

Section 7

Recently Published Papers & Reports

Included below are selected publications by the Florida Department of Health (FDOH) that appeared in peer-reviewed journals during the calendar year of 2009. 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 an FDOH employee. FDOH employee names appear in bold. Abstracts and titles are re-printed in the same format that they appeared in their respective journals.

Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis

Guidelines for the use of nucleic acid amplification (NAA) tests for the diagnosis of tuberculosis (TB) were published in 1996 and updated in 2000. Since then, NAA testing has become a routine procedure in many settings because NAA tests can reliably detect *Mycobacterium tuberculosis* bacteria in specimens 1 or more weeks earlier than culture. Earlier laboratory confirmation of TB can lead to earlier treatment initiation, improved patient outcomes, increased opportunities to interrupt transmission, and more effective public health interventions. Because of the increasing use of NAA tests and the potential impact on patient care and public health, in June 2008, CDC and the Association of Public Health Laboratories (APHL) convened a panel of clinicians, laboratorians, and TB control officials to assess existing guidelines and make recommendations for using NAA tests for laboratory confirmation of TB. On the basis of the panel's report and consultations with the Advisory Council for the Elimination of TB (ACET),* CDC recommends that NAA testing be performed on at least one respiratory specimen from each patient with signs and symptoms of pulmonary TB for whom a diagnosis of TB is being considered but has not yet been established, and for whom the test result would alter case management or TB control activities, such as contact investigations. These guidelines update the previously published guidelines.

Alland D, Bernardo J, Hanna B, Kaplan RL, Kawamura M, Liska S, Nivens C, **Salfinger M**, Seaworth B, Warshauer D, Wroblewski KE, Castro K, Diem L, Jereb J, LoBue P, Marks S, Mazurek J, Metchock B, Shinnick T, Vernon A. "Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis." *MMWR* January 16, 2009 / Vol. 58(01):7-10.

Profile of time-dependent VEGF upregulation in human pulmonary endothelial cells, HPMEC-ST1.6R infected with DENV-1, -2, -3, and -4 viruses

In this study, the upregulated expression level of vascular endothelial growth factor (VEGF) in a pulmonary endothelial cell line (HPMEC-ST1.6R) infected with dengue virus serotypes 1, 2, 3, and 4 (DENV-1, -2, -3 and -4), was investigated. This cell line exhibits the major constitutive and inducible endothelial cell characteristics, as well as angiogenic response. Infection by all four DENV serotypes was confirmed by an observed cytopathic effect (CPE), as well as RT-PCR (reverse-transcription polymerase chain reaction) assays. As we had previously reported, the DENV-infected HPMEC-ST1.6R cells exhibited an elongated cytoplasmic morphology, possibly representing a response to VEGF and activation of angiogenesis. In this study, increase in VEGF expression level at designated time points of 0, 8, 24, 96 and 192 hours post-infection

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was investigated, using a microbead-based Bio-Plex immunoassay. Increased level of VEGF expression in infected-HPMEC-ST1.6R was detected at 8 hours post-infection. Interestingly, VEGF expression level began to decrease up to 96 hours post-infection, after which an upsurge of increased VEGF expression was detected at 192 hours post-infection. This profile of VEGF upregulated expression pattern associated with DENV infection appeared to be consistent among all four DENV-serotypes, and was not observed in mock-infected cells. In this study, the expression level of VEGF, a well-established vascular permeabilizing agent was shown to be elevated in a time-dependent manner, and exhibited a unique dual-response profile, in a DENV-infected endothelial cell. The experimental observation described here provided additional insights into potential mechanism for VEGF-mediated vascular leakage associated with DENV, and support the idea that there are potential applications of anti-VEGF therapeutic interventions for prevention of severe DENV infections.

Azizan A, Fitzpatrick K, Signorovitz A, Tanner R, Hernandez H, **Stark L**, Sweat M. "Profile of time-dependent VEGF upregulation in human pulmonary endothelial cells, HPMEC-ST1.6R infected with DENV-1, -2, -3, and -4 viruses." *Virology*. 2009 May 6;6:49.

Water Pipe Tobacco Smoking Among Middle and High School students

Objectives. We examined prevalence rates of water pipe tobacco smoking among young people as a first step in assessing the health implications of this form of tobacco use.

Methods. We examined water pipe use with data from the 2007 Florida Youth Tobacco Survey, which assessed tobacco-related beliefs, attitudes, and behaviors among the state's middle and high school students.

Results. Four percent of middle school students and 11% of high school students reported ever having used a water pipe. Adolescent boys were significantly more likely than adolescent girls to use water pipes, and African American adolescents were significantly less likely than adolescents from other racial/ethnic backgrounds to do so. Those who indicated ever having tried cigarettes and those who reported positive attitudes toward the social nature of cigarette use were more likely to have tried water pipes.

Conclusions. Water pipe use appears to be widespread among middle and high school students. Further research is needed to assess the health risks associated with water pipe tobacco smoking as well as young people's attitudes toward this form of tobacco use.

Barnett TE, Curbow BA, **Weitz JR**, **Johnson TM**, Smith-Simone, SY. "Water Pipe Tobacco Smoking Among Middle and High School students." *American Journal of Public Health*, 2009, Vol. 99, No. 11, pp. 2014-2019.

Removal of species constraints in antibody detection

Serum antibodies from myriad species, particularly birds, can provide key information regarding the transmission and the expansion of the territory of emerging pathogens. Expedient antibody analysis is constrained by a lack of species-specific reagents, a deficiency

potentially highlighted by the recent swine-origin influenza A virus (H1N1) outbreak. Available methodologies present difficulties that discourage thorough serologic monitoring of potential disease vectors or hosts. Rapid high-throughput procedures that combined serum amine labeling via biotinylation, contaminant removal, and microsphere-based immunoassays for antibodies to three arboviruses were developed. Agent-specific adaptations of this simple format should facilitate expanded surveillance and diagnostic capabilities regarding pathogens of human and veterinary importance.

Basile AJ, Biggerstaff BJ, Kosoy OL, Junna SR, Panella NA, Powers AM, **Stark LM**, Nemeth NM. "Removal of species constraints in antibody detection." *Clinical & Vaccine Immunology* 17(1): 56-61.

Legionella Positive Environmental Samples from a Hot Tub at a Local Resort Hotel, Orange County, December, 2008

Subsequent to notification of a confirmed case of Legionnaires' disease in a 60 year old male resident of England who was exposed to a hot tub at a hotel that had been epidemiologically implicated as a source for five cases of Legionnaires' disease in March of 2008 environmental samples were collected for analysis from the hot tub. Numerous chronic and continual sanitation deficiencies were well documented for the hot tub. Five of the six environmental samples collected for laboratory analysis were reported as positive for the presence of *Legionella pneumophila Gp 1*. The free chlorine level of the collected samples that were positive was less than or equal to 0.1 ppm upon receipt by the laboratory. The sixth sample was negative for *Legionella pneumophila Gp 1* and had a free chlorine level upon arrival of 0.2 ppm. Neutralization of the free chlorine level of the samples from 5.0 ppm at the time of collection to less than 0.1 ppm was accomplished by adding two sodium thiosulfate tablets to each 100 milliliter sample and 20 tablets to the 1 liter sample at the time of collection. Prior attempts to neutralize water samples with high chlorine residuals from hot tubs and swimming pools utilized a single tablet for 100 milliliter samples and 10 tablets for a 1 liter sample without success in lowering the free chlorine levels to less than 0.1 ppm. The sodium thiosulfate tablets are those found in the State of Florida approved routine water sample kits. The tablets that were added during all sample collections were 100mg each with 10mg sodium thiosulfate. The finding of *Legionella pneumophila Gp 1* in a hot tub indicates chronic low disinfection levels and insufficient maintenance practices that prevent the spread of communicable diseases.

Bodager D, Walsh D, Osias T, Overfield D. "Legionella Positive Environmental Samples from a Hot Tub at a Local Resort Hotel, Orange County, December, 2008", *Florida Journal of Environmental Health*, Spring, 2009, Issue 202, p.5-6.

Correlates of smoking quit attempts: Florida Tobacco Callback Survey, 2007

OBJECTIVE: The public health burden of tobacco-associated diseases in the USA remains high, in part because many people's attempts to quit are unsuccessful. This study examined factors associated with having lifetime or recent attempts to quit smoking among current smokers, based on a telephone survey of Florida adults. **METHODS:** Data from the 2007 telephone-

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based Florida Behavioral Risk Factor Surveillance System (BRFSS) and its follow-up survey, the Tobacco Callback Survey, were used to assess determinants of having ever attempted to quit smoking and attempted to quit smoking in the past 12 months. All analyses were conducted using SAS. RESULTS: Among 3,560 current smokers, 41.5% reported having tried to quit smoking in the past 12 months while 83.4% reported having ever tried to quit. Having a history of a tobacco-related medical condition was significantly associated with both recent (Adjusted Odds Ratio (AOR) 1.41 [Confidence Interval 1.19-1.65]) and lifetime quit attempts (AOR 1.43 [1.15-1.79]). Greater nicotine dependence and being advised by a physician to quit smoking were also positively associated with lifetime quit attempts. Receipt of healthcare provider advice to quit smoking in the past 12 months and a strong belief that quitting following a long history of regular smoking would not result in health benefits and belief that there are health benefits to quitting smoking were associated with lifetime quit attempts. CONCLUSION: Targeted smoking cessation interventions are needed for smokers with selected medical conditions and with high nicotine dependence. The importance of physician advice in encouraging individuals to quit is further highlighted.

Davila EP, Zhao W, Byrne M, Webb M, **Huang Y**, Arheart K, Dietz N, Caban-Martinez A, Parker D, Lee DJ. "Correlates of smoking quit attempts: Florida Tobacco Callback Survey, 2007." *Tob Induc Dis*. 2009 Jun 29;5:10.

Cluster of Serogroup W135 Meningococci, Southeastern Florida, 2008–2009

Recently, 14 persons in southeastern Florida were identified with *Neisseria meningitidis* serogroup W135 invasive infections. All isolates tested had matching or near-matching pulsed-field gel electrophoresis patterns and belonged to the multilocus sequence type 11 clonal complex. The epidemiologic investigation suggested recent endemic transmission of this clonal complex in southeastern Florida.

Doyle T, Mejia-Echeverry A, Fiorella P, Leguen F, Livengood J, Kay R, Hopkins R. "Cluster of Serogroup W135 Meningococci, Southeastern Florida, 2008–2009" *Emerging Infectious Diseases*, Vol. 16, No. 1, January 2010.

Emergence of blaKPC-containing *Klebsiella pneumoniae* in a long-term acute care hospital: a new challenge to our healthcare system

OBJECTIVES: To characterize isolates of *Klebsiella pneumoniae* producing KPC carbapenemase (KPC-Kp) associated with an outbreak in a long-term acute care hospital (LTACH) in South Florida. METHODS: During 21 March to 20 April 2008, 241 *K. pneumoniae* isolates detected at Integrated Regional Laboratories (Ft. Lauderdale, FL) for which the ertapenem MICs were > or =4 mg/L were studied. PCR, cloning and sequence analysis were used to detect bla(KPC) and to characterize the beta-lactamase and outer membrane proteins (Omps). The expression level of KPC enzymes was studied by immunoblotting. Genetic relatedness of isolates was investigated with rep-PCR and PFGE. Clinical records of patients were investigated. RESULTS: Seven KPC-Kp strains were isolated from different patients located at a single LTACH, with a further three isolates being recovered from patients at different

hospitals. All KPC-Kp isolates in patients from the LTACH and from one hospital patient were genetically related and shared PFGE patterns that clustered with known sequence type (ST) 258 strains. These strains were highly resistant to carbapenems (MICs \geq 32 mg/L) due to an increased level of KPC expression and loss of Omps. Rectal colonization was documented in all LTACH patients with KPC-Kp isolates. Treatment failures were common (crude mortality rate of 69%). Active surveillance and enhanced infection control practices terminated the KPC-Kp outbreak. CONCLUSIONS: The detection of KPC-Kp in an LTACH represents a serious infection control and therapeutic challenge in a new clinical setting. The speed at which the epidemic of KPC-Kp is spreading in our healthcare system mandates urgent action.

Endimiani A, **Depasquale JM**, Forero S, Perez F, Hujer AM, Roberts-Pollack D, **Fiorella PD**, **Pickens N**, Kitchel B, Casiano-Colón AE, Tenover FC, Bonomo RA. Emergence of blaKPC-containing *Klebsiella pneumoniae* in a long-term acute care hospital: a new challenge to our healthcare system. *J Antimicrob Chemother.* 2009 Nov;64(5):1102-10.

Self-rated depression and physician-diagnosed depression and anxiety in Florida adults: Behavioral Risk Factor Surveillance System, 2006

INTRODUCTION: Our purpose was to determine the prevalence and correlates of self-reported symptoms of depression and physician-diagnosed depression and anxiety in Florida adults by using the 2006 Florida Behavioral Risk Factor Surveillance System (BRFSS). METHODS: The BRFSS is an ongoing, state-based telephone health survey of noninstitutionalized adults that uses random-digit dialing. In 2006, an Anxiety and Depression Module was administered in Florida. Eight questions were used to examine current depression. Two additional questions assessed health care provider diagnosis of depressive and anxiety disorders. We used SUDAAN version 9.0 to evaluate the data to accommodate the complex sampling design. RESULTS: Approximately 9% of Florida adults experienced current depression; about 13% had had a diagnosis of depression in their lifetime and 11% had a diagnosis of anxiety in their lifetime. Approximately 44% of respondents with current depression had not had a diagnosis of depression. Current depression and lifetime diagnosis of depression and anxiety were independently associated with sociodemographic variables (being a woman, young, previously married or never married, or unemployed or unable to work), adverse health behaviors (current or former smoking, physical inactivity, or obesity), and chronic health conditions (history of a stroke, diabetes, or asthma). Although the prevalence of depression among non-Hispanic blacks and people with low education levels is higher, members of these groups are less likely than members of other sociodemographic groups to have had depression diagnosed by a physician. CONCLUSION: Depression and anxiety are associated with sociodemographic disadvantages and chronic conditions and risk factors. Knowing the prevalence of depression and anxiety, both self-rated and physician-diagnosed, is useful in identifying unmet mental health needs among subpopulations.

Fan AZ, Strine TW, **Huang Y**, **Murray MR**, Musingo S, Jiles R, Mokdad AH. "Self-rated depression and physician-diagnosed depression and anxiety in Florida adults: Behavioral Risk Factor Surveillance System, 2006." *Prev Chronic Dis.* 2009 Jan;6(1):A10.

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Improvement of a selective media for the isolation of *B. anthracis* from soils

To prove linkage between an environmental sample and an anthrax case, there must be isolates obtained from both that can be compared. Although *Bacillus anthracis* is easily isolated from powder samples, isolating it from soil is difficult because of the high bacterial count in it. Formulations of PLET were prepared, inoculated with *B. anthracis*, *B. cereus* and *B. thuringiensis* and examined for growth. Two hundred eighty-three isolates including 23 *B. anthracis* were placed onto one formulation while MICs against trimethoprim-sulfamethoxazole were determined. The media supported *B. anthracis* growth at 30 degrees C and inhibited almost all other bacterial growth, including closely-related species. Sensitivity for *B. anthracis* and selectivity against other Bacillus and against non-Bacillus were 96.8%, 100% and 97.2% respectively. Isolates that grew had MICs >4 and >76 microg mL(-1) against trimethoprim and sulfamethoxazole, respectively. Soils spiked with 10(2)*B. anthracis* spores and suspended in PLET broth yielded a 6-7 log(10) increase in *B. anthracis*. Other growth was inhibited. PLET supplemented with sulfamethoxazole (38 microg mL(-1)), trimethoprim (2 microg mL(-1)), polymyxin B (15,000 U L(-1)), and lysozyme (150,000 U L(-1)) can successfully select for *B. anthracis* and will facilitate agricultural, environmental and forensic investigations of *B. anthracis* isolates.

Luna VA, Gullledge J, Cannons AC, **Amuso PT**: Improvement of a selective media for the isolation of *B. anthracis* from soils. *J Microbiol Methods*. 2009 Dec;79(3):301-6.

Bladder cancer clusters in Florida: identifying populations at risk

PURPOSE: Modifiable risk factors for bladder cancer have been identified, ie tobacco and chemical exposure. We identified high risk bladder cancer areas and risk factors associated with bladder cancer clusters in Florida using individual and area based data. **MATERIALS AND METHODS:** Spatial modeling was applied to 23,266 early and advanced bladder cancer cases diagnosed between 1998 and 2002 in Florida to identify areas of excess bladder cancer risk. Multivariable regression was used to determine whether sociodemographic indicators, smoking history and proximity to known arsenic contaminated drinking water well sites were associated with bladder cancer diagnosis in a specific area (cluster). **RESULTS:** A total of 25 clusters were found to have a higher than expected bladder cancer rate, including 13 and 12 of early and late stage disease, respectively. Urban white patients were more likely to live in an advanced bladder cancer cluster. Advanced bladder cancer cluster membership was associated with living in close proximity to known arsenic contaminated drinking water wells. **CONCLUSIONS:** There are multiple areas of early and late stage bladder cancer clusters in Florida. Individuals in an advanced bladder cancer cluster tended to live close to arsenic contaminated wells. Increased evaluation of potentially contaminated well water is warranted in these high risk areas. Targeted bladder cancer public awareness campaigns, smoking cessation support and potentially targeted screening should also be considered in communities at increased risk for bladder cancer. Our analytical approach can also be used by others to systematically identify communities at high risk for bladder and other cancers.

Nieder AM, MacKinnon JA, **Fleming LE**, **Kearney G**, Hu JJ, Sherman RL, **Huang Y**, Lee DJ. Bladder Cancer Clusters in Florida: Identification of Populations at Risk. *J Urology* 2009;182(1):46-50.

Impact of a Mobile Van on Prenatal Care Utilization and Birth Outcomes in Miami-Dade County

The study aimed to determine if there was a difference in prenatal care utilization and birth outcomes among demographically similar women who used or did not use a mobile van for prenatal care. Mothers who utilized the mobile van at least one time for their prenatal care and delivered between August 2007 through September 2008 were considered the Mobile group (n = 182) and a Comparison group of the same size who delivered within the same time period was randomly matched by sociodemographic characteristics. Birth data was obtained from Florida Department of Health Office of Vital Statistics and from the mobile clinic's Health Management System (HMS) database. Nearly 95% of mothers in both groups were foreign born, with the majority from Mexico. The evaluation of prenatal care showed that there was a significant difference (P = 0.0006) in the trimester in which mothers began care. Both the Kessner (P = 0.0003) and Kotelchuck (0.0001) Indices demonstrated a statistically significant difference in that more mothers in the Mobile group had adequate care. Birth weight distribution did not reveal a statistically significant difference (P = 0.0911) however the Mobile group did have a lower percentage of low birth weight infants (4.4% vs. 8.8%). There was a statistically significant difference in the amount of pre-term births (P = 0.0492) between the groups. The results suggest that a mobile van can be used to improve both early access to adequate prenatal care as well as birth outcomes such as prematurity.

O'Connell E, Zhang G, Leguen F, Prince J. "Impact of a Mobile Van on Prenatal Care Utilization and Birth Outcomes in Miami-Dade County." *Matern Child Health J.* 2009 Aug 15. [Epub ahead of print]

Correlations between microbial indicators, pathogens, and environmental factors in a subtropical estuary

The objective of this study was to evaluate whether indicator microbes and physical-chemical parameters were correlated with pathogens within a tidally influenced Estuary. Measurements included the analysis of physical-chemical parameters (pH, salinity, temperature, and turbidity), measurements of bacterial indicators (enterococci, fecal coliform, *Escherichia coli*, and total coliform), viral indicators (somatic and MS2 coliphage), viral pathogens (enterovirus by culture), and protozoan pathogens (Cryptosporidium and Giardia). All pathogen results were negative with the exception of one sample which tested positive for culturable reovirus (8.5MPN/100L). Notable physical-chemical parameters for this sample included low salinity (<1ppt) and high water temperature (31 degrees C). Indicator bacteria and indicator virus levels for this sample were within average values typically measured within the study site and were low in comparison with levels observed in other freshwater environments. Overall results suggest that high levels of bacterial and viral indicators were associated with low salinity sites.

Ortega C, Solo-Gabriele HM, Abdelzaher A, Wright M, Deng Y, **Stark LM.** Correlations between microbial indicators, pathogens, and environmental factors in a subtropical estuary. *Mar Pollut Bull.* 2009 Sep;58(9):1374-81.

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Isolation of genotype V St. Louis encephalitis virus in Florida

We isolated and characterized St. Louis encephalitis virus (SLEV) from cloacal swabs of naturally exposed adult sentinel chickens in 2006. Phylogenetic analysis of SLEV strains isolated in Florida indicated that Brazilian SLEV circulated in 1972 and 2006; lineages were VA and VB.

Ottendorfer CL, Ambrose JH, White GS, Unnasch TR, **Stark LM**. Isolation of genotype V St. Louis encephalitis virus in Florida. *Emerg Infect Dis*. 2009 Apr;15(4):604-6.

Assessment of body mass index screening of elementary school children – Florida, 2007-2008

The prevalence of childhood obesity has increased substantially in the United States and is associated with chronic diseases. State level surveillance is needed to monitor trends and investigate risk factors. In addition, data that identify at-risk communities can be used to inform those communities regarding childhood obesity. Body mass index (BMI) screening of Florida school children has been performed since 2001 as part of growth and development screening services and conducted by school districts and county health departments. Aggregated BMI data, by grade and county, are reported annually to the Florida Department of Health (FDOH). In 2008, FDOH considered establishing a more extensive statewide BMI surveillance system. To begin planning for such a system, during February-March 2008, FDOH surveyed school health coordinators in Florida's 67 counties to assess qualities of BMI screening activities. Among 66 counties that provided complete surveys, 58 (88%) screened $\geq 75\%$ of children in the first, third, and sixth grades, and 51 (77%) had written protocols or guidelines for measuring weight, height, or BMI. Nineteen counties (29%) were training $\geq 90\%$ of their screeners, and 21 (32%) consistently used appropriate equipment for measuring height and weight. Thirty-one counties (47%) used appropriate electronic systems to calculate BMI percentile-for-age. BMI screening activities need improvement in policy and guideline development, training procedures, appropriate selection and use of equipment, and use of electronic data systems before Florida establishes a more extensive statewide surveillance system.

CDC. Assessment of body mass index screening of elementary school children – Florida, 2007-2008. *MMWR*. 2009 May 9;58(17):460-3. (Contributors: **Sohyun Park, Roger Evans, William Sappenfield, Margaret Oxamendi, and Carol Vickers**)

Reliability and validity of birth certificate prepregnancy weight and height among women enrolled in prenatal WIC program, Florida, 2005

To investigate the reliability and validity of weight, height, and body mass index (BMI) from birth certificates with directly measured values from the Women, Infants, and Children (WIC) Program. Florida birth certificate data were linked and compared with first trimester WIC data for women with a live birth during the last quarter of calendar year 2005 (n = 23,314 women). Mean differences for weight, height, and BMI were calculated by subtracting birth certificate values

from WIC values. Reliability was estimated by Pearson's correlation. Validity was measured by sensitivity and specificity using WIC data as the reference. Overall mean differences plus or minus standard error (SE) were 1.93 +/- 0.04 kg for weight, -1.03 +/- 0.03 cm for height, and 1.07 +/- 0.02 kg/m(2) for BMI. Pearson's correlation ranged from 0.83 to 0.95, which indicates a strong positive association. Compared with other categories, women in the second weight group (56.7-65.8 kg), the highest height group (≥ 167.6 cm), or BMI < 18.5 had the greatest mean differences for weight (2.2 +/- 0.08 kg), height (-2.4 +/- 0.05 cm), and BMI (1.5 +/- 0.06), respectively. Mean differences by maternal characteristics were similar, but statistically significant, likely in part from the large sample size. The sensitivity for birth certificate data was 77.3% (+/-1.42) for underweight (BMI < 18.5) and 76.4% (+/-0.51) for obesity (BMI ≥ 30). Specificity was 96.8% (+/-0.12) for underweight and 97.5% (+/-0.12) for obesity. Birth certificate data had higher underweight prevalence (6 vs. 4%) and lower obesity prevalence (24 vs. 29%), compared with WIC data. Although birth certificate data overestimated underweight and underestimated obesity prevalence, the difference was minimal and has limited impact on the reliability and validity for population-based surveillance and research purposes related to recall or reporting bias.

Park S, Sappenfield WM, Bish C, Bensyl DM, Goodman D, Menges J. Reliability and validity of birth certificate prepregnancy weight and height among women enrolled in prenatal WIC program, Florida, 2005. *Matern Child Health J.* 2009 Nov 24. [Epub ahead of print]

Validation of ethnicity in cancer data: which Hispanics are we misclassifying?

The study of cancer in Hispanics in the United States has been hindered by misclassification of Hispanics as non-Hispanic and by the convenient practice of aggregating the diverse Hispanic subgroups into a general Hispanic category. The Hispanic Origin Identification Algorithm (HOIA) was developed to improve the identification of both the general Hispanic ethnicity and the specific Hispanic subgroup in cancer incidence data. Using an independent study of prostate cancer cases from South Florida as the "gold standard" and the Florida incident cancer registry data, we validated this algorithm and studied the characteristics of those Hispanics whose ethnicity was commonly missed in the cancer registry records. Overall, agreement between the gold standard information (derived from self-report) and HOIA derived ethnicity was 97%. For Hispanic subgroup, among a subset of subjects with known birthplace, the percent agreement was 98%. After HOIA, age-adjusted Hispanic cancer rates reflected an increase of 8% in males and 10% in females. Hispanics born in the United States were 4.6 times more likely to be misclassified as non-Hispanic than foreign-born Hispanics; black Hispanics 2.5 times more than whites; and women 1.3 times more than men. HOIA is a valid and effective tool for improving the accuracy of both general Hispanic ethnicity and Hispanic subgroup data in cancer registries. Improved procedures for identifying and recording ethnicity in health facilities are recommended, particularly focusing on improving the information gathered on Hispanics born in the United States, or who are black or female.

Pinheiro PS, Sherman R, Fleming LE, Gomez-Marin O, Huang Y, Lee DJ, Penedo FJ. "Validation of ethnicity in cancer data: which Hispanics are we misclassifying?" *J Registry Manag.* 2009 Summer;36(2):42-6.

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Cancer incidence in first generation U.S. Hispanics: Cubans, Mexicans, Puerto Ricans, and new Latinos

BACKGROUND: The diversity among Hispanics/Latinos, defined by geographic origin (e.g., Mexico, Puerto Rico, Cuba), has been neglected when assessing cancer morbidity. For the first time in the United States, we estimated cancer rates for Cubans, Mexicans, Puerto Ricans, and other Latinos, and analyzed changes in cancer risk between Hispanics in their countries of origin, U.S. Hispanics in Florida, and non-Hispanic Whites in Florida. **METHODS:** Florida cancer registry (1999-2001) and the 2000 U.S. Census population data were used. The Hispanic Origin Identification Algorithm was applied to establish Hispanic ethnicity and subpopulation. **RESULTS:** The cancer rate of 537/100,000 person-years (95% confidence interval, 522.5-552.5) for Hispanic males in Florida was lower than Whites (601; 595.4-606.9). Among women, these rates were 376 (365.6-387.1) and 460 (455.6-465.4), respectively. Among Florida Hispanics, Puerto Ricans had the highest rates, followed by Cubans. Mexicans had the lowest rates. Rates for Hispanics in Florida were at least 40% higher than Hispanics in their countries of origin, as reported by the IARC. **CONCLUSION:** Substantial variability in cancer rates occurs among Hispanic subpopulations. Cubans, unlike other Hispanics, were comparable with Whites, especially for low rates of cervical and stomach cancers. Despite being overwhelmingly first generation in the U.S. mainland, Puerto Ricans and Cubans in Florida showed rates of colorectal, endometrial, and prostate cancers similar to Whites in Florida. Because rates are markedly lower in their countries of origin, the increased risk for cancer among Cubans, Mexicans, and Puerto Ricans who move to the United States should be further studied.

Pinheiro P, Sherman R, Trapido E, **Fleming LE**, Huang Y, Gomez Marin O, Lee DJ. Cancer incidence in first generation US Hispanics: Cubans, Mexicans, Puerto Ricans and New Latinos. *Cancer Epidemiology, Biomarkers & Prevention* 2009;18(8):2162-2169.

Acute lung injury outside of the ICU: incidence in respiratory isolation on a general ward

BACKGROUND: Epidemiologic investigations of acute lung injury (ALI) and ARDS have focused on mechanically ventilated patients in ICUs, and have reported high mortality rates. We sought to determine the incidence and lethality of these syndromes in the respiratory isolation areas of general wards, a non-ICU setting that often serves patients with acute lung processes.

METHODS: We prospectively studied all patients who were admitted to respiratory isolation rooms on the general wards of a large tertiary care hospital over a 1-year period. Patients were classified as having ALI or ARDS if they met consensus definitions for the syndromes. Characteristics and outcomes were compared to those of other patients who had been admitted to a respiratory isolation room with infiltrating lung disease but lacking bilateral infiltrates, hypoxemia, or both.

RESULTS: Of 715 patients admitted to respiratory isolation rooms on general wards, 474 (66%) had acute infiltrates. ALI criteria were met by 9% of patients (62 of 715 patients), with 2% of patients (15 of 715) satisfying the criteria for ARDS. Respiratory distress was present in 71% of ALI patients (44 of 62 patients) and 32% of patients (130 of 412 patients) with acute infiltrates who did not have ALI ($p < 0.001$). However, the 90-day survival rates (ALI patients, 88%; patients with acute infiltrates who did not have ALI, 90%) was similar between the two groups ($p > 0.50$).

CONCLUSIONS: ALI and ARDS may be frequent among patients who are admitted to

respiratory isolation beds outside of ICUs. Mortality rates are substantially lower than **those** typically reported from surveys of ventilated ICU patients with ALI and ARDS.

Quartin AA, Campos MA, Maldonado DA, **Askin D**, Cely CM, Schein RM. "Acute lung injury outside of the ICU: incidence in respiratory isolation on a general ward." *Chest.*, 2009, Vol. 135, No. 2, pp. 261-268.

Working to prevent lead poisoning in children: Getting the lead out

Introduction: A common environmental contaminant, lead is a naturally occurring metal with no known biological role in the body. Toxicity was recognized as early as 200 BC in Rome with lead-induced gout developing in individuals using drinking vessels made from lead or drinking wine sweetened with lead. In children, lead is a recognized neurotoxin and has been associated with impaired cognitive, motor, developmental and behavioral abilities. At very high levels, it can cause seizures, coma and death. Since lead poisoning is often insidious and asymptomatic, it frequently goes unrecognized. The Centers for Disease Control and Prevention (CDC) have progressively lowered the definition of elevated blood lead levels (BLL) over the years. The Healthy People Objectives for the Nation recommend the elimination of $BLL \geq 10$ micrograms/deciliter (ug/dl) by 2010 (1). However, no safe threshold has been determined regarding the potentially harmful effects on children.

Ragan, P, Turner, T. (2009) "Working to prevent lead poisoning in children: Getting the lead out." *J of the Am Acad of Phys As.* 22(7): 40-45.

Has the time come to discontinue proficiency testing? [Editorial]

DRUG SUSCEPTIBILITY proficiency testing provides only a snapshot of a laboratory's performance, begging the question: Are the results of proficiency testing relevant and beneficial to the laboratory and TB control program staff? Readers often confuse proficiency testing with external quality assessment. The World Health Organization (WHO), in its most recent guidelines for the programmatic management of drug-resistant tuberculosis (DR-TB), states that the Supranational Reference Laboratory (SRL) network should ensure drug susceptibility standards by establishing an external quality assurance system before the implementation of DR-TB control programs. At a minimum, external quality assurance should include 1) an initial assessment, 2) proficiency testing with an adequate number of coded isolates and 3) periodic checking of isolates obtained within the DR-TB control program.

In this issue, Shulgina and coauthors report on the 2005 expansion of a successful external quality assessment initiative of the Russian National Center for External Quality Assessment in Laboratory Medicine in collaboration with the Swedish Institute for Infectious Disease Control and the WHO.² This is welcome news, as the Russian Federation reports multidrug resistance rates of 10–20% among new TB cases. Although only 42 of the more than 300 civilian and 90 prison system TB laboratories that perform first-line drug susceptibility testing (DST) were enrolled in the study's first phase, there were 150 enrolled in 2008. There are several take-home messages from this report for readers and policy makers:

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- Participating laboratories had to adhere to international biosafety standards and pass an inspection.
- Testing results for isoniazid and rifampicin were more easily reproduced than those for ethambutol and streptomycin. This confirms findings from the WHO and the WHO Western Pacific Region.
- Laboratories participating in all three rounds showed higher proficiency than laboratories participating only once or twice.
- After each round of proficiency testing, the National Center called the laboratories to a meeting to discuss the results. As an added value, these meetings increased buy-in and on-going commitment from the attendees.

The group agreed that below 90% accuracy (ratio of the number of accurate results among all results) was an *unacceptable* level for isoniazid and rifampicin. Until recently, DST results were mainly used for surveillance purposes and policy decisions; therefore, quality was key and timeliness came second. In today's global environment with MDR- and XDRTB, DST results are increasingly used for real-time patient care. Therefore, quality must be coupled with a timely result. TB control programs and laboratory scientists should include monitoring of turnaround times (from date of specimen collection to date of reporting results) in the external quality assessment. Furthermore, proficiency testing isolates should be more fully characterized, including molecular analysis of drug resistance mutations in relevant genes such as *rpoB*, *katG*, *inhA*, etc., as well as determination of the minimal inhibitory concentration against compounds in question. This additional information can aid in resolving discrepant results and indicate future directions for proficiency testing. Coming back to the initial question, proficiency testing results will be increasingly useful to laboratory and program staff in future years. Dr. Shulgina and her co-authors are to be congratulated on the magnitude of their effort and on the transparency with which it is reported.

Salfinger M, Ahmedov S. Has the time come to discontinue proficiency testing? *Int J Tuberc Lung Dis.* 2009 Oct;13(10):1193.

“*Mycobacterium canettii*” isolated from a human immunodeficiency virus-positive patient: first case recognized in the United States

We report the first case of tuberculosis caused by “*Mycobacterium canettii*” recognized in the United States. The pathogen was isolated from the cerebrospinal fluid of a 30-year-old Sudanese refugee.

Somoskovi A, Dormandy J, Mayrer AR, Carter M, Hooper N, **Salfinger M.** “*Mycobacterium canettii*” isolated from a human immunodeficiency virus-positive patient: first case recognized in the United States. *J Clin Microbiol.* 2009 Jan;47(1):255-7.

An accelerated method for isolation of *Salmonella enterica* serotype Typhimurium from artificially contaminated foods, using a short preenrichment, immunomagnetic separation, and xylose-lysine-desoxycholate agar (6IX method)

Rapid isolation of *Salmonella* from food is essential for faster typing and source tracking in an outbreak. The objective of this study was to investigate a rapid isolation method that would augment the standard U.S. Food and Drug Administration's Bacteriological Analytical Manual (BAM) method. Food samples with low microbial load, including egg salad and ice cream, moderately high-microbial-load tomatoes, and high-microbial-load ground beef were intentionally inoculated with 2 to 48 CFU of *Salmonella enterica* serotype Typhimurium. The samples were preenriched in buffered peptone water for 6 h, and then selectively concentrated by immunomagnetic separation and plated for isolation on xylose-lysine-desoxycholate agar: the 6IX method. *Salmonella* Typhimurium was presumptively identified from approximately 97% of the low-microbial-load and moderately high-microbial-load samples by the 6IX method 2 days before the BAM standard method for isolation of *Salmonella*. In 49% of the beef samples, *Salmonella* Typhimurium was presumptively identified 1 or 2 days earlier by the 6IX method. Given the inocula used, our data clearly indicated that for most of the food samples tested, with the exception of ground beef, *Salmonella* Typhimurium could be isolated two laboratory days earlier with the 6IX method compared with the BAM method. In conclusion, this 6IX method may expedite *Salmonella* isolation and, therefore, has the potential to accelerate strain tracking for epidemiological analysis in a foodborne outbreak.

Tatavarthy A, Peak K, Veguilla W, Cutting T, Harwood VJ, Roberts J, **Amuso P**, Cattani J, Cannons A. An accelerated method for isolation of *Salmonella enterica* serotype Typhimurium from artificially contaminated foods, using a short preenrichment, immunomagnetic separation, and xylose-lysine-desoxycholate agar (6IX method). *J Food Prot.* 2009 Mar;72(3):583-90.

Patient-to-Patient Hepatitis C Virus Transmission in an Abdominal Organ Transplant Service

Background. De novo hepatitis C virus (HCV) infection among transplant patients is rarely recognized but can have severe consequences. We investigated the scope, source, and mode of HCV transmission within a transplant center after incident HCV infection was identified in 2 patients who had liver transplantation in late 2006.

Methods. Patients were interviewed, and transplant logs, medical records, and staff practices were reviewed to identify opportunities for HCV transmission. Infection via receipt of blood or organs was

evaluated. Molecular epidemiology was used to determine the relatedness between persons with incident and chronic HCV infection.

Results. HCV from infected blood or organ donors was ruled out. Among the 308 patients who underwent transplant in 2006, no additional incident HCV infections were identified. Eighty-five (28%) had pre-transplant chronic HCV infection; 13 were considered possible HCV source patients based upon shared days on the inpatient unit, nursing assignment, or invasive procedures in common with incident HCV case-patients. Viral isolates from 1 HCV source patient and 1 incident case-patient were found to be highly related by quasi-species analysis, confirming patient-to-patient HCV transmission. Possible modes of transmission identified were the improper use of multidose vials, sharing of blood-contaminated glucometers, and touch contamination.

Section 7: Recently Published Papers and Reports

Conclusion. Sporadic transmission or endemic levels of HCV transmission might be overlooked in a setting with high HCV prevalence, such as liver transplant units, where multiple, repeated opportunities for patient-to-patient HCV transmission can occur. Surveillance through pre- and post-transplant screening is necessary to identify incident HCV infection in this setting. Constant, meticulous attention must be paid to maintaining aseptic technique and good infection control practices to eliminate HCV transmission opportunities.

Thompson ND, Hellinger WC, **Kay RS**, Cohen L, Ragan P, Voss RA, Xia G, Keating MR, Dickson RC, Hughes CB, Williams IT, Perz JF. (2009) "Patient-to-Patient Hepatitis C Virus Transmission in an Abdominal Organ Transplant Service." *Transplant Infectious Disease*, 11(4), pg.324-329.

A comprehensive evaluation of outcomes for inflammatory breast cancer

OBJECTIVE: Inflammatory breast cancer (IBC) remains the breast malignancy with the worst prognosis. We sought to determine the effects of race, socioeconomic status and treatment on outcomes for women with IBC. Study design The Florida cancer registry, inpatient and ambulatory data were queried for patients diagnosed from 1998 to 2002. RESULTS: A total of 935 patients with IBC were identified (1.5% of all breast cancers). Overall, 83.1% were Caucasian, 13.9% African American (AA), and 15.7% Hispanic. The mean age of diagnosis was 57 years old. AA patients presented at a younger age, with higher tumor grade, and were less likely to undergo surgical therapy than their Caucasian counterparts. Median survival time (MST) for the entire cohort was 32 months, while MST for AA patients was 20 months. Patients who received chemotherapy before surgery, surgery without chemotherapy, and surgery before chemotherapy demonstrated an independent, significantly improved outcome in comparison to patients who underwent chemotherapy without surgical extirpation. The administration of radiation therapy did not demonstrate an improvement in survival. By multivariate analysis, AA race (HR = 2.19) and failure to provide surgery (HR = 2.3) were independent predictors of worse prognosis. No effect of poverty or ethnicity on outcome was observed. CONCLUSIONS: IBC carries a poor prognosis for all patients with significantly worse outcomes for AA women. Multimodality therapy provided the best survival rates.

Yang R, Cheung MC, Hurley J, Byrne MM, **Huang Y**, Zimmers TA, Koniaris LG. "A comprehensive evaluation of outcomes for inflammatory breast cancer." *Breast Cancer Res Treat*. 2009 Oct;117(3):631-41.