

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

**convene the**

**ADVISORY COMMITTEE ON  
CHILDHOOD LEAD POISONING PREVENTION**

***Atlanta, Georgia  
October 14-15, 2003***

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**RECORD OF THE PROCEEDINGS**

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

## ADVISORY COMMITTEE ON CHILDHOOD LEAD POISONING PREVENTION *October 14-15, 2003* *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 October 14-15, 2003 at the Embassy Suites at Olympic Centennial Park Hotel in Atlanta, Georgia.

#### ***Opening Session***

Dr. Carla Campbell, the ACCLPP Chair, called the meeting to order at 8:44 a.m. on October 14, 2003. She welcomed the attendees to the proceedings and particularly recognized the diligent efforts and valuable contributions of five ACCLPP members whose terms have expired: Ms. Cushing Dolbeare, Ms. Anne Guthrie-Wengrovitz, Dr. Birt Harvey, Ms. Amy Murphy and Dr. Michael Shannon. Dr. Campbell opened the floor for introductions; the following individuals were present to contribute to the discussion.

#### ACCLPP Members

Dr. Carla Campbell, Chair  
Dr. William Banner, Jr.  
Dr. Helen Binns  
Dr. Walter Handy, Jr.  
Dr. Jessica Leighton  
Dr. Tracey Lynn  
Dr. Sergio Piomelli  
Dr. Catherine Slota-Varma  
Dr. Kevin Stephens, Sr.

Dr. Kimberly Thompson

#### Designated Federal Official

Dr. Mary Jean Brown,  
Executive Secretary

#### Ex-Officio/Liaison Members

Mr. Matt Ammon (HUD)  
Mr. Byron Bailey (HRSA)  
Mr. Steve Hays (AIHA)

Dr. Ezatollah Keyvan (CSTE)  
Ms. Patricia McLaine (NCHH)  
Mr. Ronald Morony (EPA)  
Dr. Patricia Nolan (APHA)  
Dr. Routt Reigart II (AAP)  
Dr. George Rodgers (AAPC)  
Dr. Walter Rogan (NIH)  
Mr. Robert Roscoe (NIOSH)

#### CDC Representatives

Dr. Henry Falk, NCEH/ATSDR Director  
Ms. Crystal Gresham  
Ms. Janet Henry  
Dr. David Homa  
Mr. Jeff Jarrett  
Ms. Helen Kuykendall  
Dr. Tom Matte  
Ms. Susan McClure  
Dr. Patrick Meehan  
Dr. Pamela Meyer  
Mr. Timothy Morta

Ms. Cathy Ramadei  
Ms. Kathy Skipper

#### Presenters and Guests

Dr. Craig Boreiko (International Lead  
Zinc Research Organization, Inc.)  
Estelina Dallett, Esq. (Dickstein,  
Shapiro, Morin & Oshinsky)  
Reuben Koolyk, Esq. (Arnold & Porter)  
Ms. Mary Ellen O'Connell  
(National Academy of Sciences)  
Jane Luxton, Esq. (King & Spalding)  
Mr. Don Ryan  
(Alliance for Healthy Homes)  
Mr. Russell Riggs  
(National Association of Realtors)  
Dr. Ian von Lindern (TerraGraphics  
Environmental Engineering)  
Dr. Michael Weitzman  
(University of Rochester)

### ***Update on CDC Activities***

National Center for Environmental Health (NCEH). Dr. Patrick Meehan was recently appointed as the Deputy Director for Program of NCEH/Agency for Toxic Substances and Disease Registry (ATSDR). He provided a status report of the newly consolidated agency. This action was taken because NCEH and ATSDR were two separate HHS agencies that conducted similar and often overlapping environmental public health activities at state and local levels. The consolidation will result in one federal environmental public health agency that is more streamlined, effective and efficient. However, the agencies' programmatic functions have not been merged and names have not been changed at this point. Only Congress has the authority to remove legal restrictions to take these actions.

On the one hand, NCEH has a broad mandate that covers all aspects of environmental public health. On the other hand, ATSDR is authorized and funded by the Superfund legislation with a Congressional mandate that is limited to conducting Superfund activities. To overcome legal barriers in the short term, the NCEH and ATSDR Offices

of the Directors and administrative functions were formally integrated in August 2003. Dr. Henry Falk was appointed as the NCEH/ATSDR Director; Mr. Robert Delaney and Mr. Peter McCumiskey were appointed as the Deputy Director for Management for NCEH and ATSDR, respectively.

In addition to merging leadership and administrative functions, other changes will also be implemented to consolidate the agencies. The transition team is represented by staff from both agencies to ensure that the NCEH/ATSDR Office of the Director is organized and structured in the most efficient manner. Many of the ~250 positions in the NCEH and ATSDR Offices of the Directors will be reassigned to program areas within divisions. Financial, personnel, information systems, global health and other infrastructures will be consolidated into single offices. The Futures Initiative will be replicated in the consolidated NCEH/ATSDR agency.

The Futures Initiative is a major strategic planning activity currently underway throughout CDC to develop innovative concepts and approaches in the areas of global health, research, systems and customers. Strategies created for these four domains will be used to guide CDC's decision-making process over the next few years. Overall, the NCEH/ ATSDR consolidated agency must demonstrate success in integrating two Offices of the Directors, streamlining administrative functions and effectively collaborating while maintaining separate mandates and appropriations. This accomplishment will generate strong political will for Congress to examine the Superfund law and completely merge NCEH and ATSDR in the future.

Dr. Meehan was pleased to report that the HHS Secretary and CDC Director/ATSDR Administrator fully support the consolidation. Most notably, NCEH and ATSDR have already built a solid track record in successfully completing joint projects. With respect to ACCLPP, the consolidated agency will not significantly impact the NCEH Childhood Lead Poisoning Prevention Program because the activity has a separate line item of ~\$40 million. The consolidation will also have no effect on the three NCEH divisions and four ATSDR divisions.

Lead Poisoning Prevention Branch (LPPB). Dr. Mary Jean Brown is the new ACCLPP Executive Secretary. Her status report covered the following areas. First, the case management document developed by ACCLPP was published and is currently being evaluated. For the pre-evaluation, state and local partners are attending training sessions to describe the impact of the case management document and training sessions on local practices. For the post-evaluation, training session attendees will be contacted three to six months after participation to determine whether changes in behavior persisted due to the case management document and training sessions. Feedback about the training sessions has been overwhelmingly positive to date. LPPB expects to update ACCLPP on the evaluation outcomes during the next meeting.



Second, LPPB forwarded ACCLPP's strategy for targeted screening of Medicaid children to the Center for Medicare and Medicaid Services (CMS) for review and comment. CMS has not yet returned the revised document to LPPB; the strategy will be submitted to the HHS Secretary after the CDC clearance process is complete. ACCLPP focused on this issue in response to findings by the Government Accounting Office. The data showed that <60% of children enrolled in Medicaid were screened for blood lead levels (BLLs). However, >83% of children with BLLs  $\geq 20$   $\mu\text{g/dL}$  are enrolled in Medicaid. Third, "Surveillance for Elevated Blood Lead Levels (EBLLs) Among Children in the United States from 1997-2001" was published in the *Morbidity and Mortality Weekly Report (MMWR)*. The report represents a monumental effort and is an essential step in LPPB's ability to target resources to areas most in need and evaluate progress.

The surveillance report reflects blood lead tests reported to LPPB only; all children who were tested from 1997-2001 are not captured. Nevertheless, LPPB believes the states reporting data represent 90%-95% of the child population in the United States. Over this time period, the surveillance report shows that the population of children 1-5 years of age increased from 20 million to 22 million; the number of BLL tests reported to LPPB increased from 1.7 million to 2.5 million; and the number of children confirmed with EBLLs in all categories decreased from 130,000 to 75,000. LPPB will continue to focus on this issue. CDC's new electronic reporting system will improve data reporting and strengthen LPPB's capacity to develop and distribute surveillance reports of BLL tests on a more routine basis.

Fourth, LPPB funded 42 new cooperative agreements in July 2003 for childhood lead poisoning prevention programs (CLPPPs) at state and local levels. The program announcement required applicants to demonstrate capacity in several areas: identify and provide services for children who are lead poisoned or at high risk for lead poisoning; refocus some activities to primary prevention; develop childhood lead poisoning elimination plans; create approaches to evaluate childhood lead poisoning activities throughout the jurisdiction; and establish strategic partnerships with agencies to promote lead hazard reduction. LPPB has already met with nine grantees to ensure that strong collaborations are developed with local and state partners in housing, banking and finance, pediatrics and public health to advance elimination plans.

LPPB has also asked grantees to consider mechanisms to address lead exposure in pregnant women from a variety of sources, such as renovation, occupation, traditional medicine and ceramics. In addition to states, Chicago, Los Angeles, New York City, Detroit, Philadelphia and Washington, DC were funded as well. Applicants were selected based on need and expertise. Dr. Brown concluded her update by emphasizing for the record LPPB's deep appreciation to the five ACCLPP members

whose terms have expired. Plaques will be distributed to Ms. Dolbeare, Ms. Guthrie-Wengrovitz, Dr. Harvey, Ms. Murphy and Dr. Shannon. ACCLPP applauded the dedicated service of the former members to the nation's children and their commitment to preventing childhood lead poisoning.

ACCLPP was extremely pleased that LPPB has established a process to collect surveillance data of EBLLs on a more consistent basis. The system is an excellent first step, but several suggestions were made to improve future surveillance reports. Dr. Campbell and Ms. McLaine encouraged LPPB to distinguish between states with universal and targeted screening and also to focus on screening of children 1-2 years of age. Dr. Banner stressed the need to focus on children on the "tail" of the distribution of BLLs because those children are disproportionately affected. He also urged NCEH/ATSDR to encourage CLPPPs to collaborate with poison control centers. Dr. Rodgers raised the possibility of making the surveillance database of EBLLs available to the public.

Dr. Brown and Dr. Pamela Meyer of LPPB followed up on ACCLPP's comments. The surveillance report of EBLLs serves as a baseline in collecting and analyzing data and strategically using the information to evaluate and target programs. LPPB received requests from Congress to produce the initial document, but future surveillance reports will present more sophisticated analyses and there should be more complete and comparable data. Significant progress has already been made since the surveillance data were collected in 2001. Most notably, many more states are now reporting all BLL tests instead of EBLL tests only.

However, the surveillance report of EBLLs should not be viewed as a state-based replication of the National Health And Nutrition Examination Surveys (NHANES). NHANES is still the best tool to analyze children's BLLs at the national level. LPPB will attempt to develop a surveillance database of EBLLs for public use in the future, but CDC is developing a data release policy and eventually would like to create a public use database. LPPB is already making efforts to ensure that NCEH/ATSDR explores partnerships between CLPPPs and poison control centers.

### ***Update by the Primary Prevention Workgroup (PPW)***

Ms. Patricia McLaine, the PPW Chair, conveyed that most programs have been interested in primary prevention for several years and have incorporated many elements of primary prevention in local activities. Because the only effective treatment of EBLLs is prevention, ACCLPP established a workgroup to develop a primary prevention



framework. This tool will be used to assist in achieving the national goal to eliminate childhood lead poisoning by 2010. During the March 2003 meeting, ACCLPP conditionally approved the primary prevention document pending refinement by a professional editor and final approval by the full membership.

ACCLPP agreed that the primary prevention document would be a stand-alone report primarily focused on housing and targeted to CLPPPs, state and local health departments, and partner organizations. The document may serve as a companion report to CDC's 1997 screening guidelines. During previous meetings, ACCLPP made several recommendations to PPW to strengthen the document. The term "primary prevention" should be included and the target audience should be identified at the beginning of the document. The references should be improved and a glossary of terms should be prepared. An appendix with a list of resources and links to other sources should be added.

Comments made by Dr. David Jacobs of the U.S. Department of Housing and Urban Development (HUD) should be incorporated in the preface. "Lead-safe" should be clearly defined and the scope and breadth of the role of CLPPPs should be characterized. PPW held a meeting on March 19, 2003 and took several actions to address ACCLPP's recommendations. The document was thoroughly reviewed and edited by CDC and Mr. Ellis Goldman of HUD. PPW dedicated the document to Mr. Goldman who recently passed away. A glossary and appendix were developed with URLs, links to other resources, and contact information for public and private agencies. Comments made by Dr. Jacobs during the March 2003 meeting were transcribed verbatim and included in the document.

Lead-safe was clearly defined as "units that were treated and cleared at a point in time." "Initiate," "catalyze," "orchestrate," "coordinate," "collaborate," "participate" and similar terms were incorporated throughout the document to clarify the role of CLPPPS. CLPPPS are expected to provide public health leadership in primary prevention, but the programs will not always play a leading role in this effort. The references were improved and will be reviewed again before the document is finalized. The revised document was distributed for review and comment to PPW members and CLPPPs in California, Minnesota, North Carolina, Ohio, Oregon and Philadelphia.

Overall, the CLPPPs found the document to be very well written and extremely useful in advancing toward primary prevention of childhood lead poisoning. However, several CLPPPS recommended that concrete examples of primary prevention strategies be included in the document; additional program guidance be provided; and funding be increased at state and local levels. Comments submitted by PPW members have been incorporated and the document is nearly finished at this point. After ACCLPP takes a



vote, PPW will include additional comments submitted by members and review the revised document with the ACCLPP Chair and LPPB staff.

The document will then be submitted for CDC clearance, review and approval of final changes. PPW will finalize the distribution strategy for the document, but a tentative plan has already been developed. The document will be immediately posted online after the CDC clearance process is complete. Approximately 5,000 copies will be initially printed and mailed to CLPPPs, state and local health departments, lead programs funded by HUD and the U.S. Environmental Protection Agency (EPA), and HUD and EPA regional offices. Information about the primary prevention document will also be circulated by e-mail to raise awareness and secure media coverage in the *American Journal of Public Health* and similar publications.

ACCLPP made several suggestions to strengthen the primary prevention document.

- Hold a press conference to publicize the document and strongly encourage legislators to allocate funding for primary prevention.
- Highlight research opportunities for primary prevention.
- Emphasize the need for programs to collect economic data on primary prevention costs and cost savings.
- Make efforts to further clarify the roles of CLPPPs and health departments in primary prevention. For example, recommend that an interagency workgroup be established with leaders to designate responsibilities.
- Replace “preventing lead poisoning” with “preventing lead exposure” in the title.
- Explicitly state that secondary prevention is important; other lead sources should be investigated for an individual child; and population-based changes need to occur based on local conditions.
- List examples of best practices that could be formatted into a “childhood lead poisoning prevention handout” and distributed to expectant mothers at prenatal classes.
- Encourage CLPPPs to collaborate with non-traditional partners in the primary prevention effort. For example, testing agencies could incorporate language about lead poisoning into licensing examinations, certification tests or continuing medical education courses for contractors, physicians or medical students. Retail outlets could distribute information to consumers about lead-based paint and other hazards in the home.
- Add data about primary prevention cost savings to obtain support from legislators.

Expanding the focus to include lead hazards not related to housing was discussed, but it was agreed that primary prevention through housing was to remain the primary focus of this document.

Dr. Lynn and several other members did not receive a copy of the primary prevention document prior to the meeting and were unable to provide PPW with meaningful input. ACCLPP agreed to table its vote until the following day to give the members time to review the document overnight. References for the document and the list of unsafe work practices would be distributed for the members to review as well. ACCLPP also agreed that the primary prevention document should maintain its focus on housing; workgroups will be established in the future to address other sources of lead exposure.

Ms. McLaine confirmed that efforts are underway to address many of ACCLPP's suggestions. For example, the Alliance for Healthy Homes is currently conducting a project that contains several innovative strategies and concrete examples of primary prevention. Retail outlets throughout the country will soon begin putting labels on paint cans and distributing pamphlets about lead-based paint to consumers. Several lead programs have already established partnerships with local hardware stores and home improvement chains. Ms. McLaine also acknowledged that many of ACCLPP's recommendations were made at previous meetings and are captured in the current version of the document. During the overnight review, she encouraged the members to ensure that PPW fully and appropriately addressed these issues.

Dr. Campbell announced that in May 2003, she met with the Federal Interagency Lead-Based Paint Task Force and summarized the primary prevention document. ACCLPP will distribute the final document to members of this group and request assistance in advancing the primary prevention effort. Dr. Brown urged ACCLPP to feel free to take a vote on the following day because the CDC clearance process will not substantially change the document. However, ACCLPP will be notified if CDC proposes major revisions.

### ***Review of Evidence for Effects at BLLs <10 µg/dL***

Update by the Workgroup. Dr. Michael Weitzman is a former ACCLPP member and the Workgroup Chair. The other workgroup members are Drs. David Bellinger, Carla Campbell, Birt Harvey, Betsy Lozoff, Patrick Parsons, David Savitz, Joel Schwartz and Kimberly Thompson. Drs. David Homa and Tom Matte of CDC provide the workgroup with extensive technical support. The members represent expertise in pediatrics, neuropsychological assessment, lead and non-lead environmental epidemiology,

biostatistics, quantitative risk assessment and laboratory science. ACCLPP established the workgroup in March 2002 with the following charge. The members were asked to review existing evidence for adverse effects of lead exposure and toxicity on children at levels below those currently defined as "elevated" by CDC or at levels <10 µg/dL. The draft document of the workgroup's findings was distributed to ACCLPP prior to the meeting.

Dr. Weitzman reviewed the charge to the workgroup and its approach in responding to the charge. The charge to the workgroup was to review the existing evidence for adverse effects of lead exposure and toxicity on children at very low BLLs and to focus on effects at BLLs of 10 µg/dL and below. To fulfill the charge, the workgroup set out to answer two questions: whether available evidence supports negative associations between children's BLLs and health in the range of <10 µg/dL and whether observed associations are likely to represent a causal effect of lead on health.

Dr. Weitzman then summarized the background section of the workgroup report, which discusses the context within which this review was conducted. No threshold has been identified to date for harmful effects of lead. A meta-analysis of cross-sectional studies conducted by the World Health Organization (WHO) shows several wide confidence intervals and a decrement of 2.5 IQ points when a BLL increases from 10 µg/dL to 20 µg/dL. Prospective cohort studies that examined the association between change in IQ and a BLL increase from 10 µg/dL to 20 µg/dL showed similar results as the WHO findings. At the same time that health effects have been identified at lower BLLs, population BLLs have fallen. The most recent estimates show that the median BLL for children <6 years of age in the United States is ~2.2 µg/dL and 2.2% of children have BLLs >10 µg/dL.

Despite the decrease in mean BLL and the percentage of children with BLLs >10 µg/dL, large social and geographic disparities still persist. In addition, the typical body burden of lead today is estimated to be two orders of magnitude above estimated pre-industrial levels. To assess whether associations between BLLs and health in the range of <10 µg/dL are likely to represent causal relationships, the workgroup considered criteria conventionally used by epidemiologists for this purpose, which are stated in a 1964 Surgeon General's report on smoking and health. These criteria include consistency of findings across epidemiologic studies; strength of the association defined by relative risk or odd ratio; a temporal relationship; and coherence of the biological plausibility and mechanism of action.

Dr. Weitzman noted that ACCLPP rather than the workgroup will determine the impact the findings will have on policy and practice. Thus, policy issues ACCLPP might consider, but which were not considered by the workgroup, include the feasibility of measuring and classifying BLLs in categories <10 µg/dL in the laboratory; the



availability of effective interventions for BLLs <10 µg/dL; the advantages and disadvantages of lowering the BLL threshold below 10 µg/dL; the impact of diverting resources currently targeted to children with BLLs >10 µg/dL; and policy options at both individual and population levels.

The workgroup also established criteria to define and include "relevant studies" in the review of evidence. Studies were required to be published in English and measure BLLs with graphite furnace atomic absorption spectrometry (GFAAS) or anodic stripping voltametry. Studies that assessed IQ or general cognitive index (GCI) as an outcome had to analyze the association between children's BLLs and IQ or GCI and were included whether or not analyses specific to BLLs <10 µg/dL were conducted. Studies that did not evaluate IQ or GCI as an outcome had to analyze the association between children's BLL <10 µg/dL and another health outcome. The workgroup also accepted studies with a formal or informal assessment using non-linear modeling; linear modeling of ≥95% of children with BLLs <10 µg/dL; a statistical comparison of ≥2 subgroups with BLLs <10 µg/dL; or a graphical display of results permitting visual assessment of the relationship between outcome and BLLs in the range of <10 µg/dL.

Dr. Weitzman then noted that few studies had conducted analyses specific to BLLs <10 µg/dL and health. The workgroup decided studies in which IQ or GCI was the outcome would be included even if they did not include such directly relevant analyses. This approach was taken to determine whether slopes of the BLL-IQ relation became more horizontal as the mean BLL of 10 µg/dL was approached. This finding would suggest a no observed effect level. If slopes did not tend to diminish with mean BLLs approaching 10 µg/dL and below or became steeper, a continuation of the BLL-IQ association at lower BLLs would be supported.

ATSDR's 1999 toxicological profile for lead served as the workgroup's initial data source to identify references. Several online searches of data collected from 1990-2003 were also conducted to supplement and update original references. Structured abstracts obtained from the literature search were reviewed to locate relevant articles. The workgroup identified 25 epidemiologic papers on IQ or proxy measures involving 16 different populations. Most papers showed an association consistent with an adverse effect on cognitive function and that adjusting for potential confounders attenuated, but did not eliminate the association. The exceptions to these results were a Kosovo study in which adjusted findings were stronger than unadjusted findings and a Cleveland study in which the association was eliminated at low BLLs with adjustments for social class and other exposures.

The workgroup examined the relation of study population mean BLL to BLL-IQ slope in two groups of published analyses: those in which BLL was measured at <24 months of age and those in which BLL was measured at age 4 years and older. In neither group

of results did regression slopes tend to diminish as the mean BLL decreased. In two studies with sufficient power to analyze the relationship between lower BLLs and cognition among children whose BLLs never exceeded 10 µg/dL, the BLL-IQ slope was greater than among all children enrolled. The workgroup reviewed research that evaluated non-neurocognitive outcomes using the Wide Ranging Achievement Test for math and reading scores; the WISC-R block design and digit span subscales; tapping speed for sensorimotor function; and visual function. The workgroup also reviewed studies relating BLLs to growth, pubertal development and dental caries.

Based on its extensive and comprehensive review of the evidence, the workgroup concluded that both direct and indirect data support a negative association between children's health, in particular cognitive function, and BLLs in the range of <10 µg/dL. Dr. Weitzman then reviewed factors the workgroup considered in judging whether the observed associations are likely to be causal. Low BLLs affect fundamental biochemical processes in animal and *in vitro* models unaffected by confounding factors. Animal research demonstrates effects in experimental studies that are consistent with those found in humans with BLLs of 10 µg/dL, but primate data on BLLs <10 µg/dL are limited. The workgroup concluded that effects at BLLs <10 µg/dL are plausible, but a mechanism of action has not been clearly established, especially that would account for the steeper slope at low BLLs.

The workgroup considered the impact that the age trend in BLLs, which tend to peak between 15 months and 3 years of age in most populations and the tendency of BLLs to correlate within individuals, might have on observed results. The NHANES cross-sectional studies reviewed involved school-aged children and did not measure BLLs at the peak point. Therefore, effects associated with BLLs <10 µg/dL may be falsely attributed to effects due to BLLs >10 µg/dL occurring at an earlier age. However, the uncertainty with the NHANES study does not apply to the 2003 Bellinger or Canfield papers. In these two studies, multiple BLLs were obtained at the point in which the highest BLLs were seen in children. The workgroup concluded that neither the age trend in BLLs nor errors in BLL measurement can fully explain observed associations between BLL and adverse health indicators in children.

The workgroup considered what impact methods of neuropsychologic assessment might have had on study results. The workgroup concluded that because examiners were blinded to BLLs in neurobehavioral assessments of cohorts in well-documented studies, biased neuropsychologic assessment is unlikely to explain the observed results. The workgroup considered whether confounding by unmeasured factors or factors measured with error might explain the study results. Of particular concern is the potential for residual confounding by social environment, which is strongly related to IQ and lead exposure, but difficult to measure precisely. In addition, some factors, such as maternal depression, were not measured in any study. The workgroup concluded that

some degree of residual confounding cannot be ruled out and, if present, might explain the troubling finding of the slope of the relationship between effects and BLLs <10 µg/dL being steeper than at BLLs >10 µg/dL.

The workgroup also considered other potential confounding factors. Most studies the workgroup reviewed had limited or no gold standard measures of iron deficiency to determine whether observed associations were due to iron deficiency. However, the studies that controlled for iron did not weaken the trend between lead and IQ. Measures used to analyze the relationship between cognition and prenatal or passive tobacco exposure were weak in most studies. The dose and critical period when exposure occurred were not quantified. These limitations add further to the uncertainty in estimating the impact of BLLs on children's health.

Another alternative explanation considered by the workgroup is that mouthing behavior might be a cause of more lead ingestion and a marker for delayed neurodevelopment. No direct evidence has been collected to date to support the hypothesis. In the Port Pirie cohort, early measures of cognitive function were not associated with later BLL. The workgroup concluded that other than cognition, sufficient data have not been collected on any endpoint to make a definitive statement about a causal relationship between an outcome and BLL. The overall weight of evidence favors an inverse association between BLLs <10 µg/dL and children's health, particularly neurocognition.

The workgroup determined that the association between BLLs <10 µg/dL and children's cognitive function is more likely than not causal, at least in part. However, limitations, especially residual confounding by socioeconomic status (SES), cause uncertainties about the size and shape of effects. Current data do not support labeling children with BLLs <10 µg/dL as "lead poisoned." Specific research projects should be undertaken to address gaps in the evidence base, such as analyses to assess residual confounding factors in observational studies in different settings; intervention trials to prevent, diminish or reduce BLLs <10 µg/dL; and animal studies of mechanisms and dose-response. Dr. Weitzman acknowledged the diligent efforts of Drs. Homa and Matte for collecting, reviewing and compiling an enormous amount of data.

Dr. Campbell opened the floor for the members to weigh in on the workgroup's draft report. She explained that the input will be used to refine the final document; the report will eventually be distributed as an ACCLPP product. Dr. Piomelli pointed out that the workgroup relied on the Bellinger and Canfield papers, but these studies use an unacceptable methodology. For example, a child with a current BLL of 8 µg/dL who had a BLL of 12 µg/dL two months ago would have the same health effects. As a result, the exposure would be mis-classified. Moreover, the slope being stronger at <10 µg/dL rather than at >10 µg/dL is absurd. Dr. Piomelli wholeheartedly agreed with the



workgroup's conclusions, but the findings should not be based on problematic data. He noted that he outlined his concerns in a letter and distributed the document to ACCLPP.

Dr. Banner was surprised that the workgroup included the Kosovo study in its review because the exposure sources, cultures and ethnic backgrounds of the cohorts were extremely different. He questioned the workgroup's approach in calculating power that is necessary to obtain and control for adequate confounding factors. He cited two studies for the workgroup to consider while revising the document. The Lozoff study in Costa Rica should be reviewed to analyze the impact of paternal intelligence and "iron insufficiency" on children's outcomes. The Shannon paper published in *Clinical Toxicology* should be reviewed to examine pervasive developmental delay and persistent exposure to lead as a result of mouthing behavior.

Dr. Banner also recommended that one reference in the workgroup report be corrected. The 2003 Bellinger paper is actually a letter to the editor that was not peer reviewed and is based on older published data. He noted that some of the workgroup's findings are different than the conclusions outlined in the Bellinger manuscript. He advised the workgroup to clearly explain the inconsistency in the report. Dr. Lynn agreed that additional research is critically needed on effects at BLLs <10 µg/dL to remove confounding SES variables. For example, nutritional aspects directly related to brain development and learning ability were not captured in the Canfield paper.

Dr. Binns advised ACCLPP to focus on next steps in this process. First, a mechanism should be developed to widely distribute the report in an appropriate venue. Information on current knowledge as well as uncertainties about effects at BLLs <10 µg/dL is critically needed by front-line providers. Second, the workgroup will soon finalize the document and complete its charge. A new workgroup should be established to explore policy implications that will be used to drive decision-making. Dr. Rodgers questioned the workgroup's rationale to not use the term "lead poisoned."

Dr. Reigart viewed the report as a useful synthesis of complex data that should be published independent of ACCLPP. He encouraged the members to refrain from significantly altering the document. The information in the report should be separated from policy implications to prevent childhood lead poisoning. The document will be extremely useful to pediatricians who routinely advise parents about environmental hazards at relatively low levels that may adversely affect children. Ms. McLaine was pleased that the workgroup report emphasizes the importance of primary prevention and risk assessment.

Dr. Campbell reiterated the need to perform additional research on effects from BLLs <10 µg/dL. The number of solid studies on this issue is small and the number of children in the studies the workgroup reviewed is limited. She raised the possibility of

duplicating existing studies to more closely examine residual confounding factors and other research needs identified by the workgroup. Dr. Campbell conveyed that solid data may provide more certainty about the association between children's health and BLLs <10 µg/dL. Dr. Stephens indicated that the cost benefit of lowering BLLs <10 µg/dL is an additional research need. These data would greatly improve the current medical literature.

Dr. Kevyan inquired whether the workgroup analyzed the original data in an effort to minimize ambiguity in the studies. Dr. Leighton made suggestions to refine the workgroup report. A discussion should be included on the magnitude of effects compared to other potential effects. The difference between individual effects on a child and population effects should be more strongly emphasized. The conclusions should be revised to match questions the workgroup attempted to answer on the basis of its charge. Dr. Campbell directed ACCLPP to submit written comments on the workgroup report to LPPB. After LPPB receives marked-up drafts from members, the revisions will be forwarded to the workgroup to review and address. The revised document will be discussed at the next ACCLPP meeting before being finalized. ACCLPP commended the workgroup for developing an excellent report.

Drs. Matte and Weitzman responded to several of ACCLPP's questions and comments. The workgroup will share and discuss Dr. Piomelli's letter with other epidemiologists to address his concerns. The multi-variate models in the studies had adequate power to detect a statistical association based on home score, maternal IQ and other covariates measured. However, the workgroup plans to further refine the report to more accurately balance the uncertainties and conclusions. The members realize that tobacco, iron status and other residual confounding factors were not adequately measured in the observational studies. Nevertheless, the workgroup is fairly confident that major potential variables with an influence on cognitive function and a strong relationship to lead were identified. The available data did not allow the workgroup to reach definitive conclusions for ACCLPP to address all policy issues.

ACCLPP will need to describe the cost benefit of lowering BLLs <10 µg/dL because this issue is beyond the workgroup's charge. The workgroup was also not directed to analyze existing data. However, a consortium of investigators that conducted the lead cohort studies is currently performing a pooled re-analysis of the original data to more closely examine the shape of the dose-response relationship. The workgroup recommended that a statistical method used for air pollution studies be applied to the pooled re-analysis of the lead cohort studies. This tool is useful in addressing confounding factors in multi-center studies. The workgroup agreed that applying the term "lead poisoned" is inappropriate. Evidence has not been collected to date that every child with a certain BLL will be adversely affected.

Policy Options. Dr. Brown conveyed that the <10 workgroup report and policy options will be complimentary, but not necessarily linked. Both sets of information will be useful to CDC's state and local partners and the broader public health community. LPPB has held several discussions about policy options related to the <10 workgroup report and will maintain its strong commitment to children with EBLLs. Most notably, health effects ranging from reduced IQ to death become more pronounced as lead exposure and BLLs increase. LPPB realizes that several important issues must be addressed to provide services to children with EBLLs. For example, ACCLPP's guidelines for case management of children with EBLLs can be accessed on the CDC web site.

Many studies have documented the failure of clinical or educational interventions to either reduce BLLs in children with at least moderate lead exposure or decrease developmental effects associated with EBLLs. State-based data indicate that in many cases, several years are required to reduce children's BLLs after levels become elevated. In response to this evidence, CDC lowered the level of concern from 40 µg/dL in the 1970s to 10 µg/dL in the 1990s. At this time, LPPB does not believe the level of concern for an individual child should be lowered from 10 µg/dL. Although compelling evidence has been produced demonstrating that adverse health effects can occur at BLLs <10 µg/dL, several important factors must also be considered.

No effective clinical or public health interventions have been identified to lower BLLs. The unavoidable error associated with laboratory testing is too great to ensure that children are properly classified. No data have been collected demonstrating a threshold below which no adverse effects are found. Children at highest risk are not appropriately screened at the present time. While implementing the High Intensity Targeted Screening (HITS) project in Chicago in 2001, for example, LPPB learned that only 39% of young children in a low-income neighborhood had ever received a blood lead test. Testing and providing follow-up services to children with BLLs <10 µg/dL will deflect resources from children living in high-risk communities.

Communities with the largest percentage of children with BLLs >24 µg/dL also have the greatest proportion of children with BLLs that are lower, but still well above the national average. These reasons emphasize the critical need to advance primary prevention and target communities where the risk for exposure is highest. Primary prevention in these communities will most likely benefit all high-risk children. In a primary prevention strategy, the first essential element is to focus on lead-based paint in housing as the most important source of lead for young children. An intervention would be conducted before the child's BLL is elevated by identifying high-risk communities and incorporating lead poisoning prevention activities into health and community services that reach families at high risk for lead poisoning.



The infrastructure currently exists to identify high-risk housing. Most notably, units built before 1950 have been located and specific addresses of units that have repeatedly poisoned children are known to local officials in many areas. In Detroit, Michigan, 657 addresses accounted for nearly 1,500 children with BLLs  $\geq 20$   $\mu\text{g/dL}$  identified in the last ten years. In Louisville, Kentucky,  $<0.3\%$  of all housing in the community housed 35% of children with BLLs  $\geq 10$   $\mu\text{g/dL}$  in the last five years. The remediation of high-risk housing should be the highest priority in primary prevention. Partners in housing, banking and code enforcement should be strongly urged to become engaged in this effort. Primary prevention can be linked to secondary prevention activities that are currently being conducted by most state and local agencies.

For example, low-cost or free training sessions on lead-safe work practices for workers are available. However, caution must be taken to ensure that the necessary requirements and enforcement of lead-safe work practices exist before paint in these units is disturbed. Making efforts to advance primary prevention is also optimal at this time because more federal support of housing remediation is now available than in the past. Targeting resources to housing that is most likely to expose children to lead paint and lead contaminated house dust or soil is imperative. Another primary prevention strategy is to make a market for housing that has been de-leaded.

Several approaches can also be taken for primary prevention of other lead sources. Communities where cultural practices and traditional medicines place families at risk can be identified. Current and new non-essential uses of lead in toys, jewelry, food utensils, and cosmetics can be controlled or eliminated. Lead poisoning prevention activities can be incorporated into health and community services that reach families at high risk for exposure. To meet the *Healthy 2010* objective to eliminate childhood lead poisoning, the public/private partnership must be strengthened among clinicians, public health providers and housing agencies.

Private and public health care providers as well as environmental health professionals can advocate for children and foster lead exposure prevention by facilitating the implementation of primary prevention recommendations in state and local communities. Active participation by these groups will provide necessary expertise and leadership to accomplish primary prevention goals. Pediatricians and other health care providers should include education about measures to prevent or reduce EBLLs as part of standard anticipatory guidance during routine well child visits. Recommendations to assist providers in this area can be found in Chapter 6 of the ACCLPP case management guidelines.

LPPB is already taking action in the primary prevention effort. The focus of the CLPPP program announcement was changed to allocate funding to areas with the highest risk children. Grantees are required to improve data management and reporting and must

also develop childhood lead poisoning elimination plans at state and local levels. The plans must focus on targeted screening to high-risk populations, primary prevention, and community-based partnerships beyond the medical and public health fields. LPPB is also strengthening strategic alliances with existing partners, including the Women, Infants and Children (WIC) program, HUD, immunization services, Medicaid and the Department of Education.

LPPB has signed a memorandum of understanding with the Low Income Home Energy Assistance Program. This agreement will ensure that the weatherization community has knowledge of lead poisoning, is aware of ongoing activities, and trains workers in lead-safe work practices. LPPB plans to enhance partnerships with local housing code enforcement agencies as well. LPPB acknowledges that elimination of lead exposure in young children is the most important outcome of a successful primary prevention strategy. This goal can be measured at both national and local levels. NHANES data can be used to analyze BLLs of children based on a national representative sample and demonstrate the nation's progress in meeting the 2010 objective. State-based surveillance data of children's EBLLs can be used to develop programs that identify and respond to local areas with the highest need. CDC will continue to conduct both activities. LPPB is confident that lead poisoning can be resolved and the 2010 objective can be met.

Some ACCLPP members were divided on LPPB's approach to maintain the focus on children with BLLs >10 µg/dL. On the one hand, Dr. Rodgers clarified that interventions are currently available to lower a child's BLL to <10 µg/dL. The public will believe that BLLs <10 µg/dL are safe if CDC takes no public health actions. The workgroup's review of the evidence demonstrates that BLLs <10 µg/dL are a concern. Dr. Rodgers indicated that because the BLL standard of 10 µg/dL is global, maintaining this threshold would be a disservice to the entire world. He added that similar to 10 µg/dL being established as the standard in 1991, a goal for a lower BLL can be set as well. Mr. Hays also cautioned LPPB against informing the public that BLLs <10 µg/dL are safe.

On the other hand, Drs. Thompson and Lynn completely agreed with LPPB's strategy to maintain the focus on children with BLLs >10 µg/dL. The current evidence does not identify a "safe" threshold for a lower BLL. Dr. Nolan clarified that the threshold can be addressed by reviewing the health disparities elimination model and establishing a standard based on success. For example, if 4 µg/dL was the lowest BLL achieved in a community, this level could be established as the mean. Dr. Rogan raised the possibility of changing the goal from eliminating childhood lead poisoning to eliminating 26% of lead hazardous units in the United States that house children <6 years of age.

Dr. Binns was in favor of lowering the standard of testing children's BLLs from 24 months to 18 months of age. This approach may allow providers to detect peak BLLs earlier. Dr. Matte did not understand the rationale for emphasizing blood lead tests at a certain age. Compelling data have been collected during prenatal visits, children's births and high-risk pregnancies to show that housing is the most important factor in EBLs. This evidence should be utilized to bridge the gap between housing-based strategies and blood lead tests. Dr. Matte added that a true primary prevention strategy would focus on children at risk for lead poisoning and their housing before the children are poisoned. As a result, interventions should occur during pregnancy or at the child's birth rather than after a blood lead measurement is taken.

Dr. Stephens agreed with Dr. Matte's suggestion to intervene at the earliest possible time. Most notably, obstetricians could inform expectant parents who plan to renovate a room for a new baby about the need to examine other areas of the home and remove peeling paint or other sources of lead. Dr. Slota-Varma also saw the need for LPPB to develop partnerships with obstetricians. The success of the "Back to Sleep" program to reduce sudden infant death syndrome and the car seat campaign to decrease fatal automobile accidents involving infants is largely due to informed parents. Obstetricians can replicate these models by educating expectant and new parents about lead poisoning and screening.

Mr. Morony expressed concern that CDC interprets the 2010 objective as "virtual elimination of <1%." Using this calculation, ~100,000 children in the United States would still be lead poisoned. Because the vast majority of these children will be in minority populations, EPA and agencies at state and local levels will find the goal to be *unacceptable and withhold support for or investment in CDC's elimination program*. Dr. Campbell was in favor of ACCLPP making recommendations to public health providers and the general public about mechanisms to improve blood lead screening. The need to continue case management interventions for previously identified children should be strongly emphasized as well.

Ms. McLaine was pleased that LPPB's strategy compliments primary prevention activities currently underway throughout the country. Homes with lead-poisoned children are being remediated and the public health infrastructure is being used to target at-risk families living in older housing. These models have been ongoing for quite some time in Milwaukee, Rhode Island and other local programs. Dr. Leighton advised LPPB to clearly define and explicitly state the <10 recommendations. For example, primary prevention activities should be targeted to at-risk children and the BLL should be set at a threshold to perform the best interventions. She supported combining the CDC guidelines and primary prevention document to provide a concise and conceptual framework.



Several members suggested additional partners LPPB should consider while building strategic alliances: building code enforcement agencies, building maintenance personnel, insurance agencies, realtors, testing agencies and certification programs, the Consumer Product Safety Commission, the Food and Drug Administration, and remediation workers. Dr. Campbell proposed that ACCLPP formalize these deliberations in a written draft. The document could then be distributed to members for review and comment prior to the next meeting.

Dr. Meehan conveyed that an ad hoc group would serve as a better mechanism to address policy and practice considerations and implications of the < 10 workgroup report. The group could specifically focus on the public health response to this issue and draft appropriate guidance to provide to clinicians. LPPB staff could be designated to support the group in developing a draft document. Dr. Thompson noted that in addition to an ad hoc group, guidance to clinicians should also be considered as a tremendous research opportunity. She made a motion for ACCLPP to establish a Policy Options Ad Hoc Group; Dr. Banner seconded the motion. The motion unanimously passed with no further discussion.

Dr. Campbell charged the group with formalizing ACCLPP's comments about policy options. LPPB staff will provide technical support in developing a draft document. The group's report will be presented to the full ACCLPP for review and comment. Dr. Weitzman has already expressed an interest in serving on the Policy Options Group. ACCLPP members who are also willing to serve should inform Dr. Campbell.

Drs. Brown and Meehan followed up on ACCLPP's comments. LPPB's targeted strategy should not be misinterpreted to mean that BLLs <10 µg/dL are safe. Instead, LPPB is taking a population-based approach and recommending a public health action to target resources to entirely remove lead from children's environments through primary prevention. This approach will be more effective in reaching the 2010 objective than continuing to screen, identify children ages 0-6 years, and offer interventions. Retesting children and educating parents are the only interventions currently recommended for BLLs in the range of 10-14 µg/dL, but only a minimal amount of evidence has been gathered to date demonstrating that these actions make a difference.

The data reviewed by the workgroup provided no justification to establish a new BLL threshold <10 µg/dL. Moreover, mistakes were made when this standard was set in 1991. Nevertheless, LPPB realizes that more explicit language should be included in the <10 workgroup report. For example, the document should urge providers to perform follow-up testing on children 24 months of age. The report should also specifically point out that lead in the body at any level is not good. LPPB also recognizes that collaborative efforts should be undertaken with federal partners to establish health-

based thresholds for lead in dust, house paint and other media. LPPB will make strong efforts in the future to build alliances with obstetricians to ensure that expectant mothers are aware of the dangers of scraping old paint.

### ***Building Blocks for Primary Prevention***

Mr. Don Ryan, Executive Director of the Alliance for Healthy Homes (Alliance), announced that CDC awarded a two-year contract to the Alliance from September 30, 2002-September 29, 2004 to develop building blocks for primary prevention. The project is specifically focused on housing and lead-based paint hazards in housing, but the model will be replicated for other sources if the primary prevention building blocks demonstrate success. The project can also compliment ACCLPP's primary prevention document by describing concrete examples. The Alliance realizes that the effort for local and state departments to shift to primary prevent will be tremendous.

Of the 98 million units in the U.S. housing stock, 60 million are lead-free, 13 million with lead-based paint are in lead-safe condition, 25 million pose one or more lead hazards, and ~30,000 of these are home to a child identified with a BLL >20 µg/dL. A "unit" is defined as a single-dwelling home or apartment. Despite these challenges, however, considerable progress has been made over the last five years in primary prevention at state and local levels. Building blocks are structured to identify successful strategies of individual programs and provide other programs with an extensive list of specific primary prevention examples. A building block serves as an innovative or promising strategy, tactic, tool, resource or programmatic change to protect children prior to exposure to lead and other environmental health hazards in the home. State and local health officials and CLPPP directors serve as the primary target audience for building blocks.

The Alliance selected seven areas for the initial building blocks: financing and subsidies; lead safety and healthy homes standards; code enforcement and other systems; capacity building for lead safety; collaborations, partnerships and incentives; targeting strategies; and mechanisms to build awareness and public support. Criteria the Alliance established to select building blocks include consistency with the principles of public health; sensitivity to the economics of affordable housing; a potential for broad-scale impact; a reasonable possibility of implementation; and a real promise for reducing hazards in high-risk housing. The Alliance recently submitted to CDC a draft outline summarizing the 75 most promising building blocks identified to date; the document was distributed to ACCLPP as well. The building blocks will eventually be expanded to a two-page template containing specific information and will also be designed as an easily searchable web-based system.

The Alliance took several actions to identify candidate building blocks. Input was solicited from internal staff, CDC, ACCLPP, lead grantees, and health departments at state and local levels. The published literature and other data were reviewed. A call for nominations was widely announced to health departments, housing agencies and community-based organizations. Model building blocks are described as follows.

For financing and subsidies, Los Angeles tenants demanded a rent increase of \$1 per month to create a special fund for code enforcement. Los Angeles County hired 70 additional code inspectors and committed to inspecting all rental properties once every three years. New Jersey and other jurisdictions are using the Community Reinvestment Act to collaborate with banks that receive credit for conducting community service activities.

For lead safety and healthy homes standards, New Orleans, San Francisco and other cities have banned unsafe work practices, while California and Rhode Island are making lead hazards a violation of the housing code. For code enforcement and other systems, Illinois is training code inspectors to identify lead hazards and pursue enforcement. Milwaukee, Philadelphia and San Francisco are abating lead hazards when owners fail to act and imposing a lien on the property to recover costs. For capacity building for lead safety, Chicago is holding free lead-safe work practice training sessions on a regular basis. This action is being taken as part of an agreement between Attorney Generals and the National Paint and Coding Association to sponsor 150 training sessions per year. California and Indiana are adding lead safety to weatherization training courses.

For collaborations, partnerships and incentives, Maine is partnering with child care facilities to ensure lead safety for young children. For targeting strategies, Ohio, Vermont and other states are capitalizing on home nursing visits to target prevention services and make necessary referrals to health or housing agencies.

For mechanisms to build awareness and public support, Philadelphia analyzed and publicized data on EBLLs in the districts of city council members to facilitate improved policies. This initiative resulted in the establishment of a new lead court and a substantial reduction in the backlog of lead cases. Community groups throughout the country are being trained in the basics of lead hazard identification and screening to document high-risk housing units.

Digital photographs of properties are being presented in court to visually confirm the presence of lead hazards. Toxic tours have been organized in several communities to raise public awareness of high-risk housing units.

In addition to the building blocks project, the Alliance has also developed the "primary prevention taste test." Readers are asked to review the alphabetized list and cross out all items that do not qualify as primary prevention. The Alliance is requesting that ACCLPP review the 75 building blocks summarized in the draft outline and provide input to LPPB by October 31, 2003. The Alliance will then revise the document based on ACCLPP's comments and resubmit the second draft to CDC by the end of November 2003. The outline will be widely distributed to LPPB grantees that are developing childhood lead poisoning elimination plans.

Dr. Campbell raised the possibility of extending the Alliance contract beyond September 29, 2004 because other innovative building blocks may be proposed after this time. Dr. Thompson was pleased that the Alliance is collecting economic data to highlight the cost of the interventions. This information will be extremely important when other programs are making decisions to replicate a particular activity. Although the project focuses on innovative and promising tools, Dr. Thompson urged the Alliance to also gather information on building blocks that were not selected. Distributing lessons learned will prevent other programs from repeating previous errors.

Dr. Stephens added that specific categories of building blocks will also assist programs in the decision-making process, such as projects in urban versus rural areas and state versus local jurisdictions. He was interested in ACCLPP making an effort to identify building blocks that can be implemented at the national level. Ms. McLaine pointed out that the primary prevention literature is minimal because <20% of programs evaluate individual activities. She asked LPPB to engage research organizations to ensure the building blocks are formally evaluated.

Dr. Leighton emphasized the need to coordinate ACCLPP's primary prevention document and the Alliance building blocks to ensure consistent messages are being delivered. She added that the building blocks document should explicitly inform programs about the need for local data to drive interventions. Because many programs will be overwhelmed by 75 building blocks, this guidance will assist in the decision-making process. Dr. Binns mentioned that primary prevention data should be incorporated in the building blocks document, such as prenatal projects in St. Louis or home cleaning studies.

Mr. Ryan clarified that the Alliance reviewed the published literature, but evaluating the data to identify successes and failures is beyond the scope of the contract. However, the Alliance used the published literature to establish criteria and select the building blocks. Dr. Banner inquired about actions that will be taken for programs with no interest in developing or implementing building blocks since the previous primary prevention campaign failed. Dr. Brown replied that additional funding, attention and other resources now being targeted to primary prevention will most likely increase the

interest of programs in becoming actively engaged in this effort. Mr. Ammon underscored the need for CDC and HUD to closely collaborate in developing primary prevention strategic plans since many programs are grantees of both agencies.

### ***Public Comment Period***

Ms. Estelina Dallett is an attorney at the law firm of Dickstein, Shapiro, Morin & Oshinsky in Washington, DC. She was pleased about the focus on primary prevention by LPPB, ACCLPP and the Alliance. She viewed the building blocks document as an outstanding collection of successful techniques and approaches. However, she recalled that a "reasonable possibility of implementation" was one of the factors for the Alliance to select a building block. In one model project summarized in the draft outline, two lawsuits were filed against lead pigment manufacturers. One trial resulted in a hung jury and the other lawsuit was entirely dismissed with prejudice. This building block did not demonstrate success and may be inappropriate to distribute to programs.

Mr. Ryan urged LPPB to issue a cohesive public health response to maintaining the focus on children with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$ . This activity should extend beyond primary prevention strategies, an ACCLPP statement or the Alliance building blocks. Instead, strong public health messages about lead should be delivered. "Level of concern" should be refined because the term indicates that CDC is not concerned about BLLs  $< 10$   $\mu\text{g}/\text{dL}$ . The national goal of lowering children's BLLs to  $< 10$   $\mu\text{g}/\text{dL}$  should be clarified since the geometric mean BLL of children 1-5 years of age is 2.2  $\mu\text{g}/\text{dL}$ . The use of national averages in the context of lead poisoning is no longer appropriate because some communities have a lead poisoning prevalence rate of 30%. Overall, the national goal for lead poisoning should be achieved by closing disparities of race and income.

Mr. Ryan conveyed that the failure of secondary prevention is another issue ACCLPP and LPPB should aggressively pursue. Lead hazards are not remediated in at least 50% of units that are investigated and found to have children with EBLLs. Screening children's BLLs is pointless if lead hazards in housing are not corrected. For units with lead hazards that are remediated, lead-safe work practices and clearance dust testing after paint repair are often not applied.

Mr. Ryan distributed to ACCLPP an informal survey the Alliance administered to 42 health departments about lead dust testing practices. The 40 respondents reported the following results: 32 health departments use lead dust testing; 8 states use dust testing as a screening tool for both EBLLs and high-risk housing; and 9 states do not conduct clearance dust testing. The Alliance has recommended that a formal survey be administered with more precise questions to obtain specific information about clearance dust testing practices. Mr. Ryan encouraged ACCLPP to review the Rochester study on



the failure of programs to utilize clearance dust testing. The 31 units in the study all had astronomical levels of lead dust on at least one surface, but the units were soon enrolled in the HUD Lead Hazard Control Grants Program.

Ms. Jane Luxton is an attorney at the law firm of King & Spalding in Washington, DC. She received confirmation from Dr. Brown that the public can send comments on the <10 workgroup report to LPPB. She suggested that LPPB consider Dr. Kathleen White, the Designated Federal Official of the EPA Science Advisory Board, as a resource in convening advisory committee conference calls pursuant to the rules of the Federal Advisory Committee Act (FACA). Ms. Luxton will send Dr. White's contact information to Dr. Brown by e-mail.

Dr. Campbell announced that the meeting would reconvene at 8:00 a.m. on the following day instead of 8:30 a.m. as noted on the published agenda. The extra time will be used for ACCLPP to further discuss and vote on the primary prevention document. There being no further business or discussion, Dr. Campbell recessed the ACCLPP meeting at 5:20 p.m. on October 14, 2003.

### ***Discussion and Vote on the Primary Prevention Document***

Dr. Campbell reconvened the ACCLPP meeting at 8:05 a.m. on October 15, 2003 and opened the floor for the deliberations. Ms. McLaine announced that Dr. Binns offered to assist PPW in adding numbers and making other refinements to the primary prevention document references. She asked the members to provide suggestions on improving the secondary prevention language in the document because the text continues to be a problem for PPW. ACCLPP members made comments on the document as follows.

- Refine the "at-risk populations" definition in the glossary to clearly place the focus on children. Residence in pre-1978 housing that may contain lead-based paint hazards is defined as the risk to women of child-bearing age, but actual risks to this population are pica and immigrant status. Add "pregnant women" or "expectant parents;" include "potential children of women;" and delete "(especially those aged 1-2)" to ensure newborns are captured. Alternatively, maintain the focus on pregnant women. [Dr. Binns will rewrite the definition to reflect and clarify housing-based hazards that need to be corrected before the child is exposed to lead.]
- Change the first sentence on page 15 to "Lead adversely affects children's cognitive and behavioral development."
- Restructure Appendix 5 to be parallel to the "eight elements" text box.

- Add “and potentially overall quality of life” to the last sentence of the second paragraph on page 15.
- Change the first sentence of the executive summary to “Lead continues to be one of the most significant environmental diseases among young children in the United States.”
- Change the last sentence in the first paragraph of the executive summary to “housing-associated lead hazards.” [Since “lead-based paint hazards” is a federal definition used by EPA and HUD, agreement was reached to add “in and around housing.”]
- Change the title to *Preventing Lead Exposure in Young Children* or *Preventing Lead Exposure and Lead Poisoning in Young Children*.
- Incorporate language to emphasize the importance of lead reduction.
- Add a sentence at the end of the second paragraph in the executive summary stating that “targeted screening should remain a priority to identify children with EBLLs.”
- Change the “risk assessment” definition in the glossary to “lead risk assessment.”
- Incorporate a section on research needs to assist programs in applying the primary prevention document to actual practice.
- Acknowledge economic issues that may be important in implementing primary prevention strategies.
- Underscore the need to use local data in the executive summary.
- Provide guidance for programs to improve targeted and cost-effective screening.
- Move Appendix 5 into the recommendations section to eliminate redundancy and improve readability. [The text was moved from the document and placed into a separate appendix in response to ACCLPP’s previous suggestion.]
- Acknowledge the existence of other lead sources and additional at-risk populations in the executive summary, but explicitly state that the document is focused on housing-based prevention interventions for children.
- Change “threshold” to “no observed effect level” on page 11.
- Delete the sentence “Reducing lead emissions...” on page 11.
- Change the first sentence of the second paragraph on page 20 to “The goal of targeting housing for primary prevention...”
- Change the first sentence of the third paragraph in the executive summary to “... for emphasizing primary prevention related to housing...”
- Change the first sentence of the second paragraph on page 20 to “...by removing lead exposure sources posed by lead-based paint...”

- Clarify secondary prevention by changing the sentence in the second paragraph on page 17 to "...are subsequently employed to prevent repeated exposures due to lead-based paint housing hazards."
- Change the order of items in "a" and "b" in the first sentence on page 21 under "Recommendations" to reflect the priority for preventing future lead exposure.

ACCLPP was divided on whether a vote should now be taken on the primary prevention document. On the one hand, Dr. Thompson requested that PPW incorporate ACCLPP's comments into the current version. The final draft should then be presented to members before a vote is taken. Dr. Lynn added that ACCLPP's goal should be to produce and distribute the best product possible. On the other hand, Dr. Binns emphasized that the vote should not be tabled because state grantees are supposed to be using the primary prevention document now to develop elimination plans. She noted that ACCLPP's suggestions are fairly minor and can be addressed without further delays in finalizing the document.

Drs. Brown and Campbell resolved this issue by directing ACCLPP to submit comments to LPPB no later than October 22, 2003 to be forwarded to Ms. McLaine. Comments submitted after this date will not be entertained. After the revised version is distributed to ACCLPP, the members will decide whether a conference call is needed to discuss the document further. The members will then vote to approve the document by either a conference call or e-mail. Dr. Banner made a motion to conditionally approve the primary prevention document pending incorporation of ACCLPP's comments; Dr. Handy seconded the motion. The motion unanimously passed with no further discussion.

### ***National Academy of Sciences (NAS) Study***

Ms. Mary Ellen O'Connell of NAS described an upcoming study entitled "Environmental Health Research in Housing and the Built Environment: Ethical Issues Involving Children and Families." The study is primarily funded by HUD and will be conducted in response to the Kennedy Krieger case in which researchers involved three groups in housing intervention research. Two families in the project filed a lawsuit because their children had EBLLs. The lower court in Maryland ruled in favor of the researchers, but the state appellate court stated that the lawsuit could be tried. The researchers were eventually exonerated, but the case caused tremendous concern among housing researchers and also raised awareness about the lack of guidance related to housing intervention research.

The scope of the NAS study will compare issues related to housing intervention research and biomedical research. Existing approaches to interventions will be explored. Characteristics of therapeutic versus non-therapeutic interventions will be defined to determine whether parents can provide consent for children to participate in non-therapeutic research if more than minimal risk is involved. Research challenges and ethical issues will be characterized. Ethical obligations to inform children and their parents will be analyzed. The process for researchers to intervene in housing-related health hazard interventions and protect study participants will be examined. The goals of the NAS study are to advance housing research and provide guidance to researchers conducting studies on housing-related health hazards.

Phase I of the project is underway. The scope of the NAS study is being refined and potential committee members are being identified to provide input on the study. Feedback will be solicited from the Institute of Medicine, NAS, ACCLPP, the Board of Children, Youth and Families, and other groups. Efforts will be made to ensure that input is balanced in terms of geographic representation, age, gender and ethnicity. NA will seek expertise in the areas of public policy, law, bioethics, child development, Institutional Review Boards, housing intervention research, environmental health, research involving children, community-based research and environmental justice.

In Phase II, NAS will hold five or six committee meetings during a 15- to 21-month period; obtain input from families, community activists and similar groups; and convene a public workshop for commissioned papers to be presented. The committee will then produce a consensus report summarizing relevant research and outlining recommendations for research and ethical guidance. The consensus report should be developed 21-24 months after the committee is formed. In Phase III, the committee report will be disseminated to external experts for review and comment and then repeatedly revised based on input. At this time, NAS is requesting ACCLPP's assistance in advancing the study. Ms. O'Connell distributed a summary of the NAS study with her contact information. She encouraged ACCLPP to forward to her the names of potential candidates who can serve as committee members or reviewers as well as suggestions to improve the study. She clarified that ACCLPP members are eligible to serve on the NAS committee.

Dr. Banner reported that Oklahoma faced ethical barriers related to conducting research on the impact of environmental exposures among children in protective custody. He urged NAS to consider this issue while refining the scope of the study. Dr. Thompson suggested that experts in risk benefit analysis also be considered as NAS committee members or reviewers. The Center on Bioethics in the National Institutes of Health should be contacted since this agency is currently defining "minimal risk." She noted that the NAS study will be helpful to areas beyond environmental issues related to housing. Dr. Binns recommended that a staff member from the Office for Protection of

Human Subjects serve on the NAS committee. Ms. McLaine and Dr. Campbell were pleased that NAS is undertaking the study. ACCLPP previously recommended that a project on ethical issues related to housing research be conducted

### ***Lead Exposure at Superfund Sites***

Dr. Ian von Lindern, of TerraGraphics Environmental Engineering (TGEE), described lead cleanup activities at the Bunker Hill/Coeur d'Alene Basin Superfund site in Idaho. In 1974, the lead smelter in this area operated without pollution controls for six months and poisoned ~2,000 children who lived within five miles of the facility. At that time, the average BLL for preschool children in the area was nearly 70 µg/dL. The mean BLL for children in the community was 40 µg/dL after the smelter ceased operations 1981. ATSDR conducted research in 1983 demonstrating that lead problems associated with residual soil and dust contamination around the facility continued to persist. The study showed that 25% of children in the area had BLLs >25 µg/dL.

In 2002, the mean BLL in the community significantly decreased to 2.5 µg/dL; only 2% of children had BLLs >10 µg/dL; and 85% of children had BLLs <5 µg/dL. The Idaho Superfund site is 21 square miles and covers five communities with 7,500 residents. The community was designated as the nation's second largest Superfund site until 2002. At one point during its operations, the smelter produced 33% of lead, 25% of zinc and 50% of silver in the country. The goal of the cleanup activities at the smelter is to transform the site into a world-class destination resort. This objective would never have been considered without ACCLPP's legacy of solid public health contributions to the nation and CDC's implementation of the BLL standard of 10 µg/dL.

The dramatic reduction in children's BLLs in the area required a comprehensive cleanup of the entire community by first demolishing the 365-acre industrial complex of buildings, machinery and waste piles. The waste was then buried in a 40-acre landfill. Over the last few years, >2 million tons of material were removed and deposited in a large waste repository at the complex. The original landfill was replaced with clean soil and the old waste facility will eventually be remediated with parking lots, golf courses and soccer fields. However, the residential soil cleanup of 85% of homes within a 21-square mile radius had the most significant impact on BLLs. One foot of topsoil was replaced with clean material; this activity has been ongoing for 12 years.

In 1990, the Idaho Superfund site established a goal of lowering BLLs to <10 µg/dL for 95% of children in each community and having no children with BLLs ≥15 µg/dL. This objective would be accomplished by examining site-specific dose-response relationships and identifying soil and dust concentrations in the environment that would need to be achieved. Residential and commercial soils with lead concentrations >1,000



mg/kg were replaced with soils <100 mg/kg to achieve a mean level of <350 mg/kg throughout the community. Yard-wide averages were determined by taking 24-inch random samples every 500 square feet in the yard.

The ultimate goal of the soil cleanup was to reduce house dust concentrations to <500 mg/kg. The percentage of children with BLLs  $\geq 10$   $\mu\text{g/dL}$  in the three major cities surrounding the community dramatically decreased from 1988-2002. These data show a strong relationship between EBLLs and contaminated yard soil. The Lead Health Intervention Program was developed in the community to obtain BLLs of all children through door-to-door surveys. Children with EBLLs received follow-up as recommended by CDC. On an annual basis, 75% of children with EBLLs were identified through school records. Of ~800 at-risk children in the community 0-9 years of age, 400 participated each year in the program. The 50% participation rate was largely due to the \$20 incentive paid to children. The program was discontinued in 2003 since community goals were met in 2002.

ATSDR conducted three neurodevelopmental studies on the cohort of children that had EBLLs in the 1970s. ATSDR recommended that a registry be established because attention deficit hyperactivity disorder, renal problems, hypertension and reproductive effects were detected. Due to lack of political will by the state of Idaho, the registry was not established. Montana gathered names of the impacted children in an effort to develop the Idaho registry, but funding for the activity was discontinued in the second year. Follow-up testing on the children was also not performed. Although the victims were compensated through settlements of private lawsuits, no government compensation was ever offered. ATSDR's data were published and are available to the public.

The high participation rate was not replicated in 1,000 children in the 1,500-square mile area surrounding the community. Only 25% of this population was recruited for the BLL survey. Other activities were targeted toward primary prevention. Under the High-Risk Residential Program, units that housed a pregnant woman or children <9 years of age were cleaned. This intervention resulted in ~200 homes per year being cleaned. Because the cleaning intervention of individual houses was not fully successful, geographic area cleanups were then performed to eliminate lead sources in parks, playgrounds, roadsides, the smelter and other common areas. Solid science was applied to implement these cleanup activities.

Of all inorganic contaminants at Superfund sites, lead is found most frequently. Unlike most contaminants, lead has no reference dose or cancer slope values. A cleanup level of 500-1,000 ppm was established for lead in 1989. The Integrated Exposure Uptake Biokinetic Model was developed by EPA in 1994 and is required to be used at all sites to assess the impact of lead on children. The current BLL of 10  $\mu\text{g/dL}$  should be

considered as the gold standard when using formulas to determine cleanup limits at sites. The threshold should be applied at sites by examining all sources of lead to children, calculating the bioavailability of each source, and analyzing the integrated combination of intake to children. House dust is the source of most lead for young children. Measurements of BLLs, house dust and soils can be used to estimate a child's intake of lead.

Data collected in the Idaho community showed a strong association between BLLs and estimated intake. Undertaking cleanup actions at Superfund sites is extremely expensive and can exceed tens of millions of dollars. The federal government and the Coeur d'Alene tribe filed a lawsuit against several mining companies to assess damages to natural resources. On September 3, 2003, the presiding judge ruled that the federal government and the mining companies shared responsibility for depositing contaminated material at the site. The damages portion of the trial will begin in May 2004.

EPA funds were allocated for NAS to investigate the scientific aspects of the Idaho community cleanup activities, particularly those apportioning risks for multiple sources, analyzing risks other than mining and smelting, and using the EPA model. The Coeur d'Alene tribe asked about the feasibility of safely resuming aboriginal practices in the Flood Plain River. The current lead level by ingestion is 25-30 µg/day, but some tribal practices will result in an ingestion level of >1,000 µg/day. Approximately 400-900 years will be needed before lead concentrations in the area will decrease to the point of supporting aboriginal practices. To date, the federal government has allocated ~\$150-200 million to the remediation of the Idaho Superfund site; industry has spent \$50-\$100 million; and \$359 million has been set aside for the record of decision for the 1,500-square mile area.

Mr. Hays emphasized the need for TGEE to clearly document in writing techniques that were used to clean up dust in houses. Dr. von Lindern clarified that the long-term plan is to remove contaminated soil and other sources which move lead into the home, but current efforts are being directed toward house paint. Special studies on cleaning the home interior have been conducted and are available to the public. TGEE recently received a HUD Healthy Homes grant to analyze different measurement techniques in both clean and unremediated areas in Idaho.

Ms. McLaine pointed out that high soil lead levels are not restricted to Superfund sites. Contaminated soil levels of up to 5,000 ppm have been detected in many urban areas. She hoped the TGEE data would be used to more closely investigate the association between children's BLLs and soil lead levels on a wider basis. Dr. Banner suggested that a study of an Oklahoma town serve as a control group to the Idaho Superfund site for comparative purposes. The Oklahoma town is in the middle of the mining activity

and yards in the community have been remediated. However, no contaminated piles of material have been moved to date.

### ***Update on International Lead Issues***

Dr. Falk reported that lead poisoning is a resurgent theme in discussions of children's environmental health issues. Various commissions, United Nations groups and other committees continually emphasize the importance of this topic. Lead is an area of interest internationally due to the success of the United States in reducing childhood lead poisoning. Average BLLs were previously between 20-25 µg/dL in the United States, but the levels have dramatically decreased over time. Lead in gasoline and other sources continue to affect children worldwide. Risk factors in the developing world are very striking and multiple lead sources differ from those in the United States.

For example, international industrial sites are frequently located near or in residential areas. Hot climates lead to more intense exposures to outdoor environments. Child labor is an important factor in lead exposure in several countries, such as battery recycling by children in India. Most countries have inadequate environmental and laboratory monitoring capacity, a lack of data, and poor tracking systems of lead use and consumption. Poor nutrition plays a significant role in enhancing children's lead toxicity. Knowledge and skills in toxic chemicals are limited among international physicians and care givers. Disease surveillance systems are typically non-existent or incomplete. Chelating agents are frequently unavailable for children with EBLs.

Protective safety equipment, technologies, industrial engineering controls and hygiene programs are limited or entirely absent. Regulations in many areas are inappropriate or have not been developed. Implementation of standards are inconsistent; inspections are rarely performed; and lengthy delays are usually associated with completing new measures. The U.S. infrastructure to address lead problems is extremely different than that of the developing world, but important advances have been made internationally. The hand-held portable instrument is used to immediately obtain BLL measurements in a community. This technology allowed several international studies to be conducted.

Lead in gasoline continues to be a priority for the World Bank, international non-governmental organizations and other groups. Children's BLLs are nearly three times higher in areas in Budapest with heavy traffic and exposure to leaded gasoline versus less congested areas in the suburbs. Improvements have been made in several countries due to aggressive efforts by international programs to remove lead in gasoline. Campaigns have been ongoing for the past 10-15 years in Asia, Latin

American and the Caribbean. Several studies have documented considerable reductions in children's BLLs in countries that have removed lead from gasoline.

A CDC study in Bangladesh showed 87% of children had BLLs >10 µg/dL and 21% had BLLs >20 µg/dL. The most significant risk factor for EBLLs in the study was living in housing adjacent to the highway. Research in Indonesia showed that the mean air lead level of 0.35 along urban highways was much higher than in rural areas. However, levels were much greater in urban, commercial and industrial areas where products that contained lead were used. Although removing lead in gasoline will reduce mean levels, extremely high levels will still persist in areas of the world where lead is used industrially or for other purposes due to poor controls and weak infrastructures. Similar results were seen in a Jamaican study that showed a mean BLL of 14 µg/dL in urban school children versus 9 µg/dL in rural school children. In mining districts or other contaminated areas, however, the median BLL was 35 µg/dL.

CDC conducted a study of lead issues in Cairo to advise the Egyptian government on establishing a central laboratory. During this time, CDC also visited a village in Aswan, Egypt in response to abdominal discomfort and other symptoms among residents. The mean BLL was 92.1 µg/dL in the hospitalized group and 79.9 µg/dL in the non-hospitalized group. Five family members had BLLs between 150-175 µg/dL. A flour mill was identified as the source of EBLLs since lead in the grinding equipment used at the facility could be ground into flour and consumed by residents. Over the following year, BLLs in the Aswan village significantly decreased to 30-40 µg/dL after use of the grinding tool was discontinued. Rural Egypt contains ~8,000 similar flour mills.

In a study in Ecuador, lead glaze was used on roofing and other construction materials. Because child labor was also used to build homes, BLLs of children in the area ranged from 20-44 µg/dL. However, several children had BLLs >70 µg/dL. Since pottery is still made with lead glaze throughout Mexico, children in rural areas where ceramics are used have much higher BLLs. Several studies have been conducted on EBLLs as a result of battery recycling in Jamaica, the Dominican Republic, Manila and Gaza. The year-round warm climate in these areas contribute to prolonged and fairly extensive lead exposures to children. CDC conducted a study in Lima, Peru due to the country's effort to remove lead from gasoline and obtain baseline BLLs. Peru was previously the six largest exporter of lead ore.

Average BLLs in Lima were <10 µg/dL, but the mean was >20 µg/dL in the suburb of Callao where mineral deposits were shipped. In areas closest to the Callao port, average BLLs were even higher at >40 µg/dL. The extremely dry climate and dirt roads were significant contributors to EBLLs among local children.



CDC collaborated with a private foundation in India and other groups to test 20,000 children in major cities in India. The percentage of children with BLLs >10 µg/dL ranged from 40%-60%, while a smaller proportion had BLLs >20 µg/dL. In New Delhi, contaminated air was believed to be the cause of lead poisoning, but the sources were probably unrelated to air. Lead in gasoline, battery recycling plants, lead smelters, lead-based pigment in paint, printing presses, ceramic pottery glazes, cosmetics containing lead and folk medicines were identified as lead sources in India.

Efforts were made in New Delhi to duplicate EPA air regulations, but this initiative was unsuccessful due to the infrastructure in India. These projects have led to a joint binational program between India and the United States to collaboratively address occupational and environmental health hazards in India. Lead will be one of the focus areas in the binational agreement.

Although efforts to prevent and eliminate childhood lead poisoning in the United States should continue, significant problems in the developing world must be addressed as well. The World Bank, WHO and other international groups should broaden the focus from lead in gasoline to other sources that can potentially result in much higher BLLs.

Dr. Campbell pointed out that ACCLPP previously sent a letter to the HHS Secretary recommending immigrant and foreign-born adopted children receive BLL screening. Dr. Lynn emphasized the need for ACCLPP to continue to outreach to international organizations that provide services to immigrants and refugees who settle in the United States. ACCLPP can play a significant role in educating these groups about lead hazards. Dr. Nolan added that the American Public Health Association is also focusing on global health. These issues include refugees and immigrants who settle in the United States with a prior lead burden; industrial and commercial strategies in the global economy; and the impact of micro-environments on lead absorption among children and adults. Duplicating U.S. interventions research in foreign countries is an extremely important mission that should be remain on CDC's agenda.

Dr. Rodgers inquired about ATSDR's formal charge for international toxicology issues. Dr. Falk clarified that ATSDR has no mandate in this area. The Superfund legislation provides ATSDR funding and authority to conduct activities, but the program is completely domestic. ATSDR is extremely interested in translating and sharing its toxicological profiles, training materials and other documents with developing countries to provide guidance in evaluating hazardous waste sites, assessing toxic chemicals and addressing similar issues. Dr. Falk hopes international collaborative efforts will be formalized now that the U.S./India binational agreement has been signed.



## **New ACCLPP Business**

Dr. Campbell opened the floor for members to describe issues ACCLPP should consider as new activities or future agenda items. For the first new business item, Dr. Piomelli asked ACCLPP to consider door-to-door screening. NHANES data show a decrease in the average BLL in the United States, but EBLLs still persist in some areas of the country. This finding was recently highlighted by the HITS project in Chicago. ACCLPP has a responsibility to urge the HHS Secretary to allocate funding for door-to-door blood lead testing. CDC and local health departments have a responsibility to conduct door-to-door screening. ACCLPP cannot be an advisory group for childhood lead poisoning prevention if the members ignore children in high-risk communities and take no actions to conduct door-to-door screening. The majority of lead intoxicated children are poor, minority or immigrants who may never present to a health care provider.

Dr. Brown was reluctant to return to the practice of door-to-door lead screening program for children. Since many of these children have no medical home, BLL testing will be virtually meaningless without determining immunization status, enrollment in WIC or receipt of other benefits. A holistic approach must be taken to identify children with EBLLs. The American Academy of Pediatrics (AAP), practicing pediatricians and the broader health care community should play a leading role in high-risk areas. CDC's responsibility would be to educate clinicians about improving blood lead screening practices and locating areas in need. ACCLPP's role would be to partner with CDC to inform providers about their obligation to screen patients.

Dr. Campbell mentioned that the primary prevention document will be extremely helpful in addressing Dr. Piomelli's concerns. The guidance is focused on high-risk properties where children have been poisoned in the past and also on low-income children, pregnant women and other high-risk populations. ACCLPP previously developed and distributed a document with recommendations for public health authorities and health care providers to increase screening of Medicaid children. Dr. Banner cautioned CDC against identifying AAP as the leader in the holistic approach for blood lead screening. Of pediatricians in Oklahoma, <50% accept Medicaid-insured patients. Pediatricians in many other states also have no involvement in the care of high-risk children.

Dr. Nolan pointed out that many clinicians do not administer blood lead tests because of poor information systems rather than a reluctance to screen. Unlike immunizations, medical records do not contain a history of lead tests performed on an individual child. Physicians throughout the country have expressed a great deal of interest in improving electronic information systems to strengthen quality of care. CDC should partner with

the Agency for Healthcare Research and Quality and other agencies engaged in this effort. Reimbursement, policies to incorporate blood lead test results into medical records and other critical issues will need to be addressed at the federal level.

Dr. Binns agreed with Dr. Piomelli's comments about the need to highlight racial health disparities. ACCLPP should deliver messages to providers that communities in greatest need are being ignored. Intense efforts should be targeted to black and Hispanic children and old housing or lead prevalence rates should be matched to census data. However, Dr. Binns did not believe that door-to-door testing should be widely replicated. The HITS program was successful in Chicago, but the initiative will be expensive or inappropriate in other parts of the country.

Dr. Slota-Varma noted that enrollment in WIC, Healthy Start, Head Start, urban day care centers and similar programs presents excellent opportunities for blood lead screening to capture more high-risk children. Dr. Thompson advised CDC to examine the federal commitment to children in the broader public health context. She also asked Dr. Piomelli to clearly outline his concerns and ideas for action in a proposal. The document can be used to facilitate ACCLPP's continued discussion on racial and economic health disparities.

ACCLPP agreed to take several actions in response to Dr. Piomelli's remarks. LPPB and CMS will present a status report at a future meeting on changes that have been made in screening practices of Medicaid children since ACCLPP's guidance document was disseminated. An overview of screening strategies in general and input from LPPB grantees will be presented at a future meeting as well. Dr. Campbell and other interested members will closely collaborate with LPPB and CMS to identify mechanisms to improve medical services and other benefits for Medicaid-eligible children. For example, a "lead checklist" for Medicaid patients can be distributed to emergency room providers and CMS could reimburse emergency room departments for providing these services.

For the second new business item, Dr. Thompson asked ACCLPP to consider issues related to ACCLPP's function, operation and process. One, an extensive discussion on the <10 workgroup report should be scheduled on the next meeting agenda. Two, draft documents should be distributed to ACCLPP for review at least two weeks prior to meetings. For example, many members were unable to provide PPW with meaningful input on the previous day because the primary prevention document was distributed during the meeting. Clear expectations and deadlines should also be established for ACCLPP to submit comments on drafts.

Three, ACCLPP documents should be available for the public to provide feedback. Four, current ACCLPP documents should be reviewed to ensure that the new federal

requirements for the Information Quality Act are being met. Five, a data set of raw data from CDC funded studies should be accessible to the public after projects are completed. Six, workgroups should be chaired by ACCLPP members who have attended at least one meeting and will continue to serve through additional meetings. Seven, research needs in general, LPPB's research activities in particular, and an ACCLPP discussion on research should be scheduled on a future meeting agenda. For example, LPPB should consider funding another long-term cohort study to better understand children's BLLs <10 µg/dL. Dr. Campbell clarified that the CDC Committee Management Office (CMO) does not require workgroups for any advisory committee to be chaired by members. However, at least two members must serve on a workgroup.

For the third new business item, Dr. Binns asked ACCLPP to consider follow-up actions to ongoing workgroup activities. First, LPPB should develop measurable housing goals in accordance with *Healthy People 2010*. This approach will provide primary prevention targets that can be evaluated in the future. Second, ACCLPP should form a workgroup to address the at-risk population of pregnant women. To facilitate this discussion at the next meeting, Dr. Leighton could present a report on New York City's screening activities, findings and recommendations related to pregnant women.

Third, ACCLPP should establish a clear process to address policy options for the <10 workgroup report. Input from both pediatricians and the public health community should be captured in ACCLPP's response. Dr. Binns is willing to chair the Ad Hoc Policy Options Group. For the membership, she asked Dr. Slota-Varma to provide expertise as a front-line clinician and Dr. Reigart to provide the AAP perspective. Dr. Thompson's position was that the charge of the new Ad Hoc Policy Options Group established on the previous day should be limited to formalizing ACCLPP's deliberations in a draft report. The responsibility of identifying appropriate policies for children's BLLs <10 µg/dL should remain with the full ACCLPP.

For the fourth new business item, Dr. Lynn asked ACCLPP to consider developing formal written policies for its operation and function; the document would then be circulated to all members. The guidelines should clearly list specific deadlines for the following activities: LPPB to distribute drafts to ACCLPP for review; ACCLPP to submit potential agenda items to the Chair; ACCLPP to submit comments on documents; and LPPB to provide members with travel arrangements for meetings. For the current meeting, some members did not receive travel arrangements until the day before they were scheduled to depart.

Convening conference calls between meetings to improve ACCLPP's function should be outlined in the policy document as well. LPPB should confer with CMO to ensure that ACCLPP's operational guidelines are consistent with FACA. In response to Dr. Lynn's final comment, Dr. Brown confirmed that LPPB will renew ACCLPP's charter



which is scheduled to expire at the end of October 2003. The new charter will be circulated to all members. Dr. Campbell asked ACCLPP to submit suggestions for future agenda items to her at least six weeks prior to a meeting.

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### ***Public Comment Period***

Dr. Craig Boreiko, of the International Lead Zinc Research Organization (ILZRO), was dismayed by several international lead issues he asked ACCLPP to consider. Linguistically and culturally appropriate guidance materials to diagnose and treat lead intoxicated children are minimal. Case management strategies are not appreciated in the developing world and access to chelating agents is extremely difficult. Lead is not a priority at the international level because other issues are much more important from economic, cultural and social perspectives.

ILZRO has been partnering with United Nations groups to address these problems, but developing countries are currently not structured to impact integrated solutions. Dr. Boreiko asked ACCLPP to identify other groups with a strong interest in international lead issues. Dr. Banner suggested that ILZRO contact the International Program on Chemical Safety (IPCS) because this group produces a wealth of linguistically appropriate information on lead chelators. Dr. Boreiko clarified that IPCS materials are useful from an academic perspective, but the documents are virtually useless in the field when efforts are being made to communicate risk reduction and child intervention strategies.


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### ***Closing Session***

Potential dates for the 2004 ACCLPP meetings will be distributed to the members within the next two weeks. There being no further business or discussion, Dr. Campbell adjourned the ACCLPP meeting at 12:02 p.m. on October 15, 2003.

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

1/9/04  
Date

  
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Carla C. Campbell, M.D., M.S.  
ACCLPP Chair