



VIRGINIA EPIDEMIOLOGY BULLETIN

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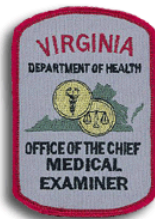
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Epidemiology and The Office of the Chief Medical Examiner

Introduction

In 1946, Virginia instituted a statewide medical examiner system, and four years later the Office of the Chief Medical Examiner (OCME) was established within the Virginia Department of Health (VDH). This article reviews one of the many important partners of VDH's Office of Epidemiology in collecting and analyzing information about causes of disease and death in Virginia, and in developing ways to protect the public health.



Structure

Dr. Marcella F. Fierro, the Chief Medical Examiner, directs the OCME. She is supported by three staff forensic pathologists at each of the four OCME district offices (Fairfax, Norfolk, Richmond, and Roanoke). In turn, the forensic pathologists are supported by forensic autopsy technicians and medicolegal investigators. The OCME also has a small administrative staff at each district office, and a statewide emergency planner, a mortality review team, and a forensic epidemiologist located at the Central District office in Richmond.

A critical part of the OCME system is the more than 230 "medical examiners" located across Virginia. Medical examiners are physicians in the community who receive special training and three year appointments from the Chief Medical Examiner. As the local OCME

representative, medical examiners assist in investigations of deaths meeting specific characteristics. The medical examiners work on an as-needed basis and receive re-imbursement for their service. In some communities, where there is a shortage of local medical examiners, trained Medicolegal Death Investigators may be employed on an as-needed basis.

Finally, depending on the circumstances, additional specialized staff are available to the OCME. A forensic odontologist, forensic anthropologist, fingerprint examiners, DNA specialists, and others may be consulted by a Forensic Pathologist working on a case. Of note though, the OCME does not have a fleet of vehicles for transporting remains. Instead, bodies are transported by funeral homes or transport services who are reimbursed (in accordance with pay schedules defined by the General Assembly) by the OCME.

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Responsibilities

Investigations

The OCME's primary mission is to conduct medicolegal death investigations for purposes of identifying the cause and manner of death. A death investigation includes, but is not limited to, visiting death scenes, viewing or performing an external examination of bodies, performing medicolegal autopsies, identifying and collecting medical evidence, reconstructing how injury occurred, and signing death certificates.

The investigation begins when a hospital or police department contacts the local Medical Examiner about a death that may fall under the jurisdiction of the OCME. In particular, pursuant to § 32.1-283A of the *Code of Virginia*, the OCME is mandated to investigate:

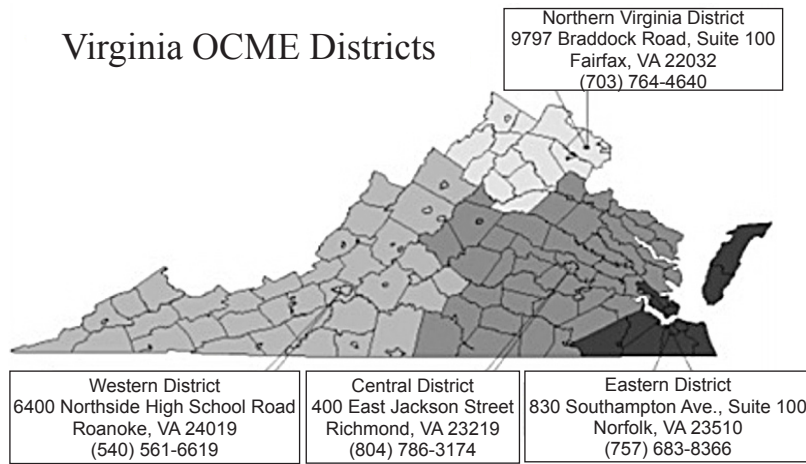
- Any death due to trauma, injury, violence, or poisoning attributed to accident, suicide, or homicide;
- Sudden deaths of persons in apparent good health or deaths unattended by a physician;
- Deaths of individuals in jail, prison, or police custody or deaths of residents of a state mental institution;
- The sudden death of any child less than eighteen months of age whose death might be attributable to Sudden Infant Death Syndrome; and
- Any other suspicious, unusual, or unnatural deaths.

These deaths must be investigated by the OCME regardless of hospitalization status or the duration of survival follow-

For the OCME:

- Cause of death is the agent (e.g., the disease, injury, or poison) that results in a physiological derangement of biochemical disturbance that is incompatible with life.
- Manner of death describes the circumstances or event(s) under which death occurred. The categories for manner of death are: accident, homicide, natural, suicide, and undetermined.

Virginia OCME Districts



ing the onset of the underlying disease or injury.

When appropriate, the local medical examiner takes charge of the dead body, makes an investigation into the cause and manner of death, and provides a report to the Chief Medical Examiner. The medical examiner also signs the certificate of death on medical examiner cases or, using established guidelines, refers cases for more intensive death investigation and medicolegal autopsy by the district office.

Contrary to popular belief, the OCME does not generally have jurisdiction over infectious disease outbreak deaths such as those deaths that could occur with pandemic influenza or other naturally occurring diseases. However, there are three exceptions:

- 1) A death related to an infectious disease (e.g., pandemic influenza) will come under the jurisdiction of the OCME if the death is unattended by a physician (e.g., the individual did not have a physician) and is unexpected;
- 2) The OCME may assume jurisdiction of a death if confirmation of the cause of death at the beginning of an outbreak is needed; or,
- 3) If there is a situation in which a naturally occurring disease agent (e.g., plague) is utilized as a weapon by a terrorist. In these cases, the death would be classified as a homicide (i.e., death due to a 'biological bullet').

Interventions

Physicians working in the OCME function as public health officers when they identify unexpected deaths due

to diseases that represent a hazard to the public health, identify unsafe products causing deaths, and ensure that sudden and violent deaths are properly certified so that families and others may settle estates, claim benefits, and otherwise resolve legal issues associated with deaths. They also serve as an important part of the justice system when they examine persons who die

violent deaths such as homicides, suicides, and accidents, and provide reports and testimony for courts in criminal and civil cases.

Mortality Review

The OCME reviews and publishes important information about deaths in Virginia through several fatality review and surveillance projects, including:

- Child Fatality Review;
- National Violent Death Reporting System;
- Maternal Mortality Review; and,
- Family and Intimate Partner Violence Surveillance.

The OCME also releases an annual report that describes the sudden, unexpected, and violent deaths that occurred in a calendar year in Virginia. The 2005 Annual Report, available at: www.vdh.virginia.gov/medexam/OCMEAnRpt05.pdf, describes the 5,799 deaths investigated by the OCME in 2004 (Table 1). These deaths represent approximately ten percent of the total number of deaths in Virginia for 2004.

Some examples of findings of interest from these cases are:

- The ratio of male to female deaths is 2.3:1.
- The number of suicides is nearly twice the number of homicides.
- Whites represent the greatest proportion of cases by all manners of death except homicide where blacks represent 61.7 percent of cases.
- The City of Richmond continues to have more than twice as many homicide deaths as Norfolk. Norfolk had the second highest number of homicides in 2004.

Table 1. Total Cases by Manner of Death by OCME District, 2004

Manner	OCME District				Total
	Central	Northern	Tidewater	Western	
Accident	735	462	430	685	2,312
Homicide	192	37	130	70	429
Natural	664	435	627	409	2,135
Suicide	236	196	164	244	840
Undetermined ¹	25	13	18	27	83
Total	1,852	1,143	1,369	1,435	5,799

¹An undetermined death is one where, after medico-legal death investigation, a forensic pathologist cannot identify or isolate the precise fatal injury or disease that caused a death and/or the specific circumstances surrounding the death that would distinguish a manner of death from unintentional injury, homicide, suicide, or natural events.

- Fairfax County experiences the greatest number of accidental, natural, and suicide deaths. Agents of change such as the General Assembly, private organizations, and

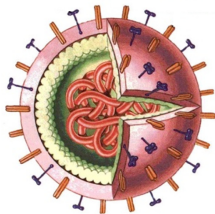
other state agencies utilize the information and recommendations developed from these projects to develop strategies for preventing deaths in Virginia.

Conclusions

Skilled investigations of deaths provide important information for the prevention of further deaths and injuries. The OCME operates a comprehensive program in Virginia for the medicolegal evaluation of deaths. An important part of this process is the participation of local physicians who are able to serve their communities as medical examiners. Physicians who would like more information about reporting deaths in Virginia, or who would like to become medical examiners, may contact the OCME district office for their region, or go to the OCME's website at: www.vdh.virginia.gov/medexam/index.asp.

Submitted by: Anna Noller, PhD, Virginia Powell, PhD, and Lori Hardin, MFS, OCME

Flu Corner



Influenza Activity in Virginia

As of April 29, 2006, the Division of Consolidated Laboratory Services (DCLS) has confirmed a total of 98 cases of influenza for the 2005-2006 influenza season in Virginia (Table 1).

Although influenza season appears to have passed, healthcare professionals should be aware that influenza viruses continue to circulate to a lesser extent throughout the spring and summer months, and may need to be considered in patients presenting with respiratory infections. Information about Virginia's influenza surveillance is available on the VDH website at www.vdh.virginia.gov/epi/flu.htm.

In addition, the continued spread of avian influenza A/H5N1 in Asia, Europe, and Africa is cause for public health concern. Updated information about Virginia's pandemic influenza planning and preparations are available at www.vdh.virginia.gov/pandemic-flu/.

National Influenza Activity

Influenza activity in the United States peaked in early March and has declined significantly. As of April 29, 2006, reported U.S. state influenza activity levels were at:

- Regional in three states;
- Local in four states;

- Sporadic in 38 states (including Virginia); and,
 - No influenza activity in five states.
- National influenza virus patterns are shown in Table 2.

The proportion of deaths attributable to pneumonia and influenza in 122 cities monitored by the Centers for Disease Control and Prevention (CDC) has remained below the epidemic threshold throughout the 2005-06 influenza season. Since October 2, 2005, the CDC has received reports of 30 influenza-associated pediatric deaths.

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

Table 1: Virginia Influenza Statistics – October 2, 2005 to April 29, 2006

Laboratory Confirmed Cases	Influenza A/H3	84
	Influenza A/H1	8
	Influenza B	6
	Total	98
Laboratory Confirmed Outbreaks		16
Statewide Influenza Activity Level (Apr. 29, 2006)		Sporadic

Table 2: National Influenza Statistics*

	Week ending Apr. 29, 2006	Oct. 2, 2005 to Apr. 29, 2006
Specimens Tested	1,032	129,924
Specimens Positive	97 (9.4%)	16,547 (12.7%)
Influenza A	30 (30.1%)	13,647 (82.5%)
- H3N2	1 (20.0%)	5,154 (92.9%)
- H1N1	4 (80.0%)	394 (7.1%)
- Not subtyped	25	8,099
Influenza B	67 (59.9%)	2,900 (17.5%)

*U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories

Cases of Selected Notifiable Diseases Reported in Virginia*

Disease	Total Cases Reported, March 2006						Total Cases Reported Statewide, January - March		
	State	Regions					This Year	Last Year	5 Yr Avg
		NW	N	SW	C	E			
AIDS	48	5	25	1	6	11	108	169	134
Campylobacteriosis	28	2	9	7	5	5	77	66	76
Chickenpox	277	37	66	85	33	56	323	31	106
<i>E. coli</i>, Shiga toxin-producing	5	3	2	0	0	0	9	4	3
Giardiasis	37	8	11	2	8	8	91	110	74
Gonorrhea	746	41	47	100	202	356	1,708	2,219	2,277
Group A Strep, Invasive	9	0	0	6	0	3	24	11	24
Hepatitis, Viral									
A	10	1	8	0	0	1	13	20	23
B, acute	2	1	0	0	0	1	6	39	35
C, acute	1	0	0	1	0	0	1	4	2
HIV Infection	79	2	25	5	19	28	216	175	190
Lead in Children†	28	2	6	8	7	5	106	64	102
Legionellosis	2	0	0	0	2	0	7	4	4
Lyme Disease	1	0	1	0	0	0	1	14	6
Measles	0	0	0	0	0	0	0	0	0
Meningococcal Infection	5	0	1	2	1	1	8	5	8
Pertussis	24	7	6	7	1	3	36	43	27
Rabies in Animals	64	21	6	15	11	11	135	106	110
Rocky Mountain Spotted Fever	2	0	1	0	0	1	2	0	<1
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	59	5	15	8	28	3	116	146	133
Shigellosis	6	1	4	0	0	1	9	19	78
Syphilis, Early§	40	1	16	2	3	18	84	39	44
Tuberculosis	30	1	21	1	2	5	49	48	44

Localities Reporting Animal Rabies This Month: Accomack 1 raccoon; Amelia 1 skunk; Appomattox 2 skunks; Augusta 1 cat, 1 fox, 2 raccoons; Bedford 1 fox, 1 raccoon; Campbell 1 raccoon; Caroline 2 skunks; Carroll 1 bobcat, 1 skunk; Chesapeake 1 raccoon; Chesterfield 1 raccoon; Clarke 1 equine, 1 skunk; Dinwiddie 1 equine; Fairfax 2 raccoons; Fauquier 1 raccoon, 1 skunk; Franklin 1 cat, 1 skunk; Frederick 1 raccoon; Giles 1 raccoon; Gloucester 1 fox; Goochland 1 fox, 1 skunk; Hanover 1 raccoon; Henrico 1 skunk; Isle of Wight 1 raccoon; Loudoun 2 raccoons; Lunenburg 1 skunk; Mathews 2 raccoons; Middlesex 2 raccoons; Montgomery 1 raccoon; Northampton 1 raccoon; Nottoway 1 skunk; Orange 1 raccoon; Patrick 1 raccoon; Pittsylvania 1 raccoon; Powhatan 1 raccoon, 1 skunk; Prince William 1 raccoon, 1 skunk; Radford 1 skunk; Rockbridge 1 goat, 1 skunk; Rockingham 1 cow, 1 raccoon, 2 skunks; Shenandoah 2 raccoons, 1 skunk; Virginia Beach 1 raccoon; Wythe 1 raccoon; York 1 cat.

Toxic Substance-related Illnesses: Adult Lead Exposure 19; Asbestosis 5; Cadmium Exposure 1; Pneumoconiosis 4.

*Data for 2006 are provisional. †Elevated blood lead levels $\geq 10\mu\text{g}/\text{dL}$. §Includes primary, secondary, and early latent.

CME: Diagnosis and Management of Tickborne Rickettsial Diseases

This is the season when the risk for contact with arthropods that may transmit disease begins to increase. An example of these conditions includes the tickborne rickettsial diseases (TBRD), vector-borne diseases that exist in natural cycles involving wild mammals and hard-bodied (ixodid) ticks. The most common TBRDs found in Virginia are:

- Rocky Mountain spotted fever (RMSF), caused by *Rickettsia rickettsii*;
- Human granulocytotropic anaplas-

mosis (HGA), caused by *Anaplasma phagocytophilum*; and,

- Human monocytotropic ehrlichiosis (HME), caused by *Ehrlichia chaffeensis*.

In Virginia, over 90% of reported cases of RMSF and HGE occur during July-December.

Antibiotic therapy is most effective early in the clinical course of these diseases; however, this is the time of greatest diagnostic challenge to clinicians. The March 31, 2006, *Morbidity and Mortality*

Weekly Report's Recommendations and Reports [55(RR04);1-27] reviewed guidelines for the diagnosis and management of TBRD. This report is available at www.cdc.gov/mmwr/preview/mmwrhtml/rr5504a1.htm.

The Centers for Disease Control and Prevention provides continuing education (e.g., a maximum of 2 hours in category 1 credit toward the AMA Physician's Recognition Award) for completion of this educational activity.