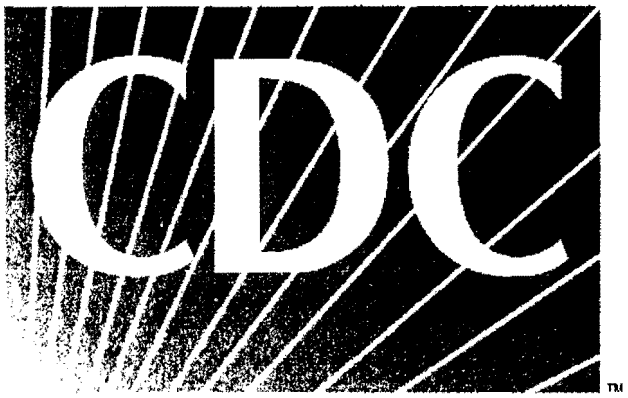
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

National Center for Environmental Health/
Agency for Toxic Substances and Disease Registry
Lead Poisoning Prevention Branch



CENTERS FOR DISEASE
CONTROL AND PREVENTION

Advisory Committee on
Childhood Lead Poisoning Prevention
March 14-15, 2007
Atlanta, Georgia

Record of the Proceedings

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ATTACHMENT 1

List of Participants

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Ms. Linda Kite
Dr. Michael Kosnett
Dr. Jessica Leighton
Dr. Megan Sandel
Dr. Wayne Snodgrass
Dr. Kevin Stevens, Sr.

Designated Federal Official
Dr. Mary Jean Brown,
Executive Secretary

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Dr. Warren Friedman (HUD)
Dr. Benjamin Gitterman (APHA)
Dr. Kristina Hatlelid (CPSC)
Mr. James Lawrence (AANP)
Ms. Jane Malone (AFHH)
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Dr. George Rodgers, Jr. (AAPCC)
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Mr. Gerald Curtis
Ms. Karen Gavin
Ms. Joy Gulliksen
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Ms. Rose Pue
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Ms. Paula Staley
Ms. Heather Strosnider
Mr. Ambarish Vaidyanathan
Ms. Nikki Walker
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Georgia CLPPP Representatives
Dr. Janice Carson
Dr. Anilkumar Mangla
Mr. Forrest Staley

Guest Presenters and Members of the Public
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Ms. Melita Jordan (Pennsylvania Department of Health)
Mr. Cuong Le
(Gardere Wynne Sewell, LLP)
Dr. Kathryn Mahaffey
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Ms. Rosalind Volpe (International Lead Zinc Research Organization)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

ADVISORY COMMITTEE ON
CHILDHOOD LEAD POISONING PREVENTION
March 14-15, 2007
Atlanta, Georgia

Minutes of the Meeting

The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) convened a meeting of the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP). The proceedings were held on March 14-15, 2007 at the Crowne Plaza Hotel in Atlanta, Georgia.

Opening Session

Dr. Mary Jean Brown, the ACCLPP Executive Secretary and Chief of the Lead Poisoning Prevention Branch (LPPB), called the meeting to order at 8:50 a.m. on March 14, 2007. She welcomed the attendees to the proceedings and particularly recognized the new ACCLPP members: Drs. Sher Lynn Gardner, Michael Kosnett and Megan Sandel.

Dr. Brown thanked both the new and outgoing ACCLPP members for providing CDC with their valuable time and expertise in the area of childhood lead poisoning prevention. She announced that plaques would be distributed on the following day to formally recognize the tremendous efforts and contributions of the outgoing ACCLPP members.

Dr. Brown was extremely sad to announce that Dr. Catherine Slota-Varma, a former ACCLPP member, died earlier in the year. Dr. Slota-Varma was a tireless advocate for lead poisoning prevention and an invaluable friend to LPPB. Dr. Brown emphasized that CDC deeply appreciated Dr. Slota-Varma's efforts on behalf of the children of this nation.

Dr. Brown announced that voting members with a real or perceived conflict of interest related to any item on the March 14-15, 2007 ACCLPP agenda would be responsible for identifying these issues and recusing themselves from voting on these topics or participating in these discussions.

Dr. Brown opened the floor for introductions; the list of participants is appended to the minutes as Attachment 1.

Update on LPPB Activities

Dr. Brown covered the following areas in her update. Data from the 2003-2004 National Health and Nutritional Examination Survey (NHANES) showed that ~1.2% of children in the United States were estimated to have blood lead levels (BLLs) ≥10 µg/dL. The geometric mean BLL for children 1-5 years of age was ~1.8 µg/dL. The *Healthy People* goal to eliminate elevated BLLs (EBLLs) as a public health problem in the United States by 2010 will not be met if the same strategies, tools and approaches are used to address this issue.

Dr. Brown clarified that the *Healthy People 2010* goal is defined as the point at which lead poisoning will no longer be a population or public health problem in the United States. When the *Healthy People 2010* goal is reached, NHANES and other public health diagnostic tools will be unable to identify any children with EBLLs in 95 out of 100 trials of the Survey as currently configured. Ongoing efforts to incorporate and institutionalize lead poisoning prevention practices into healthy housing initiatives will be extremely important to ensure that existing knowledge and expertise about lead do not disappear.

Dr. Brown informed ACCLPP about CDC's competitive program announcement. Under the current cycle of CDC-funded childhood lead poisoning prevention programs (CLPPPs), 41 state and local health departments will begin receiving funds on July 1, 2007. On the one hand, CDC is pleased that Mississippi was successful during the competitive application process and will establish a new CLPPP in the state. On the other hand, CDC is concerned that Alabama, South Carolina and Tennessee were not re-awarded and will no longer have federal support for CLPPPs.

Dr. Brown assured ACCLPP that several non-CDC grantees will continue to conduct childhood lead poisoning prevention activities. For example, South Carolina's position is that lead poisoning prevention practices are well embedded in other housing activities throughout the state. CDC has existing contracts with Memphis, Tennessee to perform blood lead surveillance, testing and follow-up in high-risk communities. CDC is attempting to establish similar contracts with Arkansas and Alabama.

Other non-CDC grantees will continue to adhere to Medicaid screening regulations, support housing programs to address lead paint, and implement programs and other activities with funding by the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA). New Mexico and a number of other non-CDC grantees will continue to report lead poisoning data to CDC.

Dr. Brown informed ACCLPP that as a condition of continued funding under the current cooperative agreement, CLPPPs will be required to institutionalize primary prevention by successfully implementing the following six strategies.

- Each CLPPP must establish collaborations with local housing agencies through its annual and five-year consolidated housing plan.
- Each CLPPP must integrate its lead poisoning prevention services with maternal and child health agencies and housing subsidy programs.
- Each CLPPP must share its data to enforce Title X of Section 1018. This regulation allows CDC and HUD to exchange actual addresses of houses where multiple children were exposed to lead over a period of time. The regulation also requires property owners who have been notified through an inspection about lead on the property to inform prospective buyers or tenants about the presence of lead paint. Over the past three years, Title X has served as a powerful primary prevention tool by providing national capacity to address the worst properties in jurisdictions and make 184,000 units lead-safe.
- Each CLPPP must develop a primary prevention regulatory platform to eliminate or control lead hazards in housing units that may become occupied by children. CDC is providing technical assistance through several mechanisms to assist CLPPPs in establishing regulatory authority.
- Each CLPPP must develop, implement and evaluate a written plan to accomplish elimination of childhood lead poisoning by 2010.
- Each CLPPP must provide explicit cost sharing plans and state matching funds for lead poisoning prevention projects.

In addition to implementing the six primary prevention strategies, all 41 grantees will be required to provide CDC with quarterly reports of the names, addresses, dates of birth and other information on all children with EBLLs who are tested. Performance measures for CDC staff will be directly linked to the six primary prevention strategies.

Dr. Brown summarized several actions CDC is taking to support CLPPPs in conducting programmatic activities under the childhood lead poisoning prevention cooperative agreement. LPPB assigned a staff member to clean and match data to ensure that information used in Title X enforcement efforts is accurate, solid and reliable. The data cleaning and matching activity was completed in ~7 cities in 2006 and will be implemented in four additional cities in 2007.

CDC contracted the Alliance for Healthy Homes (AFHH) and the National Center for Healthy Housing (NCHH) to implement the "Capacity to Build Capacity" program in four jurisdictions. Under this initiative, expertise is being provided in Michigan to standardize and implement case management guidelines throughout the state. Expertise is being provided in Mississippi to develop the state's first childhood lead poisoning elimination plan. Expertise is being provided in Nevada to develop baseline screening data for effective

screening and elimination planning. CDC is reserving funds to help New Orleans with a site assessment when the city is prepared to receive this level of assistance.

CDC established contracts in high-risk areas without state funding to ensure the continuation of childhood lead poisoning prevention activities. CDC is supporting surveillance and other basic activities in Omaha, Nebraska and Memphis, Tennessee. CDC is providing funds for a staff member to collaborate with the city of New Orleans and the state of Louisiana in restoring childhood lead poisoning prevention activities. CDC is partnering with Rhode Island to evaluate recent changes in the state lead law and determine whether lead hazard control practices in the state could serve as an effective model for the remainder of the country.

Dr. Brown conveyed that in addition to the primary prevention activities, CDC will continue its traditional role of screening children with EBLLs. An ACCLPP workgroup previously developed "Recommendations for Blood Lead Screening of Young Children Enrolled in Medicaid" as a targeted screening plan for high-risk populations. The recommendations provided guidance in four major areas.

- State health departments should be allowed to make decisions about the level of risk of Medicaid-eligible children.
- Lead screening tests should be provided at Women, Infant and Children's (WIC) sites and new testing technologies should be promoted. However, the recommendation emphasizes that this activity will require resources and reimbursement to WIC sites for these services.
- Surveillance systems should be developed that are not solely dependent on blood testing to identify risk.
- CDC and the Centers for Medicare and Medicaid Services (CMS) should jointly evaluate progress on implementing the recommendations. The CDC/CMS joint evaluation process should also include approval or denial of waivers submitted by states to not conduct routine lead screening of Medicaid-eligible children. The ACCLPP workgroup proposed appointing an external body to perform the evaluation, but CMS determined that an independent review would be overly burdensome and supported an internal review process. However, CMS agreed to defer to CDC's decision on this issue.

Dr. Brown added that CDC asked former ACCLPP members, liaisons and *ex-officio* representatives who were involved in the original development of the Medicaid screening paper to conduct an external peer review. At the completion of this process, she would provide the current ACCLPP membership with the revised document for a final review. However, she asked the members to submit substantive changes only because CDC has already identified staff to make editorial revisions.

Dr. Brown clarified that even after ACCLPP's final review, the Medicaid screening paper would undergo several additional rounds of review over a lengthy period of time before publication in the *Morbidity and Mortality Weekly Report* (*MMWR*).

In addition to developing recommendations as a targeted screening plan for high-risk populations, CDC also established another mechanism to appropriately test children enrolled in Medicaid. CDC is partnering with the National Committee for Quality Assurance to create and field test a health plan employer data and information set (HEDIS) measure for screening of Medicaid children. CMS agreed to collaborate with CDC in encouraging state Medicaid directors to adopt the HEDIS measure.

Key findings of the field test are outlined as follows. A review of various health plans showed that the total combined number of Medicaid enrollees was ~1.3 million persons with 24%-43% of this population being children 2 years of age. Of these children, 49%-84% received at least one lead screening test. Overall, the field test demonstrated that Medicaid plans with at least 4,000 members should be able to identify at least 100 eligible children for the proposed HEDIS measure. Dr. Brown pointed out that the report of the field test of the childhood lead screening HEDIS measure was distributed to ACCLPP for review.

Dr. Brown described another recent report on screening of children for EBLLs. The conclusions of the U.S. Preventive Services Task Force (USPSTF) were published in *Pediatrics* in 2006 with three key recommendations. Universal blood lead testing should not be performed. Targeted blood lead testing should be performed in high-risk children, including those in low-prevalence communities. Universal blood lead testing should not be performed in pregnant women.

Overall, USPSTF only recommended universal screening for any disease or condition in cases where supporting data from randomized controlled trials could be provided that demonstrated health benefits of screening to the individual who was tested. However, the USPSTF report contains several variations on this recommendation based on the extent to which science is sufficiently vigorous and robust to show the benefit of blood lead testing to the individual who was tested.

Dr. Brown was surprised about concerns the USPSTF report has caused in lead programs throughout the country. USPSTF's 2006 report and CDC's 1997 publication on "Screening Young Children for Lead Poisoning" are generally consistent with no significant conflicts. In its 1997 publication, CDC recommended targeted screening of high-risk children as an interim measure only until the availability of local data. CDC defined "high-risk" children as those living in zip codes with ≥27% of pre-1950 housing or enrolled in Medicaid or other public assistance programs. CDC was silent on the subject of testing pregnant women.

CDC recently convened a conference call with ~45-50 state and local representatives to clarify and emphasize the consistency between USPSTF's 2006 report and CDC's 1997 publication. However, CDC is exploring the possibility of posting additional information on

its web site or directly communicating this message to all grantees. Dr. Brown pointed out that the USPSTF report was distributed to ACCLPP for review.

Dr. Brown provided a status report on CDC's data management system for children with EBLLs. CDC initiated efforts to build a lead program area module (PAM) that would be linked to the agency-wide National Electronic Disease Surveillance System. However, Dr. Brown was recently informed that the lead PAM would never be operable and CDC would abandon its efforts to develop software to support the module. To support data collection and surveillance, LPPB staff will make site visits to states that have purchased commercial software or developed internal database systems to support the lead PAM.

Dr. Brown reported on other services CDC is providing for children with EBLLs. Case management protocols are being developed at all levels for children with EBLLs. Regulatory authority is being established to require abatement of lead hazards in housing units of children with EBLLs. Efforts are being made to implement mandatory dust wipe testing and clearance standards following abatement. Activities are still being implemented to provide statutory protection for families against retaliatory eviction or discrimination.

Dr. Brown announced that CDC is continuing its international lead activities in Kosovo. In the latest round of blood screening, three children <12 months of age were identified with capillary BLLs >45 µg/dL. No samples taken from these children exceeded 65 µg/dL. At this time, two to three families have still refused to accept lead testing or treatment. Of children in Kosovo with BLLs ≥45 µg/dL who were deemed to be in need of chelation therapy, only two were non-compliant. An extremely small number of side effects were detected. A second round of the directly observed therapy program was launched with Succicaptal because this drug is more easily available in Europe.

At this time, 14 families in Kosovo are scheduled to be relocated from the refugee camp back into the "Roman Homeland" over the next two weeks. Soil remediation, dust reduction and hygiene improvements were initiated in three schools and one kindergarten. A Health and Heavy Metal Units was developed and is functioning well in Southern Kosovo. Targeted screening and follow-up are being performed.

Agreement was reached to institutionalize lead activities in Northern Kosovo and provide these services four hours per day, but the Serbian government has not finalized the terms and conditions of this agreement to date. Both the Albanian and Serbian governments agreed on the need for case management and follow-up of refugee children. CDC hopes a stakeholder conference will be held in 2007 with both the scientific community and donors.

Dr. Brown informed ACCLPP that HHS, CDC and the State Department cleared CDC's *Train-the-Trainer Toolkit* for lead poisoning prevention in newly arrived refugee children. The purpose of the toolkit is to train refugee health workers in lead poisoning, housing hazards, lead testing, risk factors for EBLLs in refugee children, and other important aspects of lead. CDC hired a contractor to prepare workshops for refugee children, pilot a

curriculum to train trainers at refugee-serving organizations, and evaluate the course. The public can obtain CD-ROMs of the toolkit by calling CDC's toll-free telephone number or downloading the CD-ROM from the CDC web site.

Dr. Brown was pleased to announce that CDC published a wealth of childhood lead poisoning prevention papers in 2006. CDC closely partnered with *Pediatrics* and other venues to deliver key messages about lead screening to pediatricians and other target audiences.

Dr. Brown provided an update on CDC's lead budget. LPPB loses funding each year and expects a 2% decrease in FY'08 based on its FY'07 budget. LPPB's FY'07 budget was ~$500,000 less than the FY'06 funding level. Dr. Brown noted LPPB's tremendous challenge in providing the same level of services with continued budget cuts. LPPB used carryover dollars to increase the amount of new funds to CLPPPs in 2006, but CDC's lead budget was actually decreased.

The ACCLPP members made suggestions to increase LPPB's impact. Dr. Kosnett asked LPPB to compile and provide states with best practices or models that have been successful in increasing childhood lead screening. LPPB should also explore the possibility of publishing these best practices.

As an example, Ms. Angeloni described an initiative the Rhode Island CLPPP developed and implemented beginning in 2003 that has resulted in increased screening rates throughout the state. Rhode Island gathers data on children enrolled in health plans and matches this information to the CLPPP database. The Rhode Island CLPPP sends letters to providers of children who were not screened and tracks these data over time to determine whether providers have changed screening practices.

Panel Presentation on the Georgia CLPPP (GACLPPP)

Dr. Janice Carson, Deputy Director for District Operations in the Georgia Division of Public Health (GDPH), described GDPH's milestones and key activities. GDPH received its first CDC grant in 1992 to develop GACLPPP. The state of Georgia appropriated funds to support seven regional lead coordinators in 1998. The lead coordinators are charged with identifying high-risk populations; providing education; conducting outreach programs; arranging for environmental risk assessments; and distributing information on lead poisoning causes and effects, nutrition, and environmental lead hazard reduction.

GACLPPP experienced an increase in lead screening in 2006 with >65,000 children being tested for lead exposure. GACLPPP replicated an existing environmental model to develop and implement a case management and follow-up tracking system. Ten major laboratories submit electronic reports to GACLPPP on all EBLLs each day and all BLLs each week.

GACLPPP also receives data on Medicaid enrollees <6 years of age, information from providers, and data on ~30% of non-Medicaid children enrolled in WIC. Screening, Medicaid and WIC data are electronically linked. GACLPPP developed refugee screening and follow-up guidelines. GACLPPP is now shifting its focus on lead screening to target areas with high risk, high-density populations and poverty. This action was taken as a result of findings from GACLPPP's 2005 study that showed children in high-risk categories were not being screened.

Mr. Ambarish Vaidyanathan, of CDC, presented results from a lead poisoning study GACLPPP and CDC conducted in the city of Atlanta in 2005. The study was designed with a geospatial approach to assess lead testing of children in at-risk neighborhoods. Older housing and poverty were defined as the two major risk factors for purposes of the study. WIC data were used as a proxy for poverty because Medicaid data were not available at the time the study was conducted.

Residential land tax parcel data in the city of Atlanta were used to assess housing risk based on the year the property was built, its land use category and appraised value. Neighborhoods were used as the resolution for the analysis. Census data were used to obtain population data. Lead testing and WIC data were used from 2005. Children ≤3 years of age in these data sets were eligible for the study. LPPB coded the data to maintain confidentiality.

The multiple data sets were analyzed to calculate priority testing indices (PTIs) based on pre-1978 housing, pre-1950 housing, and the percentage of children enrolled in WIC by neighborhood. PTIs were categorized into five groups of low, low-medium, medium, high-medium and high risk. A scoring scheme was developed to assign scores to each risk factor category. Housing and WIC scores were combined to determine PTI scores. PTIs were used to identify neighborhoods in the city of Atlanta with the highest risk and prioritize lead screening activities.

The strengths of the study included the use of tax parcel data to facilitate an accurate assessment of housing risk. Neighborhoods were used for the analysis because smaller geographic units are recognized by residents and are better suited for outreach activities. The limitations of the study included data sets that covered different time periods.

The analysis showed the following results. In 2005, 18,627 children ≤3 years of age lived in 236 neighborhoods in the city of Atlanta with an estimated 39 children living in each neighborhood. Of 2,231 children tested for lead in 2005, 23 had BLLs ≥10 µg/dL. The WIC population of children ≤3 years of age totaled 8,229 in 2005. Of 84,055 residential parcels with data on the year the property was built, 75,286 or ~90% were built before 1978 and 47,142 or ~54% were built before 1950. Overall, the lead testing rate in the city of Atlanta was low (11.9%).

Lead testing rates did not match housing risk. Testing rates were high in neighborhoods with high rates of both WIC children and pre-1950 housing. Testing rates were lower in neighborhoods with high rates of pre-1950 housing only. Testing increased as the percentage of WIC children increased. Housing risk and testing did not follow a clear trend. Testing reflected the number of children enrolled in WIC, but not housing risk.

PTIs can be used as a common platform to characterize neighborhood risk and compare multiple neighborhoods, but combining risk factors can further improve risk assessment and ultimately testing. Community-based organizations can play a critical role in disseminating information about high-risk neighborhoods.

Maps can assist communities and providers in identifying children who live in high-risk neighborhoods, particularly maps that are generated to detect neighborhood risk in specific clinic or hospital service areas. Overall, the study showed that increased testing is needed for children living in old housing and in poor families. Primary prevention strategies will play a key role in achieving the *Healthy People 2010* goal of eliminating childhood lead poisoning.

Mr. Vaidyanathan concluded his presentation by informing ACCLPP that GACLPPP will refine the study. Medicaid data will be used to assess lead testing among children enrolled in Medicaid. Efforts will be made to replicate the study for use throughout the entire state of Georgia.

Dr. Anilkumar Mangla, of GACLPPP, described GACLPPP's ongoing efforts to develop, implement and evaluate a lead poisoning risk model for the state of Georgia. GACLPPP's mission is to eliminate childhood lead poisoning as a public health concern in Georgia by 2010. GACLPPP acknowledges that three key factors will play a critical role in reaching this goal: identification, case management and remediation.

In terms of identification, GACLPPP developed a new lead poisoning risk model with geographic information systems (GIS) to promote targeted testing and identify children with EBLLs in the state of Georgia. GACLPPP collaborated with the Georgia Registry of Immunization Transactions and Services (GRITS) and other state partners in this initiative. All risks, including housing, poverty, race/ethnicity and anemia, will be integrated into the model to assist physicians in assessing whether a child is at risk when immunization records are reviewed.

Based on risks that are input into the model, physicians will be prompted to screen the child for lead or use their discretion in performing the test. GRITS will generate and send a report to GACLPPP with the child's name, physician's name and testing status. Health plans are expected to closely collaborate with GACLPPP to ensure that lead is one of the essential medical measures to evaluate providers.

GACLPPP will provide lead information to health plans to assist in the production and distribution of lead screening report cards to providers. GACLPPP is aware of Wisconsin's success in dramatically increasing lead screening rates throughout the state based on the dissemination of report cards to providers. GACLPPP will also use GRITS reports to determine lead screening rates of each physician based on the number of children who were and were not screened.

GACLPPP decided to develop its new lead poisoning risk model in coordination with the existing GRITS system due to the wide reach of this database. The total number of GRITS users represents >90% of providers in the state of Georgia. Of 6.2 million patients maintained in the GRITS database, 1 million are children <6 years of age. All children maintained in the GRITS database are enrolled in Medicaid. GRITS users include 5,531 public health clinics and 17,960 private clinics. Medical providers, local health departments, and elementary or secondary schools of children maintained in the GRITS system can access the database. Providers can access the web-based, secure and confidential GRITS database at no cost.

GRITS collects and maintains several data elements, including the child's full name, date of birth and contact information; mother's maiden name; immunization history; and eligibility status for free vaccine. GRITS does not collect or maintain information on age of housing or addresses of children. However, GACLPPP will expand the GRITS database with these data, parcel data from nearly each county in the state of Georgia, information on each child enrolled in Medicaid in the state, and other information for purposes of the lead poisoning risk model.

GACLPPP also developed its new lead poisoning risk model in partnership with GRITS due to benefits offered to medical providers. Immunization rates are improved by providing a more complete and current immunization history. Staff time is reduced in searching and requesting immunization records. The number of children who are over- or under-immunized is decreased. Future dates for immunizations are forecasted. Overall, the capacity of the GRITS database to create reports will be extremely useful for GACLPPP's new lead poisoning risk model.

GACLPPP will use GRITS's existing mechanisms to provide training, such as onsite training sessions for physicians and an instruction manual. Efforts are underway to develop and release an interactive training CD-ROM by the summer of 2007. GACLPPP recently hired outreach staff and will use these personnel to provide training to physicians on the new lead poisoning risk model. In addition to providing training, GACLPPP will also educate physicians through grand rounds, presentations at meetings, partnerships with professional associations and newsletters.

GACLPPP will launch a pilot project in the fall of 2007 in Richmond County in Augusta, Georgia to evaluate the lead poisoning risk model. In preparation of the pilot, Richmond County is now using a lead screening questionnaire and maintaining names of all children

who present for care. The screening questionnaires will be used to assess the sensitivity, specificity and efficacy of the model based on increases in the rates of screening children and detecting EBLLs. After GACLPPP completes and evaluates the pilot project, efforts will be made to engage more counties in using the model with an ultimate goal of statewide implementation.

Dr. Mangla concluded his presentation by emphasizing the need to replicate GACLPPP's lead poisoning risk model throughout the country based on its success in the state of Georgia. This initiative could serve as a solid model of integrating different areas of a health department to make a public health impact.

Dr. Sandel advised GACLPPP to also provide outreach and education to communities in addition to physicians. This approach would provide parents with more knowledge about lead screening and would also empower parents to ask physicians to test their children.

Dr. Brown commended GACLPPP on developing the lead poisoning risk model. She pointed out that both CDC and GDPH were concerned about the overarching finding from the 2005 lead poisoning study. Children in high-risk neighborhoods in Atlanta were less likely to be screened for lead than children in low-risk neighborhoods when poverty and age of housing were used as risk factors. However, Dr. Brown was encouraged about next steps in the pilot project because her experience was that providers positively respond when this type of information is brought to their attention.

Dr. Brown also made follow-up remarks to ACCLPP's comments. Efforts will be made in the near future to link GDPH and EPA regional staff for the agencies to initiate dialogue on providing EPA with data from the lead poisoning risk model. In terms of community outreach, LPPB and GDPH are piloting a faith-based initiative in African American churches to educate consumers about the importance of lead screening.

Update on the ACCLPP Clinical Paper

Dr. Helen Binns, the ACCLPP liaison to the American Academy of Pediatrics, served as the primary author of ACCLPP's clinical paper on adverse health effects of BLLs <10 µg/dL. She covered the following areas in her update. ACCLPP established a <10 Workgroup in 2002 to address this issue in more detail. The workgroup agreed on and emphasized the following points in the <10 paper that was published in 2005.

No "safe" level of lead has been identified. Evidence favors a causal association between lead acquisition and impaired cognitive functioning. Concern exists about residual confounding, such as social factors. The strength and shape of the relationship between lead and cognitive outcomes is uncertain. Children with BLLs <10 µg/dL should not be defined with the clinical term of "lead poisoned" because all children have measurable

BLLs. Previous cross-sectional studies were not predictive of effects on individual children. Influences on child development other than low BLLs are strong.

The workgroup formed a smaller subgroup to identify management strategy options for BLLs <10 µg/dL and formulate more specific recommendations for clinicians. The subgroup reviewed the literature, ed the <10 clinical paper, and revised the document several times based on comments by ACCLPP and *Pediatrics* reviewers.

The ACCLPP-approved paper was submitted to the *MMWR* for publication and was extensively revised based on comments by the editor. The last iteration of the <10 clinical paper was submitted to the new *MMWR* editor on February 12, 2007, but no agreement has been reached on whether the document actually will be published in this venue. *Pediatrics* accepted the paper, but publication in this journal has been delayed until the *MMWR* approves the final version.

Dr. Binns highlighted key points in the <10 clinical paper. The prevalence of EBLLs is reviewed. A historical perspective is provided on BLLs of children 1-5 years of age in the United States. Laboratory uncertainties associated with blood lead measurements are outlined. Most notably, capillary sampling for screening is dependent on the technique used and venous testing is needed for confirmation. Differences in results have been observed between these two methods.

The section on blood lead measurements also notes random and systematic errors in blood lead testing and the current allowable error rate of ±4 µg/dL. However, most laboratories can operate within an error rate of ±2 µg/dL. Studies are cited to demonstrate the variability among laboratories. For example, a 1998 published study showed that eight laboratories were given several blood samples <10 µg/dL and all results were reported as <10 µg/dL. All results were within 3 µg/dL of the overall mean for that sample.

Pediatricians are given guidance to better understand blood lead patterns through inhalation or ingestion, by age and seasonality. EPA's 1995 published data are cited to show the length of time needed for BLLs to decline following an intervention. Data published in 2001 are referenced to demonstrate the expected amount of time for non-chelated children who are followed through case management to achieve BLLs <10 µg/dL.

The potential relationship between BLLs and outcomes is demonstrated, such as prenatal, peak, average lifetime or concurrent times of measurements and outcomes of cognitive deficits, educational achievements, behavior and delinquency. However, the paper emphasizes that the effects of lead on cognitive or behavioral development of an individual child is not predictable. Adverse effects from BLLs, particularly those at low levels, shift in the mean IQ of the population rather than the individual.

Pediatricians are informed about confounding variables other than BLLs on a child's IQ at seven years of age, such as mother's IQ, home observation for measurement of the

environment score, feed style, months of breast-feeding, education of both parents, mother's age at birth, parents who smoke, birth weight, and parents living together.

Strategies are described for pediatricians to encourage parents to positively impact and enhance the growth and development of their children, such as reading to, interacting with and using language around the child; fostering parental nurturing; monitoring with clinical interventions; and implementing early intervention programs.

The paper does not specifically examine associations with lead outcomes, but evidence is cited in several areas. Genes direct the growth of axons and dendrites. Pruning is needed to achieve adult patterns. The correlation between IQ test results and adult IQ is strong (~0.7) by five to six years of age. The home environment is a stronger influence on environment in the early years and a weaker influence in the older years in grade school. Grade school performance is heavily influenced by the quality of family life.

In most studies, a child's BLL explains 2%-8% of the variance in neurodevelopmental outcome measures. Data published in 2001 and 2003 from animal models are cited to suggest protective effects of enriched environments. The studies demonstrated that rats raised in an enriched environment were protected from the effects of lead. However, this research has not been replicated in children.

HUD's 2001 and 2002 published data are referenced to show the extent of the problem from lead hazards in the home. The inability of multiple federal, state and local funding strategies to address the magnitude of lead hazards is emphasized. Variations among states and local jurisdictions in case management and BLLs that trigger home inspections are noted.

Steps are described to address educational programs for prevention and intervention. Data published in 2000 showed that up to eight in-home educational sessions had no effect on preventing BLLs $\geq$10 µg/dL. Data published in 2003 showed that 28 peer educational sessions over a period of three years reduced the risk of BLLs $\geq$10 µg/dL by 34%. No studies have been conducted to demonstrate the effectiveness of office-based education.

Steps are described to increase understanding of lead hazards in the home. Tenants should request a copy of previous lead testing reports of the property. Known lead hazards should be disclosed at the sale of the property. Potential buyers or renters should pay and arrange for a lead inspection. EPA's *Protect Your Family* pamphlet should be thoroughly reviewed. Preemptive dust wipe testing should be considered to assess risk. The presence of lead should be assumed in older homes if lead-safe documentation was not presented. Caution should be taken in renovating properties. Buyers or renters should be reminded about the skills and training that are required for renovation.

Studies published in 2001 and 2004 are cited to demonstrate that hazard control reduces lead dust levels and is associated with lowering BLLs. A study published in 1996 is

referenced to show that 20% of children who were exposed to floor dust lead 40 µg/sq. ft. had BLLs ≥10 µg/dL.

Pediatricians are advised to follow local blood lead screening guidelines and perform testing in the absence of guidelines. A review is provided on the sensitivity and specificity of risk assessment questionnaires at ≥10 µg/dL from ~25 studies that focused on the effectiveness of targeted strategies.

Anticipatory guidance to parents is reviewed as the basis of several recommendations to clinicians. An environmental and family history should be taken. Education should be provided. Parents should be encouraged to examine and make their homes safe. Parents should be warned about unsafe renovation. Referrals should be made to local, state and federal partners for more information.

Laboratories that routinely achieve performance of ±2 µg/dL for blood lead analysis should be used. Blood lead screening should be conducted in accordance with state and local policies. If the child's BLL is near 10 µg/dL, the child's age, exposure history and season should be considered in determining a follow-up strategy. Diagnostic blood lead testing should be performed for children when exposure is suspected. Partnerships should be established with public health, community groups and parents.

Several recommendations are made for government agencies. Services that promote primary prevention should be expanded. Systems should be developed for clinicians and parents to learn about primary prevention services. Jurisdictional policies should be established that mandate lead safety in housing. Strategies should be developed to enforce these policies.

Systematic approaches should be developed and applied to prevent exposures to even small amounts of lead in food and consumer products, particularly since safer alternatives are available. Implementation of primary prevention plans should be promoted at state and local levels. The availability of early intervention programs should be expanded and promoted. Research should be conducted on the effects of BLLs <10 µg/dL. Strategies should be identified to reduce exposures to lead.

Dr. Brown informed ACCLPP that she recently had a conversation with Dr. Thomas Sinks, Deputy Director of the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR). Dr. Sinks offered to facilitate a discussion with the *MMWR* and *Pediatrics* editors and Dr. Binns in an effort to overcome barriers to co-publishing the <10 clinical paper in both venues.

Dr. Brown was aware that some ACCLPP members did not understand the rationale for co-publishing the <10 clinical paper in the *MMWR*. The document is targeted to pediatricians, but the *MMWR*'s key audience is not private providers. However, Dr. Brown clarified that co-publication in the *MMWR* is important because all ACCLPP papers should be released

as CDC documents. Moreover, the paper would be useful to CDC's federal partners and stakeholders that would only read the *MMWR*, such as CMS, EPA, and state and local health departments.

Drs. Brown and Rhoads proposed an approach to resolve the problem of publishing the <10 clinical paper. Dr. Sinks would facilitate a discussion with the *MMWR* and *Pediatrics* editors and Dr. Binns in an effort to simultaneously co-publish the document in both venues. If the *MMWR* did not reach a concrete decision to publish the paper in the next two months, efforts would be made to only publish the document in *Pediatrics* at that time. If the *MMWR* declined to publish the paper, Dr. Brown would attempt to reach an agreement with *Pediatrics* on publishing the paper as a stand-alone LPPB publication.

ACCLPP agreed with the approach proposed by Drs. Brown and Rhoads to proceed in publishing the <10 clinical paper. ACCLPP applauded Dr. Binns for her tremendous efforts in authoring and revising the <10 clinical paper and her additional contributions over a lengthy period of time in attempting to publish the document.

Update by the Model Codes Workgroup (MCWG)

Ms. Jane Malone, the MCWG Chair and ACCLPP liaison to AFHH, covered the following areas in her update. The latest version of the position statement to improve international model codes to prevent exposure to lead-based paint (LBP) hazards was distributed to ACCLPP for review. The current version did not reflect any changes with the exception of a few editorial revisions that were made in response to ACCLPP's suggestions during the October 2006 meeting.

Ms. Malone proposed several options that would be available to ACCLPP to release the position statement. ACCLPP could formally approve and post the document on CDC's web site. ACCLPP members, liaisons and *ex-officio* representatives could disseminate the document to the International Code Council (ICC) and other interested groups. ACCLPP could submit the document to ICC as its formal request to propose changes to the existing model codes.

Ms. Malone announced that ICC will hold its final hearings in the current cycle for proposed code changes during the last week of May 2007. The deadline to submit proposed code changes for the upcoming cycle is August 20, 2007.

Several ACCLPP members made suggestions for MCWG to consider in refining the position statement.

- Strong partnerships should be developed within the code community to successfully change existing model codes. For example, collaborations

should be established with California because LBP hazards have been successfully incorporated into model codes in the state.

- The third line on page 3 should be revised by adding language related to "above de minimis levels" for defective paint spots on interior surfaces.
- The first sentence in the "clearance testing" section on page 4 should be qualified by adding language related to "above de minimis levels."

Dr. Brown thanked Ms. Malone and the other MCWG members for their diligent efforts in ing and revising the position statement. However, she noted that the proposed options to publicly release and submit the document to ICC were problematic from a federal perspective.

The position statement cannot be issued as an independent ACCLPP document because ACCLPP is a federal advisory committee to CDC. The position statement would have more weight and credibility with signatures by the ACCLPP Chair, voting members, and Dr. Brown as the CDC Designated Federal Official. However, efforts to obtain CDC approval and clearance of the document would be extremely difficult and time consuming because the position statement makes recommendations about regulations, but CDC has no regulatory authority.

Dr. Brown proposed an alternative approach to overcome federal barriers to releasing and disseminating the document. A new position statement should be ed with references to ACCLPP's primary prevention housing document and other published materials. The new position statement should avoid references to specific regulations, but several broad messages should be conveyed:

> "ACCLPP agreed that language on lead poisoning prevention should be included in international model codes. ACCLPP previously commented on this issue in a number of published materials. ACCLPP's new position statement on international model codes is consistent with its previous documents. ACCLPP agreed that peeling paint should extend beyond aesthetics."

Dr. Brown advised AFHH to release model language on international model codes through a formal publication or web site posting. ACCLPP would then be in a position to support AFHH's model language in the new document. Dr. Brown offered to write the first of ACCLPP's new position statement.

ACCLPP agreed with the proposed approach and described a process to undertake this effort. Dr. Brown would a new position statement on improving international model codes to prevent exposure to LBP hazards. She would distribute the first to ACCLPP for review and comment; revise the document based on ACCLPP's input; and send the final version to the voting members by e-mail along with a form for a formal vote.

Update on EPA's Proposed Renovation Rule

Ms. Jacqueline Mosby, the ACCLPP *ex-officio* representative to EPA, reported that EPA conducted a study to characterize dust lead levels after renovation, repair and painting. EPA is now using results from the study to support a risk assessment of its proposed rule on the Lead Renovation, Repair and Painting Program.

The Residential Lead-Based Paint Hazard Reduction Act of 1992 provides EPA with statutory authority to address LBP hazards. For abatement, EPA certifies contractors, accredits training providers, develops work practice standards, and allows state program authorization. EPA published a final rule on abatement in August 1996.

For renovation, repair and painting activities, EPA completed guidelines to conduct renovation in September 1997 and also completed a study on hazards from renovation tasks in January 2000. EPA's current proposed renovation rule is in response to a federal requirement to revise abatement regulations to apply to renovation activities that create lead hazards by October 1996.

EPA conducted several activities prior to proposing the renovation rule. A renovation study was conducted in December 1999 that showed remodeling and renovation activities produced hazardous quantities of lead dust. The study also demonstrated that typical cleanup methods were not effective in eliminating lead dust hazards. Extensive stakeholder consultations were held and numerous public meetings were convened. A model lead-safe work practices (LSWPs) course was developed in June 2003. A voluntary program for contractors to encourage the use of LSWPs was evaluated in 2004-2005.

EPA proposed the renovation rule with several objectives. The introduction of lead hazards resulting from renovation, repair and painting activities in homes with LBP would be prevented. Persons performing renovations would be properly trained. Training providers would be accredited. Renovators and firms performing renovations would be certified. LSWPs would be followed during renovations.

The proposed renovation rule was signed on December 29, 2005. EPA extended the public comment period from April 10, 2006 to May 25, 2006. EPA is in the process of addressing >250 comments that were submitted, but the public can now view all comments on the EPA web site. EPA will publish its responses to the comments after the entire process on the proposed renovation rule is completed.

The proposed renovation rule applies to renovations of most pre-1978 housing performed for compensation, but four situations are exempt: (1) activities that disrupt <2 sq. ft. of a painted surface; (2) no LBP based on an inspection; (3) no child <6 years of age living in the home based on a signed statement by the owner occupant; or (4) no LBP based on a

test kit used by a certified renovator. The proposed rule also does not apply to persons performing renovations in housing that they own and occupy.

EPA is proposing to mandate requirements of the renovation rule in two phases to allow time for the development of improved test kits. In phase 1, pre-1960 housing and any housing with a child <6 years of age with an EBLL would be covered. In phase 2, all housing would be covered.

EPA is proposing several requirements for certification and training. Firms must pay a fee that will be determined in the future. Renovators and dust sampling technicians must successfully complete an accredited one-day training course. Certifications would be valid for a period of three years and would apply to any non-authorized state or Indian tribal area. Workers must be trained by the renovator.

EPA is proposing several requirements for work practice standards. Signs must be posted to define the work area. The work area must be isolated to ensure no visible dust or debris leaves the work area. The work area must be contained during the project. Debris must be contained at the end of each day and transferred off-site under containment.

The work area must be cleaned with a HEPA-equipped vacuum, damp mop or cloth when the renovation is completed. Wet and dry disposable cleaning cloths must be used to verify cleaning. Firms must follow work practice standards and use certified renovators and trained workers. Certified workers must train workers, ensure compliance with work practice standards, and perform post-renovation cleaning verification.

To support the proposed renovation rule, EPA conducted and obtained a peer review of a dust study. The overall purpose of the study was to compare the amount of lead dust remaining after the use of proposed work practices and the amount of lead dust remaining after typical renovation work practices. Of 75 experiments conducted in the study, 60 were in the interior of housing units and child-occupied facilities and 15 were in the exterior of these same areas. Over 5,000 samples were taken. All housing in the study was built between 1900-1925 and the child-occupied facility was built in 1967. All study buildings were unoccupied at the time of the study.

The study assessed a variety of typical renovation activities, including total renovation of kitchens, window replacement, door planing, trim replacement and paint removal. Each type of renovation activity was conducted under four different conditions: (1) proposed work practices of containment, specialized cleaning and cleaning verification; (2) typical containment and cleaning practices at baseline; (3) baseline practices with specialized cleaning; and (4) proposed rule requirements for containment and baseline cleaning.

The full range of methods and activities allowed by the proposed rule was reviewed in the study. The use of a heat gun >1,100 degrees, torching, high-powered sanding, and other

practices restricted or prohibited by EPA's abatement regulations were also assessed in the study.

Ms. Mosby concluded her presentation by describing next steps in EPA's proposed renovation rule. Findings from the dust study are being incorporated into the ongoing risk assessment. The Clean Air Scientific Advisory Committee is conducting a peer review of the risk assessment and its inputs. Results from the dust study can be accessed on the EPA web site. EPA will provide a 60-day comment period for the public to provide input on the dust study.

In further support of the proposed renovation rule, EPA will make two additional studies available to the public through a notice published in the *Federal Register* the week of March 19, 2007. EPA will consider revisions to the proposed work practice standards following its internal review of the two studies and public comments submitted in response to the *Federal Register* notice.

Dr. Cory-Slechta serves on EPA's Clean Air Scientific Advisory Committee (CASAC) that is reviewing the lead dust study. She reported that the CASAC will unanimously advise EPA not to remove lead language from the clean air standard. At this point, the CASAC has not been provided with final recommendations on EPA's rule-making of the clean air standard. Dr. Cory-Slechta committed to keeping ACCLPP informed about this process.

Update on Laboratory Measurement Issues

Ms. Wendy Blumenthal, of LPPB, provided an update on laboratory measurement issues. The Clinical Laboratory Improvement Amendments (CLIA) currently defines proficiency testing as test results within ±4 µg/dL or ±10% of the target value. During the October 2006 meeting, several presentations were made for ACCLPP to consider the feasibility of recommending more rigorous criteria for laboratories to measure BLLs. ACCLPP reached agreement to form a new Laboratory Issues Workgroup to discuss the implications of changing the current criteria.

The nine-member workgroup is represented by ACCLPP, federal and state agencies, a private laboratory, CLPPPs and academia. Key discussion topics during the workgroup's first conference call on March 9, 2007 are summarized as follows. The workgroup generally agreed that the current proficiency testing standard should be changed. As a result, the workgroup agreed that its charge should be to develop recommendations to CMS to change the current proficiency testing standard for BLL measurements.

The workgroup extensively discussed whether the proficiency testing standard should be immediately lowered to ±2 µg/dL or if a phased approach beginning with a change to ± 3

µg/dL would be more appropriate. Most of the workgroup members were in favor of a phased approach.

The workgroup recognized the need to become more knowledgeable about the process to propose changes to CLIA regulations through recommendations to CMS. The workgroup emphasized the critical need to justify its recommendations with solid science. The workgroup discussed the Occupational Safety and Health Administration's (OSHA) current proficiency testing standard of ±6 µg/dL or ±15% of the target value. The workgroup agreed to continue to explore the possibility of affecting the same changes to the OSHA standard.

Ms. Blumenthal concluded her update by describing the workgroup's next steps. The workgroup will review the literature, gather information on the CMS process, and develop a timeline based on the CMS process. The workgroup will explore the possibility of analyzing surveillance or state-based data to support the scientific justification for the recommendations. The workgroup will primarily communicate via e-mail messages, but additional conference calls will be convened as needed. The workgroup will develop a report with its recommendations.

Dr. Rhoads serves on the Laboratory Issues Workgroup. He provided additional details about the workgroup's rationale to take a phased approach. The current proficiency testing standard could be lowered to ±3 µg/dL for implementation in 2008 or 2009 and further lowered to ±2 µg/dL three to five years later. The phased approach would provide laboratories with sufficient time to adjust to more rigorous criteria.

Dr. Friedman advised the workgroup to engage the National Institute for Occupational Safety and Health in its ongoing discussions about changes to OSHA's current proficiency testing standard. Dr. Snodgrass asked the workgroup to include a section on research needs, alternate technologies and other media in the report.

Update by the Consumer Product Safety Commission (CPSC)

Dr. Kristina Hatlelid, the CPSC *ex-officio* representative to ACCLPP, reported that the Federal Hazardous Substance Act (FHSA) provides CPSC with authority to regulate children's jewelry. The FHSA defines "hazardous substances" as products that cause substantial illness or injury under conditions of reasonable and foreseeable use, including ingestion by children.

For the most part, the FHSA does not identify specific particular products or hazards. However, CPSC banned the use of lead-containing metals in candlewicks. The FHSA does not require pre-market approval of products, but manufacturers, importers, distributors and retailers are responsible for not selling hazardous substances.

CPSC received reports of cases of children who were lead poisoned after swallowing jewelry. Importers were uncertain about complying with CPSC regulations because the products met CPSC regulations based on laboratory testing and certification. However, the laboratories only tested the products for lead paint. In response to requests for assistance by importers, CPSC developed laboratory methodologies and provided guidelines on hazardous substances in terms of lead exposure to children who ingest these products.

CPSC also reviewed its existing data to improve current laboratory tests. The data showed that a piece of jewelry containing a de minimis level of lead of 600 ppm would not pose a hazard under the conditions of swallowing. CPSC informed companies to maintain low lead levels and also reminded companies that lead-containing products are not permitted because they can cause lead poisoning. Based on leeching tests, CPSC defined "lead exposure" in products as 175 µg.

CPSC received a petition by the Sierra Club requesting a ban on children's jewelry. The position of the Sierra Club was that children's jewelry should have a total lead content of no more than 600 ppm. Children's jewelry was defined as "lead in serving no purpose and costing <$20." CPSC granted the petition and initiated a proposed rule-making process. If approved, the proposed rule would ban children's metal jewelry containing lead >600 ppm, including beads, clasps and all components of the product. However, CPSC did not define children's jewelry, establish a dollar amount, or determine an age limit for affected children in the proposed rule.

Although the proposed rule initially focuses on children's metal jewelry containing lead >600 ppm, CPSC hopes to expand the rule in the future to include other materials. However, CPSC will first need to collect more data on lead exposure to children from ingesting these products, such as plastics, glass, ceramics and crystal.

Dr. Hatlelid announced that the advance notice of CPSC's proposed rule-making for children's jewelry containing lead was distributed to ACCLPP for review. The public comment period closed on March 12, 2007, but the public is still welcome to submit additional information to CPSC.

CPSC will soon begin the process of reviewing and responding to the comments. Most notably, many of the comments expressed concerns about the ability of federal regulations to preempt laws in states and jurisdictions that are different. CPSC will post all comments on its web site for public access. CPSC will continue to present analyses of previous laboratory tests on children's jewelry to refine the recommendations on products to regulate.

In accordance with the FHSA, CPSC can only promulgate a new rule by demonstrating that the cost of the rule bears a reasonable relationship to benefits. CPSC will be challenged by performing a cost-benefit analysis because no specific information has been collected to date to show the benefits or costs of the proposed rule. For example, the extent to which

children's metal jewelry causes lead poisoning is unknown. The ability of the proposed rule to generate cost-savings by preventing lead poisoning cases or deaths is uncertain. Costs will be associated with industry's efforts to maintain quality assurance and control programs and produce non-leaded materials in inexpensive children's jewelry manufactured overseas.

Dr. Hatlelid informed ACCLPP that CPSC will be focusing on the proposed rule-making process over the next year. At that time, CPSC will take another vote on the proposed rule based on updated data. As part of its review, CPSC will continue to gather legislation passed by states and local jurisdictions. For example, California implemented a new law in January 2007 that called for a phase-out of lead in children's jewelry. Illinois amended its lead and paint rule to include other substances. The city of Baltimore introduced legislation on lead in children's jewelry.

Dr. Rhoads noticed that ACCLPP was extremely supportive of and receptive to CPSC's proposed rulemaking for children's jewelry containing lead. He asked Dr. Hatlelid to contact him or Dr. Brown if ACCLPP could play a role in advancing this effort.

Overview of CDC's Framework for Action on Healthy Housing

Dr. Brown was pleased to announce that CDC accepted her proposal to develop a healthy housing program with a lead surveillance component. CDC granted Dr. Brown permission to proceed with this activity, but she emphasized that the initiative is still in the early stage. She encouraged ACCLPP to provide her with suggestions, comments and advice on refining the healthy housing framework.

CDC's health protection goals are grouped into four overarching categories: healthy people, healthy places, preparedness and global health. The healthy housing framework will be implemented under the healthy places goals. The overarching healthy places goal is to protect and promote human health and eliminate health disparities in places where persons live, work, learn and play. CDC's traditional paradigm to address healthy places focused on (1) lead, mercury, dioxin and other agents; (2) air, water, soil and other media; and (3) cancer, chronic obstructive pulmonary disease and other disease entities.

Under the Futures Initiative, CDC is addressing healthy places by focusing on communities, homes, hospitals and other healthcare settings, institutional facilities, travel and recreation, schools and workplaces. CDC will advance toward healthy places by creating and promoting healthy communities, homes and schools; controlling chemical exposures; and increasing access to greenspace and recreational facilities.

CDC is using the World Health Organization's definition of "health" as a model for its healthy homes definition: "Healthy housing is sited, designed, built, maintained and renovated in ways that support the health of its occupants." CDC is designing the healthy housing

framework to improve safety in the home. Each year, 18,000 unintentional injuries or deaths occur in the home and ~400,000 residential fires result in ~$7 billion in property damage, 3,000 deaths and 14,000 injuries. In terms of preparedness, only 43% of households on the Atlantic Ocean or Gulf Coast believe they are vulnerable to and have prepared for hurricanes.

Housing characteristics that affect health include inadequate ventilation, dampness and pest control. Radon found in indoor air causes ~21,000 cases of lung cancer each year. More than 13 million children are exposed to tobacco smoke at home. Mold and moisture aggravate asthma and other pre-existing respiratory conditions. Rodents transmit disease directly to persons and can also be the source of allergens that exacerbate asthma.

Chemical and biological contaminants are significant environmental sources of health effects. The United States still has 1.2 million housing units with LBP that house low-income families with children <6 years of age. Each year, >500 persons die from accidental carbon monoxide poisoning. Of all households with children <5 years of age in 2005, 47% had a pesticide stored in an unlocked cabinet within reach of a child.

In 1999 and 2000, 43% of all drinking water disease outbreaks were associated with small and unregulated community water systems and private wells. Unregulated water supply systems serve ~35 million families in the United States. The number of private wastewater facilities is increasing due to the country's outgrowth of sewer systems. One of the *Healthy People 2010* goals is to reduce physical hazards in homes from ~6 million to 3.2 million. However, this goal will not be achieved because ~6-7 million units in the United States still have moderate or severe physical problems and ~2 million families live in severely inadequate housing.

Dr. Brown reported that CDC established three major objectives for the framework for action on healthy housing. Homes that are free from health and safety hazards will be promoted. Efforts will be made to ensure that persons have knowledge and adopt behaviors to maintain safe and healthy homes. Efforts will be made to ensure the availability of healthy, safe and accessible homes. The framework is being developed to achieve four outcomes: (1) identify research gaps; (2) establish healthy homes policy and planning initiatives; (3) create a healthy housing workforce; and (4) create healthy homes that are safe and affordable.

Dr. Brown described CDC's proposed activities to achieve the four outcomes of the healthy housing framework. To develop and translate science into public health actions, CDC is proposing to form a new Healthy Housing Surveillance System (HHSS) Workgroup in 2007 with the following charge. Reviews would be conducted of existing data systems, proposals of measures or enhancements to current data collection efforts, and proposals of new systems to address identified data gaps. A basic information technology (IT) plan would be developed. The budget for this activity would be $100,000 to support two HHSS workgroup

meetings, hiring of a contractor, and assistance in operational issues and developing a report.

In 2008, an IT plan would be developed and implemented to link existing databases within CDC and between CDC and HUD. The budget for this activity would be $50,000 to support an external IT consultant in developing the plan. An additional $1 million would also be needed to implement linkages within and between both agencies.

In 2009, three questions would be developed and tested for inclusion in the Behavioral Risk Factor Surveillance System questionnaire, the American Housing Study or NHANES. The budget for this activity would be $25,000 to support a consultant survey statistician to design the questions. An additional $90,000 would also be needed to administer questions in existing surveys.

In 2010, a report would be published with baseline information on housing factors and their impact on health. The report would be based on data generated from the linked data sets. The budget for this activity would be $150,000 to support a doctoral level epidemiologist and a masters prepared statistician.

Another research initiative CDC is proposing for 2007 is an environmental assessment to evaluate the potential health benefits from green housing construction. The first study under the assessment will focus on chemical or toxic exposures only, including total volatile organic compounds (VOCs), dust samples, mold type and count, radon, lead, allergens, cockroaches and dust mites. Landlords and occupants will complete surveys to answer questions about water damage history, frequency of cleaning, and use of VOCs in the home. Based on results of the environmental assessment, CDC will explore the possibility of launching a larger study on health outcomes associated with environmental exposures.

The study will be conducted in one multi-family property with elderly residents in Atlanta, Georgia with 80 green units serving as the intervention group and 80 conventional units serving as the control group. The green and conventional units will be matched based on age of building, average age of occupants and socioeconomic status. CDC will attempt to establish a consortium to develop a standard to define and consistently measure green construction across the United States from both behavioral and environmental perspectives. HUD has already committed $100,000 for the study through its interagency agreement with CDC.

To establish healthy homes policy and planning initiatives, CDC is proposing to encourage both voluntary efforts and the development of environmental policies. Rental property owners, renters and single family homeowners will be provided with information on behaviors that can reduce health hazards within housing, such as routine maintenance, use of safety devices and integrated pest management. Information will be tailored to meet the needs of specific populations and geographic areas. Energy Star will be used as a model to

develop a "Healthy Home" brand. CDC will closely collaborate with its partners at EPA and the Department of Energy in this effort.

The critical need for zoning laws that separate large manufacturing plants from residential areas and also promote multi-use areas will be emphasized. Code enforcement will be highlighted as a powerful tool for ensuring that maintenance and safety problems are corrected. The possibility of using tax policies to provide economic incentives will be explored.

Another policy and planning initiative CDC is proposing for 2007 is the remediation of the top three hazards in the healthy homes objectives. Categorical programs will be expanded to include well-understood and effective interventions that address home safety, lead poisoning and indoor air quality.

CDC proposes to take four major actions to achieve this goal. CDC will expand its current pool of grantees and subcontractors to include a home visiting component for the provision and installation of safety devices and environmental testing, such as smoke alarms, carbon monoxide detectors, cabinet locks, gun lock boxes, and testing of radon, lead and allergens.

CDC will collaborate with grantees to identify fire departments and other partners that can provide additional resources for these expanded services. CDC will provide training and technical assistance to grantees. CDC will develop an evaluation methodology for remediation of each of the top three hazard areas. New CDC grantees will be required to adopt the evaluation methodology.

To create a healthy housing workforce, core competencies will be developed to increase the effectiveness of public health professionals beyond the health field. Leadership skills that are necessary to identify and implement systemic changes will be acquired. Expertise will be built in the policy environment. A minimum skill set will be mastered in the areas of assessment, hazard control, behavior change measures, analytic and communication skills, and an understanding of ethical and legal considerations that might affect housing. A diverse workforce will be established that reflects a variety of fields and emphasizes cross-training.

Another healthy housing workforce initiative CDC is proposing for 2007 is the development of academic programs, workshops, electronic training sessions and fellowships to cross-train workers from a variety of disciplines in the basic skill set for the healthy homes objectives. CDC proposes to take five major actions to achieve this goal. CDC will continue to provide technical assistance and support to the Healthy Homes Training Center. CDC will collaborate with EPA, HUD and advocacy groups to host a national workgroup that would be charged with developing model home inspection standards.

CDC will develop a healthy homes licensing and certification program for persons who demonstrate proficiency in the set of core competencies. CDC will develop games,

simulations, web-based training sessions and electronic tools for the safe and healthy homes workforce. CDC will cross-train ATSDR health communicators in healthy homes assessment, indoor air quality measures and remediation interventions.

To create healthy homes that are safe and affordable, CDC is proposing to demonstrate the relationship between health and affordable housing. Of all families in the United States, 5.4 million spend >50% of their income on housing and might be unable to purchase health care, medications or adequate food. Living in neighborhoods with concentrated poverty levels increases emotional stress and exposure to unintentional injury. Low-income families living in more affluent neighborhoods have improved education and decreased rates of asthma and depression. Homeowners are more likely to rate their health as "good" or "excellent" compared to residents of rental properties.

Dr. Brown announced that NCEH/ATSDR will serve as the lead agency in developing the framework for action on healthy housing. The National Center for Injury Prevention and Control and the National Center for Infectious Disease will serve as NCEH/ATSDR's key internal partners. In terms of external partners, CDC will closely collaborate with the HHS Office of the Surgeon General, CPSC, EPA, HUD, the National Institute of Environmental Health Sciences (NIEHS), and numerous non-governmental agencies. CDC and its federal partners will develop and release a document in January or February 2008 to clearly outline the role of federal agencies in the healthy housing initiative.

Dr. Brown concluded her presentation by describing next steps in the healthy housing initiative. She is currently developing a business plan for the framework for action on healthy housing and will present this proposal later in March 2007 to Dr. Howard Frumkin, the NCEH/ATSDR Director. She was pleased about the strong internal support from Dr. Frumkin and the solid external support from HUD in terms of funding and expertise.

To alleviate ACCLPP's concerns, Dr. Brown clarified that LPPB will maintain its core focus on lead poisoning prevention. She was aware that this important issue cannot be subsumed under the healthy housing umbrella because no institution other than CDC will address lead poisoning problems in mining, smelting, traditional medicines and consumer products. However, Dr. Brown acknowledged that LPPB's name and traditional lead activities will be expanded to include the broader focus on healthy housing.

Several ACCLPP members made suggestions for CDC to consider in its ongoing development of the framework for action on healthy housing.

- CDC should add analyses of carbon monoxide and the use of pesticides in the green housing environmental assessment.
- CDC should review EPA's computer models on indoor transfer of pesticides through dermal or inhalational routes in various age groups. These data could inform CDC's analysis of pesticides in the healthy housing initiative.

- CDC should review findings from the National Children's Study. Under this large longitudinal study, environmental samples will be collected from the housing of 100,000 children from diverse geographic areas throughout the United States beginning in the pre-conception age. CDC should use results from the study to inform the green housing environmental assessment, particularly to determine overlapping areas and identify new opportunities.
- CDC should measure housing characteristics in the green housing environmental assessment to determine variability within and between housing types.
- CDC should obtain experiences and lessons learned from the Los Angeles County Health Department because this agency has successfully implemented healthy homes inspections and developed a manual on this activity.

Public Comment Period

Dr. Warren Friedman, the ACCLPP *ex-officio* representative to HUD, announced that HUD's super notice of funding availability (NOFA) for FY'07 was published in the March 13, 2007 edition of the *Federal Register*. Of seven NOFAs by the HUD Office of Healthy Homes and Lead Hazard Control embedded in the super NOFA, five relate to lead and two relate to healthy homes:

- ~$76.4 million for LBP hazard control activities that will be open to state and local governments;
- ~$54 million for lead hazard reduction demonstration projects targeted to areas with the highest fraction of pre-1940 housing and the highest rates of EBLLs;
- $8 million that will be open to private-sector organizations to renovate homes under the Operation Lead Elimination Action Program;
- $3 million for the Lead Technical Studies Research Program;
- $2 million that will be open to jurisdictions without lead hazard control programs to conduct activities under the Lead Outreach Program; and
- $5 million that will be open to public or private entities to implement broad-based healthy home interventions, including lead activities, under the Healthy Home Demonstration Program.

Dr. Friedman added that for the three lead hazard control programs in FY'07, HUD will emphasize identification of census tracts in target areas unless the jurisdiction elects to cover an entire area.

Ms. Mosby announced that the Federal Interagency Task Force on Non-Housing Lead Sources will hold its next meeting in June 2007.

With no further discussion or business brought before ACCLPP, Dr. Rhoads recessed the meeting at 5:00 p.m. on March 14, 2007.

Dr. Rhoads reconvened the ACCLPP meeting at 9:40 a.m. on March 15, 2007. He announced that Dr. Walter Handy's term as an ACCLPP member would expire before the next meeting. Dr. Rhoads presented Dr. Handy with a plaque and letter signed by Dr. Julie Gerberding, the CDC Director, in recognition of his valuable service as an ACCLPP member since 2003, contributions to the nation's children, and commitment and support to LPPB.

Dr. Rhoads emphasized that Dr. Handy's expert advice and comprehensive guidance on public health policies were essential in improving the health of children and reaching the national goal of eliminating childhood lead poisoning by 2010. The participants applauded Dr. Handy's outstanding efforts during his tenure as an ACCLPP member.

Update by the Lead and Pregnant Workgroup (LPWG)

Summary of the Literature Review. Dr. Kathryn Mahaffey, of EPA, is an external consultant to LPWG. She summarized the literature review LPWG conducted to support its lead and pregnancy recommendations. Concerns about lead and pregnancy are based on central nervous system development in the early postnatal stage. However, the neuro-endocrine impact of lead exposure during this period has not been investigated or well established to date.

Evidence has shown that the mother can transfer lead to the infant. Marginal evidence has been collected to suggest that exposure to lead should be stopped so long as lactation continues. Occupational lead exposures in the United States and EBLLs among recent immigrants to this country have been documented.

The benefits of breast-feeding to infants are well established. Infant formulas have been found to be immediately dangerous to the infant in circumstances where the water supply is unsafe, refrigeration is unreliable, or infant formulas are often highly diluted. Studies on contraindications of breast-feeding have shown that lithium, modern antidepressive agents and certain other drugs can be transferred from the mother to the infant through breast milk. Questions have been raised about the transfer of environmental chemicals with known developmental toxicity to young infants.

Although these data emphasize the critical need to thoroughly examine the risks and well-established benefits of breast-feeding, dose must first be considered. Dose depends on comparative concentrations of lead in milk sources and the concentration of lead times the volume of milk consumed. On average, infants absorb ~50% of lead they receive. The

source of lead transferred during lactation is from a combination of the current environment and maternal body stores of lead, such as bone lead.

Studies published on dietary habits in Greece in 2005 and China in 2006 illustrated unusual sources of lead. Other published studies from 1999-2006 with women and their infants focused on the transfer of lead from bone stores to the infant. Key findings of these studies are summarized as follows.

Bone lead is mobilized and transferred into breast milk. Changes in bone density in the mother, studies of lead isotope ratios, and measures of bone lead concentrations play a key role in understanding the transfer of lead from mother to infant. Stable lead isotope studies have shown that postpartum increases in maternal BLLs average 65% of the geometric mean with a range from 30%-95%. BLLs at the end of pregnancy in these studies were <6 µg/dL.

The addition of extra calcium through diet and supplements in the amount of 1,500-2000 mg/day in the postpartum period did not affect the stable lead isotopic ratio or alter total bone lead mobilization. However, calcium supplementation delayed the mobilization of lead from bone. The geometric mean of the total amount of lead mobilized from bone was 145 µg with a range of 50-380 µg.

These data showed that women would experience a new loss of 1%-5% of bone and a decrease in bone density postpartum. Several studies have shown that bone mineral changes during lactation are endocrine-based and independent of dietary calcium. Overall, the transfer of lead during lactation would be low with maternal BLLs <5 µg/dL.

Two studies were published in 2003 to demonstrate the benefits of calcium supplementation during pregnancy and lactation in reducing lead mobilization. A more recent study was conducted in 2006 that showed calcium supplements decreased lead transfer over the course of lactation by 5%-10%. These studies showed that endogenous sources of lead would not be stopped even with calcium supplementation. The mixture of lead sources from bone and from current environmental exposure cannot be clearly determined without stable isotope data.

Several studies were published in 2001-2006 in Austria, Greece, Mexico, Nigeria and the United States on lead concentrations in breast milk. All of these studies were generally consistent with ATSDR's 1997 report that showed the average range of lead concentrations in breast milk was 2-5 µg/L.

At maternal BLLs <10 µg/dL, breast milk should be in the range of ~2-6 µg/L. BLLs and bone lead levels can predict lead in breast milk. Lead in breast milk can predict ~12% of the variance in the infant's BLL in addition to the contribution of maternal BLLs that predict newborn BLLs. However, important questions have still not been answered about the shape of the distribution at higher maternal BLLs.

Data collected from the Food and Drug Administration in 2003-2004 showed that prepared infant formula contained no detectable quantities of lead. However, if using reconstituted formula that requires water from a residential source, the lead level of the water would be an important consideration.

Dr. Mahaffey concluded her presentation by noting that LPWG's literature review emphasizes the important need to gather more information on BLLs 10-100 µg/dL. BLLs in this range have not been nearly as well studied as those in low levels.

Update on LPWG Activities. Dr. Jessica Leighton, the LPWG Chair, provided a status report on LPWG's activities following the March 2006 ACCLPP meeting. After the previous meeting, LPWG agreed to revise the chapters of the lead and pregnancy report as follows:

- Chapter 1: Introduction
- Chapter 2: Background and significance
- Chapter 3: Health effects of prenatal lead exposure
- Chapter 4: Sources of lead exposure in pregnancy and lactation
- Chapter 5: Epidemiology and risk factors for EBLLs in pregnant women
- Chapter 6: Blood lead screening and follow-up testing in pregnancy and infancy
- Chapter 7: Environmental, nutritional and behavioral management
- Chapter 8: Indications, contraindications and adverse effects of chelation in the pregnant woman, fetus and newborn infant
- Chapter 9: Breast-feeding
- Chapter 10: Research, policy and health education needs
- List of references

Dr. Leighton highlighted key areas in two chapters of the lead and pregnancy report. The chapter on "sources of lead exposure during pregnancy and lactation" will address lead paint, occupational exposures, consumer products and foods, hobbies and recreational activities, leaded gasoline, endogenous sources and drinking water.

The chapter on "risk factors in pregnant women" will address residence near a point source of lead, recent immigrants from areas with high ambient lead contamination, use of lead-glazed ceramics or imported pottery, pica behavior, use of alternative medicines and imported cosmetics, certain food products, take-home exposures from lead industries, high-risk hobbies or recreational activities, renovation or remodeling of older homes, consumption of drinking water with high lead content, and history of previous lead exposure.

Dr. Leighton's summary of the lead and pregnancy recommendations is outlined below.

Screening Recommendations. Universal blood lead testing of pregnant women in the United States is not recommended. Blood lead testing is recommended in patients at high

risk for lead exposure. Venous BLLs are recommended as the preferred method of biological sampling to determine exposure to lead in pregnant women.

State or local public health departments should assist clinicians in determining the need for blood lead testing by identifying high-risk populations. An individual risk assessment with careful attention to risk factors should be performed in clinical settings where routine blood lead testing of pregnant women is not indicated.

Blood lead testing should be performed at the earliest contact with the pregnant patient when indicated. Follow-up blood lead testing is indicated for all pregnant women and their newborns in situations where the woman has had BLLs ≥5 µg/dL. A schedule is provided on the frequency and timing of maternal blood lead follow-up testing.

Follow-up tests should be performed (1) once in each successive trimester and at delivery for pregnant women with venous BLLs 5-14 µg/dL; (2) within two weeks and then every one to two months for pregnant women with venous BLLs 15-44 µg/dL; and (3) within 24 hours and then at frequent intervals for pregnant women with venous BLLs ≥45 µg/dL depending on clinical interventions and the trend in BLLs. A maternal BLL should be obtained at delivery for pregnant women with venous BLLs 15-44 µg/dL and ≥45 µg/dL. Consultation with a clinician who is experienced in the management of pregnant women with BLLs ≥45 µg/dL is strongly advised.

A schedule is provided on initial follow-up blood lead testing of newborns. Initial follow-up tests should be performed (1) according to local pediatric lead screening guidelines for newborns with BLLs <5 µg/dL; (2) within one month at the first infant visit for newborns with BLLs 5-24 µg/dL; (3) at two weeks to one month for newborns with BLLs 25-44 µg/dL; and (4) within 24 hours and then at frequent intervals for newborns with BLLs ≥45 µg/dL depending on clinical interventions in trends in BLLs. Consultation with a clinician who is experienced in chelation is strongly advised for newborns with BLLs ≥45 µg/dL.

A schedule is provided on follow-up blood lead testing of infants 0-6 months of age. This language was extracted from the CDC *Blue Book on Management of Blood Lead Levels in Children*, but LPWG is still discussing changes to the table.

Environmental, Behavioral and Nutritional Intervention Recommendations. In homes built before 1978, pregnant and lactating women should not be in the area where home renovations or LBP hazard reduction work is being performed. Temporary relocation should be considered. Pregnant women should avoid occupational or recreational activities that may expose them to lead. Imported products that may contain lead should be avoided, such as herbal medicines, cosmetics, foods, spices and candies.

All pregnant and lactating women should be evaluated for the adequacy of their diets and provided with appropriate nutritional advice and supplements. Women with EBLLs who are

at high risk for lead exposure or have a history of EBLLs should maintain a dietary calcium intake of 2,000 mg/day either through diet, supplementation or a combination of both.

Iron supplementation is recommended to correct any iron deficiency. Pica should be assessed because this behavior is common among women identified with high BLLs in pregnancy. In homes with lead service pipes, pregnant and lactating women should refrain from drinking or using unfiltered tap water to prepare infant formula.

A table is provided on recommended actions by BLL in pregnancy. The table is divided into separate actions that healthcare providers and public health providers should take at the following BLLs:

- 0-4 µg/dL: Healthcare providers should provide routine anticipatory guidance and health education materials to all pregnant women. Public health providers should collect all blood lead test results.
- 5-9 µg/dL: Healthcare providers should provide routine anticipatory guidance and health education materials to all pregnant women. Sources should be identified and confirmatory and follow-up testing should be performed. Public health providers should develop and disseminate guidelines and health education materials to clinicians.
- 10-14 µg/dL: Healthcare providers should contact LPPB. Public health providers should disseminate health education materials to clinicians.
- 15-44 µg/dL: Healthcare providers should perform follow-up testing and source reduction. Public health providers should perform an exposure assessment, source reduction and non-medical case management.
- ≥45 µg/dL: Healthcare providers should consider chelation in the second trimester and inpatient hospitalization if chelating in consultation with the public health department. Public health providers should give providers a list of identified lead poisoning experts.
- ≥70 µg/dL: Healthcare providers should treat BLLs in this range as a medical emergency.

The table also informs both healthcare and public health providers that no threshold has been established at BLLs ≥5 µg/dL. Desired BLLs should be <5 µg/dL in pregnant women, but more aggressive testing and counseling, detailed risk assessment, source identification, reduction counseling, nutritional assessment and counseling, and follow-up testing should be performed as BLLs approach 10 µg/dL. Language in this section will be extracted from ACCLPP's <10 clinical paper when the paper is cleared for release.

Chelation Recommendations. Confirmation of the BLL should be obtained before considering chelation therapy in a pregnant women or infant. Encephalopathic pregnant women should be chelated regardless of the trimester. With the previous exception, chelation should be delayed until the completion of organogenesis. Pregnant women with

confirmed BLLs ≥45 µg/dL should be considered high risk pregnancies and managed in consultation with an expert in high-risk pregnancy and lead poisoning.

Chelation should be considered for pregnant women with BLLs ≥45 µg/dL after the completion of organogenesis and in consultation with a physician with expertise in chelation therapy for lead-poisoned pregnant women. Experience with calcium disodium EDTA is limited, but it is most frequently used to chelate lead-poisoned pregnant women. Infants 0-6 months of age with confirmed BLLs ≥45 µg/dL should be considered as candidates for chelation in consultation with an expert in pediatric lead poisoning.

Breast-feeding Recommendations. The breast-feeding recommendations are based on decisions to balance benefits and risks and only apply to situations in the United States. Lactating women with BLLs ≥5 µg/dL should have BLLs monitored. A woman with a confirmed BLL ≥40 µg/dL should not breast-feed. At maternal BLLs 5-40 µg/dL breast-feeding may continue while sequential BLLs of the mother and infant are performed to monitor trends in BLLs. If these sequential BLLs do not decline as expected, extra attention should be paid to identify ongoing sources of lead in the mother-infant pair.

Breast-feeding should be discontinued if the maternal BLL is ≥40 µg/dL. For BLLs 10-40 µg/dL, a "wait and see" approach should be taken. An environmental source investigation should be conducted that is appropriate to the maternal or infant BLL. Serial blood lead tests should be performed on both the mother and infant. Breast-feeding should be discontinued if the infant BLL rises and no additional source of exposure has been found. Calcium supplementation and prenatal vitamins should be continued.

Dr. Leighton concluded her update by thanking the LPWG members for contributing their valuable expertise and time over the past three years. She was extremely pleased about the high level of respect the LPWG members have shown to each other in formulating guidance on the diverse and controversial issue of lead and pregnancy. She informed ACCLPP that LPWG would hold its next three face-to-face meetings on April 16-17, 2007 in Atlanta, Georgia and in July and November 2007.

CDC made several remarks about the lead and pregnancy recommendations before the floor was opened for ACCLPP's discussion. Dr. Sinks expressed concern about some of LPWG's screening recommendations. The guidance appears to contradict ACCLPP's previous position to not change CDC's level of concern below 10 µg/dL for lead screening of children. He noted that only OSHA has established a threshold for lead screening of adults, but OSHA's screening level is significantly higher than LPWG's recommendations for pregnant women.

Dr. Sinks pointed out that Dr. Mahaffey's summary of the literature review demonstrated the lack of data to classify pregnant women as a high risk population for lead screening. Due to the absence of solid data, he was uncertain about the basis of LPWG's screening guidance for pregnant women.

Dr. Sinks noted that complex screening recommendations are typically supported by solid data from clinical trials. He did not recall LPWG presenting this type of information to demonstrate the benefits, risks or problems of the recommendations to pregnant women in terms of costs and other issues. He also conveyed that implementation of the recommendations would be extremely difficult with respect to communicating to pregnant women and their physicians the actual meaning of "at risk" or actions to take at BLLs $\geq$5 µg/dL.

Overall, Dr. Sinks' position was that LPWG's screening recommendations were not supported by the weight of evidence. He raised the possibility of testing the recommendations in the field before broadly issuing the guidance as general clinical guidelines for practice.

Dr. Brown reminded ACCLPP that the overarching purpose of forming LPWG was to provide the scientific basis for a screening program. However, several states currently have or are considering a universal blood lead testing and pregnancy policy in the absence of any science.

Dr. Brown emphasized that over the past three years, LPWG has been challenged by striking a balance between recommending against universal screening and identifying particular situations, practices and populations where screening might be warranted in pregnant women. She also clarified that LPWG agreed on the lead screening level of 5 µg/dL for pregnant women with the principal benefit of the mother bringing her newborn home to a lead-safe environment.

Dr. Adrienne Ettinger, of the Harvard School of Public Health, is a consultant to LPWG. She agreed with Dr. Sinks' comments about the lack of data on lead in pregnancy. However, she pointed out that LPWG's report could serve as a starting point in initiating dialogue, providing guidance to clinicians and filling data gaps. Several obstetricians/ gynecologists support lead screening of pregnant women during prenatal visits when blood is routinely drawn. Dr. Ettinger also noted that LPWG's report will be important because several states have already enacted laws on lead screening of pregnant women.

ACCLPP applauded LPWG for its diligent and substantial efforts over the past three years in developing the lead and pregnancy report. ACCLPP was aware of the difficulty in attempting to formulate recommendations on this complex and controversial topic.

Several ACCLPP members made suggestions for LPWG to consider in its ongoing efforts to refine the lead and pregnancy report.

- LPWG should include in its report NHANES data on screening rates of programs in major cities as well as data on occupational exposures to women

who work in industries with lead. These two data sources would provide a better population estimate of lead exposures in pregnant women.

- LPWG should reconsider the recommendations to perform lead screening of pregnant women at this time. Adverse effects from lead in pregnancy should trigger the collection of more data or the development of a research agenda, but not necessarily the implementation of a screening program. Moreover, lead screening of pregnant women might not fill existing data gaps.
- LPWG should notify obstetricians/gynecologists at this time about the upcoming release of the lead and pregnancy report. This approach will allow providers to initiate dialogue about the recommendations through networks, professional associations, list serves and other mechanisms.
- LPWG should provide examples of risk assessment questionnaires in the report to provide states with clear guidance. For example, states will be confused by the current version of the report because universal screening of pregnant women is not recommended, but identification of high-risk pregnant women is strongly advised.
- LPWG should clearly and succinctly state in the report that state and local health departments are advised to identify major risks at the local level. This guidance will assist providers in determining the most appropriate approach for their particular healthcare settings and patient populations. This strategy would also give responsibility to health departments rather than providers for making decisions about not universally screening pregnant women and taking a targeted screening approach for high-risk women. A step-wise approach should be included in the report to assist state and local health departments in assessing risk of women at the local level. For example, health departments could be advised to establish local committees with providers to develop screening plans.
- LPWG should include LPPB's contact information in the report to give providers a resource other than health departments.
- LPWG should reconsider the recommendation to use calcium disodium EDTA to chelate lead-poisoned pregnant women. All aspects of chelation during pregnancy are not known at this time. Chelation decreases blood lead, but increases plasma lead. This outcome would be dangerous to pregnant women because the volume of plasma is increased during pregnancy and plasma delivers lead to soft tissue and target organs. The report should clearly emphasize the limited experience in chelating pregnant women.
- LPWG should expand its recommendations on calcium supplementation to include guidance on adequate vitamin D intake.
- LPWG should consider the possibility of adding a new recommendation for health departments to screen water in homes of pregnant women identified with EBLLs.
- LPWG should engage WIC and breast-feeding advocacy groups at this time to obtain input and reactions to the breast-feeding recommendations from these representatives.

Dr. Brown made comments in response to ACCLPP's concern about the chelation recommendations. LPWG is exploring the possibility of making a recommendation for chelation to be performed in the last trimester of pregnancy for BLLs ≥45 µg/dL in consultation with an expert. However, the underlying theme of all the chelation recommendations is that chelation should be reserved in nearly all cases except for life-threatening situations.

Dr. Brown invited ACCLPP members with strong concerns about any of the lead and pregnancy recommendations, but who do not serve on LPWG to participate in the next LPWG meeting by either conference call or onsite attendance. For example, Dr. Cory-Slechta could participate in the next LPWG meeting to express her concerns about the recommendation to use calcium disodium EDTA to chelate lead-poisoned pregnant women.

Dr. Leighton thanked ACCLPP and CDC for providing helpful comments to strengthen the lead and pregnancy report. She confirmed that LPWG would discuss the overarching suggestions to re-frame and more clearly state the recommendations on lead screening and questions for providers to ask patients. She encouraged ACCLPP to provide her with additional input to assist LPWG in refining the report.

New ACCLPP Business

Dr. Rhoads announced that due to time constraints, he would defer his presentation on study designs related to adverse effects from BLLs <10 µg/dL until the next meeting.

Ms. Johnson announced that she has received numerous telephone calls from parent and child advocacy groups about guidance from ACCLPP and CDC on adverse effects from lead poisoning on school-aged children. She pointed out that existing data on this issue have not been compiled and disseminated in a useful format for parents, school districts, school personnel and clinical staff within schools. Ms. Johnson recommended gathering and widely distributing existing primary prevention strategies and services from early intervention and preschool programs to better prepare children for learning.

Dr. Brown agreed with Ms. Johnson about the importance of the relationship between BLLs and school performance. Data have been presented to ACCLPP on school performance and concurrent BLLs at 7 years of age. Additional studies are expected to be released over the next six months calling for increased emphasis on this issue.

Dr. Brown reminded ACCLPP that during the October 2006 meeting, she offered to develop a short guidance document on this issue and disseminate the report to state and local lead programs after ACCLPP's review and approval. She apologized that her five-month detail on the healthy housing initiative prevented her from ing the document. However, she made

a commitment to develop the document for ACCLPP's review and discussion during the September 2007 meeting.

Several ACCLPP members made suggestions for Dr. Brown to consider in ing the guidance document. Dr. Binns asked CDC to review data on children 5 years of age and the number of EBLLs in this population. Dr. Leighton offered to provide CDC with surveillance data the New York City Department of Health has collected on lead poisoned children at young ages. Dr. Sandel advised CDC to partner with NIEHS in developing and funding a research agenda on the relationship between BLLs and school performance.

The agenda items raised over the course of the meeting are outlined below for the record:

- Discussion on potential approaches to strengthen existing strategies to achieve the *Healthy People 2010* goal of eliminating EBLLs as a public health problem in the United States by 2010.
- Update on school performance and concurrent BLLs.
- Discussion on study designs related to adverse effects from BLLs <10 µg/dL.
- Discussion on the development of a prevention-based research agenda.

Dr. Brown confirmed that LPPB would poll the ACCLPP members by e-mail over the next few weeks to solicit input on additional items to include on the next meeting agenda.

Public Comment Period

Mr. Jonathan Wilson, the ACCLPP liaison to NCHH, regrettably announced that Mr. Warren Galke died in December 2006. Mr. Galke was a tremendous asset to the lead research community with a career that included air lead research at EPA, NCHH's Director of Research, and the National Children's Study Program Office.

Closing Session

ACCLPP applauded the efforts of Ms. Claudine Johnson, Mr. Philip Jacobs and other LPPB staff for making logistical and other arrangements to support the meeting. The next ACCLPP meeting will be held on September 18-19, 2007 in Minneapolis, Minnesota.

With no further discussion or business brought before ACCLPP, Dr. Rhoads adjourned the meeting at 12:15 p.m. on March 15, 2007.

I hereby certify that to the best of my knowledge, the foregoing Minutes of the proceedings are accurate and complete.

6/18/07
Date

George G. Rhoads, M.D., M.P.H.
Chair, Advisory Committee on
Childhood Lead Poisoning Prevention