



**EIS e-Bulletin April 2008  
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Kristen D. Folsom, Managing Editor

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## Director's Notes ([return to top](#))

Not a lot has happened in the month or so since the last *Bulletin*. Here in the EIS Office, we've been getting ready for the April EIS Conference and have been participating in the Regional EIS Conferences sponsored by the EIS Field Assignments Branch (EFAB). The two that I went to were well-attended, not just by people associated with the EIS program, but also a fair number of folks from local health departments and schools of public health. Kudos to the officers and staff in EFAB who organized this year's events.

One interesting activity this past month was the most recent installment of the CDC PanFlu response exercise. This section of the overall exercise stressed field deployments and mobilization of staff and field teams. In past large-scale responses, we have managed identification and deployment of EISOs from our offices here at Century Center. Now, we've been more closely integrated into the overall CDC response and have a desk in the Director's Emergency Operations Center (DEOC).

When we showed up at the exercise, we were ready with our updated contact lists and rosters. When the first call for field teams came out, I started reading off of my list. Then DEOC coordinators said, "No, that doesn't count. You have to contact each officer to verify that you can reach them today and that they are available!" So I was facing 160+ phone calls and a very long day. Instead, I sent an emergency e-mail out to officers asking for them to respond immediately to verify their availability. The response was fantastic! In 15 minutes, I had positive responses from 58 officers. The first field team that was "deployed" consisted mostly of EISOs. We had contacted and verified availability for most of the class before other centers' and offices' emergency coordinators had responded to the initial e-mail. DEOC staff who had not worked with EISOs in the past were pretty impressed at how promptly they responded.

We're now getting ready to welcome the latest generation of EISOs to the family. In the last issue, I gave you a breakdown of the class demographics. Following are the names of the newest EISOs

Paul Anderson, MD, MPH, MA  
Wiedad Archer, PhD, MSc  
Danielle Barradas, PhD  
Achuyt Bhattarai, MD, PhD, MSc, MSc  
Dianna Blau, DVM, PhD  
Nagesh Borse, PhD, MS, BPhar  
Sherry Burrer, DVM, MPH  
Elizabeth Cavallaro, MD, MPH  
J. Sean Cavanaugh, MD  
Deborah Christensen, PhD, MPH, BSN  
Jennifer Cortes, MD  
Isabela da Costa Ribeiro, PhD, MSc  
Kashmira Date, MBBS, MPH  
Fatima Dawood, MD

Marie De Perio, MD  
Sanjaya Dhakal, PhD, MPhil, MSc  
Saumil Doshi, MD  
Jonathan Duffy, MD, MPH  
Douglas Esposito, MD, MPH  
Mary Fournier, MD, MPH  
Brunella Frammartino, PhD, MS  
Anne Marie France, PhD, MPH  
Tracie Gardner, PhD, MS  
R. Matthew Gladden, PhD  
Vanessa Gonzalez, PhD, MS  
J. Nadine Gracia, MD, MSc  
Christopher Gregory, MD, MPH  
Cria Gregory, PhD



Matthew Groenewold, PhD, MSPH  
Christa Hale, DVM, MPH  
George Han, MD  
Farah Husain, DMD, MPH  
A. Danielle Iuliano, PhD, MPH  
Michael Jackson, PhD, MPH  
Kristen Janusz, DVM, MPH  
Emily Jentes, PhD, MPH  
Erin Kennedy, DVM, MPH, MS  
Sarah Kidd, MD, MPH  
Clara Kim, PhD, MS, MA,  
Robert Kirkcaldy, MD, MPH  
Molly Lamb, PhD  
Soo-Jeong Lee, PhD, MS  
Felipe Lobelo, MD  
Fleetwood Loustalot, PhD, FNP, RN  
Sara Lowther, PhD, MPH  
Emily Lutterloh, MD, MPH  
Ashleigh May, PhD, MS  
Kristina McElroy, DVM, MPH  
Laura McMullan, PhD  
Elissa Meites, MD, MPH  
Tariisa Mitchell, MD  
Surbhi Modi, MD, MPH  
S. Muazzam Nasrullah, MBBS, MPH  
Megin Nichols, DVM, MPH  
Carrie Nielsen, PhD

Rashid Njai, PhD, MPH  
Sharyn Parks, PhD, MPH  
Minal Patel, MD  
Ghasi Phillips, SD, MS  
Krista Powell, MD, MPH  
Nykiconia Precately, DrPH, MPH  
Rachel Radcliffe, DVM, MPH  
Yanique Redwood, PhD, MPH  
Philip Ricks, PhD, MPH  
Matthew Ritchey, DPT, MPH  
Kis Robertson, DVM, MPH  
Amira Roess, PhD, MPH  
Fadila Serdarevic, MD, MPH  
Benjamin Silk, PhD, MPH  
Alicia Siston, PhD, MPH  
Meera Sreenivasan, MD, MPH  
Kendra Stauffer, DVM  
Loretta Sullivan, MD, MPH  
Anil Suryaprasad, MD  
Mydue Ta, PhD, MPH  
Cynthia Thomas, DVM, MPH  
David Townes, MD, MPH  
Sara Vagi, PhD, MS  
Surabhi Vora, MD, MPH  
Matthew Wise, PhD, MPH  
Jennifer Zipprich, PhD, MS

If you get a chance, please welcome the newest EISOs when you see them at the conference. I hope to see you there. (Follow this link to access the schedule for this year's conference: <http://www.cdc.gov/eis/conference/schedule.htm>.)

Doug Hamilton (EIS '91)



## Career Development Division Notes ([return to top](#))

CDC and the Council of State and Territorial Epidemiologists are pleased to announce the publication of a March/April 2008 supplement to *Public Health Reports*, focused on competency-based epidemiologic training in public health practice. This supplement includes a full-length article on the collaborative, inclusive development of the comprehensive *Competencies for Applied Epidemiologists in Governmental Public Health Agencies*, as well as many articles and editorials, including those authored by EIS graduates, describing their use in academia and practice. Guest editors for the issue are **Denise Koo (EIS '91)**, **Gus Birkhead (EIS '85)**, and **Art Reingold (EIS '79)**. The competencies documents, along with tools to facilitate their use, are also available at <http://www.cdc.gov/od/owcd/cdd/aec> and <http://www.cste.org/competencies.asp>. A session at the EIS Conference will describe evaluation of the EIS curriculum in light of these competencies.

## Epi-Aids ([Return to top](#))

The following Epi-Aids have been issued since February 1, 2008:

Number	Title	Location	Officer
2008-031	Emergence of quinolone-resistant meningococcus	Multistate	<b>Henry Wu</b>
2008-032	Outbreak of influenza A in a long-term care facility	IL	<b>Nila Dharan, Mef Galle</b>
2008-033	Investigation of an outbreak of <i>Acinetobacter baumannii</i>	MD	<b>Melissa Schaefer, Alex Kallen, Rakhee Palekar</b>
2008-034	Measles outbreak	CA	<b>Jacqueline Tate, David Sugerman</b>
2008-035	Investigation of school closures associated with a possible influenza outbreak in Whitley County	KY	<b>Cheryl Broussard</b>
2008-036	Multistate outbreak of <i>Salmonella</i> Montevideo infections	Multistate	<b>Amy Boore, Umid Sharapov</b>
2008-037	Rapid assessment of injection safety and basic infection-control practices in ambulatory surgical centers	NV	<b>Sarah Schillie, Melissa Shaefer, Eloisa Llata</b>
2008-038	Suicide deaths among Native American tribe members	SD	<b>Joseph Logan, John Halpin</b>
2008-039	Rapid assessment of publicly funded antiretroviral drug assistance programs	DC	<b>Neha Shah</b>



## Other Investigations Recently Conducted by EISOs ([Return to top](#))

Officer	Investigation	Location	Dates
<b>Cynthia Lucero</b>	Infection control consultancy, WHO South Pacific office	Suva, Fiji	Feb 2008
<b>Jennifer Adjemian, Ingrid Weber</b>	Zoonotic diseases exposure among National Park Service employees	Great Smoky Mountains and Rocky Mountain National Parks	4/08–Present
<b>Paul Cantey</b>	Coverage survey of mass drug administration for lymphatic filariasis	Orissa State, India	1/29–2/16, 2008
<b>Nancy Aburto</b>	Jordan National Nutrition Survey—2008. Providing technical assistance to the Ministry of Health and the Global Alliance for Improved Nutrition to conduct a nationally representative nutritional survey in Jordan	Jordan	3/08–Present
<b>John Gibbins</b>	Health hazard evaluation, investigation of neurologic illness in swine slaughterhouse workers	Austin, MN	Ongoing

## Recent Publications by Current Officers ([Return to top](#))

Arduino MJ, **Lucero C**, Patel P. Infections in dialysis patients. *Nephrol News Issues* 2008;22(2):48–50,53, 55–7.

**Cantey P**, Umpierrez G. Diabetic ketoacidosis. In: Williams et al, eds. *Comprehensive hospital medicine*. Amsterdam: Elsevier Health Sciences; 2007.

**Cantey P**, Umpierrez G. Managing diabetes mellitus and hyperglycemia in the hospitalized patient. In: Williams et al, eds. *Comprehensive hospital medicine*. Amsterdam: Elsevier Health Sciences; 2007.

CDC. Acute pesticide poisoning associated with pyraclostrobin fungicide—Iowa, 2007. *MMWR* 2008;56:1343–5. (Submitted by **Sara Luckhaupt**.)

CDC. Evaluation of results from occupational tuberculin skin tests—Mississippi, 2006. *MMWR* 2007;56:1316–8. (Submitted by **John Gibbins**.)



CDC. Medical equipment malfunctions associated with inappropriate use of cleaning and disinfecting liquids—United States, 2007. *MMWR* 2008;57:152. (Submitted by **Fernanda Lessa**.)

CDC. Multistate measles outbreak associated with an international youth sporting event—Pennsylvania, Michigan, and Texas, August–September, 2007. *MMWR* 2008;57:169–73. (Reported by **Tai-Ho Chen** and **Michael Nguyen**.)

CDC. Nonoccupational logging fatalities—Vermont, 1997–2007. *MMWR* 2008;57:260–2. (Submitted by **Scott Laney**.)

CDC. Racial disparities in diabetes mortality among persons aged 1–19 years—United States, 1979–2004. *JAMA*. 2008;299:1129–30. (Submitted by **Laura Polakowski**.)

CDC. Trends in childhood cancer mortality—United States, 1990–2004. *MMWR* 2007;56:1257–61. (Submitted by **Jun Li**.)

CDC. Trends in wheat-flour fortification with folic acid and iron—worldwide, 2004 and 2007. *MMWR* 2008;57:8–10. (Submitted by **Nancy Aburto**.)

CDC. Unintentional strangulation deaths from the "choking game" among youths aged 6–19 years—United States, 1995–2007. *MMWR* 2008;57:141–4. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5706a1.htm>. (Submitted by **Robin Toblin**.)

**Cooper MP, Lessa F, Brems B, Shoulson R, Duffy R, McDonald LC.** An outbreak of *Enterococcus gallinarum* infections after total knee arthroplasties. *Infect Control Hosp Epidemiol* 2008;29:361–3.

**Cooper M, Lessa F, Brems B, Shoulson R, York S, Peterson A, Noble-Wang J, Duffy R, McDonald C.** Outbreak of *Enterococcus gallinarum* infections after total knee arthroplasty. *Infect Control Hosp Epidemiol* 2008;29:361–3.

**Halpin J, Forst L, Zautke J.** Conditions causing burns in foodservice workers. *Journal of Food Service*. (Accepted for online publication April 2008.)

**Laney AS, Cragin LA, Blevins LZ, Sumner AD, Cox-Ganser JM, Kreiss K, Moffat SG, Lohff CJ.** Sarcoidosis, asthma, and asthma-like symptoms among occupants of a historically water-damaged office building. *Indoor Air*. In press 2008.

**Lessa F, Tak S, De Vader SR, Goswani R, Anderson M, Williams I, Gensheimer KF, Srinivasan A.** Risk of infections associated with improperly reprocessed transrectal ultrasound-guided prostate biopsy equipment. *Infect Control Hosp Epidemiol* 2008;29:289–93.

**Moore LV, Diez-Roux AV, Brines S.** Comparing perception-based and geographic information system (GIS)-based characterizations of the local food environment. *J Urban Health* 2008;85(2):206–16.

**Moore LV, Diez-Roux AV, Nettleton JA, Jacobs DR.** Associations of the local food environment with diet quality—a comparison assessments based on surveys and geographic information systems: the multi-ethnic study of atherosclerosis. *Am J Epidemiol* 2008. [ePub ahead of print.]



**Robbins C.** Women's health toolkit. Tallahassee, FL: Florida Department of Health, Infant, Maternal, and Reproductive Health Unit; 2008. Available at:  
<http://www.doh.state.fl.us/family/mch/whtoolkit/BuildingRelationships.html>.

**Tao M,** McDowell M, Saydah S, Eberhardt M. Relationship of polyunsaturated fatty acid intake to peripheral neuropathy among adults with diabetes in the National Health and Nutrition Examination Survey (NHANES) 1999–2004. *Diabetes Care* 2008;31:93–5.

**Wendelboe AM,** Baumbach J, Blossom D, Frank P, Srinivasan A, Sewell CM. Outbreak of cystoscopy-related infections with *Pseudomonas aeruginosa*. *J Urol*. (Accepted for publication August 2008.)



## Recent Presentations by Current Officers at National or International Meetings ([Return to top](#))

Officer	Presentation	Meeting	Date
<b>Tai-Ho Chen</b>	Clinical features of Zika virus infection during an outbreak on Yap Island, Federated States of Micronesia, 2007	International Conference on Emerging Infectious Diseases (ICEID), Atlanta, GA	3/16–19, 2008
	Multistate measles outbreak associated with an international youth sporting event—Pennsylvania, Michigan and Texas, August–September, 2007	42 <sup>nd</sup> National Immunization Conference, Atlanta, GA	3/17–20, 2008
<b>Fernanda Lessa</b>	Fatal Group C streptococcal infection due to transfusion of a bacterially contaminated pooled platelet unit despite routine bacterial culture screening	ICEID, Atlanta, GA	3/16–19, 2008
	Novel adenovirus serotype identified in healthcare workers at a military hospital—Texas, 2007	ICEID, Atlanta, GA	3/16–19, 2008
<b>Cynthia Lucero</b>	Investigation of a multidrug-resistant <i>Acinetobacter baumannii</i> outbreak—Phoenix, Arizona 2007	ICEID, Atlanta, GA	3/16–19, 2008
	Potential impact of <i>Staphylococcus aureus</i> vaccine on invasive methicillin-resistant <i>S. aureus</i> disease in the United States	Society for Healthcare Epidemiology of America (SHEA), Orlando, FL	4/6/2008
<b>Aron Hall</b>	<i>Corynebacterium diphtheriae</i> among domestic cats: a potential zoonosis?	ICEID, Atlanta, GA	3/16–19, 2008
	La Crosse encephalitis in a pregnant woman and possible congenital infection	ICEID, Atlanta, GA	3/16–19, 2008
	Epidemiology of all-terrain vehicle fatalities in West Virginia, 1999–2006	American Public Health Association 135 <sup>th</sup> Annual Meeting and Expo, Washington, DC	11/3–7/2007
<b>John Halpin</b>	An evaluation of the NCAA injury surveillance system in the web era	NCAA's Surveillance Oversight Working Group Bi-Annual Meeting, Indianapolis, IN	10/29/2007
<b>Aaron Wendelboe</b>	Outbreak of cystoscopy-related infections with <i>Pseudomonas aeruginosa</i>	SHEA, Orlando, FL	4/6/2008
<b>Jennifer Adjemian</b>	Spatial clustering by disease severity among Rocky Mountain spotted fever cases in the United States	5 <sup>th</sup> International Conference on Rickettsiae and Rickettsial diseases, Marseille, France	May 2008
<b>Paul Cantey</b>	Chagas disease in Mississippi: investigation of suspected autochthonous infections in the United States	ICEID, Atlanta, GA	3/16–19, 2008





**Notes from the Field** ([Return to top](#))

## **EIS Officers and Alumni Respond to Recent Viral Hemorrhagic Fever Outbreaks in Africa**

*By Kristen D. Folsom*

Recent viral hemorrhagic fever (VHF) outbreaks have occurred in African nations, including Rift Valley fever (RVF), Marburg virus, and Ebola virus. CDC has been critical in response efforts, and several epidemic aid investigations (Epi-Aids) were executed during 2006–2008. Affected countries included Kenya, the Democratic Republic of Congo (DRC), and Uganda. At the request of these countries' ministries of health, epidemiologic assistance was made possible through current and past Epidemic Intelligence Service officers (EISOs) and other CDC personnel.



Tegan Boehmer works with a local healthcare official in Uganda to gather information regarding the Ebola virus outbreak in 2007.

### **Rift Valley Fever in Kenya**

In Kenya in December 2006, RVF was confirmed among patients in Garissa District who had experienced fever, abdominal pain, hematemesis, and cephalgia. Because continued heavy rainfalls and proliferation of mosquito vectors increased the likelihood of another substantial epidemic, which could potentially spread to other areas of Kenya and East Africa, the Kenyan Ministry of Health requested epidemiologic, veterinary, laboratory, and entomologic assistance from CDC.

In January, 2007, **Edith Lederman (EIS '05)** and CDC epidemiologist, **Peter Bloland (EIS '89)** arrived in Kenya to assist **Robert Breiman (EIS '87)**, head of the Global Disease Detection Division at CDC-Kenya, with case identification, clinical and epidemiologic characterization of identified cases, and laboratory diagnoses of RVF cases among humans and domestic livestock (Epi-Aid 2007-024). They were later joined by other CDC personnel, including **Eileen Farnon**



(EIS '05), medical officer and epidemiologist within the Special Pathogens Branch of the Coordinating Center of Infectious Diseases.

One mission of this Epi-Aid was to identify newly affected areas. The team conducted patient interviews and reviewed medical records in major healthcare clinics. They also met with village leaders and healthcare providers to identify additional cases. Blood samples were taken from suspected patients, and as of January 2007, a total of 404 cases had been reported, including 118 deaths. The index case was considered to be a patient in Garissa District who experienced symptom onset in November 2006.

Patients provided information on potential risk factors, which included having drunk unpasteurized milk or milk from an animal that was ill, having worked as a herdsman or having tended to an animal that was ill, having lived within 100 meters of a swamp, and having a dead animal or having slaughtered an animal. The Kenyan Ministry of Health imposed a ban on slaughtering animals in December 2006, and in January 2007, the Kenyan Ministry of Livestock and Fisheries Development started vaccination of herds of livestock in certain districts. Ongoing epidemiologic, entomologic, and veterinary studies continue to provide useful information in controlling the spread of RVF.

## **Marburg Virus in Uganda**

In June 2007, a man aged 29 years who was a mine worker in Kitaka in the Ibanda District of Uganda, experienced symptoms of hemorrhagic fever. A male coworker who accompanied him during transport to a hospital in the capital city, Kampala, subsequently experienced hemorrhagic fever and died. The 29-year-old miner and a second male coworker who also accompanied him to the hospital were identified as having antibodies for this disease, indicating that they might have been infected with Marburg virus in the past. All three men were sons of the mine's proprietor.

A blood sample taken from the deceased patient was sent through CDC-Kenya to the Special Pathogens Branch at CDC for testing, and Marburg virus was detected. CDC was then asked to assist in ecologic and epidemiologic investigations. The ecologic investigations focused on testing of fruit bats, the suspected reservoir of Marburg virus, collected from the mine.

Objectives of this Epi-Aid (2007-58) were to identify the extent of the outbreak, institute control measures, and assess risk factors for infections. **Jennifer Adjemian (EIS '07)** was involved in case contact tracing of the infected miners and isolating contacts during the incubation period (approximately 21 days) for the virus. She was also involved with design and implementation of a serosurvey to further investigate risk factors for Marburg virus among local villagers. Eileen Farnon was also involved in the public health aspect of this investigation. The two EISOs aided the World Health Organization (WHO) in community education efforts and joined the ecologic team during bat collections and subsequent laboratory dissections.



Jennifer Adjemian speaks with villagers in Ibanda District, Uganda.

Fortunately, the Marburg illness seems to have been limited to the three mine workers, which made tracing the source of the outbreak easier. Approximately 70 contacts of the infected miners were tested for evidence of prior Marburg infection, and 600 persons from the mine's surrounding villages participated in the survey. Epidemiologists expect to learn more regarding how the virus is transmitted from person to person and the morbidity rate of the disease.

CDC's response team recommended that workers wear personal protective equipment when entering mines in which bats might be residing. (Although the proprietor of the mine had supplied workers with safety equipment — masks, gloves, and boots — that equipment was not routinely worn by the miners.) Recommendations that persons have no contact with bats and that the mine in which the workers became ill be closed were also made. After the outbreak, authorities did close the mine.



Eileen Farnon conducts a survey at the Kitaka mine camp in Ibanda District, Uganda.



## **Ebola Virus in the Democratic Republic of Congo**

In August 2007, an outbreak of unknown illness was reported from the province of Kasai Occidental, Democratic Republic of Congo (DRC). Symptoms were consistent with gastroenteritis, but five blood samples tested positive for Ebola in September 2007. At the time of testing,  $\geq 350$  cases and 160 deaths had been reported to the DRC Ministry of Health, which requested assistance with field laboratory diagnoses and epidemiologic investigation from CDC and other international health organizations.

In September, **Amy Boore (EIS '07)** and **Ingrid Weber (EIS '07)** departed for DRC to assist the Ministry of Health with the investigation, which lasted 4 weeks. Objectives of this Epi-Aid (2007-68) were to assist in active surveillance for new cases, to institute control measures, and to define the extent of the outbreak and clinical parameters of affected patients.



Ingrid Weber walks to a health clinic near Luebo, Democratic Republic of Congo.

Along with WHO and Doctors Without Borders, Boore and Weber participated in a retrospective investigation to identify cases. They visited medical clinics and reviewed medical charts, but eventually determined that no active cases were present in the southern portion of the country in which they worked. As of October 2007, the total number of suspected cases was 249, with 183 deaths. The outbreak was considered over as of November 2007.



The old mission house in the Democratic Republic of Congo in which the EISOs resided.

## **Ebola Virus in Uganda**

In November 2007, an outbreak of febrile illness was reported from Bundibugyo District, Uganda, to the Ugandan Ministry of Health, which later identified 49 patients, including 14 deaths, to be part of the outbreak since August 2007. Presumably, the disease had been transmitted both among household members and within healthcare settings. The majority of patients experienced symptoms of fever, diarrhea, and vomiting, with <20% presenting with bleeding.

The Uganda Ministry of Health requested that CDC assist the outbreak response with laboratory diagnostics, epidemic investigation, and health communications. A multidisciplinary response team responded and included, among others, EISOs **Adam MacNeil (EIS '07)**, **Philip Gould (EIS '06)**, and **Oliver Morgan (EIS '07)**, and EIS alumni, Eileen Farnon and **Ann Schmitz (EIS '05)** (Epi-Aid 2008-013).

These EISOs worked with Ugandan and Kenyan colleagues to compile and manage an epidemic database of cases and to create an investigation form for suspected cases. They created a list of homes and families that included persons who were suspected of having contracted the Ebola virus. The investigation form was used to gather demographic information, information regarding patients' contacts, and what symptoms they might have experienced, among other concerns. They searched medical records of hospitalized patients from Kikyoo (one of the epicenters of the outbreak) and from the hospital in Bundibugyo town. They also spent time in task force meetings in which they collaborated with response workers from Doctors Without Borders, WHO-AFRO, WHO-Geneva, African Epidemiology Network, the Ugandan Red Cross, and the Ugandan Police Defense Forces.



Twenty blood samples were sent from the Uganda Virus Research Institute to the Special Pathogens Branch for testing, and a total of eight of these tested positive for Ebola virus. Philip Gould explains, “The virus from this particular strain identified from the initial eight specimens that were positive is different enough from the four known strains of Ebola (i.e., Sudan, Zaire, Ivory Coast, and Reston) to be called a new strain. It also appears to have a lower case fatality rate than the three strains that cause disease in humans.” He and fellow EISOs left Uganda late in December, at which time a second team of EISOs responded to the crisis.

The second team of EISOs — **Tegan Boehmer (EIS ‘06)**, **David Blaney (EIS ‘06)**, and **Petra Wiersma (EIS ‘06)** — arrived in Uganda in early January 2008. The mission of this team was to determine the extent of the Ebola outbreak by collecting samples for laboratory diagnoses, establish the chain of transmission, and devise a healthcare worker survey. They visited homes and gathered blood samples from persons who had been ill. They interviewed these persons and inquired about symptoms, exposures, and contacts.



EISOs (l. to r.) David Blaney, Tegan Boehmer, and Petra Wiersma don personal protective equipment in preparation for a day’s work during their Ebola virus investigation in Uganda.

The second team’s major objective was to discover where and with whom the outbreak started. They sifted through medical records from the health clinics, dating back to July 2007. The earliest case in 2007 occurred within the first week of September. A woman was eventually identified as the index case. The team worked as many as 16 hours each day, reconciling data they had collected.

David Blaney and Tegan Boehmer created the Health Care Worker Ebola Virus Transmission Survey to help in understanding the chain of transmission of the virus and in assessing infection-control practices. This comprehensive survey asked the name, age, and sex of the person completing it, and whether the person was a doctor, nurse, clinical officer, student nurse, nurse’s aid, ambulance driver, cleaner, burial assistant, administrator, or other person who might have come in contact with a patient in whom Ebola might have been suspected. Among other questions, the survey also asked questions pertaining to glove use; hand-washing practices;



contact with body fluids; needle-stick injuries; whether a febrile illness had been experienced during August 1–December 21, 2007; whether contact with a suspected Ebola patient had occurred; and whether the respondent believed that he or she had been infected with the Ebola virus during August 1–December 31, 2007. The team eventually determined that  $\geq 10$  healthcare workers had been infected. Case classification is still ongoing in Uganda, and an exact number of confirmed cases has not yet been established.



In Uganda, Tegan Boehmer collects blood samples for laboratory diagnoses.

## Challenges and Rewards

These recent VHF outbreaks in Africa were not as burdensome as certain outbreaks of the past. For example, in Kenya in 1997, an outbreak of RVF occurred, affecting  $>25,000$  Kenyan and Somali citizens (Epi-Aid 1998-023, investigated by EIS '97 members, **Christopher Woods**, **Adam Karpati**, and **Paul Arguin**). During 1998–2000, an outbreak of Marburg hemorrhagic fever occurred in DRC, with 154 cases reported, including 128 deaths. The majority of these cases occurred among young, male workers at a gold mine. Another Marburg outbreak occurred in Angola during 2004–2005, in which 252 cases, including 227 deaths, were reported. Several EISOs were sent to Angola, although the investigation was not a formal Epi-Aid. The largest Ebola outbreak occurred in Uganda during 2000–2001. A total of 425 cases were reported, including 224 deaths (Epi-Aid 2001-005, investigated by **Scott Harper [EIS '00]**). Decreases in numbers and magnitude of outbreaks can be attributed to a number of factors, including increased public health education support, surveillance provided by CDC and other public health agencies, timely detection, and specific infection-control measures.

Many challenges were met during these investigations. The team that responded to the Marburg outbreak in Uganda resided in Ibanda, a town that is approximately a 6-hour drive from Entebbe through a remote area of western Uganda. “But,” Adjemian remarked, “a comfortable new hotel provided private bathrooms, reliable electricity, and meals of fried tilapia, goat meat, rice, spinach, avocado, tomato, potatoes, and soft, fried flatbread.



The EISOs in DRC were housed in an old, solid-stone, two-story mission house in a remote village. The house had not been inhabited in more than two decades. Running water and electricity were unavailable. A logistician from Kinshasa helped the officers with meal provisions. Amy Boore described her bedroom as the second-floor porch of the house. A bug net shielded her from mosquitoes and other pests.

The first EIS response team to Uganda witnessed national news regarding the death of a local doctor who had attended to Ebola patients. (Another doctor, who had isolated himself in his home, was still ill at that time, but later died as well.) In the villages, the officers found no public facility at which they could dine, so they often relied on Power Bars<sup>®</sup> that they had remembered to bring along for meals.

Tegan Boehmer describes long hikes with her colleagues through villages in Uganda to interview persons who might have become ill. Their longest was an 8-mile round-trip trek through the mountainside to interview the husband of the woman considered to be the index case for Ebola in Uganda. “The trip there took us two-and-a-half hours,” she explains, “but we enjoyed the beauty of the mountainside along the way.”

Before departing Uganda, the second EIS team witnessed the reawakening of the village of Bundibugyo. It became vibrant once again, with markets and other businesses reopened. Isolation tents were removed; villagers returned to the streets; and children ran and played. The village people offered gifts of mangos and other fresh fruit in gratitude for the work of the Ebola task force. At the conclusion of this team’s visit, a gracious restaurateur prepared a special meal of fish, greens, noodles, potatoes, and other foods that Tegan Boehmer describes as, “Delicious!”



View of the mountain range and village in Uganda in which EISOs were involved while investigating the Ebola outbreak.

Bundibugyo is a small village in the western part of Uganda and is separated from the Democratic Republic of Congo by a river and approximately 5 miles of rolling hills covered with cocoa plantations, sugarcane, and forests. The Rwenzori mountain range, also known as the





“mountains of the moon” lie to the east. The village has no paved roads, only winding, red-clay roads, which heavy rains often wash away. “But altogether it was a fascinating experience,” says Gould. “The Rwenzori Mountains are quite spectacular. I learned about cocoa and vanilla production, the culture of the Bwamba and Bakongo people and their language, and I visited the Semliki Forest and Game Preserve. It was a long 3½ weeks, but rewarding.”

Absent most western conveniences — running water, dependable electricity, comfortable beds, local transportation, and fast food — the EISOs were still successful in completing their missions, and all of the recent outbreaks have since been mitigated.

## **Gastroenteritis Outbreak at a Winter Resort — Leavenworth, Washington, January 2008**

*Submitted by Matt Hanson, MD (EIS '07)*

On a snowy morning in early January 2008, a popular winter resort in Leavenworth, Washington, reported to the Chelan-Douglas Health Department that members of at least nine unfortunate guest groups had experienced symptoms of nausea, vomiting, or diarrhea the night before. Later that same day, Public Health — Seattle and King County received a report of a family who had visited the resort at the same time and three of four family members had since become ill. Given my link to King County, I eagerly departed for Leavenworth with skis in my trunk and hopes that an outbreak had finally come my way.



The trip over two mountain passes was typical, marked by a whiteout, two near-misses with a semi truck, and finally an iced over windshield that cracked clear in half. After staying in town the first night at the local Best Western,<sup>®</sup> I headed to the ritzy resort with lofty goals of obtaining detailed menus, recreational activities, guest lists, and staff rosters to aid in questionnaire development and interviews. After some rookie mistakes, a questionnaire was eventually developed, and interviews were conducted by an army of public health officials from the Washington State Department of Health and local health jurisdictions, including Chelan-Douglas, Spokane, Snohomish, King, and Benton Counties.



A total of 158 guests and staff (out of 498 total who were at the resort December 31, 2007–January 2, 2008) were interviewed, and the attack rate for gastrointestinal illness was 26%. Early on, excitement arose regarding the possibility of something novel, but this ended up not being the case. All three samples sent for testing were positive for norovirus and were closely related to



the most common strain, G2.4, Farmington Hills. Although I, a new EISO, was excited that an answer was found, nobody else seemed to be.

In the midst of interviews, we determined that one of the ill guests was a resident of a long-term care facility in Seattle. This facility had recently been suffering through a norovirus outbreak of epic proportions, and this was believed to be the most likely source for norovirus entry into the resort. Analysis revealed that the virus

navigated itself through the resort in multiple ways. Sharing lodging with or caring for someone ill, having consumed several meals, and having consumed certain food items were all associated with an increased risk for illness. The fact that no single culprit meal, food item, or activity was the determined cause of the outbreak disappointed me, but I was OK with it in the end. I was able to say “more research is needed,” and made plans to take my skis back next year.

## **Aboard the USNS Comfort — August–September, 2007**

*Submitted by Ryan Fagan, MD (EIS '06)*

For a second consecutive summer, U.S. Public Health Service officers will deploy aboard the USNS Comfort for a humanitarian medical mission. Last year, I joined PHS Team 3 for missions to Ecuador, Colombia, and Haiti.

Few members of our team had ever been on a Navy ship, so when it came to unfamiliarity with Navy procedures, we were all in the same boat (so to speak). Uniform wear was mandatory outside berth (bunk) areas except when walking to and from exercise facilities. Onboard, officers chose the blue coveralls (aka battle jammies) in a landslide. Long sleeve khakis were required on shore and they made for hot temperatures. One day, I managed to attract the attention of a Colombian admiral who thought I might be overheating. He laughed loudly when he found out where I am from — Alaska! No wonder!



At 894 feet, the Comfort was too large to dock at many piers and in some countries anchored miles offshore. These locations were good for whale-watching and chatting with the chaplain while he fished off the back of the ship, but the small-boat rides to shore were a real adventure in rainy weather. When Navy staff are puking, it's not good. Helicopters were much better!



PHS billet descriptions only approximated an officer's actual duties. The unofficial motto was "Semper Gumby;" always be flexible and do what

you can. For instance, I filled the infectious disease billet for Team 3. But like most clinicians on the mission, I committed substantial time to general triage and urgent care of patients on shore. In addition, I performed infectious disease consults for surgical patients, staffed the general medicine ward, shared emergency call at night, investigated possible exposures to tuberculosis, and worked with Navy doctors to revise the tuberculosis screening protocols for patients and escorts coming aboard the ship.



Daily schedules were easy to follow. The Plan of the Day, posted each evening, included the following day's shore departures, meetings, meal menus, and entertainment schedules. *On time* meant 10 minutes early. The process of selecting a lunch to pack was a daily amusement. Our military companions' encyclopedic knowledge of MREs constituted an unfair advantage, and highly valued entrée-dessert combinations were rarely consumed by PHS officers. I learned the hard way; the omelet MRE makes a poor lunch in hot, humid weather, and the BBQ pork patty MRE is where the McRib<sup>®</sup> sandwich went to die. We carried our water, and I drank six bottles a day in Haiti! There were no hardships at night — showers were hot and meals were surprisingly good. I bet most of us actually gained weight. There was no such thing as privacy on the ship, but the berths had plenty of locker space, and beds were comfortable enough.

Military personnel were friendly, well trained, and professional. They had a high level of interest in PHS and EIS. More than once, I heard, "Man, your job sounds cool; I wish I could do something like that!"



## **Job Notices** ([Return to top](#))

### ➤ **Calling All Retired EIS Alumni, Health Educators, Environmental Engineers, Sanitarians, and Epidemiologists**

Please consider joining us, if you live in Southern Arizona.

The Medical Reserve Corps of Southern Arizona wants you on our Task Force for Public Health and Environmental Health to assist in surveillance, prevention, and planning for recovery during and after a natural or man-made local disaster. See <http://www.mrcsa.org> or call Jim Justice, PHS CAPT, Ret., at 520-577-2202, or the MRC office at 520-327-2731, or send an e-mail to [info@mrcsa.org](mailto:info@mrcsa.org).

### ➤ **Colorado School of Public Health**

The future Colorado School of Public Health (CSPH) will open in July 2008, on the new state-of-the-art Anschutz Medical Campus at the University of Colorado, Denver. The school is a collaborative endeavor among UC Denver, Colorado State University, and the University of Northern Colorado, and has substantial participation by state and local health departments, community constituencies, and the business community.

Applications are currently being accepted for the following six new positions in the planned CSPH:

- Associate Dean, Faculty and Research Affairs (#803331)
- Associate Dean, Education and Student Affairs (#803329)
- Associate Dean, Public Health Practice (#803337)
- Director, Center for Public Health (#803330)
- Department Chair, Environmental and Occupational Health (#803291)
- Department Chair, Health Systems Management and Policy (#80370)

The successful candidates will have senior leadership roles and a unique opportunity to shape the future direction and success of the school's faculty, staff, students, and programs. These are 12-month administrative appointments that can be a negotiated portion of a full-time appointment, and rank will be dependent on qualifications.

For a description of required qualifications and to apply for these positions, please visit <http://www.coloradosph.org>; click on Exciting Employment Opportunities on the right-hand side; and access the posting numbers listed in this job announcement. CSPH is committed to diversity and inclusion in its faculty, staff, and student body, and its mission includes working to achieve health equity. Applicants are requested to include in a cover letter detailing information regarding how they will further these goals, as well as meet the requirements of the position. Review of applications will begin 1 month from the date of posting and continue until positions are filled.

### ➤ **Epidemiologist with the i3 Company**

i3 Drug Safety is currently seeking an Epidemiologist IV to work in our Waltham, Massachusetts, office. The Epidemiologist will have the primary responsibility for the scientific and project management of research projects. Responsibilities include preparing protocols and analytic plans, writing reports and manuscripts, directing communication with the client, leading the project team, submitting deliverables to the client on time and on budget, and ensuring client satisfaction with project deliverables. In addition, the Epidemiologist IV will mentor junior epidemiologists and participate in the scientific direction of the business unit as a whole.

Qualifications include a doctoral degree in epidemiology or equivalent, and 5+ years of relevant experience. Interested candidates should submit their résumé to [tiffany.jones@i3research.com](mailto:tiffany.jones@i3research.com).



i3 Drug Safety is an equal opportunity employer (male/female/disabled/veteran). <http://www.i3careers.com>

➤ **Alabama State Epidemiologist**

The Alabama Department of Public Health seeks a physician with experience in epidemiology to serve as State Epidemiologist. The incumbent will provide technical services to the Division of Epidemiology in the areas of surveillance of notifiable diseases, investigation of acute outbreaks, and formulation of control strategies for selected communicable diseases. Responsibilities include networking with other agencies and frequent oral and written communication with the public, medical providers, and media. Leadership, technical skills, and an aptitude for writing and analysis are desirable. Current annual salary range is \$112,346–\$171,271. The State of Alabama offers generous retirement and other benefits.

Candidates must be able to obtain a license to practice medicine in Alabama. Information about applying is located under Continuous Job List, Public Health Physician, Senior (Epidemiology Option, 40435) at <http://www.personnel.state.al.us>.

Queries may be directed to Charles Woernle, MD, MPH, Assistant State Health Officer for Disease Control and Prevention, Alabama Department of Public Health, PO Box 303017, Montgomery, AL 36130-3017. Phone: 334-206-5325; Fax: 334-206-2090; E-mail: [cwoernle@adph.state.al.us](mailto:cwoernle@adph.state.al.us)

The State of Alabama is an Equal Opportunity Employer.

➤ **University Of California, Irvine**

The Division of Infectious Diseases and the Department of Microbiology and Molecular Genetics are seeking candidates with MD or PhD degrees and basic, translational or epidemiologic research interests in infectious diseases of importance to Latino communities in the United States or abroad. Relevant infectious diseases include, but are not limited to, those caused by HIV and other sexually transmitted pathogens, dengue virus, *Mycobacterium tuberculosis*, and other pulmonary pathogens, bacterial, or parasitic gastrointestinal pathogens, *Leishmania*, and trypanosomiasis. This is a tenure-track position at the assistant professor level, with up to 75% time allotted to research. Board certification or eligibility in adult or pediatric infectious diseases is preferred. Candidates must be able to perform independent research and either have current federal funding or be poised to obtain such funding. Laboratory space will be available on the UC Irvine campus, as are multiple collaborative opportunities with clinicians and scientists in a variety of disciplines.

The successful candidate will support the needs and objectives of UC Irvine's Program in Medical Education for the Latino Community (PRIME-LC; <http://www.ucihs.uci.edu/som/meded/primelc/>). Responsibilities will include teaching, mentoring students, and service on administrative committees. PRIME-LC is a unique program designed to provide specialized training for future physicians committed to careers in public service, health-care delivery, research, and policy in underserved Latino communities. Applicants should send a curriculum vitae and names and addresses of three references to Donald Forthal, MD, Chief, Division of Infectious Diseases, Department of Medicine, University of California, Irvine, 3044 Hewitt Hall, Irvine, CA 92697-4028; e-mail: [dnfortha@uci.edu](mailto:dnfortha@uci.edu).

UC Irvine is an equal opportunity employer committed to excellence through diversity, and strongly encourages applications from all qualified applicants, including women and minorities.

➤ **The Center for Drug Evaluation and Research (CDER) at the U.S. Food and Drug Administration**

CDER has primary regulatory oversight for the provision of safe and effective drug products to the American public. CDER is modernizing the national drug safety surveillance system. Part of this modernization involves accessing large, automated health-care databases to conduct patient-level analysis for monitoring safety of drugs and quantifying risks relating to medical products. These databases include both administrative claims and electronic medical records, representing complex data systems requiring careful analysis conducted by persons with solid epidemiology training in observational study design, conduct, and analysis, and an understanding of the health-care systems generating these data.



The Office of Surveillance and Epidemiology is currently recruiting medical epidemiologists and other scientists with advanced graduate degrees in epidemiology or related subjects to fill positions in the Division of Epidemiology. The incumbent is expected to work as a member of a multidisciplinary team to design, plan, and execute post-marketing observational drug-safety studies by using automated health-care databases; review protocols and pharmaco-epidemiological drug-safety study reports submitted by the pharmaceutical industry to FDA; assess population impact of drug-safety concerns; and participate in important safety-related regulatory decisions.

For employment opportunities, please contact **Dr. Solomon Iyasu (EIS '89)**, Director, Division of Epidemiology, by e-mail ([solomon.iyasu@fda.hhs.gov](mailto:solomon.iyasu@fda.hhs.gov)) or by phone (301-796-2370).

➤ **Deputy State Epidemiologist —New Hampshire; Infectious Diseases Epidemiologist — Dartmouth - Hitchcock Medical Center**

The Section of Infectious Disease and International Health at Dartmouth-Hitchcock (DH) Medical Center and the New Hampshire Department of Health and Human Services seek an Infectious Disease fellowship-trained Deputy State Epidemiologist (DSE) for the State of New Hampshire. Candidates with a master's degree in public health, an accredited preventive/occupational medicine residency, or CDC EIS certification are preferred. The incumbent will have 0.9 FTE funding from DHHS (will be based in Concord, New Hampshire) and 0.1 FTE clinical funding from DH, but specifics of the clinical time (including the nature and location of the clinical work) could vary depending on the interests and skills of the applicant. DSE will conduct epidemiologic studies, assist in developing research projects, provide support for the state's bioterrorism preparedness and public health plan, and direct field activities for disease outbreak investigations. In addition, DSE will assist with development of DHMC's hospital-specific public health preparedness and bioterrorism plans and serve as an attending physician on the Infectious Disease service. This physician will have an academic appointment with the Dartmouth Medical School.

Letters of recommendation and a curriculum vitae should be sent to Bryan J. Marsh, MD, Associate Professor of Medicine, Acting Chief, Section of Infectious Disease and International Health, Dartmouth-Hitchcock Medical Center, One Medical Center Drive, Lebanon, NH 03756. E-mail: [bryan.marsh@hitchcock.org](mailto:bryan.marsh@hitchcock.org).

➤ **Chief of Communicable Disease Control, New Hampshire Department of Health and Human Services (Unclassified Position #9U438)**

Incumbent will be responsible for directing activities of the Communicable Disease Control Section in the New Hampshire Department of Health and Human Services, Division of Public Health Services, through application of clinical, epidemiologic, and administrative knowledge and skills for surveillance of communicable diseases; design and application of appropriate study of control strategies for acute and long-term problems; education of local health department staffs, other public health officials, health-care professionals, and the general public regarding proper epidemiologic and medical techniques for control of communicable diseases; design and administration of public health programs at the state and local level; conduct of clinical and surveillance programs for communicable disease diagnosis, treatment, and control; design and implementation of public health emergency preparedness plans; and human resource management to effectively implement these programs.

Candidates must be a physician, knowledgeable of communicable diseases, and have sufficient clinical skills and experience to rapidly arrive at proper clinical assessments and make recommendations regarding control measures. Candidates must also have thorough knowledge of epidemiology, including surveillance techniques, outbreak investigation, data analysis, statistical methods, and study design; good communication skills to interact with other staff, local health department staff, health-care providers, the general public, the press; ability to organize and conduct high-quality educational programs; and administrative and supervisory skills.

For a full job description or more information, please contact Dr. José T. Montero, State Epidemiologist at 603-271-4477, or by e-mail at [JMontero@dhhs.state.nh.us](mailto:JMontero@dhhs.state.nh.us).



➤ **Nurse Manager: Family Planning and Cancer & Cardiovascular Disease Screening, Tri-County Health Department, Colorado**

Tri-County Health Department (TCHD) is the largest local health department in Colorado, serving >1.3 million people in the Denver metropolitan region. This position is for a full-time Nurse Manager to manage two public health clinical programs in TCHD's Nursing Division. TCHD's Family Planning program provides examinations, birth control, education, and community referrals to >8,000 clients/year at five locations. TCHD's Cancer and Cardiovascular Disease Screening program, called Peak Wellness, serves >1,000 low-income persons/year and provides screening for breast and cervical cancer and cardiovascular disease, in addition to nutritional counseling and case management for clients with abnormal screening results.

The Nurse Manager provides nursing leadership to nursing staff teams, including direct and indirect supervision of staff, program planning and evaluation, and financial management at the program level, and is also responsible for development of policies, procedures, and standards of care within a clinical setting. Requirements include a bachelor of science in nursing and a master's degree from an accredited college or university, with major coursework in nursing, public health, public administration, or other related field; at least 5 years of progressively responsible public health or nursing experience, including 2 years at the supervisory level; knowledge of principles of public health nursing, project management, contract negotiation; leadership skills; and a current Colorado nursing license, current driver's license, and personal vehicle for on-the-job transportation (mileage reimbursement provided).

To apply, please send résumé and application to TCHD Human Resources (application is located at <http://www.tchd.org/jobs.htm>).

➤ **Post-Graduate Fellowship at the Institute for Health Metrics and Evaluation**

The Institute for Health Metrics and Evaluation (IHME) at the University of Washington is accepting applications for the Post-Graduate Fellowship program.

Post-graduate fellows will contribute directly to the overall research agenda of IHME and will be involved in all aspects of projects regarding health outcomes, health services, resource inputs, evaluations, and decision analytics.

Post-graduate fellowships are appointed at IHME for 1 year, with the possibility of renewal for a second year upon mutual agreement. Fellows receive full salary and benefits. The salary is \$45,000 during the first year and \$48,000 during the second year of the fellowship. Fellowships begin on September 1 and February 1 of each year.

Candidates must have an MD or PhD in the fields of quantitative methodology, statistics, health economics, health policy, demography, epidemiology, biostatistics, health services, or other related field. Candidates with an MSc/MPH degree and at least 3 years of related research experience will also be considered.

For more information regarding application requirements, visit <http://www.healthmetricsandevaluation.org/opportunities.html> or <http://www.healthmetricsandevaluation.org>, or send an e-mail message to [pgf@healthmetricsandevaluation.org](mailto:pgf@healthmetricsandevaluation.org).



**What's Happening?** — Births, marriages, and other significant events in the lives of current officers. ([Return to top](#))

**Mitesh Desai (EIS '07)** and Meera Srinivasan (below) were married on November 24, 2007, in Gaithersburg, Maryland.



Bryce Richard Greenwald (above) was born on February 16, 2008, and weighed in at 7.5 pounds. His mom, **Adrienne Sever (EIS '07)**, notes that this is the third baby so far for her class!

**Michael Cooper (EIS '06)**, the EIS field officer in Ohio, reports that he and Brooke M. Cooper, an “Ohio girl,” were married on December 30, 2007, in Hocking Hills, Ohio.





## Alumni Notes — Publications and significant events submitted by alumni. ([Return to top](#))



The Food and Drug Administration presented an Award of Merit to CDC's **Matthew Kuehnert (EIS '96)**, Michael Soucie, and **Lawrence Schonberger (EIS '71)** for their work on the U.S. Plasma-Derived Factor VIII vCJD Risk Assessment Working Group to ensure safety of the United States' blood supply.

Pictured l. to r., Matthew Kuehnert (EIS 96), Michael Soucie, and Lawrence Schonberger (EIS '71). Photo by Jim Gathany, *CDC Connects*.



Emily Z. Li was born on March 3, 2008. She weighted 7 lbs, 6 oz and was 20 in. long. Mother, Liping, and baby are doing well. Father **Jun Li (EIS '06)** is delighted.



**Seema Jain (EIS '04)** and **Jacek Skarbinski (EIS '05)** recently had a son, Isan. Mom is doing well and is scheduled to finish her IDS fellowship at Emory this June.



## **Epidemic Aid Investigations, the Fifth Decade: 1986–1995** ([Return to top](#)) **Stephen B. Thacker, EIS '76; Donna F. Stroup, EIS '01**

The bombing of the federal building in Oklahoma City (95-44; **Gail Stennies [EIS '94]**, **Patrick Kachur [EIS '93]**, and **Ann Dellinger [EIS '93]**) brought a mature program into a new world of terrorism. This decade also saw an enhanced agency role beyond urgent threats, with the transfer to CDC of the Office of Smoking and Health and the National Center for Health Statistics (Figure 1). A major prevention milestone in 1991 was the Public Health Service recommendation that all women of childbearing age take 400mg of folic acid each day to prevent neural tube defects in their infants. This decade was also marked by major events in prevention and control of infectious diseases, including certification that the Americas were free of poliomyelitis, the discovery of Hantavirus as a cause of serious disease in the southwestern United States, and the Institute of Medicine Report warning of the imminent threat of emerging infectious diseases.



Pictured l. to r., **Joyce Neal (EIS '92)**, **Ward Cates (EIS '74)**, **Polly Marchbanks (EIS '85)**, and **Pam Chin**



During 1986–1995, Epidemic Intelligence Service officers (EISOs) and colleagues investigated a total of 909 reported health problems (Table 1, last row; Figure 1), slightly less than the previous decade (see *EIS Bulletin*, October 2007). However, these health problems were larger and even more complex than ever before. As observed during the previous decade, infectious agents (i.e., bacterial, viral, and fungal) were the most common causes of health problems investigated, but the percentage of Epi-Aids related to disabilities, injuries, environmental exposures, cardiovascular disease, and other chronic diseases increased (177/909 [19.5%] during this decade, compared with 124/1,009 [12%] during the fourth decade; prevalence odds ratio = 1.35; confidence interval = 1.04–1.74). **Gregory Heath (EIS '85)** conducted the first physical activity Epi-Aid (86-2) to assess the impact of a community-based exercise program. Economic methods were well-accepted into EIS when **Michael Seigel (EIS '93)** used the software program SAMEC to measure smoking-attributable costs in Epi-Aid 94-76. **David Arday (EIS '92)** and **Monina Klevens (EIS '91)** surveyed tobacco outlets and discovered that the majority of them sold to minors despite the law forbidding such sales (93-29).

Hurricane Andrew stimulated an acute response led by **Lynn Quenemoen (EIS '92)**, **Robin Armenia-Cope (EIS '92)**, **Lore Lee (EIS '92)**, and **Kate Brett (EIS '91)** (92-84), with long-term follow-up by **Richard Troiano (EIS 93)** and **Sharon McDonnell (EIS '93)** (94-10). **Sherrilyn Wainwright (EIS '93)**, **Sharunda Buchanan (EIS '93)**, and **Hugh Mainzer (EIS '92)** confirmed >600 deaths resulting from heat exposure in Philadelphia (93-84). A year later, **Jan Semenza (EIS '95)**, **Joel Selanikio (EIS '95)**, and **Annemarie Wasley (EIS '94)** investigated heat deaths in four states, including Illinois, and discovered 465 deaths in Chicago and 85 in Milwaukee during 3 days (94-65,71).



During an investigation of school violence, **Richard Lowry (EIS '90)** discovered that 60% of students reported access to a handgun, and that 67% of students favored use of metal detectors in the school (92-52). **Robert Froehlke (EIS '89)** and **Patrick Meehan (EIS '88)** reported that 1.3% of children in Georgia were confirmed victims of child abuse or neglect, with >60,000 reports during 3 years (90-18).

Investigation of these health problems once again took EIS officers to every state and around the world (Figures 3 and 4). The first Epi-Aid conducted collaboratively with the Mexico Field Epidemiology Training Program involved **Herschel Lawson (EIS '88)** on the question of maternal mortality (90-10). In Epi-Aid 91-32, **David Swerdlow (EIS '89)**, **Duc Vugia (EIS '90)**, and **Eric Mintz (EIS '89)** investigated an outbreak involving >100,000 reported cases of cholera in Peru. This event represents the first time the disease had been discovered in that country during the 20<sup>th</sup> century. **Jane Koehler (EIS '91)** investigated the first case of cholera in Honduras (92-33) this century. Meanwhile, Duc Vugia investigated the first cholera outbreak in the United States associated with a commercial product (91-74). Across the Atlantic ocean, **Anthony Marfin (EIS '91)** investigated the first yellow fever case reported in Kenya since 1966 (93-39).

During a decade highlighted by emerging infectious diseases, several firsts were reported during Epi-Aid investigations. **John Spika (EIS '84)** documented the first human case of *Salmonella* Newport associated with antibiotic use in animals (86-1). **Jay Wenger (EIS '87)** discovered the



first occurrence of meat as a vehicle for *Listeria monocytogenes* (89-48). **Leigh Sawyer (EIS '85)** reported the first confirmed case of human ehrlichiosis (86-82), followed the next year by the second confirmation by **Edward Hayes (EIS '86)** (87-3). The first outbreak caused by *Escherichia coli* O104:H21, a non-shiga-producing bacterium, was reported by **Cynthia Whitney (EIS '93)** (94-41).

During a 1987 epidemic of cholera in Guinea Bissau that affected  $\geq 600$  persons, **Nathan Schaffer (EIS '86)** confirmed that an outbreak was spread among those who had eaten rice and fishmeal prepared by the same persons who had prepared an epidemic victim for burial (88-1). Certain investigations uncovered new vehicles for recognized pathogens. During Epi-Aid 90-76, **Richard Besser (EIS '91)** and **J. Todd Weber (EIS '90)** identified this to be the case when apple cider was discovered to carry *E. coli* O157:H7 (90-76). Three years later, *E. coli* O157:H7 associated with consumption of undercooked hamburgers sold at the Jack-in-the-Box<sup>®</sup> fast food chain led to hundreds of confirmed cases of bloody diarrhea and dozens of cases of hemolytic uremic syndrome during an investigation led by **Jessica Tuttle (EIS '91)**, **Xilla Ussery (EIS '91)**, and **Beth Bell (EIS '92)** (93-33,37).



**Nathan Schaffer (EIS '86)** during an investigation of cholera in Guinea Bissau  
(Courtesy, Matthew Naythons, National Geographic)

New locations for outbreak investigations provided interesting experiences for **Lisa Jackson (EIS '91)**, who identified transmission of meningococcal meningitis at a college bar (92-36), and **Sonia Richards (EIS '91)**, who investigated the first documented outbreak of multidrug-resistant tuberculosis in a prison (92-9).

Investigations involving viral diseases were also prominent during this decade. The first transmission of human immunodeficiency virus (HIV) from a screened cadaver donor was documented in Epi-Aid 86-9. The first naturally acquired Ebola hemorrhagic fever among nonhuman primates was discovered during an investigation led by **Stephen Ostroff (EIS '86)** (90-23). **William Paul (EIS '90)** documented the first occurrence of Japanese encephalitis since 1947 in the U.S. Trust Territories (91-24). Five members of the EIS class of 1992 (**Jeffrey Duchin, Craig Dalton, Mary Jane Schmidt Dalton, Ron Moolenaar, and Paul Zeitz**)



spearheaded the investigation of what was identified as Hantavirus pulmonary syndrome in the Four Corners area of the southwestern United States (93-69). **Curtis Fritz (EIS '94)** identified a new vector for dengue fever, *Aedes hensilli* (94-75).



**Paul Zeitz (EIS '92)** (far right) joins Rusty Enscoe (far left) and other workers at the Indian Health Service during a Hantavirus investigation in the Four Corners area of the southwestern United States.

**James McAuley (EIS '90)** uncovered 90 cases of trichinosis, leading the investigation of the largest outbreak in recent history (90-84). **Rana Hajjeh (EIS '93)** and **Eileen Schneider (EIS '93)** uncovered the first documented outbreak of coccidioidomycosis that resulted from an earthquake (94-31). Rana Hajjeh and **David Ashford (EIS '94)** investigated an outbreak of histoplasmosis at a cavers reunion.

## **Epi-Aids' Impact on Policy**

Increasingly, recommendations from Epi-Aids led to policy evaluation and modification. After an investigation by **Michael St Louis (EIS '85)** of an epidemic of diarrhea linked to *Salmonella*



*enteritidis* contamination of commercial pasta, a labeling change was instituted to prevent recurrence (86-59). The Food and Drug Administration recalled L-tryptophan when it was linked to eosinophilia-myalgia syndrome in a series of investigations by **Rossanne Philen (EIS '88)**, **Mary Kamb (EIS '89)**, and **Kees Nederlof (EIS '89)** (90-15, 36). **Sherry Mills (EIS '88)** and **Anne Trontell (EIS '90)** evaluated a policy prohibiting sales of tobacco to minors (90-79), and **William Kassler (EIS '90)** evaluated anonymous HIV testing and counseling (91-29).

Statistical and epidemiologic methods continued to evolve during this decade. Epi-Aid 86-10 was the first to document use of a time-series analysis (**Sue Binder [EIS '84]** and **Lee Harrison [EIS '85]**) to study food poisoning in Peru. Capture-recapture methods were used in 94-36 (**Stephen-Pat Kachur [EIS '93]**) to study school-related deaths. The first report of record-matching was done in 95-85 (**Brian Dulisse, EIS '94**) to study motor vehicle injuries among older drivers. Rana Hajjeh and David Ashford first used generalized estimating equations in 95-40 to study dengue in Palau.

Case-control studies became the method of choice during this decade, many employing matching. Frequently, both risk ratios and odds ratios were reported. As computer software became more widely used, logistic regression began to replace Mantel-Haenszel adjustment for risk estimates. Meanwhile, unfortunately, power calculations were reported rarely, and *P* values were often given without explanation of methods.





**Table 1. Topics of Epi Aids, 1986–1995**

Category	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
<b>Infectious disease</b>											
Bacterial*	28	34	27	35	32	29	28	35	33	31	312
Parasitic†	4	5	2	4	2	4	3	6	6	5	41
Mycobacteria§	3	1	4	1	5	5	16	11	4	7	57
Mycoplasma								1	1		2
Viral¶	23	23	20	19	19	21	17	13	20	17	192
HIV									2	1	3
Amoeba	1										1
Spirochete	1	1	2								4
Fungal**		1	3			3	3	1	6	2	19
Rickettsiae††		2	1	1	1		1	1			7
Syndrome§§	10	7	7	3	6	10	6	8	6	6	69
Pseudoepidemic	10	1	1	1	2		2		1	1	19
Mixed¶¶					1				1	1	3
Other				1	2				1		4
ID program eval					1	1	1	2	1	2	8
Cancer			2	1			1	1			5
Diabetes	1					1	1		1	1	5
CVD											0
Neurologic disease											0
Nutrition		1		1					1	1	4
Chronic-progm eval			1		1		3	2	2	9	18
Law evaluation				3	1		1	1			6
Chronic-other	1	2	2						1		6
Genetic											0
Birth defect	1		2		1	1	2	2	2	3	14
Repro health/MCH	2	2	1	1	1		1	1		1	10
Drug/vaccine reaction		1		1	3	3		1			9
Contaminated drug					1						1
Poisoning/toxin			1								1
Illicit drug use	1						3	1			5
Unintentional injury	1	2	1	1			4	3		1	13
Intentional injury	5	3		2	1				1	1	13
Environment***	6	3	6	4	6	7	7	13	8	10	70
Famine											0



Refugee health assessment												0
Error, commercial product prep												0
Unknown	1	1					1					3
Insect bite												0
Hysteria				1								1
Disability												0
Cancelled										1		1
Unknown	1	1					1					3
<b>Total Epi-Aids</b>	<b>89</b>	<b>89</b>	<b>83</b>	<b>81</b>	<b>85</b>	<b>86</b>	<b>98</b>	<b>105</b>	<b>98</b>	<b>86</b>	<b>909</b>	

\*Bacterial: for example, acute glomerulonephritis, anthrax, diphtheria, *E-coli*, impetigo, leptospirosis, plague, *Streptococcus*, *Salmonella*, chlamydia (psittacosis), *Shigella*, and *E.coli*.

†Parasitic: for example, amebiasis, malaria, trypanosomias, and cryptococcosis.

§Mycobacteria: for example, tuberculosis, leprosy, and atypical *Mycobacteria*.

\*Viral: for example, Coxsackie, encephalitis, fifth disease, hepatitis, influenza, mumps, polio, animal rabies, smallpox, varicella, measles, and hemorrhagic fevers.

\*\*Fungal: for example, histoplasmosis and aspergillosis.

††Rickettsiae: for example, tsutsugamushi fever, Rocky Mountain Spotted Fever, and typhus.

§§Syndromes: for example, conjunctivitis, febrile disease, respiratory disease, pneumonia, and mononucleosis.

\*\*Mixed infections: diarrhea, dysentery.

\*\*\*Environment: disasters, chemical exposure.



**Table 2. Major Epi-Aids, 1986–1995**

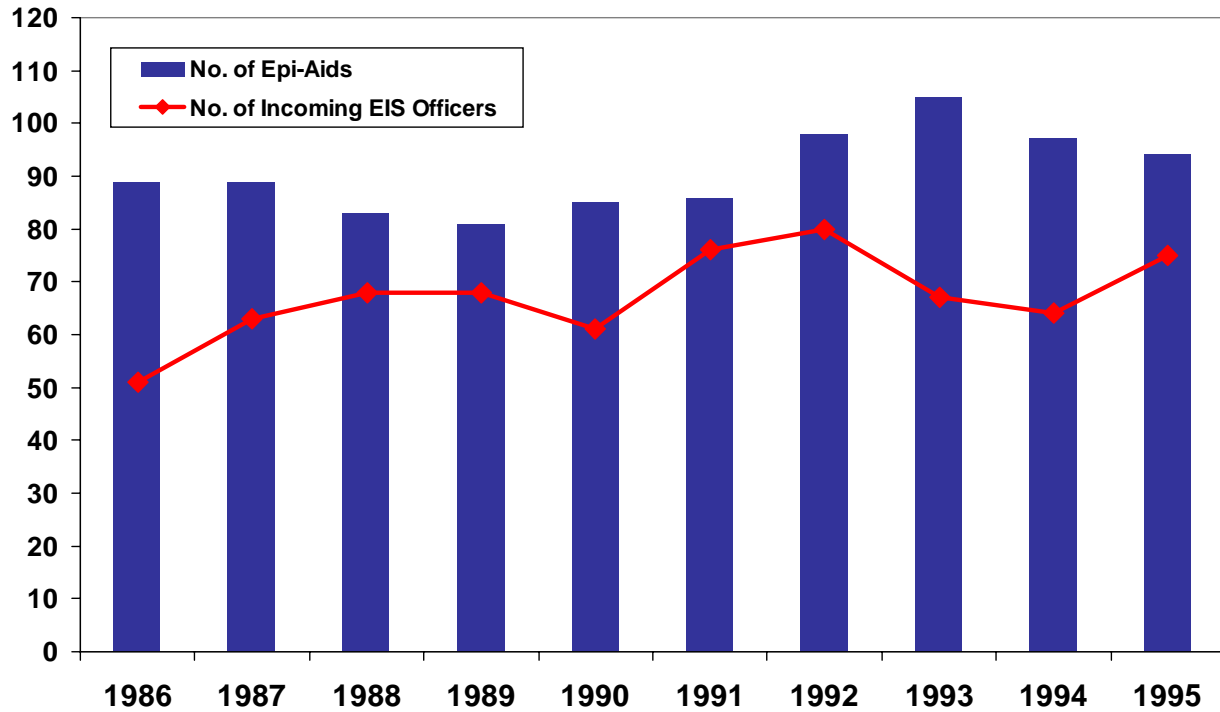
<b>Epi-Aid No.</b>	<b>EISO</b>	<b>Health Problem</b>	<b>Location</b>	<b>Magnitude</b>
86-15	Margaret Oxtoby	Volcanic eruption and mudslide	Colombia	1,200 hospitalized; 300 dead
87-1	Susan Robertson	Poliomyelitis resulting from lack of access to vaccination	Senegal	618 paralytic cases
88-1	Nathan Shaffer	Cholera resulting from a meal prepared by persons readying a body for burial	Guinea Bissau	>6,000 cases
88-10	Jessie Wing	Release of 53,000 lbs of nonhydrous hydrofluoric acid	Texas	939 persons ill at two hospitals, with eye and throat irritation
88-35	Patrick Moore	Meningococcal meningitis despite vaccination	Chad	3,300 cases
89-1	William Levine	<i>Shigella sonnei</i> from mass contamination during processing of cold food served on multiple airline flights; the initial flight carried a professional football team	28 states, the District of Columbia, and four countries	7,000 cases (estimated)
89-3	Stephanie Ostrowski	Volcanic eruption	Hawaii	10,000 homes exposed to lead
89-40	Patrick Moore	Group A meningococcal meningitis	Ethiopia	28,500 cases
89-41	Mary Agocs	Measles	Hungary	19,000 cases
89-73	Karen Farizo, Mary Lou Lindegren	Measles	Illinois	800
89-78	Robert Pinner	Meningococcal meningitis	Kenya	7,000 cases led to study of vaccine effectiveness
90-45	Ken Gershman	Syphilis	Marshall Islands	14,000 cases
90-83	Stephen Luby	<i>Salmonella</i> serotype Agona	South Carolina	850 cases
91-27	Jacqueline Gindler, Desiree Rodgers	Measles	Pennsylvania	13,000 members of a religious group
91-31	Caryn Bern	Acute hemorrhagic conjunctivitis	American Samoa	58% of a population of 45,000; first outbreak since 1969



Epi-Aid No.	EISO	Health Problem	Location	Magnitude
91-34	Sue Ann Brenner, Lynn Miller	Explosion in chemical warehouse	Thailand	4 deaths; 642 homes destroyed; 5,000 persons displaced; 60,000 persons with symptoms
91-39	Peter Strebel, Susan Davis, Kelley Scanlon	Measles	New York	2,000 cases; 4 deaths
91-53	Caryn Bern	Cyclone	Bangladesh	100,000 deaths
91-55	J. Todd Weber	Cholera	Ecuador	31,081 cases, 505 deaths
92-5	Robert Quick, Betsy Thompson	Cholera	El Salvador	600 cases
92-18	William Adams	Meningococcal meningitis	Tanzania	6,865 cases, 20% mortality
92-35	Elias Durry	Coccidioidomycosis	California	1,208 new cases
92-37	Richard Besser, Jason Eberhart-Phillip, Denise Koo	Cholera	Airplane flight: Buenos Aires-Lima-Los Angeles	131/336 passengers affected
92-51	Mark Papania	Measles	Texas	630 cases
93-30	Iain Hardy	Diphtheria	Russia	3,000 cases, 125 deaths
93-57	Robert Pond, William MacKenzie	<i>Cryptosporidium</i>	WI	44,000 physician visits, 4,400 hospitalizations, 725,000 lost days of productivity
94-12	John Murray, David Espey	Intertribal violence after presidential assassination	Burundi	Hundreds of thousands displaced; 50,000–200,000 deaths
94-18	Han Choi	Dracunculiasis	Chad	
95-2	Kathy Orloski-Snider	Plague	India	1,200 cases of pneumonic plague, 40 bubonic, 52 deaths during 1 month
95-5	Barbara Mahon	<i>Salmonella enteritidis</i> in Schwan's ice cream	National epidemic	11,000 cases in Georgia alone
95-40	Rana Hajjeh, David Ashford	Dengue	Palau	>800 cases
95-50	Thomas Boyce, Barbara Mahon	<i>Shigella sonnei</i>	Cruise ship	>1,300 passengers
95-85	Cindy Friedman	Cholera	Cape Verde Islands	11,757 cases, 244 deaths



**Figure 1. Number of Epi-Aids and number of EIS officers by year, 1986–1995**





**Figure 2. Timeline of selected significant events in the history of CDC, 1986–1995**

**1986**

Office of Smoking and Health moves back to CDC.

**1987**

National Center for Health Statistics moves to CDC.

**1988**

National Center for Chronic Disease Prevention and Health Promotion established.

**1989**

Eosinophilia-myalgia syndrome linked to L-tryptophan.

**1990**

CDC reports first case of HIV transmission from dentist to patient.

**1991**

Public Health Service recommends that all women of childbearing age consume 400 mg of folic acid daily to prevent neural tube defects.

**1992**

National Academy of Science releases *Emerging Infections: Microbial Threats to Health in the United States*.

Hurricane Andrews hits Florida.

**1993**

Hantavirus pulmonary syndrome investigated in the southwestern United States.

Cryptosporidiosis contaminates the Milwaukee water supply, sickening 400,000 persons.

**1994**

Polio elimination certified in the Americas.

Intertribal violence in Burundi creates refugee and public health crisis.

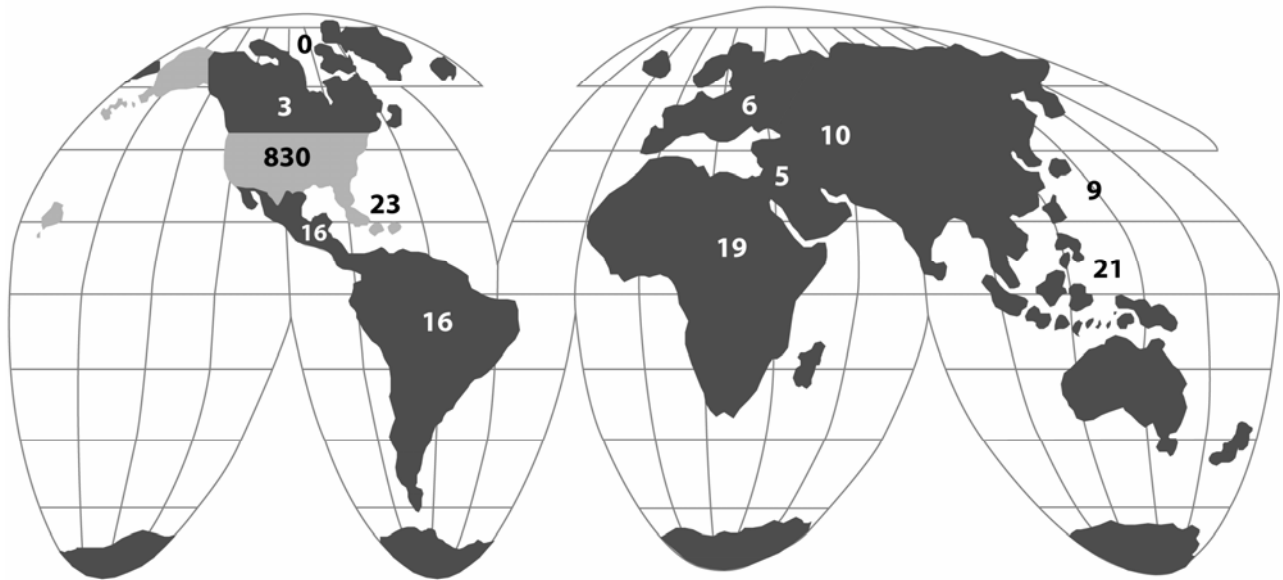
**1995**

Chicago heat wave kills >400 persons.

Bombing of federal building in Oklahoma City.



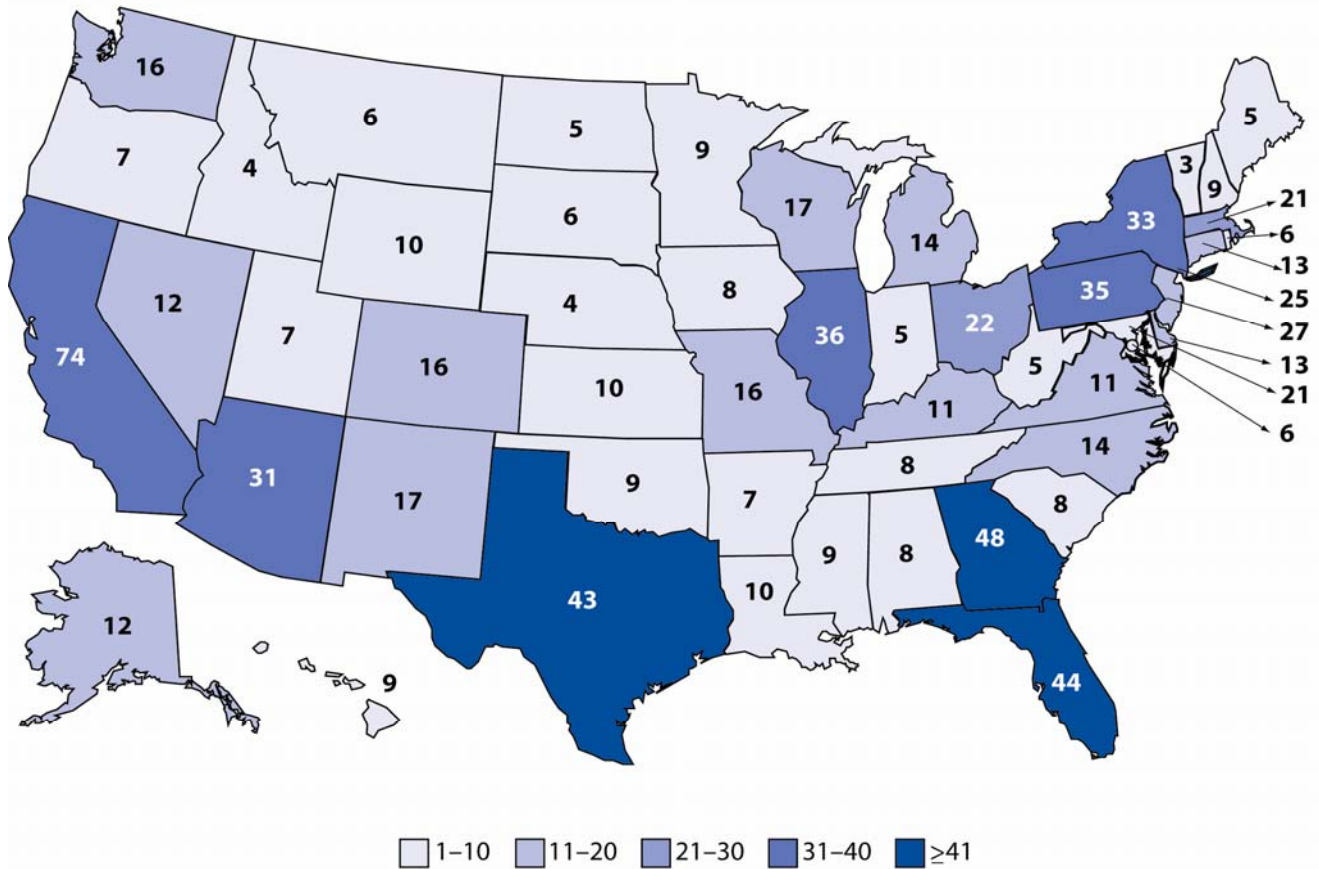
**Figure 4. Map of Epi-Aids by international region, 1986–1995\*.**



\*Numbers might sum to greater than total because of multiple countries involved in the same Epi-Aid.



Figure 3. Map of Epi-Aids by state, 1986–1995\*.



\*Numbers might sum to greater than total because of multiple states being involved in the same Epi-Aid.





## Quiz for the Reader

### *Debut of Epi Info™!*

1. Which Epi-Aid included the first field trial of the computer software package *Epi-Aid*, later to become *Epi Info*? Which EISO was in charge?

### *Bible school can be dangerous!*

2. Which Epi-aid investigated an outbreak of *Campylobacter* among children attending a vacation bible school in Kansas?

### *Read all about it!*

3. Which Epi-Aid was the first to use the media (newspaper) for surveillance?

### *Voice lessons?*

4. Which EISO investigated an outbreak of Legionnaires' disease among a Welsh male choir?

## Answers to Quiz from the February Issue of *EIS Bulletin*

1. All of these EIS officers were featured in *Epidemic Detectives*, a book written about EIS, by Fred Warshofsky, and published in 1963 by Scholastic Book Services.
2. These officers were among many featured in the *New Yorker* articles and in subsequent books written by Berton Roueché.
3. *The Disease Detectives* was written by Gerald Astor and published in 1983 by the New American Library, and these officers were among >20 officers featured in this book featuring CDC and EIS.