

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL AND PREVENTION**

**National Center for Infectious Diseases
Board of Scientific Counselors**

Minutes of Meeting

**May 12 and 13, 2005
Atlanta, Georgia**

MINUTES

The Board of Scientific Counselors (BSC), National Center for Infectious Diseases (NCID), convened a meeting at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia on May 12-13, 2005. Dr. Stanley Lemon served as Chair; Dr. Rima Khabbaz served as Executive Secretary.

WELCOME AND OPENING COMMENTS

Dr. Stanley Lemon

Dr. Lemon, the Board's Chair, welcomed BSC members and other meeting participants. Meeting attendees then introduced themselves. During his opening comments, Dr. Lemon stressed the importance of obtaining feedback during the meeting regarding CDC's recent reorganization. Dr. Lemon asked BSC members for comments and revisions to the December 2004 BSC Minutes of Meeting; with the exception of a minor editorial change, BSC members officially approved the December minutes.

Dr. Rima Khabbaz provided the Board with information regarding upcoming meetings. The International Conference on Emerging Infectious Diseases will be held in Atlanta on March 19--22, 2006. The International symposium on Emerging Zoonoses and the International Conference on Women and Infectious Disease (ICWID) will be held on March 22--24 and March 16--18, respectively.

NCID UPDATES

Dr. Anne Schuchat

Many new activities are being undertaken within NCID, and many changes have taken place since the December 2004 BSC meeting. The center is under new leadership. Dr. Jim Hughes is retiring from CDC and will begin work at Emory University this summer, and Dr. Steve Ostroff has moved to Hawaii to serve as the HHS representative for the Pacific region. A transition team is in place to help maintain leadership during these changes in leadership; Dr. Schuchat is serving as Acting Director, Dr. Rima Khabbaz is the Acting Deputy Director of NCID and Executive Secretary for BSC, and Dr. Dan Jernigan is serving as the Acting Associate Director for Epidemiologic Science. Dr. Schuchat provided meeting attendees with background about her professional experience. She became the Acting Director of NCID on February 7th, 2005 after having worked within NCID for 17 years. Dr. Schuchat started her CDC career as an Epidemic Intelligence Service (EIS) Officer in the Division of Bacterial and Mycotic Diseases (DBMD) and later served as a Branch Chief within this Division.

Other new staff members have been appointed to new leadership positions within NCID. Dr. David Warnock is now Director of NCID's DBMD, Dr. John Ward is Director of the Division of Viral Hepatitis, Doug Brown has become the Deputy Director for DBMD, and Dr. Ron Rosenberg is Associate Director for Science in the Division of Vector-Borne Infectious Diseases.

Reorganizing NCID's Office of the Director

Dr. Anne Schuchat

Dr. Schuchat gave the Board an update regarding CDC's reorganization and how it has affected NCID, particularly the center's Office of the Director (OD). With the Futures Initiative, a new mandate was given prohibiting center offices from running programs. For NCID, this mandate meant that many programs (e.g., program development, veterinary medicine, chronic disease coordination, and surveillance) would have to be moved out of the center's OD. Other activities (e.g., Health Communication and Informatics) would need to be moved out of NCID and into other Coordinating Centers.

Active workgroups were formed within NCID, charged with developing a plan for restructuring the center based on Futures Initiatives mandates. Workgroup participants organized NCID as follows.

- NCID's OD will continue to oversee management and operations, administrative services, policy planning and evaluation, laboratory science coordination, epidemiology science coordination, vaccine coordination, and global health. Minority and women's health activities might stay within the OD, although another option is for this office to be moved out of NCID and into another coordinating center.
- Several activities (i.e., the veterinary medicine, public health, and antimicrobial resistance offices) are moving out of OD because opportunities exist for synergy with other existing NCID divisions. No final decisions have been made regarding where these activities will be placed.
- NCID's Extramural Research Office will be moving to the Scientific Resource Program, although this move may be temporary and dependent on firewall issues.
- NCID's OD will no longer be coordinating research concerning infectious and chronic diseases.
- Several cross-cutting programs have been identified as needing to be housed together in a new small division or program. These programs include the *Journal of Emerging Infectious Diseases*, program development activities, the surveillance office, and cross-cutting global health activities.

Dr. Schuchat discussed issues and infectious-disease problems that have been facing NCID since last December's BSC meeting. She presented meeting attendees with a timeline of these activities, summarized in the following bulleted list.

- December 2004: The world faced the largest tsunami in history; NCID played an active role in relief efforts, helping to reduce morbidity from diarrheal disease.
- February 2005: A vancomycin-resistant *Staphylococcus aureus* case was reported in Michigan; NCID's Division of Healthcare Quality and Promotion (DHQP) supported the investigation.
- Early spring 2005: Repeated outbreaks of *E. coli* and hemolytic uremic syndrome associated with petting zoos occurred, resulting in substantial "letter writing" campaigns and concerns from CDC's constituents.

- March 2005: NCID dealt with an anthrax scare associated with a mail handling facility for the Pentagon; anthrax-related activities consumed the center for approximately 3 days, and after-action tasks and lessons learned are still being undertaken and discussed. NCID also became involved in a health scare in Angola that was quickly discovered to be caused by Marburg; scientists from NCID's Division of Viral and Rickettsial Diseases (DVRD) confirmed the etiology of this outbreak.
- April 2005: The center participated in a large-scale training exercise known as "Top Off 3." NCID played a substantial role in this exercise, because a plague emergency was used as one of the scenarios. Also during this month, NCID was actively involved in handling activities associated with the inadvertent distribution of H2N2 influenza in proficiency kits to 4,700 laboratories around the world.
- Spring 2005: NCID has been involved in dealing with the reemergence of polio in Yemen and Indonesia.

Dealing with infectious-disease associated problems throughout the world requires NCID to devise, assess, communicate, and implement solutions. The following timeline represents solutions that have been undertaken during 2005.

- January 2005: The first quadravalent conjugate vaccine for meningococcal disease was licensed.
- February 2005: CDC recommended that the meningococcal vaccine be routinely used in adolescents.
- April 2005: The results of the Gambian pneumococcal disease vaccine trial were published in the Lancet; the trial demonstrated that the vaccine substantially reduces child mortality.
- April 2005: President Bush added avian influenza to the list of quarantinable diseases.

Other efforts are having a positive impact on public health. Results from the 2004 FoodNet surveillance system have recently become available and indicate a 30%-45% decline in the major foodborne pathogens.

Dr. Schuchat discussed the expansion of partnerships within NCID. Efforts are underway to expand CDC's messages and to learn from other organizations through partnering; specifically, three national meetings recently have been held: the National Viral Hepatitis Roundtable, the Building Bridges meeting, and the 6th National Conference on West Nile Virus. Also key to ensuring an exchange of information is the external program-review process. Many external reviews have taken place within NCID; the Scientific Resources Program reviewed the Laboratory Animal Program, the Emerging Infections Program reviewed the new Respiratory Diseases Activity, and the Bioterrorism Response and Preparedness program will undergo external review in July.

NCID has had many other achievements thus far this year. First, the center's Laboratory Response Network has been identified as one of 18 finalists being considered for the America's Innovation in Government award; the final five finalists will receive a monetary reward for their achievements. In addition, the Honorable Shield Award was

presented to NCID's International Emerging Infections Program in Thailand in recognition for work done in the field of avian influenza; many NCID staff also have received HHS Distinguished Service Awards. Specific NCID employees have been recognized for their work in the field of infectious disease this year, including Brian McMahon (who became a master of the American College of Physicians); Michael Bell (named as a healthcare leader by the Atlanta Business Chronicle); and Roberta Carey and Fred Tenover (received recognition from FDA). Other NCID staff members have been highlighted in national media, including Tim Uyeki and Keiji Fukuda in the New York Times Magazine.

Discussion:

- Dr. Lemon asked whether a problem with silos is created as a result of moving programs into divisions. Dr. Schuchat responded that much thought has gone into determining where programs will be moved; all divisions have been consulted to ensure that they are served appropriately.
- Dr. Schuchat was asked about what the terms “management and operations” mean in terms of budget and FTEs when they are used in reference to OD responsibilities. She clarified that the budget is handled through the OD, because budget execution is authorized at the center level; the coordinating center does not allocate money to NCID's divisions. Other administrative activities (e.g., procurement, personnel actions, and facilities management) will also be conducted at the center level.
- One meeting attendee inquired about which key positions within NCID are still vacant or staffed with “acting” personnel. According to Dr. Schuchat, leadership positions within the divisions are staffed with permanent employees, although several vacancies exist at the OD level. Many of these positions can not be staffed until responsibilities are more clearly outlined.
- The question, “How much flexibility does the coordinating center have in budgets” was posed by Dr. Carole Heilman. She was told that when the budget is submitted to Congress, it is divided into large categories, but money is still allocated for separate diseases (in separate accounts) when it is handled within the agency. Efforts are underway to achieve more flexibility in the congressional budget lines.

Budget Update

Mark Scally and Jerry Robinson

Mark Scally updated the BSC about the FY '05 budget. Specific amounts have not changed substantially since the last board meeting in December 2004, although a few other changes have occurred as a result of CDC's new organizational structure. CDC's restructuring has required the creation of one budgetary infectious disease line that is representative of money allotted for several centers; this money is distributed to individual centers. Other new budget lines include the “business services” and “leadership and management” lines; in past years, these activities were referred to as “indirect costs.”

In allocating the '05 budget, the following guiding principle was outlined by CDC's OD: divisions and grant programs should be given funding at levels comparable to those allocated last year. To ensure this level of funding, CDC's OD is making an effort to identify ways to make the administration within divisions and programs more efficient. Divisions will not be given "hard numbers" regarding funding until this effort is complete.

Jerry Robinson gave the Board additional specific information about this year's budget. The following bullets summarize the update.

- CDC's funding for 2005 was \$7.7 billion, representing a 4% increase over the FY '04 appropriation.
- Congress did not approve Dr. Gerberding's request to have control in re-directing 1% of program money if needed; Congress instead encouraged Dr. Gerberding to use the available reprogramming authority to assist in the implementation of the Futures Initiative.
- Individual Learning Accounts up to \$30 million were approved for CDC staff (totaling \$1,000 per each FTE).
- The "infectious disease" budget line now represents HIV/STD, TB, and Immunization activities, all of which are managed by the Coordinating Center for Infectious Diseases (CCID).
- Increases in budget were given to buildings and facilities, infectious diseases, health promotion, health information and service, environmental health and injury, occupational safety and health, global health, public health research, public health improvement and leadership, ATSDR, and terrorism.

Jerry Robinson discussed budgetary estimates for FY '06. President Bush has submitted the budget to Congress, and hearings currently are being held. A reduction in money is expected for infectious disease. Other programs that will likely have a reduction in funding include chronic disease, birth defects and developmental disabilities, environmental health and injury, occupational health and safety, and public health improvement and leadership. Despite reductions, increased funding is proposed for CDC's global health program, which will positively impact infectious disease efforts.

Discussion:

- Mark Scally clarified that for bioterrorism funding, the dollar amount is the same as FY '04; however, an internal change in the allocation process makes the numbers appear different. Each year, programs must submit requests for funding from the Office of Terrorism Preparedness and Response; projects are then judged on the basis of their merits, which results in a highly competitive environment.
- Budgets have been affected by the formation of the coordinating centers. CDC's goal is to limit staffing to these centers to 20 employees, because the cost of operating the coordinating centers comes from existing centers' budgets.
- The presenters were asked to provide additional detail about bioterrorism surveillance. According to Mark Scally, approximately \$10 million of the funding is being allocated to NCID's Division of Quarantine to be used for enhancing and

- creating new quarantine stations throughout the country. Efforts will be concentrated on the Mexico-U.S. border and major cities that serve as an entry point for travelers from Asia (i.e., Detroit and Minneapolis). Recruitment is underway for quarantine inspectors, public health advisors, and medical officers.
- Dr. Jack Bennett asked for an interpretation of the \$42 million increase in budgetary line items. He wonders whether it is an attempt by Congress to ensure that more money is spent in the administration of programs. Mark Scally agreed that the increase was larger than what was expected, and it could be the result of increased activity by constituency groups and lobbying.
 - Dr. Heilman wanted clarification regarding whether budgetary increases have been directed to specific program areas. According to Dr. Schuchat, increases have been clearly assigned to individual programs, but decreases in budget must be dealt with within the agency. She emphasized that the agency is in transition, and therefore handling budget decreases while maintaining mandated funding levels for divisions is virtually impossible. The agency may find short-term fixes, but CDC's administration will need to determine exactly how much base funding is needed.
 - Dr. Heilman commented that the agency is being required to restructure in hopes of creating synergy within programs; creating synergy will likely drain the agency's budget for several years to come. Dr. Neill concurred, stating that finding synergy within the agency is draining CDC's resources; perhaps priorities should be outlined for recouping these resources and obtaining documented follow-up of the effort.
 - Regarding the FY '06 budget, Dr. Lemon asked about the proposed decrease in state and local capacity. Mark Scally assured him that CDC had little input in this decision; final budgetary decisions are made by OMB and the White House.
 - Dr. Heilman was asked about how budgets are determined at NIH. She stated that because of the vast amount of peer reviewed activities that are conducted at the agency, most budgetary decisions are made by OMB. NIH is also experiencing substantial decreases in funding, and the agency is being forced to make difficult decisions regarding the prioritization of activities.
 - Dr. Quinlisk inquired about the increase in the National Stockpile line. She was told that the budget reflects an effort to include more drugs in the stockpile.

Building and Facilities Update

Dr. Jan Nicholson

Dr. Nicholson provided BSC with a campus-by-campus update regarding the status of CDC's buildings and facilities. Several new laboratory buildings are under construction at the Clifton Rd. (Roybal) campus. Building 18 is scheduled to be finished this summer, with occupancy to take place during the fall. It is a high-containment laboratory building that will house biosafety level (BSL) 2, 3, and 4 space; the building also will serve as a BSL-3 facility for animal laboratory activities and will have agricultural labs. In addition, CDC's centralized glass wash facility is being moved to Building 18, along with the core bioterrorism labs and specimen acquisition activities. The building also will serve as a training facility. Building 23, also located at the Roybal

campus, is slated to be the next new building to be constructed. This laboratory building will replace all of CDC's existing laboratory space and will be the largest CDC facility in the Atlanta area. Building 23 will contain complete space for laboratory activities conducted at all Atlanta campuses; infectious disease and parasitic disease laboratory programs (now located at Chamblee) will be housed in this building. In addition, the building will house a vivarium and an insectory. Also at the Roybal campus, the existing loading dock will be expanded; the number of receiving bays will be increased to 10, and the dock will serve as the central receiving point for all laboratory shipments. Completion may not occur until late 2009.

Construction also is underway at the Ft. Collins, Colorado campus. A new laboratory building is under construction and likely will be completed by late summer 2006. The new building contains BSL 2 and 3 space (including enhanced level 3 space), a vivarium, and an insectory. Unfortunately, because of budgetary restraints, a significant proportion (45%) of this laboratory building will be left as empty "shelled" space. An additional \$22 million is needed to complete this building if it is finished while contractors are still at the work site; this needed amount will triple if work must be completed at a later date.

Discussion:

- Dr. Lemon inquired about the cost of maintaining and operating the new buildings. Dr. Nicholson indicated that the costs will increase, but that many laboratory buildings will be demolished, which will help keep costs down.
- Dr. Nicholson was asked about how many laboratories will operate in the Atlanta area. CDC will operate a total of six laboratory buildings.
- CDC's facility plan calls for large laboratory animals to be housed in Lawrenceville; a vivarium will be maintained at the Lawrenceville facility.
- BSC attendees were told that a new library and Global Health Odyssey are included in CDC's construction plans; funding for computers and other equipment, however, is insufficient.

TOPIC UPDATES

Domestic Water-Related Activities in DPD

Dr. Michael Beach

Dr. Beach reported on the recent water-related activities being conducted in NCID's Division of Parasitic Diseases (DPD). He began his presentation by discussing the different CDC organizations where water-related activities are undertaken --- primarily CDC's National Center for Environmental Health (NCEH) and NCID. NCEH focuses on the environmental issues posed by water (e.g., contamination), whereas NCID focuses on the role of water in infectious diseases; both centers deal with both international and domestic issues surrounding the use of water by humans. Specific water-related issues that are undertaken by CDC include the Safe Water System, Guinea worm, legionella related activities, and dialysis devices.

Many drinking-water-related activities are unique to NCID's DPD. The division, in collaboration with EPA, is actively involved in investigating the relationship between gastrointestinal (GI) illness and drinking water consumption in the United States. Methods used to conduct this research primarily involve the installation of either functional or "sham" water purification devices in homes; residents are then followed over time and questioned about GI illness. Results from these studies in other countries have varied (from <15%--35%) depending on the degree of participant blinding. Preliminary results from the current CDC/EPA investigation, which focuses on a population of Midwestern residents who obtain drinking water from the Mississippi River, indicate that the reporting of GI illness is not affected by the presence of water purification systems. These data are being summarized for Congress and EPA.

DPD is also involved with the tracking of waterborne disease outbreaks. DPD is home to the Waterborne Disease Outbreak (WBDO) Surveillance System, which was created in 1972 and initially used for foodborne disease surveillance. Since 1989, DPD has been collaborating with state health departments and EPA to collect waterborne disease data through this system. Although this system is useful for tracking trends, it likely only identifies the "tip of the iceberg" regarding waterborne disease. Many suggestions have been received regarding ways in which to improve this system, including updating to an electronic system, expanding reporting partners, expanding state networks, improving the knowledge of the system at the local and state levels, and creating publicly accessible databases.

NCID's DPD also has been involved with policy development. The division has been partnering with the National Park Service to begin investigating the use of backcountry water within national parks throughout the United States. The study will be piloted in Yellowstone National Park with the objective of guiding decisions regarding whether to treat backcountry drinking waters.

The division is moving in new directions regarding drinking water-associated research and activities. Currently, DPD is partnering with NCEH and pilot sites to improve the detection and investigation of waterborne outbreaks; the objectives of this investigation include measuring improved detection that results from more active surveillance, obtaining a better estimate of the scope of the water problem, and developing a better risk-factor analysis for outbreaks.

Illness associated with recreational water is also studied within NCID's DPD. Waterborne pathogens are common in U.S. recreational waters. The links between swimming in public areas and human illness are well documented; recreational water use has been linked to GI illness and to skin, ear, eye, respiratory, and neurologic infections. Because of a recent increase in reported outbreaks, CDC has been called to increase its efforts in the investigation of recreational-water-associated illness, particularly in the chlorinated water venue (e.g., swimming pools and water parks).

The agency has launched a program titled "Protecting Swimmers at the Pool: Healthy Swimming Program" with the objective of increasing public awareness about the health risks associated with recreational waters. As part of this program, CDC created a website that provides audience-specific prevention information, recommendations, and technical information; since 2001, more than 1 million visitors have entered the website. Another component of the Healthy Swimming Program is a focus on the epidemiology of recreational-water-associated illness; thus far, case-control studies have been conducted

for *cryptosporidium* and *giardia*, and a microbial indicator/beach study has been undertaken in collaboration with EPA. Laboratory and environmental health efforts, including investigating water quality parameters and providing sanitarian education, have also been undertaken as part of the healthy swimming program.

In February 2005, NCID and NCEH co-convened a workshop titled “Planning for the Future: Recreational Water Illness Prevention Workshop” in response to a request from CSTE to create a national recreational-water-related illness (RWI) prevention plan. The meeting involved local, state, and federal officials and professionals from the aquatics sector and academia. The following activities were identified by the work group as needing to be performed to help reduce the incidence of RWI in the United States.

- Develop a national model pool code for use by state and local health departments
- Improve surveillance
- Create an extensive public awareness campaign
- Improve operator training and certification
- Prioritize research agenda
- Define potential funding sources
- Convene implementation groups

CDC also has been partnering with EPA to address the Congressional mandate to set new U.S. recreational water quality standards for marine and fresh water. To accomplish this task, CDC and EPA are working to find new methods and indicators for rapidly measuring fecal contamination (i.e., within 2 hours). The NEEAR Water Study was designed to use new methods in beach settings to correlate health effects with changing water quality indicators; as part of the study, full-scale data collection from more than 20,000 beach visitors was conducted during summer 2003 and 2004. Analysis of these data is underway.

A new issue facing NCID’s DPD is water security. The main objective of DPD’s effort in ensuring the security of U.S. waters is to promote communication and share information. To reach this goal, CDC has begun holding workshops to bring together representatives from health departments and water utilities, who must collaborate to develop joint emergency response plans. To promote water security, the division also is working to overcome challenges associated with rapid sampling and the detection of pathogens.

Discussion:

- Dr. Quinlisk commented about the problems that her health department in Iowa is facing; residents are filling swimming pools with tap water, and children are becoming ill. She asked whether this problem is being encountered in other areas of the country. Dr. Beach stated that this practice is taking place throughout the country and that his program will try to put together a set of guidelines for health departments.
- The issue of fecal coliform tests was raised. Beaches are often being closed unnecessarily after heavy rainfall because of positive tests. Many beaches also are being closed because of substantial bird populations.

- According to Dr. Karmali, in Canada, funding for waterborne illness-associated efforts (e.g., surveillance) is insufficient. Therefore, the public health sector is turning to creative funding and surveillance methods. For example, through the cooperation of local pharmacists, disease incidence is being estimated through examining the level of antidiarrheal drug purchases.
- BSC members were told that as of now, pathogen testing for recreational and drinking water consists only of coliform testing in most laboratories. However, the technology to move beyond this level of testing is being developed, prompted primarily by funding made available for bioterrorism efforts.

Influenza

Dr. Nancy Cox

Dr. Cox, Chief of NCID's Influenza Branch, updated BSC members on recent influenza-related activities occurring within NCID, particularly those associated with H5N1. She began by providing background information about the emergence of avian influenza viruses in humans.

Avian influenza viruses have caused disease in humans for many decades. Currently, an enormous reservoir of avian influenza, containing 16 identified subtypes, is circulating in the wild bird population. These viruses are constantly re-assorting and moving to different bird species. Thus far, only H1, H2, and H3 are known to cause epidemics in humans, although serologic data have only been collected since the late 19th Century.

Ongoing worldwide surveillance for influenza is being conducted in collaboration with the World Health Organization (WHO). WHO's Global Influenza Program consists of two levels: national influenza centers and collaborating centers. CDC serves as a dual participant, coordinating data from state and local health departments and collaborating directly with WHO on other influenza-related activities. Approximately 114 laboratories in 84 countries serve as WHO national influenza centers; these laboratories isolate viruses, identify viruses and send them to the international collaborating centers, and collect epidemiologic information. WHO's international collaborating centers are located in Atlanta, London, Melbourne, and Tokyo; these centers analyze the viruses received from participating laboratories, provide data for annual vaccine recommendations, and prepare and distribute candidate vaccine strains.

Influenza H5N1 outbreaks in domestic bird populations have been reported from nine countries within the last few years. Although two countries (i.e., Japan and South Korea) have managed to control local outbreaks, other countries have been less successful in controlling influenza. Three countries (i.e., Thailand, Cambodia, and Vietnam) have had outbreaks involving both birds and humans.

WHO has collected specific data regarding current characterization and circulation of H5N1 in humans. In 2004-2005, 89 cases of H5N1 resulting in 52 deaths were reported, resulting in a case-fatality rate of 58%. The case-fatality rate has been high among persons of all ages and likely is higher than what has been reported. Clinical symptoms of patients have been similar to those reported in earlier outbreaks, although symptoms in current outbreaks also include profound lymphopenia and diarrhea. Data

indicate that during the 2004-2005 outbreaks, limited transmission of virus from person-to-person has occurred.

The current avian influenza outbreaks have required the development of new vaccines. Although an effective vaccine for the 2003 virus is available, the current virus strain required the creation of new prototype vaccine strains (VN/1194/04 and VN/1203/04). CDC has been collaborating with many partners to examine the relationships between the hemagglutinin, neuraminidase, and other viral genes. For 2004, findings indicated that all viruses isolated from humans had specific properties and distinct clustering, and therefore could be easily differentiated from other viruses. In addition to vaccine development, CDC has been involved in researching the effectiveness of antiviral drugs against new viruses. This research has demonstrated that all human isolates were resistant to adamantanes, which are the least expensive antivirals. However, some of the avian viruses were sensitive to these drugs.

The epidemiology of the current H5N1 outbreaks has been characterized. In northern Vietnam, many changes have been observed since January 2005; detailed analyses indicate that genes from viruses from northern Vietnam are forming a separate grouping with increasing antigenic heterogeneity. The following bullets represent some of the epidemiologic, virologic, and clinical changes that have been occurring.

- More clusters have been reported in northern Vietnam than in the southern part of the country.
- The average case-patient age has risen from 17 to 31 years.
- The observed case-fatality rate has declined to 34%.
- Three asymptomatic infections were documented among close contacts of confirmed cases and milder H5N1 infections are occurring.
- Phylogenetic analysis of sequence data from human and avian H5N1 virus isolates indicates that genes from viruses are forming a separate grouping.
- Increased antigenic heterogeneity has occurred among 2005 viruses.

In response to the emergence of avian influenza in Asia, HHS has enhanced surveillance for these viruses. A \$5.5 million initiative is underway to build surveillance capacity; the following activities will be conducted as part of this initiative.

- Surveillance networks with bilateral funding will be developed for 10 Asian countries.
- WHO HQ and the Western Pacific Regional Office will be provided support.
- CDC's IEIP in Thailand and NAMRU-2 in Jakarta will receive support.
- WHO's Animal Influenza Network will be enhanced.
- Communications between public health and veterinary agencies will be enhanced.
- Support will be given for the shipment of isolates and specimens.

Discussion:

- A question was posed regarding the efficiency of surveillance for natural reassortments. Is CDC examining non-H5 isolates? According to Dr. Cox, no effort

- has been made to examine these isolates, although a limited amount of genosequencing has been done for H5N1.
- Dr. Cox was asked about the current status of plans to examine re-assortment under controlled conditions. Dr. Cox indicated that funding has been received from the National Vaccine Program Office to begin this work at CDC. NCID is using reverse genetics to conduct coordinated studies. Specifically, NCID will be studying the properties of the re-assortments; each gene will be replaced and examined before any animal model experiments are conducted. The center will ultimately study the pathogenesis and transmissibility of these viruses in animal models.
 - Dr. Heilman asked Dr. Cox to address epidemiology. She inquired about whether antibody studies had been conducted. Dr. Heilman was informed that serum has been collected from contacts and health-care workers. However, only one study has been published demonstrating that health-care workers are not becoming infected by their patients.
 - Dr. Karmali asked whether any evidence of a shift in epidemiology has been observed, particularly in light of the diarrheal component of the current outbreak. Has any waterborne or oral transmission occurred? Dr. Cox informed him that almost all case patients had had contact with sick birds; although some case-patients reported swimming in water near dead birds, the mode of transmission has not been determined.
 - A question was posed regarding whether antivirals will be included in the national stockpile. According to Dr. Cox, a limited amount of Tamiflu (i.e., enough to treat 2 million patients) is included in the strategic national stockpile, although its effectiveness is unknown.
 - Dr. Granger asked about NCID's efforts to conduct surveillance in animals. Specifically, he wondered whether the virus has been isolated from the swine population. He also asked about whether H5N1 isolates from U.S. poultry have been examined. Dr. Cox noted that serostudies were conducted on pigs in Vietnam within the last year; only one pig tested positive. However, studies have revealed that the virus can be transmitted from feline to feline. To answer Dr. Granger's second question, Dr. Cox stated that H5N1 isolates from the United States are of a different lineage and are genetically and antigenically distinct. In addition, in contrast to Asian flocks, most poultry in the United States is located on commercial farms and not in private backyards.
 - The topic of data flow from WHO was touched upon. Dr. Cox clarified that samples submitted to NCID labs are processed, and results are reported back to the originating country and to WHO. Ideally, information can be promptly e-mailed to ensure quick data exchange. Any delays usually are caused by politics (e.g., communicating "sensitive" material), not science.
 - Dr. Bennett asked about whether H5N1 can be transmitted through ingestion. According to Dr. Cox, tigers have been infected by eating infected birds, although it is unknown whether the tigers were infected orally or intranasally. In one instance, a man was infected after drinking duck's blood; however, he had also killed and prepared the bird prior to ingestion.

- Dr. Cox was asked to comment further on vaccine development and the creation of antiviral stockpiles. She noted that NIAID is studying human response to H5N1. They are attempting to answer several questions, including whether vaccine can be made and whether the strain can be placed into a production line. Studies are underway, in which blood samples are being collected from vaccinees to determine immunogenicity. Another approach to disease prevention and control that is being discussed is priming the population with a low level of H5 vaccine, which hopefully would result in a residual memory among vaccinees.
- The topic of quarantine and isolation was raised. Dr. Cox noted that these control methods were used successfully with SARS, but because of the clinical features of influenza, these methods may be less effective in controlling flu; infected humans excrete the virus before the onset of symptoms, and many cases are asymptomatic.
- Dr. Neill asked whether efforts are being made to convey aspects of influenza control to the broad business community in the United States; many U.S. companies are outsourcing work to Asian countries, and foreign employees are seeking treatment at travel clinics. Dr. Cox replied that community outreach is currently lacking, and that CDC must increase its education efforts because queries have been coming from the business community. CDC has, however, started a corporate forum with key business leaders from companies that have a substantial presence in avian influenza-affected countries.

Marburg Hemorrhagic Fever

Dr. Michael Bell

Dr. Beach provided BSC members with information regarding NCID's involvement in the 2004-2005 Marburg outbreak in Angola. Marburg Hemorrhagic Fever is caused by a filovirus (ebola is another such virus). Outbreaks of Marburg often begin as a result of human contact with the virus in remote, natural areas; infected persons then bring the virus back to their communities. Detection of Marburg is difficult, as symptoms of the disease (e.g., fever, headache, myalgia, sore throat, nausea, vomiting, diarrhea, and delirium) are also symptoms of malaria. Outbreaks often go undetected until a healthcare worker becomes infected and dies. Laboratory diagnosis of filoviruses is performed using immunoassays, including indirect ELISA, IgG ELISA, and antigen capture ELISA. The virus is isolated using kidney cell cultures obtained from monkeys. Immunofluorescence staining and electron microscopy are used to help detect cytoplasmic inclusion bodies on days 2-5; RT PCR is then used for amplification.

Marburg hemorrhagic fever is named after the city of Marburg, Germany, where the first cases were identified in 1967. Several small outbreaks in other countries (e.g., Australia and Kenya) were then identified in the following years (i.e., 1975, 1980, and 1987). During 1998--2000, a large outbreak of Marburg occurred in the Democratic Republic of Congo. The Congo outbreak involved 154 gold miners who worked in tight, unsanitary conditions; in this environment, the disease was transmitted effectively for an extended period of time, resulting in the deaths of 128 people.

The current Marburg outbreak is unusual, in that it is affecting the Uige Province of Angola, an agrarian province of about 800,000 people located in western Africa; all

past outbreaks have occurred in countries in eastern Africa. The current outbreak peaked in April 2005, when more than 150 people were diagnosed with the disease. Disease transmission has been facilitated by the overcrowding in the province's cities and by the unsanitary conditions of local healthcare facilities (e.g., unclean needles and lack of running water). CDC is actively involved in outbreak control; priority control activities include case identification and confirmation, contact tracing and daily follow-up, safe hospital care and isolation capacity, isolation and observation of febrile contacts, safe burial practices, and community education.

Many outbreak-control challenges have been faced during the current outbreak. Community infrastructure, including overcrowding and poverty, has facilitated disease transmission. Many locals also have a fear and mistrust of foreign healthcare workers assisting in outbreak control, particularly teams of professionals charged with the burial of the deceased. Because much of this fear can be attributed to the physical appearance of healthcare workers who arrive dressed in protective gear, persons involved in outbreak response recently have begun dressing in the field; they also are burying loved ones in well marked graves. Effective communication with the local community is also a hurdle in disease control and prevention; to facilitate communication in Uige, educational sessions are being held with community leaders and local healthcare workers, and informational signs are being posted.

Identification and treatment of infected persons is difficult because many febrile patients hide from healthcare workers instead of seeking care. This behavior also substantially increases disease transmission to family members and others who have contact with these patients within the first 10 days of symptom onset. Once professional treatment is sought, patient care is straightforward. Persons with febrile illness are evaluated and several diagnoses are considered (e.g., malaria, rickettsia, leptospirosis, typhoid, and dysentery). After a Marburg diagnosis is made, patients are hospitalized promptly, administered analgesics and cardiotoxic drugs, sedated, kept hydrated, and given other types of support. Although it is straightforward, patient care in the Uige Province is complicated by the lack of hygiene in local facilities. Infection control is challenging in facilities that have no running water and no basic protective equipment.

Discussion:

- Dr. Rico-Hesse inquired about the prevalence of arboviral disease (e.g., Dengue) in Angola. According to Dr. Bell, arbovirus is rarely detected, but diagnostics for these diseases are not conducted in the field.
- Dr. Bell discussed the ways in which CDC's Division of Vector-Borne Infectious Diseases has been involved in the Marburg outbreaks. According to Dr. Bell, the division first works with laboratorians to determine the etiology of disease before any CDC personnel are sent out to the field. When an outbreak is confirmed, CDC field officers are sent to the outbreak site.
- Dr. Neill asked about the role of the index case-patient in outbreaks that are occurring through "smoldering" low levels of disease transmission. She also wondered which phylogenetic analyses have been conducted. She was informed that CDC remains unaware of which diseases are being transmitted at low levels in the communities at large until someone from the community expresses concern.

In terms of phylogenetics, the original specimens received in the current outbreak yielded virus that promptly was sequenced. The sequences from all specimens were identical to each other but different from those yielded from the 1998-2000 Marburg outbreak.

- Dr. Karmali commented that mobile laboratories are being used frequently in Canada and are important in ensuring the health of the public.

Office of Antimicrobial Resistance

Dr. J. Todd Weber

Dr. Weber provided meeting attendees with information regarding NCID's Office of Antimicrobial Resistance (OAR). The office was created in 1996; it began as an office of one staff member, but has been gradually expanded in the past few years.

OAR has been given several unique responsibilities. It is in charge of prioritizing and distributing all AR program funds; representing CDC on all AR issues; and coordinating activities among other organizations, including NCID divisions and other CDC centers (through the Antimicrobial Resistance Working Group). The Office also coordinates activities between CDC and other federal agencies (e.g., FDA, NIH, and EPA). For example, OAR co-chaired the Interagency Task Force on Antimicrobial Resistance in 1999, works with FDA to deal with antimicrobial-drug-related issues, worked with NIH on the Best Pharmaceuticals for Children Act, and consulted with EPA on the issue of antimicrobial pesticide registration. Finally, OAR coordinates activities between CDC and foreign governments, global organizations, NGOs, and medical societies, including WHO, PAHO, EU, APUA, ACP, and IDSA.

The funding for the office was originally obtained through the Emerging Infections Program; funds were then formally appropriated by Congress in 2001. Since the creation of the office in 1998, approximately 100 projects and programs have been funded.

OAR has had many accomplishments in the few years since its inception. First, it has spearheaded the "Get Smart: Know When Antibiotics Work" campaign. Through participation from more than 95 organizations, this national Get Smart campaign has involved evidence-based reviews, state-based campaigns, advertising campaigns, the establishment of a medical school curriculum, the development of health plan employer data and information set measures, and campaign evaluation.

The office has also been involved in the research of methicillin-resistant *Staphylococcus aureus* (MRSA). OAR has been investigating the epidemiology of and conducting surveillance for MRSA through funding a pilot project focusing on methicillin-resistant *S. aureus* in three communities (published in the New England Journal of Medicine in April 2005) and through supporting the national monitoring of invasive MRSA. Through the National Health and Nutrition Examination Survey (NHANES), the office has also funded an effort to determine the nationwide prevalence of MRSA nasal carriage. Other surveillance-related activities funded by OAR have included the surveillance of a) post-influenza-like illness (ILI) MRSA pneumonia and b) MRSA in Alaska; other epidemiology-related activities funded by OAR have included a)

the use of PulseNet to determine the epidemiology of MRSA strains in the United States and b) a “scope and magnitude” study.

Efforts concerning prevention, treatment, and education have also been undertaken. For example, OAR has participated in the CDC Community-Acquired MRSA Working Group and the Pittsburg Regional Healthcare Initiative. The office also was involved in the April 2005 Public Health Ground Round titled, “Antimicrobial Resistance: Old Bugs, New Threats, and the Public Health Response,” has helped to develop educational materials, has collaborated with NCAA regarding the education of trainers, and has provided guidance to the Federal Bureau of Prisons.

OAR is actively involved with research efforts across the country. Grants have been given to many academic institutions, including the Harbor-UCLA Research and Education Institute, Columbia University, William Beaumont Hospital, the University of Chicago, and the University of California at San Francisco. In addition, research is being conducted at CDC’s DHQP laboratory. Extramural grants, which are typically 3-year awards, are ongoing.

The document titled, “A Public Health Action Plan to Combat Antimicrobial Resistance,” published on the internet in January 2001, outlines many action items in the areas of surveillance, prevention and control, applied research, and project development. NCID’s OAR is involved in efforts to address these 87 action items; a public meeting, at which staff members will provide updates regarding CDC’s efforts, is planned for June 2005. As part of this effort, OAR currently is performing a gap analysis to determine how well action items have been addressed thus far.

Additional specific projects being undertaken in the area of antimicrobial resistance include surveillance for *S. pneumoniae*, campylobacter, shigella, TB, HIV, malaria, influenza, candida, lice, and filariasis. CDC also is involved in involving susceptibility testing through providing funding.

Several areas of concern have emerged in the area of antimicrobial resistance. CDC is most concerned about the following topics.

- Potential shortages and discontinuation of antimicrobials
- Community-acquired MRSA
- Gram-negative infections
- Appropriate antimicrobial use
- Infection control in healthcare settings
- Secondary bacterial pneumonia during an influenza pandemic
- Antimicrobials for malaria, TB, and HIV

In the future, NCID’s OAR will move to an NCID division as part of the agency’s Futures Initiative. Administration of the office also will change; the governance of OAR will be modified to include steering and working teams, comprised of division directors or their designees, who will formally set funding priorities.

Discussion:

- Dr. Quinlisk asked about the “watchful waiting” mode for otitis media and wonders how well this campaign is being accepted in the community. She was told that the success of the campaign is unknown.
- Dr. Karmali inquired about whether U.S. programs have had an impact on rates for MRSA and other infections. According to Dr. Weber, *S. Pneumonia* is declining because of the vaccine; the total burden of invasive infection has been reduced by 50% in persons of all ages. For MRSA, however, it is hard to evaluate the effectiveness of programs and campaigns because causal determinations are not always feasible. A campaign conducted to encourage the appropriate use of antimicrobials resulted in a decline of drug use, although data are still somewhat unclear. During the late 1990s, the number of antimicrobials prescribed by physicians throughout the country declined by 40%.
- BSC members were updated regarding IDSA’s Bad Bugs, No Drugs campaign. The IDSA has hired lobbyists to support the two antimicrobial-associated bills that are currently under consideration.
- Dr. Stamm asked about whether more attention should be given to the topic of rapid diagnostics for antimicrobial resistance. The availability of rapid diagnostics could substantially limit drug resistance through the avoidance of inappropriately prescribed broad-spectrum antibiotics. Dr. Weber noted that CDC has not focused enough on this issue because the agency has not had the funding to support the technology required to investigate diagnostic tools. The issue of rapid diagnostics is, however, part of the CDC-wide agenda for the Futures Initiative.
- JCCHO and CMS have been promulgating practices to ensure the early initiation of appropriate antimicrobial therapy. Dr. Brennan asked whether CDC has been involved in these efforts. According to Dr. Weber, queries have been received regarding this issue. DHQP is attempting to work with these organizations.
- Two questions were posed by Dr. Neill: a) Why are only half of the states involved in the state-based antimicrobial resistance campaign and is there a plan in place to include the remaining states and b) Is a maintenance phase built into projects after they are initiated? Dr. Weber stated that although limited funds are available through CDC, individual states are contributing their own funding for the campaign; therefore, states who express an interest in the program have been chosen for participation. CDC will not be providing a “maintenance phase” because of lack of funding; states who have initiated the campaign will take over in later stages, and CDC funding will be transferred to other states who are initiating their efforts.

Public Reporting of Health-care Acquired Infections

Dr. Denise Cardo

BSC members were updated regarding NCID’s efforts in the area of public reporting for health-care acquired infections (HAIs). Dr. Cardo began her presentation by providing background information about this reporting. Because public disclosure has been credited with a role in improving outcomes for heart surgery, and because the media, consumers, and patient safety leaders have increased their focus on the rates of HAIs, 21 states have implemented mandatory reporting laws for adverse events.

In response to recent concerns regarding rates of HAIs, CDC's Healthcare Infection Control Practices Advisory Committee (HICPAC) has established guidelines for the public reporting of HAIs that were endorsed by APIC, SHEA, and CSTE. In these guidelines, CDC concludes that not enough evidence exists to recommend for or against public reporting. Despite the lack of data, HICPAC's document issues guidance to states that are interested in implementing mandatory legislation. The following bulleted statements reflect HICPAC's recommendations for states regarding best practices.

- Use established public health surveillance methods when designing and implementing mandatory HAI reporting systems.
- Create a multidisciplinary advisory panel to monitor the planning and oversight of the operations and products of HAI public reporting systems.
- Choose appropriate process and outcome measures based on facility type and phase in measures over time to allow time for facilities to adapt and to permit ongoing evaluation of data validity.
- Provide regular and confidential feedback of performance data to healthcare providers.

The implementation of mandatory public reporting of HAIs at the state level can be beneficial. Public reporting results in a better informed public and group of providers, greater accountability, more attention on prevention, and increased resources for infection-control programs. Implementation of a public reporting system can also have unintended consequences, however, including the potential for misinformation, diversion of health-care resources to data collection and away from the bedside and prevention, a narrow focus on the events being reported, and the avoidance of high-risk patients.

Several challenges are associated with the implementation of public reporting systems. Currently, resources are insufficient at the state level, and state health departments have had limited involvement, perhaps as a result of the disconnect that exists between states' regulatory and epidemiology departments. In addition, because recommendations from JCAHO, CMS, and other organizations differ, standards are inconsistent from state to state; the development of a national standard would help ensure consistency.

In addition to HICPAC's guidance, CDC has been involved in several activities associated with the public reporting of HAIs. The agency has been investigating the use of CDC's National Healthcare Safety Network (NHSN) as a platform for reporting, is actively collaborating with partners (e.g., CSTE, SHEA, and APIC), and is working to educate legislators through collaborating with the Public Health Law Office. CDC's Division of HealthCare Quality Promotion (DHQP) is also involved in the Surgical Care Improvement Project (SCIP) and in the 100,000 Lives Campaign --- a large national health promotion campaign involving more than 2,000 hospitals.

The public reporting of HAIs likely will benefit CDC in many ways. Such reporting will promote the prevention of HAIs and promote health through provision of a science-based approach for defining and evaluating the best approach. Public reporting will also result in an increased use of data from NHSN, which is beneficial to the agency; this network can be used to expand CDC's connections with health-care facilities, expand the acquisition of information about adverse events, and minimize the data reporting burden.

Finally, the public reporting of HAIs will help CDC work more closely with states across the country.

The remaining challenges for CDC include a) the lack of resources to accommodate more reporting and to evaluate the impact of public reporting and b) the potential missed opportunity for helping guide the process and focus on prevention. Because CDC's resources are limited, the agency currently is not able to assume a leadership role.

Discussion:

- Dr. Brennan emphasized the importance of CDC's involvement in the public reporting effort, noting that the guidance document prepared by SHEA and HICPAC has been heavily used by the states. It is critical that CDC offer expert advice.
- Dr. Bennett asked whether data are available to make risk adjustments to health-care associated infections. According to Dr. Cardo, the type of risk adjustment being conducted by CDC is sound, but limited. It has been suggested that hospitals begin reporting to CDC, and the agency is investigating ways in which to collect better data.
- Dr. Stamm suggested that information and lessons learned be collected from states; such information will help CDC in its efforts. Dr. Cardo agreed that such information is valuable. The agency is working with the American Hospital Association and individual states to collect information regarding costs and unintended consequences.

NCID Global Health Update

Dr. Ray Arthur

Dr. Ray Arthur provided an overview of NCID's global health activities as guided by CDC's 2002 Infectious Disease Strategy. He highlighted the following six priorities.

- International outbreak assistance
- Global approach to disease surveillance
- Applied research on diseases of global importance
- Application of proven public health tools
- Global initiatives for disease control
- Public health training and capacity building

International NCID activities include a) outbreak assistance, b) U.S.-based collaborations with countries via cooperative agreements and WHO Collaborating Centers, c) assignments to national and multinational institutions and international organizations, and d) CDC international field sites and programs. Data for NCID's global health activity was reviewed to provide an indication of the broad scope and number of countries in which NCID conducts activity. Cooperative agreements with WHO, the Pan American Health Organization (PAHO), and national institutions encompass an expansive number of activities across NCID. NCID staff assignments have been made

across the globe in several subject areas, including parasitic diseases, emerging infectious diseases, and vaccine preventable diseases.

Fourteen NCID international assignees have been stationed within CDC programs. Six assignees work within Kenya or Guatemala field stations, four within the Ministries of Health (MoH) Thailand International Emerging Infections Program (IEIP), and four within the Kenya IEIP. Discussions are currently underway with Egyptian MoH to establish a third IEIP site this year. Collaborations are progressing for a China IEIP, with an agreement anticipated by year-end 2005. In addition, 12 NCID international assignees are located at partner institutions. Four work within MoH and other institutions, six within WHO Geneva, and two within DoD Overseas Laboratories.

Dr. Arthur related the International Emerging Infections Program (IEIP) to CDC's Infectious Disease Response Model for domestic and global infectious disease outbreak preparedness and response, surveillance, training, and capacity building including Epidemic Intelligence Service (EIS), Field Epidemiology Training Program (FETP), and Emerging Infections Program (EIP). The cornerstones of IEIP are outbreak disease detection, capacity-building, surveillance, and linking the programs internationally via a global network with core surveillance activities and applied research.

The IEIP Thailand program review was conducted in December 2004. Presently, more than 1 million persons are under surveillance for community-acquired pneumonia in two provinces. The program was actively involved in treating the first case of SARS, continues to work with H5 avian influenza, and investigates a variety of enteroviruses. Capacity building includes training of 21 Thai and 21 U.S. epidemiologists, EIS officers, lab scientists, and students. Thus far, Thailand IEIP has published 30 research articles (2003-04), four of which have appeared in *The New England Journal of Medicine*.

Coordinating Office of Global Health (COGH)

Dr. Jay McAuliffe

Dr. McAuliffe expressed regards from Dr. Steve Blount, Director of the Coordinating Office of Global Health (COGH), who was unable to attend the Board meeting.

Global Health is listed as one of the six strategic imperatives for CDC's Futures Initiative and is included in CDC's four main goals:

- health protection,
- preparedness,
- healthy places, and
- global health.

The CDC Research Agenda is being developed, and working groups have been defined for each of the coordinating centers and offices. Presently, the Global Health Working Group has 17 research themes with two specific to infectious diseases. In addition, an Infectious Disease Working Group has been created and has identified an additional 19 research themes.

A review of the CDC organizational chart prior to the Futures Initiative was reviewed detailing the Office of Global Health (OGH) as it previously existed within the Office of the Director. It was relatively small in size, provided logistic and

administrative support to overseas staff, represented global health within CDC, and was a key facilitator with global health partners. With the Futures Initiative, the OGH has come to serve as a coordinating office. Current components of COGH are a) global program support services, b) geographic and program coordination, and c) new program areas (e.g., epidemiology and surveillance capacity development, sustainable management development programs, and laboratory systems).

Part of the restructuring plan involves reframing how CDC works with partner countries, specifically in settings where multiple staff members represent various programs. These initiatives will include a) improved focal point for partners on all CDC programs, b) better alignment of CDC strategic plan with partners and host governments, and c) coordination of management through COGH. The program is slated to be launched in Kenya, Thailand, China, and Guatemala.

COGH has also assumed the following three functions:

- programmatic role with focus on capacity development;
- financial oversight of congressional funds to CDC for global health (e.g., global immunization, global AIDS, and malaria); and
- funding for global health and global disease detection.

Global Disease Detection Initiative

Dr. Martin Landry

Dr. Landry reiterated the following NCID goals for global disease detection.

- Rapidly detect and respond to infectious disease outbreaks around the globe.
- Control intentional or naturally occurring health threats at their origin and prevent international spread.
- Protect Americans traveling or living abroad.
- Protect the economic interests of the United States and its partners.

A review was given regarding the increased funding for global disease detection, and appreciation was expressed to Dr. Gerberding for her efforts in attaining increased appropriations. The FY 2004/05 budget allocations were reviewed, with approximately 60% of appropriations spent on CDC intervention-based activities: IEIP, influenza, FELTP, and existing global laboratories. Other processes requiring funds were IT, global infrastructure in Guatemala and Kenya, and contingency funds for emergency outbreak response.

Dr. Landry reviewed a model for building CDC's global disease detection and response in collaboration with strategic partners. The model includes a) management, b) epidemiologic activities, c) laboratory activities, d) outbreak response, e) disease monitoring, and f) communications. These strategic partners include China, Guatemala, Kenya, and Thailand.

NCID's IEIP has had several achievements. The program has

- established pneumonia surveillance in two provinces in Thailand;

- completed clinical description of first 12 human cases of avian flu in Thailand;
- published a description of an avian flu cluster exhibiting early examples of person-to-person transmission; and
- investigated several outbreaks in Kenya (including Chikungunya fever).

The Field Epidemiology Laboratory and Training Program (FELTP) also has experienced many achievements. FELTP has investigated 38 outbreaks, conducted 37 in-country surveillance system evaluations, graduated 41 students, redefined China's policies on SARS quarantine and health workers' protection, and investigated rash illnesses in Brazilian children. In addition, the program has engaged in the following IT-related activities.

- Conducted IT assessments in 11 countries.
- Upgraded CDC Kenya laboratories to bio-safety level 3.
- Enhanced communications/internet capacity in four Kenyan provincial medical offices.
- Upgraded Kenya and Thailand offices for reliable, rapid, and quality data with voice and video capabilities between these locations and Atlanta.

Discussion:

- Dr. Landry expanded on the relationship between NCID's OGH and COGH, explaining that his role is to acquire and distribute congressional funds, whereas Dr. Arthur manages infectious disease projects.
- Dr. Rico Hesse inquired about how countries are chosen for partnership. Dr. Arthur explained the criteria used by CDC officials relative to political, public health, and feasibility/viability considerations, as well as geographic distribution. A systematic process is used in determining where to base IEIPs; one such factor is existing CDC presence.
- Dr. Petersen inquired about the process for involving NCID divisions in the decision-making process of establishing resources and priorities. In the past, the NCID Global Health Working Group considered project submissions for review and funding. Due to limited resources over the past several years, the focus of the work has shifted to become information sharing. Funding allocations were easily determined for IEIP, Influenza, and FELTPs. The benefits to Kenya's IEIP and parasitic diseases, also indirectly support NCID programs in Guatemala with regard to infrastructure. Collaborations exist between NCID and National Immunization Program (NIP) for laboratory partnerships and resource allocation in support of global disease detection activities.
- Dr. McAuliffe explained that a Global Health Advisory Board (GHAB) was established to allow representation from all CIOs. With the creation of the coordinating center as a funding entity, announcements are made when funding becomes available; proposals are accepted for review and are evaluated with a structured approach. Dr. Landry specified that through the funding allocation

process, NCID received 40% of available funds. The 2006 process will be more strategic.

- The question was posed regarding what federal advisory committees COGH seeks guidance from when setting priorities. BSC members were informed that although these types of discussions have not previously occurred, they are important and will be brought to Dr. Blount's attention for future consideration.
- Dr. Quinlisk inquired about CDC's response to the IOM's revision of the Emerging Infectious Disease report that was published 2 years ago. Dr. Schuchat stated that a draft response was produced, but it was put on hold after the implementation of the Futures Initiative. With the creation of the coordinating center, consideration is being given to exploring how a modified version of the response report could fit into the Futures Initiative and the over-arching infectious disease goals of the agency. It will be revisited as a strategy for reaching infectious disease goals rather than as a response to the IOM report. Advice from the Board is welcome.

CCID Update

Reginald Mebane

Reggie Mebane provided meeting attendees with an overview of the newly formed Coordinating Center for Infectious Diseases (CCID). CCID is one of four new coordinating centers established as part of CDC's Futures Initiative. CCID has been charged with protecting health from the threat of infectious diseases and thereby enhancing the potential for full, satisfying, and productive living across the lifespan of all people in all communities.

CCID is comprised of three centers or programs: the National Center for HIV, STD, and TB Prevention (NCHSTP); NCID; and the National Immunization Program (NIP). NCHSTP's mission includes attaining TB control, making progress regarding HIV, and taking action against STDs, whereas NCID and NIP focus on disease detection and prevention, respectively. These centers will collectively provide the foundation for scientific and program knowledge and expertise, provide day-to-day operational management of science and prevention programs, and maintain accountability for the quality of scientific and prevention programs. In addition to its programs and centers, CCID also has an Office of the Director charged with management, communications, strategy and innovation, science and public health practice, program integration, and workforce and career development.

CCID, through its three centers and programs, focuses the power of public health. Specifically, the coordinating center functions to

- identify and capitalize on opportunities for coordination and integration of research between centers and programs to increase CDC's health impact;
- decrease duplication and redundancy in center programs, thereby maximizing resources available to achieve public health goals and streamline logistics for CDC interaction with partners;
- provide leadership, management, and accountability for cross-center goals and programs; and

- leverage CDC's resources to be more flexible in responding to public health threats, emerging issues, and chronic health conditions.

To achieve its public health objectives, CCID also has assumed several distinct roles and responsibilities, including

- identifying areas of synergy for collaboration within NCHSTP, NCID, and NIP and across other coordinating centers;
- identifying opportunities for coordination and integration of programs across CIOs to improve health outcomes;
- achieving infectious-disease related goals;
- ensuring that science and programs are of superior quality;
- providing leadership, decision-making, and management to CCID infectious disease programs; and
- working with CDC's OD to reduce business-practice redundancies.

Through a contract with McKing Consulting, CDC's CCID is also focusing on opportunities for collaboration and synergy. The coordinating center is reviewing related science and prevention programs across CCID, assessing the role of Public Health Advisor in state and local health departments, and revamping state and local health department cooperative agreements.

CCID is managed with a focus on leadership and diversity. CCID's management officials are also committed to ensuring that CDC provides its employees with a positive and productive working environment; therefore, a Task Force on Barriers to Effective Work at CDC has been established to conduct an analysis of operational procedures and practices within the agency. Currently, CCID management officials are involved in several specific activities, including standing up the new coordinating center and facilitating the execution of the FY '05 budget.

On May 27, 2005, a consensus-building retreat involving CIO directors, division directors, and senior staff is planned for CCID. BSC members are encouraged to send suggestions for consideration during the retreat to Mr. Mebane by May 15th.

Discussion:

- Dr. Lemon expressed concern regarding NCID's budget issues. Budgetary shortfalls will require the development of a list of priority activities. However, it remains unclear which group is responsible for identifying these priorities. Mr. Mebane responded, noting that he has been working to create a strategic board in charge of executing goals; priorities should be identified in the upcoming months.
- Regarding priority setting, Dr. Lemon noted that persons involved in this process should be familiar with the program and that the priority-setting process will require input from the broader organization.
- Dr. Heilman commented on the plans for a CCID management retreat. She referred to the principle that form follows function, inquiring specifically about how the retreat could be successful in light of the lack of clear functional roles for the center. To create a form, function must first be well defined. Mr. Mebane

- noted that a list of priorities is being developed within each of the programs, which will help to better define the function of the center.
- Dr. Quinlisk expressed concern about CDC's reorganization. She sees the changes as being "morale dropping." States have traditionally looked to CDC for expert advice and guidance; however, because of the reorganization, state health departments are now seeking advice elsewhere. Mr. Mebane responded, stating that chaos is inherent to change. CDC is now recruiting top-notch experts who are coming to the agency with the intent to stay, which will eventually result in a strong organization. Mr. Mebane concurred, however, that CDC's reorganization process could be better managed.
 - Dr. Neill thanked Mr. Mebane for his informational presentation. She concurred with Dr. Quinlisk, stating that the public health community needs to have a concrete plan for how CDC will undertake plans to reorganize. Mr. Mebane agreed that concrete decisions must be made.
 - Concern was expressed about the decrease of authority for center directors in the new organizational plans; these leaders have worked to prioritize and create budgets because they have the most knowledge. Mr. Mebane stated that these types of issues will be ironed out at the upcoming retreat.
 - Dr. Petersen noted that the objective of the reorganization is to increase efficiency; FTEs are supposed to be placed back in the divisions. Dr. Petersen is concerned, however, that these FTEs have not yet been designated. Mr. Mebane responded, stating that it will take time to achieve efficiency. CDC is facing a challenge regarding consolidating programs.
 - Dr. Lemon suggested that BSC work with CCID management to assist in the reorganization. Mr. Mebane welcomed his offer.
 - Dr. Quinlisk emphasized CDC's presence as a science organization. She wonders whether this concept has gotten lost in the reorganization, as the public health arena is beginning to view the agency as a business or political unit.

Emerging Infections Programs

Dr. Bob Pinner

Dr. Pinner provided meeting attendees with information regarding NCID's Emerging Infections Programs. Dr. Pinner began by giving background regarding the Programs. CDC's EIPs comprise a population-based scientific public health network that works to achieve the following objectives: surveillance and response, applied research, infrastructure and training, and prevention and control. To achieve its goals regarding emerging infectious disease, CDC works with 11 state health departments and partners with academic institutions, infection control practitioners, and other federal agencies.

The EIP network has had many achievements. The network has provided the data used to determine the burden of foodborne diseases in the United States, which resulted in the publication of approximately 25 scientific manuscripts (e.g., *Morbidity and Mortality Weekly Report [MMWR]* volume 54, no. 14 and *Clinical Infectious Diseases [CID]* volume 38). The network also has been involved in research regarding early- and late-onset GBS disease (resulting in the creation and publication of CDC

recommendations) and methicillin-resistant *Staphylococcus aureus* (resulting in substantial press coverage).

Other EIP accomplishments are reflected in awards and publications involving NCID researchers. For instance, Dr. Anne Schuchat, Dr. Cynthia Whitney, and colleagues were awarded the 2004 Charles C. Shepherd Science Award for their work in documenting the decline in invasive pneumococcal disease after the introduction of protein-polysaccharide conjugate vaccine. In addition, NCID's manuscripts have been recognized through awards, including papers on a) the impact of childhood vaccination on racial disparities in invasive *Streptococcus pneumoniae* infections (2005 Nakano Citation) and b) changes in invasive pneumococcal disease among HIV-infected adults (2005 Langmuir Award and 2004 IDSA Program Choice Award).

EIP's Respiratory Diseases Activity

Dr. Alicia Fry discussed work being done in the Respiratory Diseases Activity (RDA) within the Emerging Infections Programs. She began by describing the challenges being faced regarding respiratory diseases. Pneumonia is one of the top 10 leading causes of death in the United States, and other respiratory illnesses are responsible for primary emerging health threats (e.g., SARS and pandemic influenza). In addition, respiratory outbreaks of unknown etiology are common, and etiologies are often difficult to determine, factors that limit researchers' ability to assess etiology-specific burden, assess trends, identify preventable burden, and identify optimal preventive strategies.

The EIP network has been involved in respiratory disease investigation for the past few decades. Surveillance for pneumonia was initiated in 1989, and data continues to be collected regarding unexplained pneumonia and pneumonia in health-care workers. Recently, the network also has focused on influenza surveillance, specifically the use of diagnostic tests among children and the age-specific incidence of laboratory-confirmed influenza among hospitalized children.

Despite this involvement, however, past EIP efforts to investigate respiratory disease have not been cohesive. To create more cohesion, in 2004, the EIP network launched a new respiratory disease activity (RDA) within NCID. The activity has begun working on existing respiratory projects and has been charged with integrating surveillance projects to document trends and determine the etiologic spectrum of pneumonia.

RDA activities are reviewed by internal and external consultants. The objectives of the external review are to evaluate proposed RDA projects and prioritize public health gaps. Thus far, the following observations and recommendations have resulted from the external review.

- High priority should be given to surveillance for diseases for which good diagnostics are available for burden, but that have been insufficiently defined.
- RDA currently is unable to determine the full etiologic spectrum of pneumonia; causal vs. colonization/asymptomatic infection should be further investigated.
- Emerging threats from abroad and new threats that emerge within U.S. borders should be made high priority.
- The effectiveness of new vaccine recommendations should be monitored.

- Health-care worker surveillance and ICD-9 code projects should be given lower priority.

On the basis of these recommendations and observations, RDA's steering committee identified several priorities for 2005. The following bulleted statements reflect RDA's priority projects.

- Work to obtain more precise estimates of severe influenza in the United States by continuing population-based surveillance among hospitalized children and expanding surveillance to include adults.
- Evaluate recent influenza vaccine recommendations for children 6-23 months of age.
- Address the new pertussis vaccine booster for adolescents and work to achieve precise estimates of disease burden through validation of new diagnostic assays.
- Work to develop and evaluate educational tools for and algorithms to assist in the investigation of outbreaks of unknown etiology.

Discussion:

- Dr. Bennett asked about pertussis, noting that health professionals believe that the incidence of this disease is more common than is currently detected. What laboratory methods will CDC use to improve diagnosis? According to Dr. Fry, the Meningitis and Special Pathogens laboratory is looking at validating a PCR diagnostic assay and a serologic assay. Dr. Warnock concurred that additional diagnostic tools are crucial to understanding the spectrum of pneumonia.
- Dr. Quinlisk asked about whether CDC is planning to expand the EIP network. Dr. Pinner noted that in NCID, opportunities exist to engage a wider group of states and activities through combining efforts.
- A question was posed regarding how the EIPs will work with NIP on vaccine evaluation. According to Dr. Fry, it is hoped that NIP will lead that working group.
- Technology from the Institute of Genomic Research (TIGR) that currently is being developed might be applicable to the diagnostic issues being discussed.

Links Between Animal and Human Health

Dr. Nina Marano

Dr. Marano described her Associate Director position as the interface between CDC and the veterinary community. She briefly reviewed the microbial challenges to public health currently under consideration by medical and veterinarian partnerships. CDC's overarching health protection goal of preparedness is to prevent the introduction and spread of emerging microbial threats in the United States. Highlighted recommendations from the *Microbial Threats to Health Emergence Detection and Response* Institute of Medicine (IOM) report were reviewed as a corollary guide to the collaborative efforts between animal and human health. These recommendations include

- enhancing global response capacity,
- improving disease surveillance and reporting,
- exploring innovative surveillance systems,
- rebuilding workforce capacity,
- addressing inappropriate antibiotic use, and
- managing vectorborne and zoonotic diseases.

The Office International des Epizooties (OIE), also known as World Organization for Animal Health, was established in 1924 and has 167 Ministries of Agriculture (MoA) member states. In 2004, CDC began an initiative to become an OIE Collaborating Centre with the objective of strengthening zoonoses surveillance and control activities for newly emerging and re-emerging threats to public health. OIE centers increase capacity for disease surveillance, early warning, and collaborative partnerships.

A satellite meeting, the International Symposium on Emerging Zoonoses, is scheduled to coincide with the March 2006 International Conference for Emerging Infectious Diseases (ICEID). The global themes to be addressed by attending medical and veterinary professionals include a) the convergence of human and animal health, b) threats and challenges facing human and animal health, c) lessons learned, d) opportunities for the future, and e) risk management and communication with chief veterinary officers (CVOs) from member countries.

The following efforts have been initiated to facilitate the integration of veterinary and public health surveillance: a) the Animal Health Safeguarding Review (2001); b) the WHO Technical Report-Future Trends in Veterinary Public Health and Converging Issues in Veterinary and Public Health (L. King and R. Khabbaz [2003]); c) the IOM Report on Microbial Threats to Health (2003); d) the BT and Public Health Security Act (2002); d) the Council of State and Territorial Epidemiologists (CSTE) Position Statement (2004); and e) Homeland Security Presidential Directives.

CDC coordinates zoonotic disease surveillance with several other agencies. Specifically, the agency engages in international activities with USDA's Animal and Plant Health Inspection Service (APHIS). In addition, a zoonotic intersection exists between CDC's Laboratory Response Network (LRN) and USDA's National Animal Health Laboratory Network; these large networks were put in place to monitor bioterrorism-related diseases and foreign animal diseases, respectively. Efforts to integrate the expertise of these networks in collaborative partnership have been considered. A working group involving CDC, Food and Drug Administration (FDA), USDA, and state partners is currently developing a survey to be sponsored by the United States Animal Health Association (USAHA) to assess and foster communication between state veterinarians and state public health veterinarians. Efforts are being made to more effectively increase surveillance by discovering and possibly merging the animal health information of various veterinary laboratory databases with BioSense, CDC's early human health event detection and quantification system.

The Companion Animal Surveillance Program, which was generated in 2003 by a grant from CDC and other organizations, is an innovative surveillance system sponsored by Purdue University. The program obtains and continually mines data from the Antech national laboratory system and 450 Banfield (PetSmart) hospitals. The program was originally developed to detect syndromes compatible with bioterrorism events and has

since expanded to include a) tick/flea activity and forecasting, b) canine and feline parasites, c) heartworm preventive drug use and safety, d) leptospirosis infection, e) rabies vaccination use and safety, and f) influenza-like illness. Projects in development for expansion include antibiotic resistance and vectorborne diseases; the inclusion of environmental determinants of infectious and chronic diseases also is being considered.

The IOM recommendation to rebuild the public health workforce capacity was reviewed with regard to the veterinary workforce. Statistics reveal that of 64,867 U.S. veterinarians, only 2% are in public health and preventive medicine; in addition, retirement rates among public health veterinarians are high. The need to recruit veterinary professionals into public health is evidenced by the 75% of veterinary students who go into private practice. A survey was developed to assess the knowledge, attitudes, and beliefs of veterinary students towards careers in public health in an attempt to assist CDC and other federal agencies to more effectively market careers in public health. It was determined by a poll of the approximately 85 CDC veterinarians that 30% of these professionals had visited the 28 veterinary schools during the past 2 years. Attempts to improve this rate by better tracking and assessment systems where gaps may occur are being made. Collaborations with the Ferguson Fellowship and the North Carolina Food Safety Research and Response Network are underway to place veterinary students at CDC for externships.

A brief review of the recent outbreak of *E. coli* in a North Carolina petting zoo was provided as an example of measures to manage vector-borne and zoonotic diseases. The National Association of State Public Health Veterinarians, Inc. (NASPHV) put together a compendium of measures to prevent disease associated with animals in public settings in 2000; it was published in the March 2005 *Morbidity and Mortality Weekly Report (MMWR)*. Public safety guidelines for vendors regarding safe exhibit design and the appropriate placement of hand-washing stations have been published; recommendations also have been developed for parents.

The recent outbreak of multidrug-resistant *salmonella* typhimurium associated with rodents (e.g., hamsters, mice, and rats) purchased at retail pets stores was reviewed as reported in the May 2005 *MMWR*. CDC plans to increase collaborations with the animal health community to determine critical control points in animal distribution systems to more effectively control outbreaks. The Division of Healthcare Quality Promotion (DHQP) is concerned about the role of companion animals in the transmission of methicillin-resistant staphylococcus aureus (MRSA). Pets provide significant health benefits to human healing and emotional well-being, specifically via nursing/retirement homes and hospital visitation. The recent clusters of community-associated (CA)-MRSA involving humans have raised concern for the potential of transmission MRSA from pets to humans. DHQP has been approached about conducting studies on this topic that may lead to guidelines for animal management in these settings; funding might be available through the Morris Animal Foundation.

A Plague BT release simulation recently took place to test the National Response Plan. A CDC veterinary team was formed to address animal management issues, protect human health, and provide timely advice to veterinarians and pet owners. Lessons learned from this activity were a) awareness of the Division of Vector Borne Infectious Diseases (DVBID) stockpile of vector and animal management supplies ready for emergency deployment, b) coordination of state agencies roles and responsibilities, c)

treatment considerations, and d) the role of serology in animals to assess disease spread in the human population.

Information regarding the interface between humans and animals is available through various sources. Dr. Marano invited the Board to visit the “Healthy Pets Healthy People” website (<http://www.cdc.gov/healthypets>) for additional information. The first Emerging Infectious Diseases (EID) special issue devoted entirely to Zoonoses was published December 2004, and the manuscript deadline for the second issue to be published December 2005 is June 20, 2005; these publications will also provide additional valuable information.

Discussion

- Dr. Bennett inquired whether animal quarantine was part of Dr. Marano’s responsibilities. Dr. Marano informed the Board of the concern she shares with the Division of Global Migration and Quarantine. She relayed her intentions to foster an interagency working group to eliminate regulatory gaps through the coordination of the eight agencies that have varying responsibilities for the importation of animals into the United States.
- Dr. Quinlisk commended Dr. Marano on her efforts and asked that when breaking information is reported in the news or posted on the website that the potential affect on pets be included. Dr. Quinlisk commended the veterinary schools visits and noted that state public health veterinarians should be made aware of the available public health system. Dr. Marano recognized that state veterinarians can play an integral part in assisting to make connections with veterinary schools. Dr. Quinlisk informed the Board that IOM will be publishing a report on how animal health affects human health in the near future.

Office of Strategy and Innovation

Dr. Lonnie King

Dr. King gave BSC members a brief update on CDC’s newly formed Office of Strategy and Innovation (OSI). The new office has been tasked with goals management, strategy and policy, innovation, and transformation and organization development. Dr. King provided specific information regarding they way in which a strategy and innovation office can effectively function within a governmental agency.

Regarding the broad objective of “innovation,” OSI will focus on ensuring that the agency moves innovative ideas forward --- ideas that historically have not been appropriately funded. In addition, the office will explore ways to extract innovative ideas from staff members throughout the agency that might help move CDC forward. OSI will also investigate methods of creating a more innovative environment for CDC employees.

Regarding its task of “strategy and policy,” OSI will work to exploit and create opportunity to drive the agency’s transformation process. The office will attempt to define CDC’s overall public health strategy and find methods of strategy implementation. Finally, OSI will evaluate the agency’s ability to plan strategically.

The task of “transformation and organization development” requires OSI to manage the internal and external change associated with CDC’s reorganization.

Specifically, the office is focusing on the movement and reassignment of CDC staff members as a result of the Futures Initiative. Because of the tremendous change taking place within the agency, OSI is focusing on the emotional impact that this change is having on CDC employees; the office is attempting to ensure that new concepts are being understood and that employee morale is being maintained. OSI is putting together an executable set of actions to be taken to achieve these tasks. The office also is evaluating the transformation process as it is unfolding (e.g., documenting activities that have resulted in both positive and negative outcomes) and examining the agency's vulnerabilities and strategic positioning.

Much of OSI's work centers around the concept of goals management. The goals-management process has been undertaken to help define a "roadmap" to health impact by establishing agency goals, objectives, priorities, budgets, and performance measures. Specifically, CDC is creating a goals framework with three overarching themes: people (e.g., infant/toddler, child, adolescent, adult, and older adult), preparedness (e.g., prevention, detection, and reporting), and places (e.g., communities, homes, hospitals, and schools). Thus far, approximately 20 national goals have been established, and many global goals are under development. An example of such a goal is CDC's Infant and Toddler Life Stage Goal, which was established to improve the health of infants and toddlers and provide them with a strong start for healthy lives. The agency has defined specific objectives for this life-stage goal, including diagnosis of developmental disabilities in a certain percentage of children by age 3 years. CDC has identified specific actions to be undertaken to achieve objectives, including launching the "Learn the Signs, Act Early" media campaign.

CDC has defined four early priority areas, or trailblazers, for goals management: obesity, adolescent health, influenza, and preparedness measurement. For each trailblazer, OSI has conducted an assessment, modeling, and prioritization; strategy and management also have been considered. To define trailblazer areas, CDC established trailblazer teams that developed proposals designed to maximize public health impact. Staff members from OSI and other CDC offices reviewed these proposals. Proposals were then revised, and recommendations were sent back to the trailblazer teams. The teams finalized the proposals and made final recommendations, which were presented at an Executive Leadership Board retreat.

Discussion:

- Positive feedback regarding OSI's effort was offered by Dr. Lemon. He noted that the trailblazer initiative makes "good sense," because it crosses different centers. He wonders, however, how the process works with pandemic influenza, as many CDC organizations are involved with management for this topic. Dr. King agreed that challenges are associated with the influenza trailblazer; it is difficult to coordinate activities that involve so many programs. The coordinating centers are responsible for putting trailblazer teams together to achieve a broad perspective.
- Dr. Heilman asked about public health emergencies, noting that maintaining capacity is inherently difficult when so many organizational units are involved. According to Dr. King, some of the topics, including flu, don't "track" as well

- across the various CDC organizations; however, these topics remain a public health priority.
- Dr. Heilman asked about whether other initiatives will be included in CDC's goals management plans in addition to the currently defined trailblazer activities. Dr. King noted that the four trailblazer models serve as prototypes. Other trailblazing activities can be added.
 - Dr. Stamm asked about the way in which OSI works with the budget. He asked whether OSI's mission includes creating a proactive, lobbyist type of approach to funding. Dr. King responded that although the agency will not engage in lobbying, the agency must make a case for critical needs in public health (i.e., data gaps associated with lack of funding). Dr. King expressed concern about the way in which funding is handled, stating that ideally, strategies should drive the budget and not vice-versa.
 - The topic of the IOM report and the agency's strategy for handling infectious disease was raised by Dr. Khabbaz; she asked Dr. King whether CDC's Future Initiative goals can be aligned to address the IOM report. According to Dr. King, this alignment is being achieved. However, more thought should be given to making the connection between the CDC goals and a response to the IOM report.
 - Dr. Quinlisk noted that when the first IOM report was published, it was used in the states as an impetus to change. However, the new report has not had the same results. Perhaps CDC's newly defined goals and objectives may help motivate state-based public health organizations. Dr. King informed the Board that several senior CDC officials have been serving as Portfolio Managers; these managers are stationed out in the states to ensure a link between federal and state public health strategy. In addition, to ensure that measurable outcomes are achieved, nine health goals have been associated with the bioterrorism money that has been distributed to the states; portfolio managers help facilitate this funding.
 - Dr. Ward expressed concern about the concept of innovation. He has been trying to promote this concept among his staff members at the division level and would welcome assistance from OSI. Dr. King encouraged him to share his ideas and concerns with executive leadership staff.

Breakout Group Reports

During the May 2005 BSC meeting, Board members were assigned to breakout groups to facilitate discussion regarding two NCID divisions: the Division of Vector-Borne Infectious Diseases and the Division of Viral and Rickettsial Diseases. No charge was presented to the groups; instead, breakout groups discussed any issue of interest to the members. The following sections summarize discussion that took place during these sessions.

Division of Viral and Rickettsial Diseases (DVRD)

Dr. Okhuysen served as the facilitator for the DVRD breakout group and presented to the Board. The group was provided with a report of activities currently taking place within the Division. DVRD focuses its efforts on five disease areas:

influenza, respiratory/enteric diseases, special pathogens, viral exanthems, and viral and rickettsial zoonoses. Another core activity taking place within DVRD is the pathology laboratory; three programs also operate within the Division. The Division's research efforts are enhanced by a strong interaction with WHO's collaborating centers. NCID's DVRD takes a comprehensive approach when conducting all of these activities, engaging in outbreak response, epidemiologic investigation, surveillance, laboratory research, training, and education.

All of DVRD's branches, activities, and programs have been productive. A total of 240 publications, including 27 *MMWR* articles, originated from the Division in the span of 1 year; the Division's successes can be attributed to the following strengths.

- DVRD deals with high profile events, and therefore the Division helps define CDC's brand name.
- The nature of the pathogens studied within DVRD requires the Division to maintain flexibility and to provide fast response at any time around the globe.
- The Division is staffed by a core of scientists who are dedicated to NCID's mission.
- DVRD is capable of focusing on a wide range of pathogens and balancing core activities with trailblazers.

Breakout group members identified several areas of improvement for the Division. The following bulleted statements summarize suggestions for improvement.

- DVRD should improve its interaction with global health and the National Immunization Program (NIP). Data flow between these organizations should be improved and synergized.
- Extended BSL 4 and 3 training should be provided for DVRD personnel.
- Technology to detect EIDs should be expanded.
- Key personnel should be retained.
- The Division must deal with a reduction in discretionary funds that are used to support FTEs.

DVRD is faced with many challenges, particularly those associated with a reduction in funding. Limited funding is requiring the Division to develop a prioritization strategy to be used when allocating resources; DVRD must initiate a dialogue regarding incorporating branch input and alignment with the goals associated with the Futures Initiative. Finally, the Division needs to develop global standards for select agents, focusing on the areas of containment and transportation for high profile pathogens.

Discussion:

- Dr. Lemon has been impressed with the pride of the staff members within DVRD despite budget cuts. He noted that CDC's reorganization will be particularly problematic for the Division; priority setting will need to occur.

- Dr. Heilman inquired about the new organizational structure of DVRD. Is a duplication of activities occurring? Dr. Schuchat asked Dr. Heilman to convey this concern to the ELB for discussion at the upcoming retreat.
- Dr. Lemon is impressed that the Futures Initiative has resulted in communication between programs that once appeared to be walled.
- Dr. Rico-Hesse expressed concern about whether CDC will participate in the containment training effort. Dr. LeDuc stated that the Division also believes that NIH's containment capacity initiatives must be supported by well trained staff. CDC must take a leadership role and organize and gather guidance. In addition, CDC must investigate ways to interface with global colleagues when dealing with the containment of select agents.

Division of Vector-Borne Infectious Diseases (DVBID)

Dr. Mary Jane Ferraro served as group facilitator for the Division of Vector-Borne Infectious Diseases breakout group and presented to the Board. The group tackled issues identified by Dr. Petersen (the division's director) as being worthy of intense focus by the group: construction and Lyme disease activities.

Substantial construction of new facilities is occurring on DVBID's Ft. Collins campus. Although CDC's objective in adding a new building was to increase laboratory space at the campus, budgetary restrictions have made construction problematic. The original plan for the new lab building called for 9 floors and 270,000 square feet of usable space; however, after building activities were initiated, CDC budget constraints required this plan to be scaled back to include only 5 floors comprised of 85,000 square feet. This smaller "revised" facility provides each full-time technologist with only 160 square feet of space, whereas the standard amount of space for these employees in other NCID facilities is 270 feet; space for office staff is also insufficient at the new building, providing only 80 square feet of space per full-time employee versus 150 feet for Atlanta-based NCID staff.

DVBID's facility inadequacies prompted the breakout group to focus on solutions. The group examined the current budget and discussed needed funding. Completion of phase 1A and 1B of building (i.e., total completion of one laboratory facility) requires \$102 million, representing a shortfall of \$22 million. Of this total amount, \$80 million has been allocated and spent. In examining the FY '06 budget for DVBID, the breakout group determined that approximately \$30 million has been allocated; however, concern exists that this money will be tapped to be used as a "payback" for money once borrowed by DVBID.

In light of the problematic funding situation at the Ft. Collins campus, the breakout group provided the following recommendations.

- Plans for phase 1A and 1B should be completed; the \$30 million included in the FY '06 budget should be used to finish the facility to that level. Any outstanding loan should be forgiven.
- Because a "phase 2" building likely will never be built, older buildings should be renovated and used as office or conference space.

- The new Ft. Collins facility should be used as a back-up laboratory for the entire agency.

Completing the Ft. Collins facility currently under construction has many advantages. Although \$22 million is required to complete phase I, this amount will triple if construction activities must be halted and then begun during a different fiscal year. Providing the Ft. Collins campus with more adequate space ensures that this group can remain in Colorado, which is an appropriate placement for a division focusing on vectorborne disease.

The second topic of discussion among members of the breakout group is Lyme disease --- particularly the challenges presented by this disease that extend beyond science. Recently, highly organized groups of people have been expressing concern for CDC's current case definition and laboratory criteria. Much of this effort has been triggered by unpaid insurance claims from patients with symptoms that are not included in CDC's case definition for Lyme disease. In addition to these vocal organized groups, laboratories across the country are conducting inappropriate, or questionable, testing for Lyme. The tests are being sent to physicians who have not been appropriately trained to interpret them.

The breakout group issued the following recommendations for DVVID regarding these Lyme-disease-associated issues.

- The IDSA guidelines should be updated; a consensus document should be made available to physicians who need guidance.
- The CDC guidelines for interpreting laboratory tests should be updated in collaboration with industry and government experts.
- As updated guidance becomes available, an effort should be made to notify physicians and other practitioners regarding availability of clinical and laboratory documents.
- CDC researchers should focus on science and not on the concerns of patient groups; other groups may need to step in and assist DVVID with public interface.

Discussion:

- Dr. Lemon reiterated that the building should be completed sooner rather than later. He asked Dr. Petersen to provide the Board with a business plan to be used to develop recommendations. Dr. Petersen informed him that a business plan is being developed but is not yet available.
- Dr. Neill expressed the need for more detailed information regarding build-out of the phase I "shell" facility before the Board can support the completion of the laboratory building. Dr. Schuchat noted that NCID believes the build out of the facility is important; however, funding is lacking. The agency is not pushing HHS for additional funding at this time.
- Dr. Eberhart stated that inappropriate laboratory testing and treatment are occurring in many states. Commonalities throughout the states should be identified. Dr. Quinlisk concurred; she receives e-mails from constituents asking why the state health department does not agree with their private doctors. Many of

these constituents can not be convinced by science; therefore, accurate information should be distributed to clinicians.

- Dr. Stamm commented that rogue guidelines are legitimizing long-term treatment for chronic Lyme disease; as long as these guidelines can be accessed, this type of treatment can be legitimized.
- The breakout group also discussed the concept of “breaking down the walls” between different CDC organizations. The group members would like CCID and NCID leadership to review the proposed organization for viral and rickettsial diseases and consider aligning these subject areas with vectorborne infectious diseases. Doing so may reduce redundancy. Dr. LeDuc commented that aligning programs can present logistical problems, as some activities are better placed at the Ft. Collins campus, whereas others function better in Atlanta.
- The issue of emerging vectorborne diseases was raised. These diseases should be recognized in the bioterrorism arena, along with other natural agents that could become a substantial public health threat within the United States. Resources should be appropriately allocated.
- Dr. LeDuc added that NCID recognizes the need for new policy guidelines regarding transplantation. Recently, rabies has been transmitted from organ donors to their recipients. A policy for tracking this type of transmission must be defined.
- Dr. Granger expressed appreciation to the Board for including USDA in its discussions. USDA is interested in tickborne diseases, particularly because these diseases cause disease in cattle. The agency is examining tick collections and is trying to isolate agents at a Ft. Collins facility. This presents an excellent opportunity for synergy between USDA and CDC’s DVRD. USDA and CDC have a different focus on achieving the same mission; collaboration could be beneficial to both agencies. Dr. Lemon concurred that the agencies should work together --- such a collaboration could help link animal and human health.

APPENDIX

List of Attendees and Participants

CDC and NCID Staff

Ray Arthur
Bo Barrow
Mary Bartlett
Michael Beach
David Bell
Carolyn Black
Shelly Bratton
Jennifer Brooks
Doug Browne
Sandra Browning
Jay Butler
Denise Cardo
Greg Dasch
Debbie Deppe
Peter Drotman
Mark Eberhard
Jeff Efird
Dan Jernigan
Matt Kuehnert
Jim LeDuc
Allison Mawle
Marian McDonald
Jan Nicholson
Dale Nordenberg
Lyle Petersen
Bob Pinner
Ron Rosenburg
Lisa Rotz
Mark Scally

David Swerdlow
Herb Thompson
David Warnock

BSC Members

Dr. Stanley Lemon, *Chair*
Dr. Rima Khabbaz, *Executive Secretary*
Dr. Barry Beaty
Dr. Mary Jane Ferraro
Dr. Marguerite Neill
Dr. Pablo Okhuysen
Dr. Patricia Quinlisk
Dr. Rebecca Rico-Hesse
Dr. Walter Stamm
Dr. Gillian Woollett

Ex-Officio Members

Dr. John Bennett
Dr. Larry Granger
Dr. Carole Heilman
Dr. Duane Hospenthal

Liaison Representatives

Dr. Patrick Brennan (HICPAC)
Dr. Mohamed Karmali (Canada)
Dr. Fernando Navarro-Garcia (Mexico)

