pneumococcal infection who would be aged 10 years or less at the time of revaccination (i.e., the first dose was given before seven years of age).
- Healthy persons aged 65 years and older should only receive a second dose of pneumococcal vaccine if they received the vaccine more than 5 years previously, **and** they were less than 65 years of age at the time of the first dose.

Reference

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Submitted by: Laura Ann Nicolai, Division of Immunization, VDH

Flu Corner

Virginia's influenza activity level in December remained at Local (i.e., increased influenza-like illness (ILI) in one region and laboratory-confirmed influenza in that region, or two or more institutional outbreaks in a single region with laboratory confirmation). In the U.S. during the week of December 25, 2004, three states/territories reported widespread activity, six states/territories reported regional activity, 16 states/territories reported local activity, and 28 states/territories reported sporadic activity. The proportion of deaths attributable to pneumonia and influenza in 122 cities monitored by the Centers for Disease Control and Prevention (CDC) remained below baseline values.

Although influenza disease activity in the United States and Virginia has remained relatively low, it is expected to increase during the weeks ahead. As of January 1, 2005 the Division of Consolidated Laboratory Services (DCLS) and hospital laboratories have reported 15 confirmed cases of influenza (14 type A and 1 type B) by direct fluorescent antibody (DFA) and/or culture in Virginia. Of three culture confirmed influenza A specimens, all three were sub-type H3.

Nationally, the CDC reports that during the week of December 19-25, 2004, 134 (10.0%) of specimens tested by the World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories were positive for influenza. Of the 134 influenza isolates identified, one was an influenza A (H1N1), 27 were influenza A (H3N2) viruses, 85 were influenza A viruses that were not subtyped, and 21 were influenza B viruses.

Overall, since October 3, WHO and NREVSS laboratories have tested a total of 29,134 specimens for influenza viruses with 773 (2.7%) positives detected. Among the 773 influenza viruses, 589 (76.2%) were influenza A viruses and 184 (23.8%) were influenza B viruses. Two hundred fifty (42.4%) of the 589 influenza A viruses have been subtyped; 248 (99.2%) were influenza A (H3N2) and 2 (0.8%) were influenza A (H1N1) viruses.

CDC has antigenically characterized 60 influenza viruses collected by U.S. laboratories since October 1, 2004 and detected:

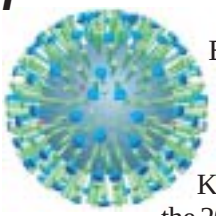
- 42 influenza A (H3N2) viruses, and
- 18 influenza B viruses.

All 42 of the influenza A (H3N2) isolates were characterized as A/Fujian/411/2002-like (H3N2), which is the influenza A (H3N2) component contained in the 2004-05 influenza vaccine.

The 18 influenza B viruses were divided into two antigenically and genetically distinct lineages represented by:

- Influenza B/Yamagata/16/88 (16 of 18 viruses), and
- Influenza B/Victoria/2/87 (2 of 18 viruses).

Influenza viruses in the B/Yamagata lineage are characterized as B/Shanghai/361/2002-like, which is the influenza B component in the 2004-05 influenza vaccine. Influenza B viruses in the B/Victoria lineage are characterized as B/Hong Kong/330/2001-like (contained in the 2003-4 trivalent influenza vaccine).



For up-to-date details on influenza surveillance in the U.S. go to the CDC website at http://www.cdc.gov/flu/weekly/fluactivity.htm.

Vaccination Coverage

In addition, influenza vaccination coverage among this season's interim priority groups is lower than it has been in recent influenza seasons. Given these considerations, CDC recommends that vaccine providers should aggressively reach out to vaccinate persons in high risk priority groups. Adequate time remains for persons in these priority groups to receive the benefits of vaccination before influenza begins to circulate widely in most communities.

Norovirus Outbreaks in Virginia

Norovirus ("winter vomiting disease") outbreaks are being reported to the Virginia Department of Health. As of January 3, 2005 at least 14 confirmed outbreaks had been reported from across Virginia.

Norovirus causes an acute gastroenteritis (nausea, vomiting, watery non-bloody diarrhea, stomach cramps, fatigue, headache, muscle aches and low-grade fever). While the illness is generally short-lived (1-2 days), its high attack rate can severely affect group living arrangements such as long-term care facilities. In addition, hospitalizations and deaths from dehydration have occurred, especially among the elderly and the very young.

This organism is highly infectious: as few as 10 viral particles may be sufficient to infect an individual (in contrast, up to a billion viral particles may be in each gram of feces during peak viral shedding). Norovirus outbreaks most commonly arise from direct contamination of food by an infected food handler; fecal-oral OR vomit-oral routes are also common.

There are no antiviral medications or vaccines for norovirus. However, frequent handwashing can prevent infection and spread. Persons who do become sick should drink plenty of fluids (especially oral rehydration fluids (ORF) or water) to prevent dehydration. In addition, persons who are infected with norovirus should not prepare food while they have symptoms and for three days after they recover from their illness.

The Division of Consolidated Laboratory Services (DCLS) can perform testing for norovirus outbreaks. Contact your local health department to discuss suspicious clusters of cases of gastroenteritis—they can help investigate and arrange for norovirus testing.

Remember:

√ Individual cases of norovirus are NOT notifiable diseases.
√ Known or suspected OUTBREAKS of norovirus ARE notifiable, and should be reported to your local health department as soon as possible.

Cases of Selected Notifiable Diseases Reported in Virginia*

Total Cases Reported, November 2004

Disease	State	Regions NW	N	SW	C	E	Total Cases Reported Statewide, January through November: This Year	Last Year	5 Yr Avg
AIDS	47	0	11	2	17	17	608	714	720
Campylobacteriosis	26	5	11	5	1	4	596	764	588
E. coli O157:H7	0	0	0	0	0	0	34	37	58
Giardiasis	33	4	13	5	6	5	476	330	359
Gonorrhea	501	41	61	59	134	206	7,905	8,258	9,177
Hepatitis, Viral									
A	5	1	0	1	0	3	120	95	133
B, acute	23	1	3	8	5	6	240	178	154
C, acute	0	0	0	0	0	0	16	7	7
HIV Infection	58	0	13	3	25	17	778	712	776
Lead in Children†	69	6	2	19	26	16	758	720	654
Legionellosis	8	2	1	1	1	3	49	90	41
Lyme Disease	16	1	12	0	0	3	166	87	132
Measles	0	0	0	0	0	0	0	0	4
Meningococcal Infection	2	1	0	1	0	0	20	24	38
Mumps	0	0	0	0	0	0	2	1	7
Pertussis	26	17	4	0	3	2	196	91	84
Rabies in Animals	36	7	7	12	7	3	446	499	516
Rocky Mountain Spotted Fever	1	0	0	0	0	1	31	31	24
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	56	6	14	4	8	24	1,079	990	1,091
Shigellosis	9	0	3	0	6	0	149	407	454
Syphilis, Early§	13	0	3	0	3	7	185	141	225
Tuberculosis	26	0	15	1	2	8	250	237	251

Localities Reporting Animal Rabies This Month: Alexandria 1 bat; Arlington 1 raccoon; Augusta 1 raccoon; Bath 1 skunk; Bedford 1 skunk; Bland 1 skunk; Campbell 2 skunks; Carroll 1 skunk; Fairfax 1 fox, 1 raccoon; Greensville 1 raccoon; Hampton 1 raccoon; Hanover 1 bat, 1 raccoon; Henrico 1 cat; James City 1 raccoon; Loudoun 1 raccoon; Louisa 1 skunk; Mecklenburg 1 raccoon, 1 skunk; Pittsylvania 1 skunk; Prince George 1 cat; Prince William 1 bat, 1 skunk; Pulaski 2 skunks; Rappahannock 1 skunk; Roanoke 1 skunk; Rockbridge 1 cow; Rockingham 1 raccoon; Salem 1 bat; Shenandoah 1 skunk; Southampton 1 skunk; Tazewell 1 raccoon, 1 skunk; Wythe 1 dog.

Toxic Substance-related Illnesses: Asbestosis 3; Adult Lead Exposure 15; Pneumoconiosis 8.

*Data for 2004 are provisional. †Elevated blood lead levels ≥10µg/dL. §Includes primary, secondary, and early latent.

Published monthly by the
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