

Section 7: Recently Published Papers and Reports, 2008

Included below are selected publications by the Florida Department of Health (FDOH) which appeared in peer reviewed journals during the calendar year of 2008. The complete title, abstract, and reference are included. The publications are ordered by last name of the first author, regardless of whether or not that author is a FDOH employee. All FDOH employees' names are highlighted in bold. Abstracts and titles are re-printed in the same format that they appeared in their respective journals.

Hepatitis B Vaccine: A Seven Year Study of Adherence to the Immunization Guidelines and Efficacy in HIV-1 Positive Adults

Vaccination against hepatitis B virus (HBV) has been recommended for all high-risk adults since 1982. Since the advent of highly active antiretroviral therapy, few studies have examined adherence to the Infectious Diseases Society of America (IDSA) and Advisory Committee on Immunization Practices (ACIP) guidelines for hepatitis B vaccination in persons infected with HIV. This was a seven-year retrospective, cross-sectional analysis of HBV vaccination practices in HIV-1-positive adults treated in an urban ambulatory care center. Compliance with screening, hepatitis B vaccination recommendations, and response to vaccination were assessed. Of the 1,601 charts reviewed, 717 persons were eligible for vaccination against hepatitis B. Of these patients, 503 received at least one dose of vaccine, but only 356 patients completed the three-dose series. Vaccine response was associated with CD4 count ($p = 0.006$) and viral load ($p = 0.001$) at the time of the first dose. However, development of hepatitis B surface antibody was seen at all CD4 counts and viral loads. The multivariate analysis showed only the HIV viral load was predictive of immunologic response. Twenty of the vaccine-eligible patients who did not receive vaccination were infected with HBV during the study period. No vaccinated persons contracted hepatitis B. Failure to implement these guidelines represents a missed opportunity to prevent disease. In our study, HIV viral load was better than CD4 count as a predictor of response to the HBV vaccination. However, neither low CD4 count nor high HIV viral load should be used as justification to delay vaccination of high-risk persons.

Bailey C, Smith V, **Sands M**. "Hepatitis B Vaccine: A Seven Year Study of Adherence to the Immunization Guidelines and Efficacy in HIV-1 Positive Adults." *IJID*, 2008, Vol. 12, No. 6, e77–e83.

Feasibility of Shortening Respiratory Isolation with a Single Sputum Nucleic Acid Amplification Test

Serial smear analysis to guide respiratory isolation (RI) of patients with suspected tuberculosis (TB), the majority of whom will be found not to have TB, leads to expensive and unnecessary isolation, and may potentially result in decreased vigilance of subjects with respiratory compromise. To compare the performance of a single first-sputum, *Mycobacterium tuberculosis*-specific nucleic acid amplification (NAA) test with three sputum smears for assessing the need for RI. Prospective evaluation of 493 patients with suspected TB (74% HIV positive) admitted to RI in a major county hospital in the United States, who had at least three sputum smears and material available from the first sample for additional NAA testing. Accuracy of the first sputum NAA result and serial smears for identifying patients with potentially infectious TB who truly require RI was determined. Forty-six patients (9.3%) had TB confirmed by culture. First-sputum NAA test detected all patients with TB who had a positive smear ($n = 35$), even when the first of the three specimens was smear negative. In addition, when compared with serial smears, the first-sputum NAA had a higher sensitivity (0.87; 95% confidence interval [CI], 0.74–0.95) and specificity (1.0) in the detection of subjects with positive *M. tuberculosis* cultures (smear sensitivity, 0.76; 95% CI, 0.61–0.87; and specificity, 0.96; 95% CI, 0.94–0.98). A single first-sputum NAA testing can

rapidly and accurately identify the subset of patients with suspected TB who require RI according to serial sputum smears. Its potential use to shorten RI time does not preclude the need to obtain subsequent specimens for culture.

Campos M, Quartin A, Mendes E, Abreu A, Gurevich S, Echarte L, Ferreira T, Cleary T, **Hollender E, Ashkin D**. "Feasibility of Shortening Respiratory Isolation With a Single Sputum Nucleic Acid Amplification Test." *Am J of Resp and Critical Care Med*, 2008 Vol. 178, pp. 300-305.

Outbreaks of Noroviral Gastroenteritis in Florida, 2006–2007

Noroviruses are an important cause of sporadic cases and outbreaks of acute gastroenteritis. During 2006–2007, widespread increases in acute gastroenteritis outbreaks consistent with norovirus were observed in the United States. We conducted a statewide survey to characterize norovirus outbreak activity in Florida during a 1-year period. From July 2006 to June 2007, 257 outbreaks of norovirus gastroenteritis were identified in 39 of Florida's 67 counties. About 44% of outbreaks were laboratory confirmed as norovirus and 93% of these were due to genogroup GII. About 63% of outbreaks occurred in long-term care facilities and 10% of outbreaks were classified as foodborne. The median number of ill persons per outbreak was 24, with an estimated total of 7,880 ill persons. During the study period, norovirus outbreak activity in Florida was widespread, persistent, and consistent with increased activity observed in other parts of the country.

Doyle TJ, Stark L, Hammond R, Hopkins R. "Outbreaks of Noroviral Gastroenteritis in Florida, 2006–2007." *Epidemiology and Infection*, 2008, published online by Cambridge University Press, doi:10.1017/S0950268808000630.

Outbreak of Giardiasis and Cryptosporidiosis Associated with a Neighborhood Interactive Water Fountain — Florida, 2006

An outbreak of giardiasis and cryptosporidiosis was identified in central Florida in September 2006. Environmental and epidemiological investigations indicated the likely source was a neighborhood interactive water fountain in a large upscale urban neighborhood. Forty nine cases meeting the case definition were identified, of which 38 were giardiasis, nine were cryptosporidiosis, and two were co-infections. The median age of cases was five years old with 32 (65.3%) cases being male. This outbreak and other similar occurrences highlight the need to design and implement more stringent disinfection practices and filtration requirements for treated interactive water venues. *Giardia* cysts and *Cryptosporidium* oocysts are small, chlorine resistant and may require supplemental disinfection methods such as ultraviolet light irradiation, ozonation, or chlorine dioxide use. Behavior modification by users of these types of venues is also necessary to prevent disease transmission. This is the first documentation of a giardiasis outbreak associated with exposure to an interactive water fountain in the United States.

Eisenstein L, Bodager D, Ginzi D. "Outbreak of Giardiasis and Cryptosporidiosis Associated with a Neighborhood Interactive Water Fountain — Florida, 2006." *Journal of Environmental Health*, 2008, Vol. 71, No. 3, pp. 18-22.

Coordinated Care Special Needs Shelter

On a national level, Hurricane Katrina highlighted gaps in services and demonstrated the need for good community practices of care for those medically at risk during disaster events. Locally, the Brevard County Health Department (BCHD) initiated a response to this need in 1992 after returning from

deployment for Hurricane Andrew. Having a 72-mile-long Atlantic coastline; a county that is one-third water and mostly flood plains; more than 500,000 residents, one-fifth of whom have special needs; and a robust manufactured housing community, Brevard recognized its own vulnerability. BCHD took the lead by creating dialogues with interested community members – those with special needs and those caring for people with special needs. These discussions led to community partnerships and mutual aid agreements culminating in the Coordinated Care Special Needs Shelter (CCSNS) model practice – a virtual network of care wrapping all of the necessary goods and services of the special needs independent citizen safely around them. Victorious events of this network of care were successfully demonstrated in the 2004 hurricane season, when Brevard County expertly sheltered and safely shepherded home or to safe havens 100% of its most vulnerable citizens on three separate occasions, consecutively.

Emgushov O. “Coordinated Care Special Needs Shelter.” *Public Health Reports*, 2008, Vol. 123, pp. 371-375.

Cancer Risk in People Infected with Human Immunodeficiency Virus in the United States

Data are limited regarding cancer risk in human immunodeficiency virus (HIV)-infected persons with modest immunosuppression, before the onset of acquired immunodeficiency syndrome (AIDS). For some cancers, risk may be affected by highly active antiretroviral therapy (HAART) widely available since 1996. We linked HIV/AIDS and cancer registries in Colorado, Florida and New Jersey. Standardized incidence ratios (SIRs) compared cancer risk in HIV-infected persons (initially AIDS-free) during the 5-year period after registration with the general population. Poisson regression was used to compare incidence across subgroups, adjusting for demographic factors. Among 57,350 HIV-infected persons registered during 1991-2002 (median CD4 count 491 cells/mm³), 871 cancers occurred during follow-up. Risk was elevated for Kaposi sarcoma (KS, SIR 1,300 [n = 173 cases]), non-Hodgkin lymphoma (NHL, 7.3 [n = 203]), cervical cancer (2.9 [n = 28]) and several non-AIDS-defining malignancies, including Hodgkin lymphoma (5.6 [n = 36]) and cancers of the lung (2.6 [n = 109]) and liver (2.7 [n = 14]). KS and NHL incidence declined over time but nonetheless remained elevated in 1996-2002. Incidence increased in 1996-2002 compared to 1991-1995 for Hodgkin lymphoma (relative risk 2.7, 95%CI 1.0-7.1) and liver cancer (relative risk infinite, one-sided 95%CI 1.1-infinity). Non-AIDS-defining cancers comprised 31.4% of cancers in 1991-1995, versus 58.0% in 1996-2002. For KS and NHL, risk was inversely related to CD4 count, but these associations attenuated after 1996. We conclude that KS and NHL incidence declined markedly in recent years, likely reflecting HAART-related improvements in immunity, while incidence of some non-AIDS-defining cancers increased. These trends have led to a shift in the spectrum of cancer among HIV-infected persons.

Engels EA, Biggar RJ, Hall HI, Cross H, Crutchfield A, Finch JL, **Grigg R, Hylton T**, Pawlish KS, McNeel TS, Goedert JJ. “Cancer Risk in People Infected with Human Immunodeficiency Virus in the United States.” *Int J Cancer*, 2008, Vol. 123, No. 1, pp. 187-94.

Viral Resuppression and Detection of Drug Resistance Following Interruption of a Suppressive Non-nucleoside Reverse Transcriptase Inhibitor-based Regimen

Interruption of a non-nucleoside reverse transcriptase inhibitor (NNRTI)-regimen is often necessary, but must be performed with caution because NNRTIs have a low genetic barrier to resistance. Limited data exist to guide clinical practice on the best interruption strategy to use. Patients in the drug-conservation arm of the Strategies for Management of Antiretroviral Therapy (SMART) trial who interrupted a fully suppressive NNRTI-regimen were evaluated. From 2003, SMART recommended interruption of an

NNRTI by a staggered interruption, in which the NNRTI was stopped before the NRTIs, or by replacing the NNRTI with another drug before interruption. Simultaneous interruption of all antiretrovirals was discouraged. Resuppression rates 4-8 months after reinitiating NNRTI-therapy were assessed, as was the detection of drug-resistance mutations within 2 months of the treatment interruption in a subset ($n = 141$). Overall, 601/688 (87.4%) patients who restarted an NNRTI achieved viral resuppression. The adjusted odds ratio (95% confidence interval) for achieving resuppression was 1.94 (1.02-3.69) for patients with a staggered interruption and 3.64 (1.37-9.64) for those with a switched interruption compared with patients with a simultaneous interruption. At least one NNRTI-mutation was detected in the virus of 16.4% patients with simultaneous interruption, 12.5% patients with staggered interruption and 4.2% patients with switched interruption. Fewer patients with detectable mutations (i.e. 69.2%) achieved HIV-RNA of 400 copies/ml or less compared with those in whom no mutations were detected (i.e. 86.7%; $P = 0.05$). In patients who interrupt a suppressive NNRTI-regimen, the choice of interruption strategy may influence resuppression rates when restarting a similar regimen. NNRTI drug-resistance mutations were observed in a relatively high proportion of patients. These data provide additional support for a staggered or switched interruption strategy for NNRTI drugs.

Fox Z, Phillips A, Cohen C et al and the SMART Study Group including **Sands M**. "Viral Resuppression and Detection of Drug Resistance Following Interruption of a Suppressive Non-nucleoside Reverse Transcriptase Inhibitor-based Regimen." *AIDS*, 2008, Vol. 22, pp. 2279-2289.

Ciguatera Fish Poisoning: Treatment, Prevention and Management

Ciguatera Fish Poisoning (CFP) is the most frequently reported seafood-toxin illness in the world, and it causes substantial physical and functional impact. It produces a myriad of gastrointestinal, neurologic and/or cardiovascular symptoms which last days to weeks, or even months. Although there are reports of symptom amelioration with some interventions (e.g. IV mannitol), the appropriate treatment for CFP remains unclear to many physicians. We review the literature on the treatments for CFP, including randomized controlled studies and anecdotal reports. The article is intended to clarify treatment options, and provide information about management and prevention of CFP, for emergency room physicians, poison control information providers, other health care providers, and patients.

Friedman MA, Fleming LE, Fernandez M, Bienfang P, Schrank K, Dickey R, Bottein M-Y, Backer L, Ayyar R, Weisman R, **Watkins SM**, Granade R, **Reich A**. "Ciguatera Fish Poisoning: Treatment, Prevention and Management." *Marine Drugs*, 2008, Vol. 6, pp. 456-479.

Tracking Childhood Exposure to Lead and Developmental Disabilities: Examining the Relationship in a Population-Based Sample

Elevated levels of lead detected in the blood are associated with harmful effects on children's learning and behavior. The goal of the current Environmental Public Health Tracking Project was to examine the relationship between selected developmental disabilities and childhood blood lead levels in a population-based sample. Using extant datasets from the Florida Department of Health, Childhood Lead Poisoning Prevention Program, and the Florida Department of Education, we were able to isolate a linked dataset of children who were tested for lead poisoning and attended public schools. Special education categories served as a proxy for developmental disabilities; the prevalence of these disabilities in the sample of children with blood lead levels was compared with that in children who attended the same schools but were not tested for lead poisoning. Results indicated that children screened for lead poisoning were more likely to be receiving services for behavior problems, mental retardation, learning disabilities, or a speech-language impairment than other children attending the same schools. Implications for using administrative datasets to examine this relationship are discussed.

Kaiser MY, **Kearney G**, Scott KG, **DuClos C**, **Kurlfink J**. "Tracking Childhood Exposure to Lead and Developmental Disabilities: Examining the Relationship in a Population-Based Sample." *J Public Health Management Practice*, 2008, Vol. 16, No. 6, pp. 577-580.

Mercury Levels and Fish Consumption Practices in Women of Child-bearing Age in the Florida Panhandle

The southeastern United States, and in particular the coastal areas along the Gulf of Mexico (Gulf Coast) in Florida, experiences some of the highest levels of mercury deposition in the country. Although the State of Florida's coastal border is among the longest in the United States, and the State has issued fish consumption advisories due to mercury on multiple fish species, few data have been systematically collected to assess mercury levels in the human population of the state or to assess the efficacy of the consumption advisories. Because of the generally high rate of seafood consumption among coastal populations, the human population in the Florida Panhandle, near Pensacola, FL is potentially exposed to elevated levels of mercury. In the present study, we analyzed hair mercury levels in women of childbearing age (16-49 years) who had resided near Pensacola, FL for at least 1 year. We also surveyed the fish consumption practices of the cohort and evaluated awareness of the Florida Fish Consumption Advisory. Hair mercury levels were significantly higher in women who consumed fish within the 30 days prior to sampling ($p < 0.05$) and in those women who were unaware of the consumption advisory ($p < 0.05$). Only 31% of the women reported knowledge of the consumption advisory and pregnant women exhibited lower awareness of the advisory than non-pregnant women. The data suggest that public health interventions such as education and fish advisories have not reached the majority of women in the counties surrounding Pensacola who are most at risk from consumption of fish with high levels of mercury.

Karouna-Renier NK, Rao KR, **Lanza JJ**, **Rivers SD**, Wilson PA, Hodges DK, Levine KE, Ross GT. "Mercury Levels and Fish Consumption Practices in Women of Child-bearing Age in the Florida Panhandle." *Environmental Research*, Vol. 108, No. 3, 2008, pp. 320-326.

A Procedure for Detecting Childhood Cancer Clusters Near Hazardous Waste Sites in Florida

Despite over 20 years of research on childhood cancer clusters and hazardous waste sites, little evidence has been produced to indicate a causal relationship. Nevertheless, the perception of a childhood cancer cluster being located near a hazardous waste site can raise fear and uncertainty, and it demands attention from health officials. To investigate this public health concern, the author used the spatial-scan statistical software SaTScan to detect childhood cancer clusters and their proximity to National Priority List (NPL), or Superfund, sites in Florida. In the ecological study reported here, "most likely" clusters were defined as those with a p-value of $< .05$. Distance served as a proxy for exposure; a geographical information system (GIS) was used to determine the number of clusters within a predetermined distance of an NPL site. Spatial clusters were found to occur randomly throughout the state, with most clusters being identified in the more populated counties, and clusters less likely to occur near an NPL site. This article attempts to explain the utility of an emerging public health surveillance tool for detecting cancer clusters near hazardous waste sites. Despite several epidemiological limitations of the study, as well as the fact that there are other environmental exposure hazards such as Toxic Release Inventory facilities and landfills, the SaTScan program proved useful as a surveillance tool for generating more in-depth studies.

Kearney G. "A Procedure for Detecting Childhood Cancer Clusters Near Hazardous Waste Sites in Florida." *Journal of Environmental Health*, 2008, Vol. 70, No. 9, pp. 29-34.

Potential Effects of Electronic Laboratory Reporting on Improving Timeliness of Infectious Disease Notification — Florida, 2002-2006

Electronic laboratory reporting (ELR) potentially can improve the timeliness of notifiable disease case reporting and subsequent disease control activities, but the extent of this improvement and the resulting effects on the workload of state or local surveillance teams are unknown. To estimate those effects, investigators from the Florida Department of Health (FDOH) evaluated the timeliness of reporting for four notifiable diseases of varying incubation periods: salmonellosis, shigellosis, meningococcal disease, and hepatitis A. Investigators then calculated the potential improvement expected with ELR using the assumption that ELR can reduce to 1 day the time from completion of a diagnostic laboratory test to notification of the county health department (CHD) of the result. This report summarizes the results of that analysis, which showed that ELR would reduce the total time from symptom onset to CHD notification of a case by nearly half for salmonellosis (from 12 days to 7 days) and shigellosis (from 10 days to 6 days), but would produce no change for meningococcal disease (4 days) and minimal improvement for hepatitis A (from 13 days to 10 days). In Florida, the benefits of ELR for reporting timeliness likely will vary by disease.

Kite-Powell A, Hamilton JJ, Hopkins RS, DePasquale JM. "Potential Effects of Electronic Laboratory Reporting on Improving Timeliness of Infectious Disease Notification — Florida, 2002-2006." *MMWR*, 2008, Vol. 57, No. 49, pp. 1325-1328.

Florida Red Tide and Human Health: A Pilot Beach Conditions Reporting System to Minimize Human Exposure

With over 50% of the US population living in coastal counties, the ocean and coastal environments have substantial impacts on coastal communities. While many of the impacts are positive, such as tourism and recreation opportunities, there are also negative impacts, such as exposure to harmful algal blooms (HABs) and water borne pathogens. Recent advances in environmental monitoring and weather prediction may allow us to forecast these potential adverse effects and thus mitigate the negative impact from coastal environmental threats. One example of the need to mitigate adverse environmental impacts occurs on Florida's west coast, which experiences annual blooms, or periods of exuberant growth, of the toxic dinoflagellate, *Karenia brevis*. *K. brevis* produces a suite of potent neurotoxins called brevetoxins. Wind and wave action can break up the cells, releasing toxin that can then become part of the marine aerosol or sea spray. Brevetoxins in the aerosol cause respiratory irritation in people who inhale it. In addition, asthmatics who inhale the toxins report increased upper and lower airway symptoms and experience measurable changes in pulmonary function. Real-time reporting of the presence or absence of these toxic aerosols will allow asthmatics and local coastal residents to make informed decisions about their personal exposures, thus adding to their quality of life. A system to protect public health that combines information collected by an Integrated Ocean Observing System (IOOS) has been designed and implemented in Sarasota and Manatee Counties, Florida. This system is based on real-time reports from lifeguards at the eight public beaches. The lifeguards provide periodic subjective reports of the amount of dead fish on the beach, apparent level of respiratory irritation among beach-goers, water color, wind direction, surf condition, and the beach warning flag they are flying. A key component in the design of the observing system was an easy reporting pathway for the lifeguards to minimize the amount of time away from their primary duties. Specifically, we provided a Personal Digital Assistant for each of the eight beaches. The portable unit allows the lifeguards to report from their guard tower. The data are transferred via wireless Internet to a website hosted on the Mote Marine Laboratory Sarasota Operations of the Coastal Ocean Observation Laboratories (SO COOL) server. The system has proven to be robust

and well received by the public. The system has reported variability from beach to beach and has provided vital information to users to minimize their exposure to toxic marine aerosols.

Kirkpatrick B, Currier R, Nierenberg K, **Reich A**, Backer LC, Stumpf R, Fleming L, Kirkpatrick G. "Florida Red Tide and Human Health: A Pilot Beach Conditions Reporting System to Minimize Human Exposure." *Science of the Total Environment*, 2008, Vol. 402, No. 1, pp. 1-8.

Cryptosporidiosis Outbreak in a Nassau County, Florida, Return Travel Group from Ireland, May 24, 2006-June 4, 2006

The Nassau County Health Department (NCHD) in Florida investigated an outbreak of gastrointestinal (GI) illness in a returning choral group who toured Ireland from May 24 to June 4, 2006. The travel group, consisting predominantly of retirees, had performed at several churches and at a dinner theater in Ireland. The NCHD administered a telephone questionnaire to 40 of the 41 group members to examine possible water exposures; common meals; and food, travel, and clinical histories. The results of the questionnaire showed that 29 people met the case definition for the outbreak. Five stool samples from travel group members tested positive for *Cryptosporidium parvum*, a species that is animal in origin and often spread through an environmental contamination with animal feces. All five positive samples were subtyped 11aA16G1R1b, a strain that scientists at the Centers for Disease Control and Prevention (CDC) Division of Parasitic Diseases detected twice in 2006 in other human specimens from Northern Ireland.

Lazensky R, Hammond RM, Van Zile K, Geib K. "Cryptosporidiosis Outbreak in a Nassau County, Florida, Return Travel Group from Ireland, May 24, 2006-June 4, 2006." *J Environ Health*, 2008, Vol. 71, No. 2, pp. 20-4.

Gender and Race Specific Comparison of Tobacco-Associated Cancer Incidence Trends in Florida with SEER Regional Cancer Incidence Data

Analysis of state and national tobacco-associated cancer trends is critical for the identification of high-risk regions of the country that require the attention of the public health community. This study compares Florida race- and gender-specific cancer trends with pooled data obtained from nine Surveillance, Epidemiology, and End Results (SEER-9) registries. Age-adjusted, race- and gender-specific cancer incidence trends were evaluated using joinpoint regression analysis. Pooled, age-adjusted incidence rates and standardized incidence rate ratios were computed for each cancer for the years 1999-2003 to compare Florida to SEER-9. Relative to SEER-9 whites and irrespective of gender, lung cancer rates in white Floridians were elevated through the 1990s. However, lung cancer rates have recently declined at a steeper rate among white Floridians than among SEER-9 whites. For years 1999-2003, black Floridians had significantly lower rates of lung, bladder, pancreas, and kidney cancer relative to SEER-9 blacks. The opposite pattern was evident for white Floridians with significantly higher rates of lung and laryngeal cancer relative to SEER-9 whites. Progress in the reduction of tobacco-associated cancers among white Floridians lags behind the progress noted in SEER-9 registries suggesting that additional state-directed smoking prevention and smoking cessation measures are needed.

Lee DJ, Voti L, MacKinnon J, Koniaris LG, Fleming LE, **Huang Y**, Wohler B, Franceschi D, Dietz NA, Sherman R, Soler-Vilá H. "Gender and Race Specific Comparison of Tobacco-Associated Cancer Incidence Trends in Florida with SEER Regional Cancer Incidence Data." *Cancer Causes and Control*, 2008, Vol. 19, No. 7, pp. 711-23.

Men Who Have Sex with Men: Racial/Ethnic Disparities in Estimated HIV/AIDS Prevalence at the State and County Level, Florida

Population-based HIV/AIDS prevalence estimates among men who have sex with men (MSM) have been unavailable, but have implications for effective prevention efforts. Prevalent (living) Florida HIV/AIDS cases reported through 2006 (numerators) were stratified by race/ethnicity and HIV exposure category. Based on previous research, MSM populations were posited as 4-10% of all males aged >13 years in each subgroup (denominators). At the estimated lower and upper plausible bounds, respectively, HIV/AIDS prevalence per 100,000 MSM was significantly higher among black (8,292.6-20,731.4); Hispanic (5,599.5-13,998.7); and Asian/Pacific Islander, American Indian or multi-racial (4,942.6-12,356.8) MSM than among white MSM (3,444.9-8,612.3). HIV/AIDS prevalence among all MSM was 13.8-36.9 times that among all other males. Across 19 high-morbidity counties, MSM HIV/AIDS prevalence was highest among those in the most populous counties and highest among blacks. This methodology, adaptable by other states, facilitates calculation of plausible MSM HIV/AIDS prevalence to guide HIV prevention/care community planners and MSM.

Lieb S, Arons P, Thompson DR, Santana AM, Liberti TM, Maddox L, Bush T, Fallon SJ. "Men Who Have Sex with Men: Racial/Ethnic Disparities in Estimated HIV/AIDS Prevalence at the State and County Level, Florida." *AIDS and Behav.*, 2008 [Epub ahead of print], DOI 10.1007/s10461-008-9411-3.

Primary Amebic Meningoencephalitis — Arizona, Florida, and Texas, 2007

Primary amebic meningoencephalitis (PAM) is a rare but nearly always fatal disease caused by infection with *Naegleria fowleri*, a thermophilic, free-living amoeba found in freshwater environments. Infection results from water containing *N. fowleri* entering the nose, followed by migration of the amoebae to the brain via the olfactory nerve. In 2007, six cases of PAM in the United States were reported to CDC; all six patients died. This report summarizes the investigations of the cases, which occurred in three southern tier states (Arizona, Florida, and Texas) during June-September and presents preliminary results from a review of PAM cases during 1937-2007. Because deaths from PAM often prompt heightened concern about the disease among the public, an updated and consistent approach to *N. fowleri* risk reduction messages, diagnosis and treatment, case reporting, and environmental sampling is needed.

Matthews S, Ginzi D, Walsh D, Sherin K, Middaugh J, Hammond R, Bodager D, et al. "Primary Amebic Meningoencephalitis — Arizona, Florida, and Texas, 2007". *MMWR*, 2008, Vol. 57, No. 21, pp. 573-577.

Florida Bladder Cancer Trends 1981-2004: Minimal Progress in the Reduction of Advanced Disease

While bladder cancer (BC) is the 4th most common cancer in males in the U.S. there are no accepted screening recommendations for this disease despite the fact that the greatest risk factors for BC are identifiable and modifiable (i.e., tobacco exposure). Survival from BC is highly correlated with stage of disease. We sought to ascertain if there have been any changes in the stage at presentation of BC in Florida over the last 25 years. The Florida Cancer Data Registry was evaluated for all BC cases between 1981 and 2004. Cases were coded and analyzed as local, in-situ or advanced (regional and distant) disease. Cases were stratified by demographic groups. The overall incidence of BC declined slightly over the last 25 years from 24.3 to 20.5 cases per 100,000. Overall, non-Hispanic White males have a nearly three-fold incidence of BC compared to Black males, while Hispanic males have approximately a two-fold higher incidence compared to Black males. Non-Hispanic White females have nearly a twofold

increased incidence compared to both Black and Hispanic females. Advanced stage BC decreased minimally over 25 years; White and Black females had the smallest decline in annual percentage changes of advanced BC. Despite knowledge of the main risk factors for BC, there have been only small decreases in the percentage of patients presenting with advanced cases in Florida over the last 25 years. BC may thus be an appropriate cancer for increased public awareness campaigns and potentially targeted screening of high-risk populations.

Nieder AM, MacKinnon JA, **Huang Y**, Fleming LE, Koniaris LG, Lee DJ. "Florida Bladder Cancer Trends 1981-2004: Minimal Progress in the Reduction of Advanced Disease." *J Urol*, 2008, Vol. 179, No. 2, pp. 491-5.

Public Health Consequences of a False-Positive Laboratory Test Result for *Brucella* — Florida, Georgia, and Michigan, 2005

Human brucellosis, a nationally notifiable disease, is uncommon in the United States. Most human cases have occurred in returned travelers or immigrants from regions where brucellosis is endemic, or were acquired domestically from eating illegally imported, unpasteurized fresh cheeses. In January 2005, a woman aged 35 years who lived in Nassau County, Florida, received a diagnosis of brucellosis, based on results of a *Brucella* immunoglobulin M (IgM) enzyme immunoassay (EIA) performed in a commercial laboratory using analyte specific reagents (ASRs); this diagnosis prompted an investigation of dairy products in two other states. Subsequent confirmatory antibody testing by *Brucella* microagglutination test (BMAT) performed at CDC on the patient's serum was negative. The case did not meet the CDC/Council of State and Territorial Epidemiologists' (CSTE) definition for a probable or confirmed brucellosis case, and the initial EIA result was determined to be a false positive. This report summarizes the case history, laboratory findings, and public health investigations. CDC recommends that *Brucella* serology testing only be performed using tests cleared or approved by the Food and Drug Administration (FDA) or validated under the Clinical Laboratory Improvement Amendments (CLIA) and shown to reliably detect the presence of *Brucella* infection. Results from these tests should be considered supportive evidence for recent infection only and interpreted in the context of a clinically compatible illness and exposure history. EIA is not considered a confirmatory *Brucella* antibody test; positive screening test results should be confirmed by *Brucella*-specific agglutination (i.e., BMAT or standard tube agglutination test) methods.

Pragle A, Blackmore C, Clark TA, Ari MD, Wilkins PP, Gross D, Stern EJ. "Public Health Consequences of a False-Positive Laboratory Test Result for *Brucella* — Florida, Georgia, and Michigan, 2005." *MMWR*, 2008, Vol. 57, No. 22, pp. 603-5.

Mortality Surveillance: 2004 to 2005 Florida Hurricane-Related Deaths

During 2004 and 2005, Florida was struck by eight hurricanes, resulting in 213 deaths. The Department of Health and Florida medical examiners monitor hurricane mortality surveillance. This study analyzed hurricane-related deaths reported by the Florida Medical Examiners Commission (MEC) for 2004 to 2005. The objectives of this study were to 1) describe the Florida hurricane-related mortality for 2004 and 2005 2) accurately characterize the hurricane-related deaths and 3) identify strategies to prevent or reduce future hurricane deaths. For 2004, there were 144 total hurricane-related deaths. The majority (59%) occurred in the post-impact phase, with accidents accounting for 76% of deaths. Among these, over half were caused by trauma, followed by drowning, other injury, electrocution, and carbon monoxide poisoning. For 2005, there were 69 hurricane-related deaths. Sixty-one percent of deaths occurred in the post-impact phase, with accidents accounting for 86% of all deaths. Among these, over half were due to trauma, with drowning and carbon monoxide poisoning being the other major contributors. Most hurricane-related deaths are due to unintentional injury and therefore, preventable. Seventy-nine percent

of deaths are in those aged 40 and older. Prevention messages should target high-risk, post-impact activities, especially in older adults.

Ragan P, Schulte J, Nelson S, Jones K. "Mortality Surveillance: 2004 to 2005 Florida Hurricane-Related Deaths." *American Journal of Forensic Medicine & Pathology*, 2008, Vol. 29, No. 2, pp. 148-53.

Florida Epidemic Intelligence Service (FL-EIS) Program: The First Five Years, 2001-2006

The Florida Epidemic Intelligence Service Program was created in 2001 to increase epidemiologic capacity within the state. Patterned after applied epidemiology training programs such as the Centers for Disease Control and Prevention Epidemic Intelligence Service and the California Epidemiologic Investigation Service, the two year post-graduate program is designed to train public leaders of the future. The long term goal is to increase the capacity of the Florida Department of Health to respond to new challenges in disease control and prevention. Placement is with experienced epidemiologists in county health departments/consortia. Fellows participate in didactic and experiential components, and complete core activities for learning as evidence of competency. As evidenced by graduate employment, the program is successfully meeting its goal. As of 2006, three classes (N=18) have graduated. Among graduates, 83% are employed as epidemiologists, 67% in Florida. Training in local health departments and an emphasis on graduate retention may assist states in strengthening their epidemiologic capacity.

Ragan P, Rowan A, Schulte J, Weirsma S. "Florida Epidemic Intelligence Service (FL-EIS) Program: The First Five Years, 2001-2006." *Public Health Reports*, 2008, Vol. 123, Supplement 1, pp. 21-27.

Illness Associated with Red Tide — Nassau County, Florida, 2007

A "red tide" is a harmful algal bloom that occurs when toxic, microscopic algae in seawater proliferate to a higher-than-normal concentration (i.e., bloom), often discoloring the water red, brown, green, or yellow. Red tides can kill fish, birds, and marine mammals and cause illness in humans. Florida red tide is caused by the dinoflagellate *Karenia brevis*, which produces toxins called brevetoxins and is most commonly found in the Gulf of Mexico; however, *K. brevis* blooms also can occur along the Atlantic coast. On September 25, 2007, a cluster of respiratory illnesses was reported to the Nassau County Health Department (NCHD) in northeastern Florida. All of the ill persons were employed at a beach restoration worksite by a dredging company operating at Fernandina Beach; they reported symptoms of eye or respiratory irritation (e.g., coughing, sneezing, sniffing, and throat irritation). NCHD and the Florida Department of Health promptly conducted epidemiologic and environmental investigations and determined the illnesses likely were associated with exposure to a red tide along the Atlantic coast. These actions highlight the importance of rapid investigation of health concerns with potential environmental causes to enable timely notification of the public and prevent further illness.

Reich A, Blackmore C, Hopkins R, Lazensky R, Geib K, Ngo-Seidel E. "Illness Associated with Red Tide — Nassau County, Florida, 2007." *MMWR*, 2008, Vol. 57, No. 26, pp. 717-720.

Fatal Necrotizing Pneumonia Due to a Pantone-Valentine Leukocidin Positive Community-associated Methicillin-sensitive *Staphylococcus aureus* and Influenza Co-infection: A Case Report

Recent studies have described a number of fatalities due to methicillin-resistant *Staphylococcus aureus* (MRSA) and influenza virus co-infection. MRSA isolates provide a challenge to caregivers due to inherent wide range antibiotic resistance. Many facilities have instituted screening methods, based on the presence of antibiotic resistance genes, to identify MRSA positive patients upon admission. However,

the resistance profile of the pathogen does not necessarily determine the severity of disease caused by that organism. We describe a fatal case of necrotizing pneumonia in a patient co-infected with Influenza B and a community-associated, PVL-positive methicillin-susceptible *Staphylococcus aureus* (MSSA). Roberts JC, Gulino SP, Peak KK, Luna VA, **Sanderson R**. "Fatal Necrotizing Pneumonia Due to a Pantone-Valentine Leukocidin Positive Community-associated Methicillin-sensitive *Staphylococcus aureus* and Influenza Co-infection: A Case Report." *Ann Clin Microbiol Antimicrob*, 2008, Vol. 7, No. 5.

Major Clinical Outcomes in Antiretroviral Therapy (ART)-naïve Participants and in Those not Receiving ART at Baseline in the SMART Study

The SMART study randomized 5472 human immunodeficiency virus (HIV)-infected patients with CD4+ cell counts >350 cells/ μ L to intermittent antiretroviral therapy (ART; the drug conservation [DC] group) versus continuous ART (the viral suppression [VS] group). In the DC group, participants started ART when the CD4+ cell count was <250 cells/ μ L. Clinical outcomes in participants not receiving ART at entry inform the early use of ART. Patients who were either ART naïve (n=249) or who had not been receiving ART for \geq 6 months (n=228) were analyzed. The following clinical outcomes were assessed: (i) opportunistic disease (OD) or death from any cause (OD/death); (ii) OD (fatal or nonfatal); (iii) serious non-AIDS events (cardiovascular, renal, and hepatic disease plus non-AIDS-defining cancers) and non-OD deaths; and (iv) the composite of outcomes (ii) and (iii). A total of 477 participants (228 in the DC group and 249 in the VS group) were followed (mean, 18 months). For outcome (iv), 21 and 6 events occurred in the DC (7 in ART-naïve participants and 14 in those who had not received ART for \geq 6 months) and VS (2 in ART-naïve participants and 4 in those who had not received ART for \geq 6 months) groups, respectively. Hazard ratios for DC vs. VS by outcome category were as follows: outcome (i), 3.47 (95% confidence interval [CI], 1.26–9.56; P=0.2); outcome (ii), 3.26 (95% CI, 1.04–10.25; P=0.4); outcome (iii), 7.02 (95% CI, 1.57–31.38; P=0.1); and outcome (iv), 4.19 (95% CI, 1.69–10.39; P=0.002). Initiation of ART at CD4+ cell counts >350 cells/ μ L compared with <250 cells/ μ L may reduce both OD and serious non-AIDS events. These findings require validation in a large, randomized clinical trial.

The Strategies for Management of Antiretroviral Therapy (SMART) Study Group, including **Sands M**. "Major Clinical Outcomes in Antiretroviral Therapy (ART)-naïve Participants and in Those Not Receiving ART at Baseline in the SMART Study." *JID*, 2008, Vol. 197, pp. 1133-44.

Inferior Clinical Outcomes of the CD4 Cell Count-guided Antiretroviral Treatment Interruption Strategy in the SMART Study: Role of CD4 Cell Counts and HIV RNA Levels During Follow-up

The SMART study compared 2 strategies for using antiretroviral therapy—drug conservation (DC) and viral suppression (VS)—in 5472 human immunodeficiency virus (HIV)-infected patients with CD4+ cell counts >350 cells/ μ L. Rates and predictors of opportunistic disease or death (OD/death) and the relative risk (RR) in DC versus VS groups according to the latest CD4+ cell count and HIV RNA level are reported. During a mean of 16 months of follow-up, DC patients spent more time with a latest CD4+ cell count <350 cells/ μ L (for DC vs. VS, 31% vs. 8%) and with a latest HIV RNA level >400 copies/mL (71% vs. 28%) and had a higher rate of OD/death (3.4 vs. 1.3/100 person-years) than VS patients. For periods of follow-up with a CD4+ cell count <350 cells/ μ L, rates of OD/death were increased but similar in the 2 groups (5.7 vs. 4.6/100 person-years), whereas the rates were higher in DC versus VS patients (2.3 vs. 1.0/100 person-years; RR, 2.3 [95% confidence interval, 1.5–3.4]) for periods with the latest CD4+ cell count \geq 350 cells/ μ L—an increase explained by the higher HIV RNA levels in the DC group. The higher risk of OD/death in DC patients was associated with (1) spending more follow-up time with relative immunodeficiency and (2) living longer with uncontrolled HIV replication even at higher CD4+ cell counts. Ongoing HIV replication at a given CD4+ cell count places patients at an excess risk of OD/death.

The Strategies for Management of Antiretroviral Therapy (SMART) Study Group, including **Sands M**. “Inferior Clinical Outcomes of the CD4 Cell Count-guided Antiretroviral Treatment Interruption Strategy in the SMART Study: Role of CD4 Cell Counts and HIV RNA Levels During Follow-up.” *JID*, 2008, Vol. 197, pp. 1145-55.

Maternal Obesity and Risk of Infant Death Based on Florida Birth Records for 2004

The purpose of this study was to assess the relationship between pre-pregnancy maternal obesity and risk of infant death. In March 2004, maternal height and pre-pregnancy weight were added to the data collected on the Florida birth certificate. Using birth records linked to infant deaths, these data were used to assess the relationship between pre-pregnancy maternal obesity, as measured by body mass index, and infant death. Pre-pregnancy maternal obesity was associated with increased odds of infant death. The increased risk was found with and without adjustments for maternal race, marital status, age, education, trimester prenatal care began, first birth, and tobacco use. There is a substantial and significant association between pre-pregnancy maternal obesity and infant death.

Thompson DR, Clark CL, Wood B, Zeni MB. “Maternal Obesity and Risk of Infant Death Based on Florida Birth Records for 2004.” *Public Health Reports*, 2008, Vol. 123, pp. 487-493.

An Intervention to Improve Notifiable Disease Reporting Using Ambulatory Clinics

Strong notifiable disease surveillance systems are essential for disease control. We sought to determine if a brief informational session between clinic and health department employees followed by reminder faxes and a newsletter would improve reporting rates and timeliness in a notifiable disease surveillance system. Ambulatory clinics were randomized to an intervention group which received the informational session, a faxed reporting reminder and newsletter, or to a control group. Among intervention and control clinics, there were improvements in the number of cases reported and the timeliness of reporting. However, there were no statistically significant changes in either group. Despite improved communication between the health department and clinics, this intervention did not significantly improve the level or the timeliness of reporting. Other types of interventions should be considered to improve reporting such as simplifying the reporting process.

Trepka MJ, **Zhang G, Leguen F**. “An Intervention to Improve Notifiable Disease Reporting Using Ambulatory Clinics.” *Epidemiol. Infect.*, 2008, Vol. 137, pp. 22-29.

Neurotoxic Shellfish Poisoning

Neurotoxic shellfish poisoning (NSP) is caused by consumption of molluscan shellfish contaminated with brevetoxins primarily produced by the dinoflagellate, *Karenia brevis*. Blooms of *K. brevis*, called Florida red tide, occur frequently along the Gulf of Mexico. Many shellfish beds in the US (and other nations) are routinely monitored for presence of *K. brevis* and other brevetoxin-producing organisms. As a result, few NSP cases are reported annually from the US. However, infrequent larger outbreaks do occur. Cases are usually associated with recreationally-harvested shellfish collected during or post red tide blooms. Brevetoxins are neurotoxins which activate voltage-sensitive sodium channels causing sodium influx and nerve membrane depolarization. No fatalities have been reported, but hospitalizations occur. NSP involves a cluster of gastrointestinal and neurological symptoms: nausea and vomiting, paresthesias of the mouth, lips and tongue as well as distal paresthesias, ataxia, slurred speech and

dizziness. Neurological symptoms can progress to partial paralysis; respiratory distress has been recorded. Recent research has implicated new species of harmful algal bloom organisms which produce brevetoxins, identified additional marine species which accumulate brevetoxins, and has provided additional information on the toxicity and analysis of brevetoxins. A review of the known epidemiology and recommendations for improved NSP prevention are presented.

Watkins SM, Reich A, Fleming LE, Hammond R. "Neurotoxic Shellfish Poisoning." *Marine Drugs*, 2008, Vol. 6, pp. 430-455.

Burden of Cervical Cancer in the United States, 1998-2003

Recent interest in human papillomavirus (HPV)-associated cancers and the availability of several years of data covering 83% of the US population prompted this descriptive assessment of cervical cancer incidence and mortality in the US during the years 1998 through 2003. This article provides a baseline for monitoring the impact of the HPV vaccine on the burden of cervical cancer over time. Data from 2 federal cancer surveillance programs, the Centers for Disease Control and Prevention (CDC)'s National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program, were used to examine cervical cancer incidence by race, Hispanic ethnicity, histology, stage, and US census region. Data from the CDC's National Center for Health Statistics were used to examine cervical cancer mortality by race, Hispanic ethnicity, and US census region. The incidence rate of invasive cervical cancer was 8.9 per 100,000 women during 1998 through 2003. Greater than 70% of all cervical carcinomas were squamous cell type, and nearly 20% were adenocarcinomas. Cervical carcinoma incidence rates were increased for black women compared with white women and for Hispanic women compared with non-Hispanic women. Hispanic women had increased rates of adenocarcinomas compared with non-Hispanic women. The South had increased incidence and mortality rates compared with the Northeast. Disparities by race/ethnicity and region persist in the burden of cervical cancer in the US. Comprehensive screening and vaccination programs, as well as improved surveillance, will be essential if this burden is to be reduced in the future.

Watson M, Saraiya M, Benard V, Coughlin S, Flowers L, Cokkinides V, Schwenn M, **Huang Y**, Giuliano A. "Burden of Cervical Cancer in the United States, 1998-2003." *Cancer* (Supplement), 2008, Vol. 113, No. 10, pp. 2588-64.

Assessing the Association Between Environmental Impacts and Health Outcomes: A Case Study From Florida

The Centers for Disease Control and Prevention (CDC) created the Environmental Public Health Tracking (EPHT) program to integrate hazard monitoring, exposure, and health effects surveillance into a cohesive tracking network. Part of Florida's effort to move toward implementation of EPHT is to develop models of the spatial and temporal association between myocardial infarctions (MIs) and ambient ozone levels in Florida. Existing data were obtained from Florida's Agency for Health Care Administration, Florida's Department of Environmental Protection, the U.S. Census Bureau, and CDC's Behavioral Risk Factor Surveillance System. These data were linked by both ignoring spatial support and using block kriging, a support-adjusted approach. The MI data were indirectly standardized by age, race/ethnicity, and sex. The state of Florida was used as the comparison standard to compute the MI standardized event ratio (SER) for each county and each month. After the data were linked, global models were used initially to relate MIs to ambient ozone levels, adjusting for covariates. The global models provide an estimated relative MI SER for the state. Realizing that the association in MIs and ozone might change across locations, local models were used to estimate the relative MI SER for each county, again adjusting for covariates. Results differed, depending on whether the spatial support was ignored or accounted for in

the models. The opportunities and challenges associated with EPHT analyses are discussed and future directions highlighted.

Young LJ, Gotway CA, Yang J, **Kearney G, DuClos C.** "Assessing the Association Between Environmental Impacts and Health Outcomes: A Case Study From Florida." *Statist. Med.*, 2008, Vol. 27, pp. 3998-4015.



Additional reports and articles regarding infectious disease incidence, disease surveillance activities, reportable disease notifications, and health studies conducted in Florida can be accessed in *Epi Update*. *Epi Update* is a publication of the Bureau of Epidemiology and compiles information related to Department of Health activities from around the State. The current issue, as well as archived issues, of *Epi Update* can be accessed at http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/index.html.