Published monthly by the
VIRGINIA DEPARTMENT OF HEALTH
Office of Epidemiology
P.O. Box 2448
Richmond, Virginia 23218
http://www.vdh.virginia.gov
Telephone: (804) 864-8141

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

PRESORTED
STANDARD
U.S. POSTAGE
PAID
Richmond, Va.
Permit No. 591

VIRGINIA
EPIDEMIOLOGY BULLETIN

Robert B. Stroube, M.D., M.P.H., Health Commissioner
Carl W. Armstrong, M.D., State Epidemiologist

Christopher Novak, M.D., M.P.H., Editor
Vickie L. O'Dell, Layout Editor

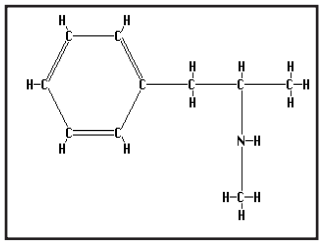
October 2005 Volume 105, No. 10

Methamphetamine: Clinical and Public Health Impacts

Introduction

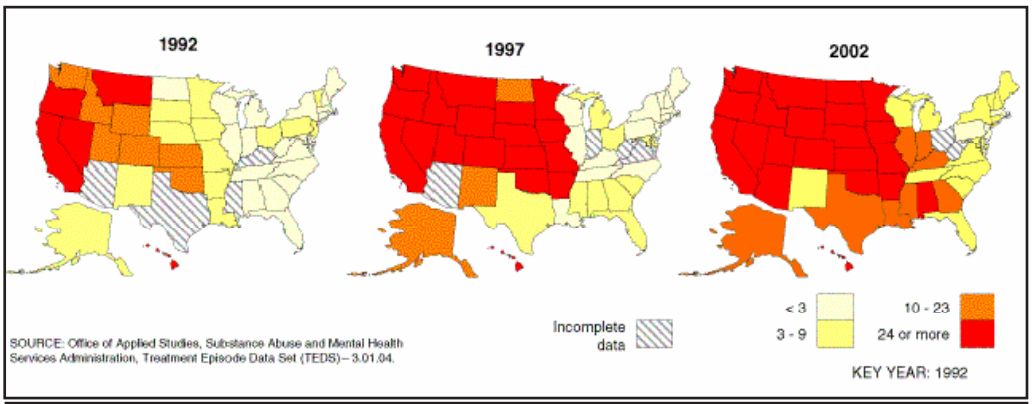
Methamphetamine, a chemical structurally similar to the neurotransmitter dopamine, was developed in the early 1900s from its parent drug amphetamine. The drug was used originally in nasal decongestants and in bronchial inhalers. However, it is a powerfully addictive psychostimulant that causes increased activity, decreased appetite, and a general sense of well-being. As a result, methamphetamine is now available only by prescription as a Schedule II stimulant, with few accepted medical indications (e.g., narcolepsy, attention deficit disorder, and for short-term use, obesity).[1] Unfortunately, the drug can be made relatively easily with inexpensive over-the-counter ingredients. As a result, methamphetamine has a high potential for widespread abuse and in some areas, it is more popular than cocaine.[2]

According to the National Survey on Drug Use and Health, in 2004 an estimated 12 million persons (4.9 percent of persons aged 12 or older) had used methamphetamine at least once in their lifetime, 1.4 million (0.6 percent) had used it in the past year, and 600,000 (0.2 percent) had used it in the past month.[3] Methamphetamine was the primary substance of abuse in almost 117,000 substance abuse treatment admissions nationally in 2003 (6.3 percent of all admissions for substance abuse treatment).[4]



Information on methamphetamine abuse in Virginia is sparse; however, the data suggest that its presence is increasing. For example, while admissions for methamphetamine abuse in Virginia currently account for a relatively small proportion of total admissions for substance abuse treatment (3.2% in 2002), this represents an increase of almost 356% from 1992.[5] This trend suggests that methamphetamine is likely to become a problem in Virginia in the future. As a result, concern exists over the increased public health consequences related to:

1) the medical and social



Primary methamphetamine/amphetamine admission rates by State: TEDS 1992-2002 (per 100,000 population aged 12 and over)

impact on individuals; and,

2) the health effects of clandestine laboratories on community members and first responders.

This article reviews methamphetamine for healthcare providers and some of the initiatives taken by the Virginia Department of Health (VDH) to help protect the public.

Physical Properties

Methamphetamine, commonly known as "speed," "go," "meth," or "chalk" is an odorless, bitter-tasting crystalline powder that easily dissolves in water or alcohol. Its color can range from white to light brown, but may also be some shade of pink, depending on the manufacturing process. Methamphetamine can be injected, smoked, snorted (inhaled), or taken orally or rectally; the effect on mood depends on how it is taken.[1]

In the 1980s, methamphetamine hydrochloride ("ice," "crystal," "crystal meth," "tina," "crank," or "glass") appeared.[1,6] "Ice" is a large, usually clear crystal of high purity that is smoked in a glass pipe like crack cocaine. The smoke is odorless, and leaves a residue that can be re-smoked.[1] Methamphetamine can also be in the form of small, brightly colored tablets. The pills are often called by their Thai name, *yaba*.

Clinical Effects

Immediately after smoking methamphetamine or injecting it intravenously, the user experiences an intense "rush" or "flash" that lasts only a few minutes and is described as extremely pleasurable. Snorting or oral ingestion produces euphoria—a high but not an intense rush. Snorting produces effects within 3-5 minutes, and oral ingestion produces effects within 15 to 20 minutes. The effects of methamphetamine can last 6-8 hours or longer (compared to one hour for crack cocaine). After the initial rush, there is typically a state of agitation that in some individuals can lead to violent behavior.[1]

Methamphetamine, even in small doses, has physiological effects. Both the rush and the high may result from the release of significant amounts of the neurotransmitter dopamine into areas of the brain that regulate feelings of pleasure.[1] Short-term effects include insomnia, hyperactivity, decreased appetite, increased respiration and tremors. Other systemic effects may include shortness of breath, nausea, vomiting and diarrhea.[7] Methamphetamine can cause a variety of cardiovascular problems, such as tachycardia, dysrhythmias, increased blood pressure, and stroke. Hyperthermia and seizures can occur with methamphetamine overdoses, and if not treated immediately, can result in death.[1]

Methamphetamine abuse during pregnancy may result in prenatal complications, premature delivery, and altered neonatal behavioral patterns, such as abnormal reflexes and extreme irritability. Fetal exposure to methamphetamine may lead to some congenital deformities.[1]

Drug impurities from production by-products can also cause severe and permanent neurological disabilities following intravenous injection. For example, a common method of illegal methamphetamine production uses lead acetate as a reagent, and production errors may contaminate the drug with lead. Therefore, abusers may present with acute lead poisoning.

Increased risk of human immunodeficiency virus (HIV), hepatitis B and hepatitis C transmission are likely consequences of methamphetamine abuse. Infection with HIV and other bloodborne infectious diseases may spread among injection drug users primarily through the re-use of contaminated syringes, needles, or other paraphernalia. Methamphetamine abuse also results in increased libido and feelings of invulnerability. This may lead to increased sexual activity and increased sexual risk-taking during periods of methamphetamine abuse.[1] A 1995 study from 11 city and state health departments found that 16% of 1,147 drug injectors with HIV infection or acquired immunodeficiency syndrome (AIDS) reported amphetamines as the primary drug injected. In all regions of the United States, men having sex with men were substantially more likely than heterosexuals to report amphetamines as the primary drug they injected.[2] Therefore, these factors may result in HIV becoming a significant problem among methamphetamine abusers.[1]

Chronic Use

As with other stimulants, abusers of methamphetamine most often follow a "binge and crash" pattern. However, chronic abuse causes tolerance for methamphetamine. In an effort to intensify the desired effects, abusers may take higher doses of the drug, take it more frequently, or change their method of drug intake. In some cases, abusers go without food and sleep while indulging in a form

of binging known as a "run," injecting as much as a gram of the drug every 2-3 hours over several days until the abuser runs out of the drug or is too disorganized to continue.[1] With methamphetamine, the stages of progressive addiction and loss of function occur much more quickly than for other drugs of abuse, sometimes evolving over months compared to decades.

Chronic methamphetamine abusers exhibit symptoms that can include violent behavior, anxiety, confusion, memory loss, repetitive activity and insomnia.[1,2] They also can display a number of psychotic features, including paranoia, visual and auditory hallucinations, mood disturbances, and delusions (e.g., the sensation of insects creeping on the skin). The paranoia can result in homicidal as well as suicidal thoughts, and out-of-control rages can be coupled with extremely violent behavior.[1] Methamphetamine abuse in young people can also affect critical stages of their development, with loss of function in emotional development, education, relationships, employment, and parenting.

Methamphetamine also appears to have a neurotoxic effect, damaging brain cells that contain dopamine as well as serotonin. Over time, methamphetamine may reduce dopamine levels, resulting in Parkinson's disease-like symptoms.[6] Chronic methamphetamine abuse can also cause endocarditis, and among users who inject the drug, damage blood vessels and cause skin abscesses.[1] Skin lesions and infections may also result from the obsessive picking and scratching that accompanies methamphetamine abuse.

The dental effects of methamphetamine abuse can be devastating. Reports have described "meth mouth," a distinctive caries pattern often seen on the buccal smooth surface of the teeth and the interproximal surfaces of the anterior teeth that resembles early childhood caries. This effect may result from the drug's acidic nature, its xerostomic effects, the cravings it causes for high calorie carbonated beverages, an increase in tooth grinding and clenching, and/or its long duration of action leading to extended periods of poor oral hygiene.[7]

Although no physical manifestations of a withdrawal syndrome occur when methamphetamine use ends, when chronic users stop taking the drug they may experience depression, anxiety, fatigue, paranoia, aggression, and an intense craving for the drug. Heavy users also show progressive social and occupational deterioration. Psychotic symptoms can sometimes persist for months or years after use has ceased.[1]

Treatment

Drug abuse treatment, prevention, and community-based outreach programs can significantly reduce drug-related risk behaviors, such as needle-sharing and unsafe sexual practices.[1]

The current treatments for methamphetamine addiction use cognitive behavioral interventions, helping to modify the patient's thinking, expectancies, and behaviors and to increase skills in coping with various life stressors. This may occur on an inpatient basis, or in a supervised/structured outpatient setting. Other models include contingency management, where vouchers are earned in response to participants' supplying drug-free urines and where voucher values increase as the number of consecutive drug-free urines increase. Although relapse rates are high, it is important to remember that duration of treatment for methamphetamine abuse is strongly correlated with better outcomes. Aftercare is also important: methamphetamine recovery support groups (e.g., Narcotics Anonymous) appear to be effective behavioral interventions that can lead to long-term drug-free recovery.

There are currently no FDA-approved pharmacologic treatments for dependence on amphetamine-like drugs such as methamphetamine. No single agent has proven efficacious in controlled clinical studies, although antidepressant medications are helpful for the depressive symptoms frequently seen in methamphetamine abusers who recently have become abstinent.[1]

Some protocols have been established by emergency room physicians to treat methamphetamine overdose. Acute methamphetamine intoxication can often be handled by observation in a safe, quiet environment. In cases of extreme excitement or panic, treatment with anxiolytic agents (e.g., benzodiazepines) has been helpful. For methamphetamine-induced psychoses, short-term use of neuroleptics has proven successful. Because hyperthermia and convulsions are common and often fatal complications, emergency room treatment focuses on the immediate physical symptoms. Overdose patients are cooled off in ice baths, and anticonvulsant drugs may be administered.[1] Clinicians should be aware that methamphetamine abusers frequently have secondary substances of abuse (e.g., alcohol, marijuana/hashish, cocaine, heroin)[2,4] that may require additional treatment considerations.

Methamphetamine Production

Most of the methamphetamine available in the U.S. is produced and trafficked by well-organized foreign groups.[8] However, since methamphetamine is relatively easy to produce from commonly available materials, the domestic production of methamphetamine has become a significant problem.

Data from the Drug Enforcement Administration (DEA) show a rapid increase in the number of methamphetamine laboratories seized by law enforcement officials in the US, from 263 in 1994 to 1,815 in 2000 (a 590% increase).[10] In 2004, there were 82 lab seizures in Virginia.

Illicit methamphetamine is made by using a "recipe" obtained from any number of sources, including the Internet. The person manufacturing the drug is called the "cook." Most methamphetamine recipes start with common over-the-counter (OTC) cold medications containing pseudoephedrine or ephedrine. These can be purchased at retail stores and pharmacies. Additional chemicals that may be used include lye, rock salt, battery acid, lithium batteries, pool acid, iodine, lighter fluid, matches,

Methamphetamine Production: Ephedrine/Pseudoephedrine Reduction Methods

Hydriodic acid/red phosphorus. The principal chemicals are ephedrine or pseudoephedrine, hydriodic acid, and red phosphorus. This method can yield multipound quantities of high quality d-methamphetamine.

Iodine/red phosphorus ("Red P Method"). The principal chemicals are ephedrine or pseudoephedrine, iodine, and red phosphorus. The required hydriodic acid in this variation of the hydriodic acid/red phosphorus method is produced by the reaction of iodine in water with red phosphorus. This method yields high quality d-methamphetamine. Another iodine/red phosphorus method, limited to small production batches, is called the "cold cook" method because the chemicals, instead of being heated, are placed in a hot environment such as in direct sunlight.

Lithium or sodium ("Birch" or "Nazi Method"). The principal chemicals are ephedrine or pseudoephedrine, anhydrous ammonia, and sodium or lithium metal. This method typically yields ounce quantities of high quality d-methamphetamine.

fireworks, road flares, antifreeze, propane, paint thinner, and drain cleaner.[8] As a result, methamphetamine production carries a high risk of explosion, chemical fire, and the release of toxic gases.

Of special concern are small "mom and pop" labs. While these may only be able to manufacture 1-4 ounces of methamphetamine per production cycle (2-12 hours/cycle), these labs can be established almost anywhere, including motel rooms, self-storage units, private residences, campgrounds, and motor vehicles, and have been discovered in rural areas as well as in cities and towns. Small labs typically produce the drug for personal use, with enough extra to sell to finance the purchase of materials. However, while these labs produce only about 20% of the methamphetamine used in the U.S., they account for a disproportionate fraction of the explosions, fires, uncontrolled hazardous waste dumping, and child endangerment. This is largely because less-skilled cooks operate the small labs, using more primitive equipment and facilities.[8] From the public health perspective, these laboratories carry both acute and long-term public risks.

Acute Exposure Risk

Clandestine laboratories produce a variety of acute health hazards. The greatest threat is to those individuals within the confines of a building when methamphetamine production is underway.

Danger of fire and explosion comprises the greatest risk. Overall, an estimated 20%-30% of known methamphetamine laboratories are discovered because of fires and explosions.[9]

Chemical exposures (e.g., solvents, corrosives, cyanide, etc.) are also a concern. Corrosive substances may cause burns as well as inhalational injuries with symptoms including shortness of breath, cough, or chest pain. Solvents can be absorbed through the lungs and if the dose is sufficient may cause symptoms of intoxication, including dizziness, lack of coordination, nausea, and disorientation. The skin, to a lesser extent, may also absorb some solvents if chemicals remain in direct contact. However, ingestion of chemicals (e.g., by children) will result in the greatest risk of toxicity.

These laboratories also pose a significant risk for other groups, including law enforcement personnel, first responders (firefighters, emergency medical technicians [EMT], and HAZMAT workers), and hospital personnel.[9] The most frequently reported injuries include respiratory irritation (39%), headache (26%), eye irritation (8%), and burns (8%).[10] Of the types of responders usually on site first, police officers have the greatest number of injuries because they are present during and immediately after a chemical release. They may also be injured by "booby traps" (e.g., pipe-bombs, jugs of gasoline with blasting caps, acid traps, dogs, etc.) used to protect the cook site while it's unoccupied. EMTs sustain most injuries through on-site exposure or direct contact with the clothing or skin of contaminated persons. Firefighters are the least often injured on-site first responders since they are the most likely to be wearing personal protective equipment (PPE). Hospital personnel injuries may result from injured persons who have not been decontaminated before being brought to the hospital.

As state and federal agencies reduce the availability of precursors by regulation and enforcement, it can be anticipated that producers will resort to more exotic methods of production, resulting in the creation of contaminants and by-products with unexpected and potentially adverse effects to the drug abuser, citizens and the environment.

Long-term Impact

Chemicals used during the methamphetamine manufacturing process aerosolize or produce gases that can leave residues on the surfaces of walls and ceilings, in and around air handling equipment, and on furniture, carpet, and draperies in the room. Therefore, in buildings where residual contamination is present, new occupants (especially young children) could unwittingly be exposed to hazardous materials. Exposure may cause respiratory problems, skin and eye irritation, headaches, nausea, and dizziness. There are also possible risks of exposure to infectious disease (e.g., AIDS, hepatitis B) in the event of skin puncture by undiscovered sharps or other open wound contact with unseen bloodborne pathogens. Some methamphetamine-

related chemicals are either known or suspected carcinogens.[11]

Public Health Actions

To mitigate some of the impact of methamphetamine in Virginia, the Commonwealth of Virginia has recently started to address two areas:

1) reducing the availability of methamphetamine precursors (e.g., ephedrine, pseudoephedrine); and,
2) developing guidelines for cleaning up clandestine laboratories.

Methamphetamine Precursors

In an effort to reduce the availability of the raw materials for methamphetamine production, on September 1, 2005, the Governor of Virginia issued Executive Directive #8 that included directions to limit access to methamphetamine precursors, as well as to develop comprehensive educational efforts to help curb methamphetamine use, and treatment plans for methamphetamine addiction. To address methamphetamine precursor availability, on September 15, 2005, the State Health Commissioner issued an *Order* restricting the sale of any product containing ephedrine, pseudoephedrine, or any of their salts or isomers (see Box 1). This approach has been implemented in other states (e.g., Oklahoma), and has been effective at reducing the number of methamphetamine laboratories.

Clandestine Laboratories

Cleaning up clandestine drug labs is an enormously complex, time-consuming and costly process. If the lab is in operation when police find it, it must first be safely neutralized so that it does not explode or chemically contaminate the environment. Then, the immediate and apparent hazardous materials must be removed and disposed of safely. Local law enforcement may contract with certified hazardous material disposal companies for this task. Storing evidence and conducting laboratory analysis of chemicals are resource intensive. Many jurisdictions find that the demands of processing the evidence strain their forensic laboratory resources.[8]

Once appropriate investigations have been completed and all of the chemicals

Box 1. Summary of the State Health Commissioner Emergency Order – Meth Precursors

September 15, 2005 (www.vdh.virginia.gov/pdf/Methamphetamine.pdf)

For any product containing ephedrine, pseudoephedrine, or any of their salts, isomers, or salts of isomers, alone or in a mixture, provided or sold by a retail distributor or pharmacy, the vendor must now ensure that:

I. Retail sales are limited to three (3) individual packages (no more than nine grams total of active ingredient) per transaction.
II. Retail personnel must be trained on special procedures used in the sale of covered OTC drug products containing ephedrine or pseudoephedrine.
III. For Single Active Ingredient Products (any substance where ephedrine or pseudoephedrine is the only active ingredient):
    1. The product may only be displayed for sale behind a store counter (not necessarily a pharmacy counter) that is not accessible to consumers, or in a locked case that requires assistance by a store employee for customer access.
    2. Any person purchasing or otherwise acquiring the product must present government-issued or educational-institution-issued photo identification. The seller must record in a written or electronic log the purchaser's name, quantity sold, and the date of the transaction. The purchaser must sign the record acknowledging an understanding of the applicable sales limit.
    3. Records of these transactions must be maintained by the establishment for at least one year from the date of each purchase. However, using or disclosing the information in the log for any purpose other than to ensure compliance with this Order or to facilitate a product recall necessary to protect public health and safety is prohibited. Disclosure of the information in the log to law enforcement personnel is required upon request.
IV. For Multi-active Ingredient Products (any substance in which ephedrine or pseudoephedrine is one of two or more active ingredients):
    1. The product may only be displayed for sale behind a store counter (not necessarily a pharmacy counter) that is not accessible to consumers, OR
    2. The product is displayed in a locked case that requires assistance by a store employee for customer access, OR
    3. The product is sold from the sales floor if the retailer adopts at least one of the following four options:
        i. The product must be kept within 30 feet and in direct line of sight of a cash register or store counter staffed by one or more store employees;
        ii. Reliable anti-theft devices are used on packages;
        iii. Restricted access shelving is used so that only one package may be removed by a consumer at a time and a delay of at least 15 seconds occurs between package replacement on shelf;
        iv. The product is kept under constant video surveillance.

Note that liquid, liquid capsule, and gel capsule products containing pseudoephedrine are exempt from this order. In addition, this order does not apply to pediatric products containing pseudoephedrine or ephedrine, or their salts or isomers, where the pediatric product:

(a) is primarily intended for administration to children under 12 years of age, according to label instructions, and is either in solid dosage form with individual dosage units not exceeding 15 mg of ephedrine or pseudoephedrine; or in liquid form and recommended dosage units do not exceed 15 mg of ephedrine or pseudoephedrine per 5 mL of liquid product; OR,
(b) is in liquid form primarily intended for administration to children under two years of age with a recommended dosage not exceeding 2 mL, and the total package contains not more than one fluid ounce.

These limits do not apply to product properly dispensed under a valid prescription. In addition, the Board of Health may exempt specific products if they cannot be used in the illegal manufacture of methamphetamine or any other controlled dangerous substance.

have been removed, management of the building or property returns to the owner. Any subsequent cleanup then becomes the responsibility of the property owner. This may involve a significant loss of permeable materials (carpets, furniture, etc.), and require cleaning of the ventilation and plumbing systems, and re-painting/re-sealing to encapsulate residues. However, complete remediation may not be done because of the cost, and owners sometime abandon the property rather than undertake that task.[8]

Because methamphetamine labs are still an emerging problem, there are no uniform guidelines, regulations, or standards for cleanup.[11] However, VDH's Division of Health Hazards Control (www.vdh.virginia.gov/HHControl/index.asp) is working with other agencies to develop practical, economical, effective guidance for the clean-up of abandoned and deactivated methamphetamine production sites.

Conclusions

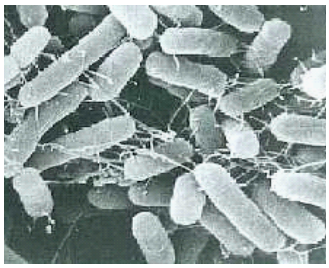
The impact of methamphetamine abuse extends beyond individual health effects. The social effects include violent offenses (such as domestic violence and child abuse) committed by drug abusers, and property offenses to obtain money to buy drugs or the chemicals to produce them. The risks to the public from clandestine laboratories include physical injury from explosions, fires, chemical burns, and toxic fumes. In addition, each pound of manufactured methamphetamine produces about five to six pounds of hazardous waste. Clandestine drug lab operators commonly dump this waste into the ground, sewers, or streams and rivers. Residual contamination of the ground, water supplies, buildings, and furniture may last for years.[8] Efforts to reduce this impact require coordination by many agencies and groups. For example, VDH's Center for Injury and Violence Prevention is working to develop a methamphetamine awareness campaign. As a result, the Virginia Department of Health will be actively collaborating with many agencies to minimize the effects of this drug.

References

1. Methamphetamine: Abuse and Addiction. NIDA Research Report. 1998. National Institutes of Health.
2. *Morb Mortal Wkly Rep.* 1995. 44[47]: 882-886.
3. U.S. DHHS, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey on Drug Use and Health Report: Methamphetamine Use, Abuse, and Dependence: 2002, 2003, and 2004. 2005. http://oas.samhsa.gov/2k5/meth/meth.cfm. Accessed: 10/20/2005.
4. U.S. DHHS, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Treatment Episode Data Set (TEDS). Highlights - 2003. National Admissions to Substance Abuse Treatment Services, DASIS Series: S-27, 2005. wwwdasis.samhsa.gov/teds03/2003_teds_highlights.pdf. Accessed: 11/14/2005.
5. U.S. DHHS, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Primary Methamphetamine/Amphetamine Treatment Admissions: 1992-2002. The DASIS Report. 2004. www.drugabusestatistics.samhsa.gov/2k4/methTX/methTX.htm. Accessed: 10/20/2005.
6. NIDA InfoFacts: Methamphetamine. 2005. National Institutes of Health. www.nida.nih.gov/Infofacts/methamphetamine.html. Accessed: 10/20/2005.
7. Dental Topics A-Z: Methamphetamine Use. 2005. American Dental Association. www.ada.org/prof/resources/topics/methmouth.asp. Accessed: 10/20/2005.
8. Scott MS. 2002. Clandestine Drug Labs. Problem-Oriented Guides for Police Series No.16. Department of Justice. www.cops.usdoj.gov/mime/open.pdf?Item=74. Accessed: 10/20/2005.
9. *Morb Mortal Wkly Rep*. 2000. 49[45]: 1021-1024.
10. *Morb Mortal Wkly Rep*. 2005. 54[14]: 356-359.
11. *J Environ Health.* 2003. 65[9]: 50.

Outbreaks Investigated

At any given time, the Office of Epidemiology may be participating in local, state and/or national outbreak investigations. Just a sample of some of these investigations from this summer and fall are provided to illustrate the scope of these investigations.



Salmonella typhimurium **Outbreaks**

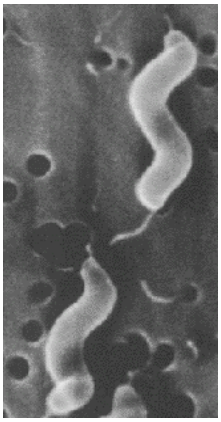
In July, the Virginia Department of Health (VDH) participated in two multistate investigations of outbreaks caused by *Salmonella typhimurium*. One outbreak included seven Virginia residents diagnosed with *S. typhimurium* that matched a strain of the bacterium linked to the consumption of contaminated unpasteurized fresh-squeezed orange juice produced in Florida.

Another outbreak, caused by a different strain of *S. typhimurium,* involved three Virginia residents and one traveler to Virginia. The source of illness was thought to be contaminated ice cream from a national chain; the suspect ingredient was dry commercially-prepared cake mix added into some of the ice cream flavors. VDH worked with the Virginia Department of Agriculture and Consumer Services on traceback efforts to prevent further illness.

Salmonella hartford **Outbreak**

A *Salmonella hartford* outbreak was identified at a bible study camp in Augusta County. Sessions were held at the end of June in the evenings, and participants ate dinner together each night. Thirty-eight attendees were reported ill. Findings from the epidemiologic investigation implicated hamburgers or tomatoes served on June 28th as the likely vehicle.

Campylobacteriosis Outbreak



An outbreak of campylobacteriosis possibly linked to raw milk consumption was investigated in July. One confirmed case and three clinically compatible cases of campylobacteriosis were identified in persons with a history of raw cow milk consumption from a farm operating a "cow share" program. Four other persons who received milk from the same farm contacted VDH; none of these reported illness in themselves or their family members.

Hurricane Katrina Surveillance – Red Cross

The VDH Office of Epidemiology worked closely with the American Red Cross' Greater Richmond Office to monitor Hurricane Katrina evacuees presenting to the facility with potentially infectious conditions. Although some evacuees presented with mild gastrointestinal, respiratory symptoms, or rashes diagnosed as contact dermatitis, no outbreaks were detected. VDH also worked with local hospitals on surveillance activities since most of the evacuees with medical conditions were referred to those facilities for treatment.

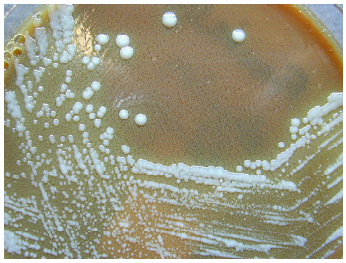
Systemic Inflammatory Response Syndrome (SIRS) Cluster

In September, 2005, the Rappahannock Area Health District and the Office of Epidemiology investigated reports of an increase in the number of patients diagnosed with Systemic Inflammatory Response Syndrome (SIRS) in a local hospital. The cluster was reported by a hospital after five patients became seriously ill following cardiac surgical procedures. The hospital and VDH personnel collaborated with the Federal Drug Administration and Centers for Disease Control and Prevention (CDC) to determine the cause. Analysis of the solution (manufactured by Central Admixture Pharmacy Services, Inc. (CAPS)) used to induce cardioplegia suggests that bacterial contamination of the product may have been the cause of the illnesses. As a result, the FDA issued a product recall for Cardioplegia and several other products manufactured by CAPS.

VDH Addresses Mold and Moisture Issue in Stafford County School

In June 2005, the Stafford County Schools conducted a fungal and pesticide/herbicide assessment at an elementary school following a history of moisture and mold issues, complaints, and concerns by parents and teachers. The VDH Northwestern Region Emergency Preparedness and Response Team and the Rappahannock Area Health District participated by providing technical advice regarding the assessment.

The assessment found that the school did have mold and moisture, but that it did not present a general public health problem. It could not be concluded that various reported illnesses were due to mold exposure at the schools since mold testing results showed levels that were typical of indoor environments. Mold spore levels were also higher outside the school than inside, and since these molds are ubiquitous, families probably have these molds in their homes as well. VDH recommended maintaining dehumidification equipment, enforcing general housekeeping requirements, remaining vigilant for moisture-related damage and removing carpeting to the maximum extent possible.



Hepatitis B in Assisted Care and Adult Home Facilities

Sharing devices or failing to follow infection control practices related to blood glucose monitoring may allow the transmission of hepatitis B virus and other bloodborne pathogens. This summer, two assisted care facilities in Richmond were found to have cases of hepatitis B associated with the improper use (sharing) of blood glucose monitoring devices. The Richmond City Health District worked with the facilities to improve infection prevention procedures. VDH also sent a letter to all assisted-living facilities in Virginia that included recommendations written by the CDC that address safe practices to follow while performing diabetic care procedures in healthcare and group residence settings (www.cdc.gov/ncidod/diseases/hepatitis/spotlights/glucose.htm#4).

VDH Participates in Tularemia Investigation

The VDH was notified by the CDC on the morning of September 30, 2005, that routine air sampling testing sites near the National Mall in Washington, D.C. showed aberrant sample data. The samples, taken on September 24-25, 2005, indicated the presence of *Francisella tularensis,* the bacterium that can cause tularemia. An estimated 100,000 to 300,000 individuals may have been in and around the National Mall during the time frame in question (including visitors, employees working on the mall, demonstrators participating in an anti-war rally, and law enforcement officials). Press materials and a Health Alert Network notification were disseminated on the evening of September 30 as a joint response from VDH, the Maryland Department of Health and Mental Hygiene, and the D.C. Department of Health.

VDH worked closely with officials from the National Capitol Region, Department of Homeland Security, CDC, Governor Warner's Office of Commonwealth Preparedness, the Virginia Department of Emergency Management and other state and federal agencies during this investigation.

Hospital surveillance was also used to try to identify potential cases.

Continued follow-up testing did not generate conclusive results indicating the presence of *F. tularensis* in the environment, and no spike in the incidence of compatible illness was observed. Although isolated cases of suspected illnesses were reported, including in five Virginia residents, clinical testing did not confirm any case of tularemia and the clinical presentations were consistent with illnesses other than tularemia.

An intentional release of tularemia is not suspected as the cause of the observed signals. However, investigations continue into the possible source of the organism to better understand the strengths and limitations of air sampling systems.

Cases of Selected Notifiable Diseases Reported in Virginia*

Disease	Total Cases Reported, September 2005						Total Cases Reported Statewide, January - September		
		Regions							
	State	NW	N	SW	C	E	This Year	Last Year	5 Yr Avg
AIDS	60	3	20	3	21	13	429	512	549
Campylobacteriosis	67	13	16	10	16	12	438	494	497
***E. coli* O157:H7**	4	1	1	2	0	0	29	25	42
Giardiasis	57	10	27	5	9	6	412	366	289
Gonorrhea	829	39	59	111	266	354	6,418	6,700	7,401
Hepatitis, Viral									
A	6	2	3	1	0	0	61	89	96
B, acute	8	2	0	3	1	2	118	185	144
C, acute	0	0	0	0	0	0	10	13	7
HIV Infection	106	4	32	3	26	41	599	644	635
Lead in Children†	144	19	5	44	42	34	476	621	564
Legionellosis	2	0	0	0	1	1	33	37	35
Lyme Disease	28	9	14	2	0	3	167	116	108
Measles	0	0	0	0	0	0	0	0	<1
Meningococcal Infection	0	0	0	0	0	0	23	14	27
Mumps	0	0	0	0	0	0	0	7	5
Pertussis	23	5	4	5	4	5	278	135	88
Rabies in Animals	40	19	4	8	8	1	363	384	414
Rocky Mountain Spotted Fever	25	1	2	13	3	6	73	22	19
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	156	19	33	22	41	41	869	865	862
Shigellosis	14	1	6	0	2	5	99	116	346
Syphilis, Early§	34	2	10	3	8	11	208	154	165
Tuberculosis	31	0	11	0	5	15	227	177	192

Localities Reporting Animal Rabies This Month: Amherst 1 fox; Arlington 1 raccoon; Bedford 1 raccoon; Buckingham 1 raccoon; Campbell 1 cat, 1 skunk; Caroline 1 skunk; Carroll 1 raccoon; Charles City 2 skunks; Chesterfield 2 raccoons; Fairfax 1 bat, 2 raccoons; Fauquier 1 fox, 1 raccoon; Fredericksburg 1 raccoon; Hanover 1 raccoon; King George 1 fox, 1 raccoon; Louisa 1 fox; Madison 1 fox; Mecklenburg 1 skunk; Montgomery 1 raccoon; Northampton 1 raccoon; Pittsylvania 1 skunk; Prince George 1 raccoon; Radford 1 bat; Rockbridge 1 skunk; Rockingham 1 raccoon, 2 skunks; Shenandoah 2 skunks; Stafford 2 foxes, 1 raccoon, 1 skunk; Warren 1 raccoon.

Toxic Substance-related Illnesses: Adult Lead Exposure 30; Mercury Exposure 2; Pneumoconiosis 6.

*Data for 2005 are provisional. †Elevated blood lead levels ≥10µg/dL. §Includes primary, secondary, and early latent.

Excellence in Public Health

Director of Office of Epidemiology to Receive Award from the Medical Society of Virginia

Dr. Carl Armstrong, director of the Office of Epidemiology, has been selected by the Medical Society of Virginia Foundation to receive the annual Salute to Service Award for Service on Behalf of All Virginians on November 4, 2005. This award is presented to a physician, alliance member, or medical student who has provided exceptional service in the public health arena.

The Medical Society of Virginia