DBD BULLETIN

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this issue

DIRECTOR'S SPOTLIGHT

regards from *Rana ...*

Dear colleagues,

The last three months have seen a flurry of activities following the American Recovery & Reinvestment Act (Recovery Act) as well as the novel influenza A (H1N1) outbreak. Recovery Act activities required intense efforts by many staff in the division to ensure adequate funding of key studies that will allow us to assess the vaccine effectiveness of the meningococcal conjugate vaccine and the new pneumococcal conjugate vaccine, as well as support laboratory training activities for state health departments to help build and upgrade the capacity to diagnose our various diseases. In addition, and at a time when all of CDC was on alert, the Division of Bacterial Diseases, once again, rose up to the challenge of supporting another major national public health response; this time the H1N1 influenza outbreak, mobilizing its staff and resources. Almost one third of our staff was involved in all aspects of the outbreak response, including laboratory support, epidemiologic and surveillance activities, data management, and incident management command. I very much appreciate the efforts of all those who volunteered in this response, as well as all our other staff who had to double up their efforts in order to ensure the continuation of our critical activities. I am also very proud of the various awards that our division staff have won recently, as groups or individuals, highlighting the division's achievements and contributions to public health both domestically and globally, including support of more environmentally friendly laboratory practices. Thank you very much for all your efforts to improve the control of the various bacterial vaccine-preventable and respiratory diseases, and I hope you will be able to take some time off this summer to relax and prepare for next year. Wishing you all a safe and fun summer!

Rana

The American Recovery & Reinvestment Act of 2009: DBD sets August 30th Target Date to Award $7 Million Dollars to States

On February 17th, President Obama signed the American Recovery & Reinvestment Act (Recovery Act) of 2009—a strategic and significant investment in our country's future and opportunity for CDC to have an even greater impact on the health of the Nation.

The act allocated more than $1 billion for public health to the Department of Health and Human Services: $650 million for community-based prevention and wellness programs, $50 million for healthcare-associated infections, $50 million for information technology security and $300 million directly to CDC to expand the Section 317 Immunization Program. Visit www.recovery.gov for more information.

The Recovery Act provided a tremendous opportunity to foster communication and stimulate collaboration within the Division of Bacterial Diseases (DBD) as staff across the division carefully decided how best to spend the funds to support CDC in achieving the intent of the stimulus effort. DBD has worked with colleagues throughout the agency and external partners to develop competitive criteria to award nearly $7.5 million dollars to state health departments by August 30th to fund activities related to "Strengthening the immunization evidence base."

States currently have limited funding to conduct surveillance and to evaluate the effectiveness of our newest vaccines. DBD will oversee award funding for activities and staffing for a meningococcal conjugate vaccine effectiveness study and vaccine-preventable disease (VPD) surveillance; a 13 valent pneumococcal conjugate vaccine effectiveness study; and a project to enhance state laboratory training in VPD diagnostics (a joint activity with the Division of Viral Diseases). The August 30th awarded funds will support activities to be implemented and completed over a 24 month time period.

We are proud to have this opportunity to expand our relationship with state health departments by leveraging longstanding relationships with the Association for Public Health Laboratories to facilitate Recovery Act funded projects that will strengthen surveillance, monitor the impact of all vaccines and add to the body of knowledge to inform long term vaccine policy. Within CDC, the division has collaborated closely with the Division of Emerging Infections and Surveillance Services, the Emerging Infectious Diseases Program, the Epidemiology and Laboratory Capacity Program and the Division of Viral Diseases to develop these initiatives.

Investing in state health departments is critical and extends well beyond the immediate creation of jobs. The outcomes associated with these investments will be seen for years to come as collaborators compile data to further validate the effectiveness of vaccines in preventing disease and identify new ways to augment capacity building activities at the state level. The high standards of accountability set for achieving outcomes will ensure that the "gold standard" for research is maintained—generating effectiveness data that can be instrumental in informing vaccine policy decisions and guiding manufacturers in developing the content of the next generation of vaccines. DBD's direction of Recovery Act funds to state health departments will produce benefits to the economy, enhance the pool of scientific knowledge about VPDs, help limit the transmission of VPDs and ultimately aid in improving the health of Americans of all ages.

ACIP: June 24-26 Meeting

DBD participated in the meeting during the following sessions:

- Estimate of effectiveness of meningococcal conjugate vaccine (MCV4)
- Recommendations for MCV4 revaccination for persons at prolonged increased risk for meningococcal disease
- *Haemophilus influenzae* serotype b (Hib) surveillance
- Planning for use of PPSV23 to prevent novel influenza A (H1N1) - associated pneumococcal disease
- Invasive pneumococcal disease burden caused by PCV13 serotypes

DBD Answers the Call to Support Agency H1N1 Response

On April 24th CDC reported two cases of a new strain of flu—novel influenza A (H1N1) virus. The situation was concerning because it appeared that human-to-human transmission was occurring. A possible global danger had emerged, and the need for a global framework for responding to it was evident. Dr. Richard Besser, as CDC's Acting Director, activated the agency's Emergency Operations Center (EOC—the central public health incident management center), and with that, the H1N1 investigation became the agency's top priority.

Agency-wide, staff undertook activities that had only been practiced in drills. This activation was real, and challenges—technical, political and institutional—had to be addressed in real time. As the pandemic threat level continued to change, CDC aggressively investigated possible sources of the infection and the scope of the outbreak in order to implement mitigation measures. Collaborations with international health organizations and key partners, local and state health authorities, elected officials and policymakers were mounted to communicate critical information to the media and the general public.

During the height of H1N1 response activities, CDC deployed more than 250 Atlanta-based staff to work 24 hours a day, 7 days a week in the EOC. Additionally, 82 staffers were deployed to states, 24 went to U.S. Quarantine Stations and 16 went to Mexico.

To date, more than 60 staffers from DBD have assisted in this pandemic response. Whether traveling around the globe at first notice of cases to provide technical assistance, investigating scenarios through fieldwork data collection, tracking CDC's H1N1 response, communicating with the public and policymakers, managing EOC functions or handling essential administrative tasks, DBD staff immediately volunteered their skills to support the agency's response to this outbreak. For example:

Just before the EOC was fully mobilized, Jonas Winchell was on the ground in Mexico City working 15 hour days to establish a laboratory and logistics for testing thousands of backlogged specimens that had come in from all over Mexico. Agnes Warner joined him the following week to provide further technical assistance. Both worked effectively with Mexican health authorities to quickly and accurately gather the data, equipment and reagents needed to enable Mexico to address the pandemic underway. See Washington Post article at www.washingtonpost.com/wp-dyn/content/article/2009/05/07/AR2009050703892_pf.html.

Early in the response, Jennifer Verani and Ben Silk deployed to San Antonio, TX where they collaborated with state and local health authorities to find answers to questions about transmission, severity and disease burden. Jennifer remarked, "It was very gratifying to see how our data were providing insights on this novel virus. The most unexpected thing was watching the media declaring the outbreak over about a week into our time there—when we knew that H1N1 was far from over."

"The microbe that felled one child in a distant continent yesterday can reach yours today and seed a global pandemic tomorrow." - Joshua Lederberg, Nobel Laureate, Physiology 1958

Communication was at the hub of demands and requirements for this response. The Joint Information Center (JIC) relied on subject matter experts in every unit of the EOC to meet the information needs of CDC and the public. CDC harnessed the latest technology in media, internet, Twitter, podcasts and public appearances to keep the world informed on the status of the H1N1 outbreak. Marsha Houston assisted the JIC in prioritizing and responding to thousands of requests.

Gina Mootrey, who staffed the EOC Technical Services Unit commented, "Helping sustain the momentum of this rapid paced environment charged to ensure the scientific integrity and accuracy of all H1N1 content documents was a demanding and exhilarating experience. The staff there were among the best communicators in public health. I was proud to be a part of the response."

To support New York City Health Department's investigation of one of the nation's largest outbreaks—at a school in Queens—DBD staffers interviewed 143 people in 32 households to characterize secondary attack rates, virus generation time, viral shedding and risk/protective factors. They collected blood samples from 134 people to send to CDC labs for H1N1 serology diagnostics development and designed a survey instrument that was modified for in-person, phone and web use. Michael Jackson, part of the 15 member field team reported that navigating the streets of New York may have been the most difficult aspect of this rapid response investigation, "On one day, we left Manhattan at 1:30 PM for a household interview and returned to the public health lab at 6:00 PM. 45 minutes for the interview and 3 hours and 45 minutes in traffic. Because the families involved were so cooperative, we gathered invaluable data."

PHOTO:
CDC's Emergency Operations Center (EOC)

Perhaps Eddie Ades, who was co-team lead for the EOC laboratory response, described the division's support best when he said, "DBD's involvement in the H1N1 response was phenomenal and not at all unexpected. Our willingness to go the extra mile is just characteristic of the overall commitment of the division's staff to public health."

DBD acknowledges and thanks all who volunteered during the current H1N1 response. Special thanks to DBD staff who pitched in to ensure that the division's essential functions remained in tact and our external partners for their support and encouragement.

Though the 24 hour-a-day H1N1 response activities have been modified, a number of DBD staffers will have on-going involvement in the EOC, research, publication and engagement in deployments to locations throughout the world for the foreseeable future. Access the latest information on H1N1 at: www.cdc.gov/H1N1FLU/.

UPDATES

- The Anthrax Vaccine Research Program (AVRP) database was locked in early July, more than 7 years after the first participant enrolled! Early review of these recently locked data indicates an exciting opportunity to perhaps reduce the number of doses beyond the 5 dose series currently administered. However, much remains to be done to use these data to effect a change in vaccine licensure.
- Performance Management Appraisals Program (PMAP) midyear reviews and evaluations are due July 30.

AWARD SPOTLIGHT

Awards Presented at the 2009 58th Annual Epidemic Intelligence Service (EIS) Conference

The Iain C. Hardy Award was awarded to **Amanda Cohn** and **Ros O'Loughlin**. This award recognizes a current EIS officer or an alumnus/a within five years of having completed EIS training who has made an outstanding contribution to the control of vaccine-preventable diseases.

The J. Virgil Peavy Memorial Award was awarded to **Michael Jackson**. Sponsored by the EIS Alumni Association, this notable award recognizes a current EIS officer for the oral or poster presentation that best exemplifies the effective and innovative application of statistics and epidemiologic methods in an investigation or study.

Pertussis Clinical Validation Study

Despite high childhood vaccination rates, pertussis is among the most poorly-controlled vaccine-preventable diseases in the U.S., with substantial cyclic variability in disease occurrence. Pertussis remains endemic in the U.S. and in 2005, the most recent peak incidence year, more than 25,000 cases were reported.

Laboratory diagnostics are key to understanding the epidemiology and transmission of pertussis, but pertussis diagnostics is problematic. The current gold standard for *B. pertussis* is culture, which requires several days to perform and suffers from a lack of sensitivity. Polymerase chain reaction (PCR) is rapidly becoming the standard for laboratory diagnosis; however, no PCR assay has been standardized or licensed for diagnostic use, and predictive values of results have not been defined.

Serological testing for antibodies to *B. pertussis* antigens has the potential advantage of markedly improving diagnostic sensitivity, but it currently has several limitations, including the need to collect acute and convalescent specimens.

CDC is conducting a study at six sites nationwide to provide assessments of the sensitivity, specificity, and predictive values of several new diagnostic methods, as well as to provide additional insight into the clinical usefulness of the individual tests as related to stage of disease, age, and vaccination status.

For this study, clinical specimens, clinical symptoms, and epidemiologic-linkage information will be collected from 1,200 persons with cough illness. Using a serology kit recently co-developed by CDC and FDA, serologic testing will be conducted to assess pertussis antibodies. PCR assays will be performed at CDC using a combination of two real-time PCR assays with different targets, and the study sites may perform their standard PCR assay used for routine patient management.

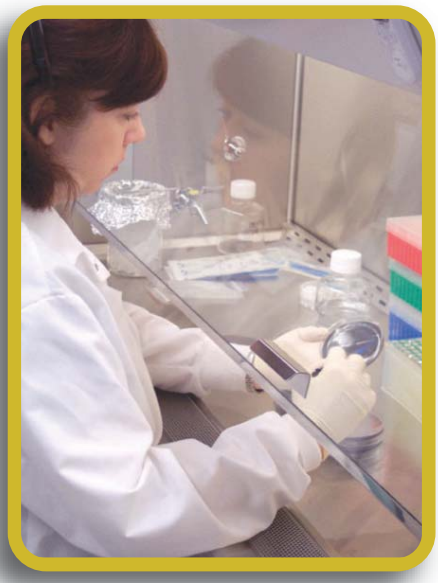

PHOTO:
Laboratorian Pam Cassiday isolating Bordetella pertussis on Regan-Lowe medium in CDC's pertussis laboratory

If successful, the results of this study will ensure that validated laboratory assays are available at both the state and local level and at CDC to assess and manage pertussis outbreaks, measure the real burden of adolescent and adult pertussis disease, and perform future pertussis vaccine efficacy studies.

As of April 30, 2009, 575 persons had been enrolled in the study and 818 diagnostic tests (429 PCR, 154 culture, and 235 serology tests) had been run by CDC's Pertussis Lab Team – Pam Cassiday, Kathleen Tatti, Lucia Pawloski, Monte Martin, Kathryn O'Connell, and Amber Schmidtke. For more information, contact Stacey Martin or Lucia Tondella.

AWARD SPOTLIGHT

PHOTO: Brian Plikaytis, Chief of DBD's Biostatistics Office, accepting the Excellence in Innovations Award from CDC Director Dr. Thomas Frieden and CCID Chief Management Officer Reginald Mebane

The **CDC and ATSDR Honor Awards** celebrate the best of public service by recognizing the outstanding, talented, and dedicated staff of CDC for their contribution to improving public health and making the world a better place. DBD was presented with 5 awards during the June ceremony:

- Global Health Achievement Group Award: **The Hib Initiative Team**
- Partners in Public Health Improvement Group Award: **Dr. I. King Jordan's Laboratory** at the Georgia Institute of Technology for collaborative work with Leonard Mayer's Meningitis Laboratory (see Spring DBD Bulletin)
- James Virgil Peavy Work Force Development Group Award: **The CDC Veterinary Student Day Team**
- Excellence in Innovations Award: **Brian D. Plikaytis**
- "Go Green, Get Healthy" Sustainability Group Award: **MVPDB's Lab Recycling Program** (see http://intranet.cdc.gov/cso/sustainabilitystar/archive/2008_07.htm)

PUBLIC HEALTH SERVICE (PHS) COMMISSIONED CORPS AWARDS

The Outstanding Unit Citation Award (OUC) is presented to officers of a unit that exhibits superior service toward achieving the goals and objectives of the PHS. To merit this award, the unit must provide exceptional service, often of national or international significance. The OUC was awarded to:

- **The Hib Initiative** for exceptional service in preventing childhood pneumonia and meningitis by increasing adoption of Hib vaccine in developing countries and
- **The Pertussis Outbreak Response Team** for exemplary work assisting state and local health departments in multiple pertussis outbreaks which led to changes in national recommendations for pertussis testing during suspected outbreaks.

The Outstanding Service Medal was presented to **Delois Jackson** for outstanding leadership and excellence in microbiological methods for assessment and prevention of pneumococcal and other streptococcal diseases.

The Achievement Medal was presented to **Jennifer Dolan** for leading the development of unique molecular diagnostic techniques to identify agents of bacterial meningitis in the U.S. and developing countries.

2009 ATLANTA FEDERAL EMPLOYEE OF THE YEAR "OUTSTANDING TEAM AWARD"

This award honors teams of employees who have made an outstanding contribution to achieving a special project, accomplishing their agency's mission, achieving a significant cost reduction, or providing exceptional service to a customer or the public. DBD's **Anthrax Vaccine Research Program (AVRP) Team** was awarded for the interim analysis and the December 2008 FDA approval of the BLA.

FEATURED PUBLICATIONS:

Skoff TH, Farley MM, Petit S, Craig AS, Schaffner W, Gershman K, Harrison LH, Lynfield R, Mohle-Boetani J, Zansky S, Albanese BA, Stefonek K, Zell ER, Jackson D, Thompson T, Schrag SJ. **Increasing burden of invasive group B streptococcal disease in nonpregnant adults, 1990–2007.** Clin Infect Dis. 2009;49:85-92.

Van Dyke MK, Phares CR, Lynfield R, Thomas AR, Arnold KE, Craig AS, Mohle-Boetani J, Gershman K, Schaffner W, Petit S, Zansky SM, Morin CA, Spina NL, Wymore K, Harrison LH, Shutt KA, Bareta J, Bulens SN, Zell ER, Schuchat A, Schrag SJ. **Evaluation of universal antenatal screening for group B streptococcus.** N Engl J Med. 2009;360:2626-36.

Calm before the storm: Inhalation anthrax study reveals triphasic kinetics for lethal factor and poly-D-glutamic acid capsule with a central period of remission before fulminant infection and death. Inhalation anthrax has a rapid onset and a high fatality rate unless diagnosed and treated early. The toxins of *Bacillus anthracis* contribute to the rapid progression by disabling host immune defenses. Boyer et al. describe using a highly sensitive and specific method to detect the anthrax toxin lethal factor (LF) in rhesus macaques within 24 hours of spore exposure and provide the first description of a triphasic kinetic pattern for inhalation anthrax. The triphasic infection pattern concurs with the clinical description in humans of initial flu-like illness followed by a brief respite and then death. Detection of the bacterial poly-D-glutamic acid capsule antigen and culture results support this triphasic pattern and indicate that animals exhibit a robust antigenic clearance before the toxins disarm the immune response and infection progresses. The study emphasizes the value of LF detection as a tool for early diagnosis of inhalation anthrax and the utility of LF levels in monitoring infection status. Stay tuned for the August 31st print publication.

SAVE THE DATE!

Save the date for the second annual **Get Smart About Antibiotics Week**, October 5-11, 2009. This is an annual effort to coordinate the work of CDC's Get Smart campaign, state-based appropriate antibiotic use campaigns, non-profit partners, and for-profit partners during a one-week observance of antibiotic resistance and the importance of appropriate antibiotic use. For more information, visit www.cdc.gov/getsmart.

Save the date for **World Pneumonia Day**. Child health groups, united with Save the Children Artist Ambassadors Gwyneth Paltrow and Hugh Laurie, established an annual World Pneumonia Day for **November 2, 2009**. The day will mobilize efforts to fight a neglected disease that kills more than two million children under the age of five worldwide each year. For more information, visit www.worldpneumoniaday.org.

Using PPV23 Vaccine to Prevent Pneumococcal Pneumonia During an Influenza Pandemic

During the February 2009 meeting of the Advisory Committee on Immunization Practices (ACIP), Matt Moore presented "Pneumococcal Vaccines: Use of PPV23 for prevention of pneumococcal pneumonia during an influenza pandemic." During previous influenza pandemics, many people with pandemic influenza infection developed secondary pneumococcal pneumonia (SPP), including many who are not in groups currently targeted for pneumococcal vaccines. Moore described the role PPV23 may play in preventing SPP during the next influenza pandemic.

CDC has been considering two overarching questions related to the use of pneumococcal vaccines during the next pandemic: Should PPV23 be recommended for groups without existing indications for vaccination? If so, which groups should be included in the expanded recommendations and when should they receive vaccination, e.g., as soon as possible vs. when a pandemic is imminent?

During the three influenza pandemics that occurred in the 20th century, about 15% of people with pandemic influenza infection went on to develop secondary bacterial pneumonia. Approximately half of those bacterial pneumonia cases are thought to have been caused by *Streptococcus pneumoniae*. Neither of the existing pneumococcal vaccines was available during the 20th century pandemics.

Because of the association between previous pandemics and SPP, several divisions in CDC's Coordinating Center for Infectious Diseases have been collaborating to estimate the potential burden of SPP and the possible impact of prevention strategies during the next pandemic. A rate-based model has been developed that considers potential influenza attack rates, SPP attack rates, the various etiologies of bacterial pneumonia, and potential interventions such as antiviral prophylaxis and treatment. Although much uncertainty exists in these estimates, the model suggests that more than two million cases of SPP might occur in the U.S. population during the next pandemic. Pneumococcal vaccines may play a role in reducing morbidity and mortality associated with pandemic influenza infection.

One option for using pneumococcal vaccines during the next pandemic would be to vaccinate approximately 20 million critical infrastructure, including vital communications and electricity workers, and front-line healthcare workers. This approach has several advantages. First, these same populations have been considered for pre-pandemic influenza vaccination; therefore, co-administration of pneumococcal vaccine and pre-pandemic influenza vaccine might be feasible using the same infrastructure. Second, emergency responders and healthcare personnel will likely be at increased risk of exposure to pandemic influenza infection and may, therefore, be more likely to develop SPP. Third, most of these people are likely to be relatively young and healthy and would be expected to mount an adequate immune response to vaccination. Finally, the available PPV23 vaccine is thought to be 50-85% effective against bacteremia caused by serotypes included in the vaccine.

A recommendation to use pneumococcal vaccines could result in purchase and stockpiling of PPV23 for persons not included in existing recommendations. To view the ACIP presentation slides, visit http://www.cdc.gov/vaccines/recs/ACIP/slides-feb09.htm#pneuvac. Read the June interim guidance during novel influenza A (H1N1) pandemic at http://www.cdc.gov/h1n1flu/guidance/ppsv_h1n1.htm.

PHOTO
Electricity workers who may need to be vaccinated during an influenza pandemic

VACCINE NEWS

As of June 26, CDC is Recommending Reinstatement of the Hib Booster Dose

"Effective immediately, CDC, in consultation with ACIP, AAFP, and AAP, is recommending reinstatement of the booster dose of Hib vaccine for children aged 12--15 months who have completed the primary 3-dose series. Infants should continue to receive the primary Hib vaccine series at ages 2, 4, and 6 months. Children aged 12--15 months should receive the booster dose on time. Older children for whom the booster dose was deferred should receive their Hib booster dose at the next routinely scheduled visit or medical encounter. Although supply is sufficient to reinstate the booster dose and begin catch-up vaccination, supply is not yet ample enough to support a mass notification process to contact all children with deferred Hib booster doses."

Centers for Disease Control and Prevention. Updated recommendations for use of *Haemophilus influenzae* type b (Hib) vaccine: reinstatement of the booster dose at ages 12--15 months. MMWR 2009;58:673-74.

COMMUNICATIONS

- Brian Harcourt and Fátima Coronado worked with NPR's Medical Discovery News to produce a 2 minute radio show about the meningococcal vaccine; it will air on July 18th. Listen at www.medicaldiscoverynews.com.
- The meningitis and Get Smart websites have launched in CDC's new web template. View at www.cdc.gov/meningitis and www.cdc.gov/getsmart.
- DBD's Eddie Ades was profiled on CDC Connects in a story about inventors at CDC. Read more under April's Inside Stories at http://intranet.cdc.gov/ecp/insidestory/index.asp.
- CDC offers Live Meeting, which is also known as Web Conferencing and Net Conferencing. This interactive collaboration application allows colleagues to share presentation and application materials over the Internet with the audio provided over the phone. For more information, visit intranet.cdc.gov/itso/ResourceTools/conferencing/Web_Conferencing.htm.
- The Graphics Services Council at CDC has developed a guideline factsheet -- "Approval Process for the Use of Partner Logos." View at http://intra-apps.cdc.gov/createit/createit2/request_job_start.asp.

MEETINGS

The annual **ABCs Surveillance Officers Meeting** was held in Portland, OR on June 1-2. This meeting is the primary forum in which the ABCs surveillance officers and CDC collaborators gather to review ongoing projects and recent study results, discuss potential solutions to current surveillance challenges, and learn about upcoming or new projects for ABCs as set forth by the ABCs Steering Committee and principal investigators. Meeting attendees included ABCs surveillance officers from all 10 Emerging Infections Program (EIP) sites, CDC ABCs staff from RDB, MVPDB, DHQP and the Influenza Division as well as colleagues from CDC's Arctic Investigations Program (AIP) and a guest public health researcher from South Africa's Group for Enteric, Respiratory, and Meningeal Disease Surveillance (GERMS-SA). Highlights from this year's meeting included updates on challenges in tracking severe group A *Streptococcus* infections; preparing for expanded multivalent conjugate vaccines for *Streptococcus pneumoniae*; neonatal sepsis trends; epidemiology of MRSA; updates on an ongoing *Neisseria meningitidis* vaccine effectiveness study; *Haemophilus influenzae* type b infections among vaccinated children; seasonal summary of influenza hospitalizations, including an update on novel H1N1; and discussion of ways to optimize ABCs surveillance methods. Several surveillance officers presented site-specific analyses and special presentations were given by ABCs sister surveillance programs; AIP and GERMS-SA.

CDC held a meeting with key partners, including the American Academy of Pediatrics, American College of Obstetricians and Gynecologists, American Academy of Family Physicians and American College of Nurse-Midwives on June 22-23 in Atlanta, GA to revise the 2002 **Prevention of Perinatal Group B Streptococcal Disease** guidelines. The discussion focused on all aspects of the guidelines including laboratory, obstetric and neonatal components of the recommendations.