

Panel 1: Health Literacy, Literacy, and Health Outcomes

Topics covered in Panel 1:

- National Assessment of Adult Literacy health literacy results
- Health literacy in everyday life
- Literacy in the clinical care setting
- The association between health literacy and health outcomes
- Improving health outcomes for patients with low health literacy

The National Assessment of Adult Literacy: Health Literacy Results

*Russ Whitehurst, Ph.D.,
Director, Institute of Education Sciences,
U.S. Department of Education*

Dr. Whitehurst, Director of the Institute of Education Services at the U.S. Department of Education, opened the panel with an overview of health literacy data from the National Assessment of Adult Literacy (NAAL).

About the National Assessment of Adult Literacy (NAAL)

The NAAL is a nationally representative assessment of English literacy among American adults. The survey sample included over 19,000 adults ages 16 and older in homes and over 1,000 inmates in state and Federal prisons across the country. In 2003, for the first time, the NAAL included a health literacy component which assessed respondents' skills for locating and understanding health-related information and services.

The Health Literacy Scale

The NAAL assessment measures health literacy on a scale of 0 to 500, using four literacy levels:

1. *Proficient*—Able to perform complex activities such as searching a document to define a medical term or other information.
2. *Intermediate*—Capable of conducting moderately challenging tasks such as finding the age range for a particular vaccine from a childhood vaccination chart.

3. *Basic*—Able to complete simple tasks such as giving two reasons why a person should be tested for a specific disease, based on information in a clearly written pamphlet.
4. *Below Basic*—Demonstrates the lowest levels of performance such as identifying what is permissible to drink before a medical test, based on a set of short instructions.

There is also a fifth category, *Nonliterate in English*, which includes adults at the bottom of the *Below Basic* level and those adults who could not take the test because they did not speak English or Spanish.

The NAAL health literacy tasks encompassed three domains of information:

- *Clinical*—such as filling out a patient form.
- *Prevention*—such as following guidelines for age-appropriate preventive health services.
- *Navigation of the health care system*—such as understanding what a health insurance plan will pay for.

To perform the health literacy tasks, individuals need to:

- Be familiar with everyday health-related words.
- Have experience with the type of written material (such as a drug label).
- Have knowledge of how the health care system works.

The health literacy scale did *not* measure the ability to obtain information from nonprint sources, such as interactions with a health care provider. It also did not measure knowledge of health issues or assess understanding of medical terms.

“Those who are most in need of health literacy are the ones with the poorest reported health.”

Russ Whitehurst, Ph.D.

Results of the 2003 NAAL

Based on the survey findings, Dr. Whitehurst provided the following interpretation of the NAAL data:

- The majority of adults (53 percent) had *Intermediate* health literacy.
- An additional 12 percent had *Proficient* health literacy.

- Among the remaining adults, 22 percent (corresponding to 47 million adults) had *Basic* health literacy and 14 percent (30 million adults) had *Below Basic* health literacy (see Table 1).
- 5 percent (11 million adults) were found to be *Nonliterate in English*. This includes 7 million adults at the bottom of the *Below Basic* level who did poorly on the easiest test questions and an additional 4 million adults who could not participate in the study at all because of language barriers.

Table 1: Percentage and Number of Adults in Each Level: Health Literacy Component 2003 National Assessment of Adult Literacy

Health literacy level	Percentage of adults in each health literacy level	Number of corresponding adults in millions
Below Basic	14	30
Basic	22	47
Intermediate	53	114
Proficient	12	25

NOTE: Detail may not sum to totals because of rounding. n = 19,000 adults. Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive disabilities (3 percent in 2003) are excluded from this figure. From: Kutner, Greenberg, Jin, & Paulsen, 2006.

Adults who spoke only English before starting school had higher health literacy scores than did adults who spoke another language alone or other languages plus English. Adults who spoke only Spanish before starting school had the lowest mean health literacy score. Demographic data show how adults with *Below Basic* health literacy are different from the adult population as a whole. For example, 51 percent of adults with *Below Basic* health literacy did not graduate from high school, as opposed to 15 percent of the total population.

About 76 percent of adults who reported that their overall health was excellent had *Intermediate* or *Proficient* health literacy. In contrast, 69 percent of adults who reported their health was poor had *Basic* or *Below Basic* health literacy. Dr. Whitehurst concluded that the data indicate that those who are most in need of health literacy are the ones with the poorest reported health. More detailed information about the NAAL health literacy report, as well as other reports on the study, is available at www.nces.ed.gov/naal.

Functional Health Literacy: Health Information in Everyday Life

*Rima Rudd, Sc.D., M.S.P.H., Sc.D.,
Senior Lecturer on Society, Human Development, and Health,
Harvard School of Public Health*

Dr. Rima Rudd, Senior Lecturer on Society, Human Development, and Health at the Harvard School of Public Health, provided a brief history of the growing interest in

health literacy over the past several decades and gave an overview of the literature on the topic to date.

There are now more than 1,000 peer reviewed articles on health literacy. Early studies in education and adult literacy set the stage for future research with evidence that literacy influences one's ability to access information, use print materials, and participate in society. According to Dr. Rudd, leadership in the early days of the health literacy movement came from medicine, with a strong focus on patient-provider communication.

A New Focus: Functional Health Literacy

Patient-provider encounters are less frequent than other health-related situations that occur at home, at work, and in the community. Individuals must make daily choices about what they eat, how they exercise, whether to put on sunscreen, or how to take over-the-counter medications. For this reason, Dr. Rudd's research has focused on functional health literacy—the ability to read, understand, and act on health information in everyday life. She and her colleagues established a project to clearly define functional health literacy and to derive a set of provisional estimates of the distribution of health literacy in the United States. Their report, *Literacy and Health in America*, is an analysis of health literacy skills based on health-related materials and tasks from national and international surveys of adult literacy conducted before 2003 (Rudd, Kirsch, & Yamamoto, 2004).

"We need to look at both the demand side (the health care system) and the skill side (individual capacities) in order to make improvements in health literacy."

Rima Rudd, M.S.P.H., Sc.D.

Dr. Rudd and colleagues found that as many as one-half of adults lack the skills needed to accomplish health-related tasks such as following directions on medicine labels, reading nutrition labels, describing symptoms, or using a map to locate health facilities. They also found that general literacy skills and health-related literacy skills are related; those with more general literacy skills will also be more likely to have stronger health literacy skills (Rudd, et al., 2004).

Improving Health Literacy: A Two-Sided Approach

Dr. Rudd emphasized a two-sided approach to improvement in health literacy. Researchers and others concerned with health literacy must examine both:

- The demand side—what the health care system requires
- The skill side—individual capacities to respond to system demands.

Toward this end, Dr. Rudd has begun to deconstruct health activities by delineating the specific tasks associated with each health activity and assessing the skills needed to complete the tasks. For example, in order to enhance and maintain their health,

individuals are expected to read nutrition labels and purchase healthy food, prepare a dish from a recipe, understand charts and graphs such as the Body Mass Index, and/or plan an exercise routine. For many people, there is a mismatch between the demands of the activity and their skill level.

In response, Dr. Rudd and her colleagues have developed an in-depth training protocol for adult educators to help them increase health literacy skills among their students. The resulting three Health Literacy Study Circle guidebooks have been peer-reviewed and piloted (Rudd, Soricone, & Santos, 2006a, 2006b, 2007). They have been implemented in the State of Louisiana, New York State, New York City, and Boston.

Advice to Researchers and Practitioners

Dr. Rudd concluded by emphasizing the need for researchers to develop testable hypotheses related to the link between literacy skills and health, thereby clarifying the pathways from health literacy to health outcomes. Findings can then inform practice, which, in turn, must include rigorous evaluation studies. As a result, the health sector can eliminate literacy-related barriers to health promotion and access to care.

At the same time, health researchers and practitioners must work closely with colleagues in education to clearly define the needed skills associated with access to healthcare services, management of chronic disease, and participation in disease prevention activities and early screening. Adult education professionals must then work to develop these skills among members of the general public to improve health literacy.

Literacy, Chronic Disease Care, and Public Healthcare Systems: A Focus on Communication

*Dean Schillinger, M.D.,
Director of the Center for Vulnerable Populations,
University of California, San Francisco*

Dr. Dean Schillinger, Director of the Center for Vulnerable Populations at the University of California, San Francisco (UCSF), summarized the research that has been underway over the last six years at the UCSF/San Francisco General Hospital. The research includes studies evaluating the effects of limited literacy on communication, decision-making, self-care, and health outcomes such as access to care, self-rated health, and morbidity. Major findings from these studies provide good evidence that the “communication characteristics” of the health care system (described below) contribute to suboptimal care, particularly for those with limited literacy.

Limited Literacy and Health Outcomes: An Association

In one community-based prospective study of elderly English-speaking adults, limited literacy was associated with:

- Less self-rated access to care (i.e., whether patients had a regular doctor or regular place of care, had obtained a flu shot in the last 12 months, or had supplemental insurance that covered medications);
- Lower self-rated health (classified as excellent, very good, good, fair, poor);
- Higher rates of some chronic diseases; and
- Higher adjusted mortality (Sudore, Yaffe, et al., 2006).

In a separate study of public hospital patients with diabetes, limited literacy was associated with higher rates of health complications (Schillinger, et al., 2002).

Dr. Schillinger presented four hypotheses to explain these associations:

1. *Confounding*: In this hypothesis, limited literacy is a marker for a number of
2. sociodemographic and behavioral factors or experiences that directly or indirectly lead to morbidity and mortality.
3. *Reverse Causation*: Limited literacy is a *consequence* (not a cause) of high disease burden or poor disease control, and this is associated with a worse health trajectory.
4. *Mediation*: Limited literacy affects health through a number of behavioral and exposure-related factors at the individual and community-level that directly or indirectly lead to morbidity and mortality.
5. *Effect Modification at the System Level*: The predominant hypothesis Dr. Schillinger addressed in his intervention research is that limited literacy leads to poor quality of care, which results in illness and premature death. According to Dr. Schillinger, the health care system places inappropriate demands on the patients and population groups with the greatest needs. This hypothesis suggests altering the context of care is a possible remedy.

Communication Characteristics of the Health Care System

There is good evidence that the communication characteristics of the healthcare system contribute to suboptimal health care, particularly for people with limited literacy.

*Fang et al., 2006;
Schillinger et al., 2004, 2006;
Sudore, et al., in press*

Studies have shown that limited literacy affects both written and verbal communication. Ineffective communication can impair shared decision-making and impede understanding of technical information and explanations of self-care (Sudore, Landefeld, et al., 2006).

Dr. Schillinger cited several examples from studies involving heart disease, diabetes, and end-of-life care that demonstrate these findings (Fang, Machtinger, Wang, & Schillinger, 2006; Schillinger, Bindman, Stewart, Wang, & Piette, 2004; Sudore, et al., in press). For example, diabetes patients with limited literacy were more likely to report that their doctor used words they did not understand (Schillinger, et al., 2004). In addition, limited literacy impairs medication communication, jeopardizing patient safety (Schillinger, Machtinger, Wang, Rodriguez, & Bindman, 2006).

These studies from UCSF/San Francisco General Hospital suggest a number of characteristics of the U.S. health care system that exacerbate the communication difficulties experienced by patients with limited literacy:

- Lack of time and incentives
- Over-reliance on “activated patients”
- Reliance on single modes of communication (written or verbal)
- Provider/population mismatch across language and culture
- Unprepared health professional workforce with respect to communication
- Underdeveloped technology platforms to support communication

Improving the Reach and Effectiveness of Health Care

In response to these findings, Dr. Schillinger and his colleagues recently completed a three-arm randomized trial (the IDEALL Project) that compared automated telephone diabetes management to nurse follow-up, monthly group medical visits, and usual care among public hospital patients with diabetes (Schillinger, Hammer, & Wang, in press). The study was designed to challenge the "inverse care law" which states that the availability of good medical care tends to vary inversely with need among the population served.

Preliminary analyses show that the extent of engagement was five times higher for those patients participating in the automated telephone diabetes management program than for those participating in the group medical visits. Moreover, the greatest reach of the automated telephone diabetes management program was among patients with limited literacy and limited English proficiency. More detailed analyses will be forthcoming in the near future.

Limited Literacy and Health Outcomes: A Complex Issue

In conclusion, Dr. Schillinger noted that the mechanisms by which limited literacy affects health are complicated and likely multiple. Although it is apparent that improving literacy levels of the population can achieve important public health objectives, there is strong evidence that the communication characteristics of the health care system, such as lack of time, reliance on single modes of communication, and provider/population

mismatch across language and culture, contribute to suboptimal health care, particularly for those with limited literacy. There is limited but growing research to suggest that restructuring the health care system can improve the reach and effectiveness of health care, improving quality, promoting safety, and possibly saving lives (Davis et al., 2006; Kripalani et al., 2006; Paasche-Orlow, Schillinger, Green, & Wagner, 2006; Sentell & Halpin 2006; Sudore, Landefeld, et al., 2006; Weiss, Francis, Senf, Heist, & Hargraves, 2006). It is likely that such restructuring would have greater benefit for those with limited literacy.

The Associations Between Health Literacy and Health Outcomes: Self-Reported Health, Hospitalization, and Mortality

*David W. Baker, M.D.,
Chief of the Division of General Internal Medicine,
Northwestern University Feinberg School of Medicine*

Dr. David Baker, Chief of the Division of General Internal Medicine at Northwestern University's Feinberg School of Medicine, discussed his research, which demonstrates a strong, independent connection between health literacy and health outcomes. These outcomes include emergency department use, hospitalization, self-reported physical health, and mortality. Dr. Baker seeks to demonstrate a causal association, though by which means in particular (knowledge, self-management skills, use of preventive care, medication errors, access, or cognitive function) is not clear.

Health Literacy and Health Outcomes: A Strong Association

One of Dr. Baker's earliest studies examined the relationship between health literacy* and self-reported health among patients presenting to the emergency department at one of two urban public hospitals. Patients rated their overall health as excellent, very good, good, fair, or poor. Those with inadequate health literacy skills were more than twice as likely to self-report poor health (Baker, Parker, Williams, Clark, & Nurss, 1997). After 2 years of follow-up, those with inadequate literacy had a 52 percent (95% confidence interval 1.11 to 2.06) higher adjusted risk of hospital admission compared to those with adequate health literacy (Baker, Parker, Williams, & Clark, 1998).

Multiple studies show there is a strong, independent connection between health literacy and health outcomes, including emergency department use, hospitalization, self-reported physical health, and mortality.

*Baker et al., 1997, 1998;
Wolf et al., 2005 2006*

*To measure the reading fluency of participants in their studies, Dr. Baker and colleagues used the Test of Functional Health Literacy in Adults (TOFHLA) or the short-TOFHLA. The TOFHLA classifies people as having *adequate*, *marginal*, or *inadequate* literacy.

Another study, the Literacy and Health of Medicare Managed Care Enrollees, followed 2,923 new Medicare managed care enrollees to evaluate the association between health literacy and functional health status (Wolf, Gazmararian, & Baker, 2005). Outcome measures included scores on the physical and mental health functioning subscales of the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), difficulties with instrumental activities of daily living and activities of daily living, and limitations because of physical health and pain.

The study found that individuals with inadequate health literacy reported significantly lower mean physical function (67.7 vs 78.0, $P < .001$) and mental health (76.2 vs 84.0, $P < .001$) scores on the SF-36 compared to those with adequate and marginal health literacy. Individuals with inadequate health literacy were more likely to report difficulties with instrumental activities of daily living and activities of daily living, limitations in activities because of physical health, and pain that interferes with normal work activities (Wolf et al., 2005).

A recent study of health literacy and mortality among the elderly revealed that the risk of death was 50 percent higher for those with inadequate literacy compared to those with adequate literacy (Baker, et al., 2007). This was true for cardiovascular death but not cancer death. Dr. Baker concluded that inadequate health literacy, as measured by reading fluency, independently predicts all-cause mortality and cardiovascular death among elderly persons. Interestingly, in contrast to health literacy, years of school completed were not associated with higher mortality (Baker et al., 2007). According to Dr. Baker, reading fluency is a more powerful variable than education for examining the association between socioeconomic status and health.

The Roles of Reading Fluency and Cognitive Abilities in Health Outcomes

Dr. Baker and his colleagues have begun investigating the independent associations between reading fluency, cognitive abilities, and mortality. They have proposed two specific domains—memory and the ability to follow commands—that may affect health communication and patients' ability to adhere to recommended treatment plans. Using the Mini Mental State Exam, Dr. Baker is investigating whether individuals with inadequate health literacy are less likely to be able to recall three items and to follow a three-step command than individuals with adequate health literacy (Baker, 2006). Individuals' performance on the items used to measure these domains is unlikely to be biased by educational experience or literacy. Ongoing analysis has shown that performance on measures of cognitive function predict mortality (Baker, 2006). According to Dr. Baker, cognitive function may explain a significant portion of the increased risk of mortality among patients with limited health literacy.

It remains unclear whether individuals with inadequate literacy have worse outcomes than individuals with adequate health literacy because of their poor reading fluency, their poor background knowledge of health-related issues, or their lower cognitive abilities. Further work using more detailed measures of reading fluency and cognitive function is needed to understand these relationships and to identify which individual capacities most strongly influence patients' ability to acquire and use new knowledge and gain new skills.

Interventions to Improve Health Outcomes for Patients with Low Literacy

*Michael Pignone, M.D., M.P.H.,
Associate Professor of Medicine,
University of North Carolina—Chapel Hill School of Medicine*

Dr. Michael Pignone, Associate Professor of Medicine at the University of North Carolina—Chapel Hill School of Medicine, provided an overview of existing literature on intervention studies to improve health outcomes for patients with low literacy. To date, such interventions can be categorized into three main types:

1. Interventions that make written health information easier to understand;
2. Interventions that attempt to change or re-organize the care system to mitigate the effects of low literacy; and
3. Interventions that attempt to directly improve patient literacy.

Intervention Studies: A Review of the Literature

Dr. Pignone and colleagues conducted a systematic review of the literature between 1980 and 2003 to assess the relationship between literacy and health outcomes, as well as interventions to improve outcomes for individuals with low literacy (Berkman, et al., 2004). Of the 20 studies included in the review, only 5 stratified their results by literacy level. Stratification by literacy level is key to understanding and closing the disparity gap between high and low level literacy. Most of the studies measured knowledge as their main outcome. Based on the results of the evidence review, Dr. Pignone and colleagues concluded that future research is required to better understand the factors that mediate the relationship between literacy and health outcomes.

Accommodating Patients with Low Literacy

Subsequent intervention trials have been published since the systematic literature review in 2003 (Berkman, et al., 2004). One intervention study by Dr. Pignone, Dr. Darren DeWalt, and colleagues involved a 12-month randomized trial to test the efficacy of a heart failure self-management program designed to accommodate patients with low literacy (DeWalt, et al., 2006).

The intervention included an education session and booklet written below the 6th grade reading level, a digital bathroom scale, and scheduled follow-up calls. Special attention was paid to barriers to care. Results showed improved knowledge, self-efficacy, and self-care behavior for those in the intervention group as compared with the control group. Self-efficacy, defined as an individual's judgment of his/her ability to succeed in reaching a specific goal, was measured with an 8 item scale developed for the behaviors needed in this trial. The intervention reduced incidence of hospital admission or death.

Patients with low literacy showed even greater improvements than those with higher literacy.

Providing Literacy Education

In a separate intervention study cited by Dr. Pignone, the authors investigated literacy education as an adjunct treatment for depression. In addition to receiving standard treatment for depression, patients in the intervention group were also referred for literacy training at an adult education program. Learning was facilitated through computer-assisted instruction, traditional text-based instruction, and/or self-paced study modules. The literacy program also offered employment-skill training.

Results of the small, randomized study of 70 patients suggested that literacy education can beneficially supplement the effects of depression treatment in primary care settings (Weiss, et al., 2006). It is unknown whether these results can be replicated for other health outcomes.

Suggestions for Future Intervention Studies

In conclusion, Dr. Pignone noted that relatively few studies have examined interventions to mitigate the effects of low literacy on health outcomes. Future studies should include participants with a wide range of literacy levels and stratify results by literacy level. Pignone also suggested that in addition to outcome measures like knowledge, future studies should identify the behaviors required for effective self-care and measure the ability of patients to learn those tasks. For example, rather than asking only asthma knowledge questions, researchers could analyze the effect of interventions on the ability to correctly use inhalers. Finally, more studies are needed that examine the effect on health outcomes by improving the reading skills of persons with low literacy.

Discussion: Panel 1

Panel 1 elicited a wide variety of comments from audience members and panelists.

Self-Efficacy versus Knowledge Building in Improving Health Literacy

One researcher in the audience asked whether there were scientific studies investigating causal influence interventions (i.e., teaching people more generally about how the body works and the nature of disease so that they may act more appropriately when faced with symptoms). Panelists noted that much of the work to date concerns self-efficacy building rather than knowledge building. Dr. Baker expressed concern that causal models can sometimes create excessive cognitive demand, noting that it may be useful to begin with a simple causal model, then build on that knowledge. He emphasized the importance of efforts to determine how we can effectively create learning situations that promote the long-term retention of information.

Participants discussed the role of knowledge versus skills in improving health literacy. Dr. Rudd noted that what is taught in kindergarten through 12th grade (K-12) varies so widely that few assumptions can be made about the knowledge base of children and

adults with regard to understanding the human body and its systems. A representative from the American School Health Association responded that national health education standards for K-12 emphasize skills, such as how to access health information and the ability to set goals and make decisions, rather than content or knowledge. There appears, however, to be a large disparity in the content taught and no clear definition of what content people should have in order to say that they are health literate. Dr. Pignone agreed with the need to improve health and science instruction, but he expressed concern about the tendency to overemphasize pathology and physiology. He commented that at a basic level, people need non-health-specific skills related to empowerment and self-efficacy, such as how to ask questions during a medical appointment.

The Relationship Between Literacy and Health Literacy

Panelists and audience members had varying views on the relationship between literacy and health literacy. Dr. Rudd noted that the IOM Committee on Health Literacy had concluded that there is a significant overlap between the two concepts, but that there are strong content-specific demands in the area of health literacy that distinguish it from general literacy. The skills may be the same, but the applications differ.

“Although there is significant overlap between literacy and health literacy, there are strong content-specific demands in the area of health literacy that distinguish it from general literacy.”

Rima Rudd, M.S.P.H., Sc.D.

Dr. Whitehurst added that the correlation between literacy scores and health literacy scores in the NAAL is quite high.

Dr. Baker agreed that there were commonalities, but argued that there was a need for greater precision in discussing general literacy. He noted that background conceptual knowledge may be key to understanding the distinction between literacy and health literacy. Dr. Pignone cautioned participants against calling the measures described at the workshop health literacy measures, when in fact they are literacy measures that use health terms. He stated that a measure of health literacy as a broad construct has yet to be developed.

Improving the Communication Skills of Health Care Providers

A representative from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) raised the issue of changing the communication practices of healthcare providers, noting that good communication practices need to be introduced in provider education and training. An audience member from the American Medical Association (AMA) echoed these concerns and announced that the AMA would be launching an initiative linking health communication and patient safety. Dr. Schillinger pointed out that nursing, medical, and pharmacy students are very receptive to learning these skills, but noted that skills training needs to continue into the residency phase/clinical context. The positive effects of communication skills training can be

displaced by the demands of residency. He commented that medical student associations can often drive curricular change, making them excellent points of intervention.

Dr. Pignone noted that system changes such as team-based care, information technology infrastructure, and reimbursement practices can also improve patient-provider communication. Dr. Rudd added that, while it is important to look at communication between health professionals and patients, we must also work with writers of health education materials to ensure that they rely on formative research. She noted that we do not approve new drugs without formative research, so we should not produce written materials without comparable research.

Methodological Issues in Health Literacy Research

An audience member remarked that much of the study of health literacy has been quantitative in nature and asked how much ethnographic research, particularly research models that involve people with low literacy in the design of materials, has been conducted. Dr. Baker pointed out that qualitative studies as early as 1991 have included interviews and focus groups designed to record the opinions, questions, and experiences of persons with low literacy. Dr. Schillinger described a study in which clinicians and patients were videotaped in order to assess shared decision-making (Saba et al., 2006). Results did not show a strong correlation between the effective communication behavior of the provider and the positive experience of the patient. The researchers concluded that relationship dynamics such as trust between provider and patient mediate the patient's perception of shared decision-making. Efforts to enhance patient-physician communication, especially among disadvantaged populations, must include improvements in effective communication behavior and affective relationship dynamics (Saba et al., 2006).

An adult education advocate in the audience asked how much research has been done on oral literacy, commenting that we are largely an oral society. Dr. Rudd replied that there is not much in the literature to date, but a number of studies on the topic are underway. She noted that the NAAL collected information on oral skills such as fluency and pronunciation, but that information had not been analyzed at the time of the workshop. There is a good deal of literature on oral communication in the communication field, and more knowledge-sharing on this topic would be useful.

Interpreting the NAAL Health Literacy Data

A representative from the Indian Health Service asked if the NAAL accurately reflects the health literacy of minority populations. Dr. Whitehurst replied that the NAAL was a very large national study, with a sufficient sample size to accurately report on population differences. He added that because the assessment was in English, there would be some differences in literacy skills when nativity is analyzed.

The moderator commented that prior to the 2003 NAAL data, most people cited the 1992 National Adult Literacy Survey figure used in the IOM report that 90 million Americans would have trouble understanding health information. He asked whether the NAAL data

give us a more concrete number. Dr. Whitehurst replied that they did not categorize the data in that way. According to the NAAL, there are approximately 30-34 million adults in the lowest levels of health literacy (30 million adults in Below Basic and an additional 4 million adults who could not participate in the survey due to language barriers); it is reasonable to presume that they will have trouble understanding and using health information (Kutner, et al., 2006). An audience member from AHRQ pointed out that the 30-34 million figure does not include those from institutionalized populations (other than prisons) and homeless people. Therefore, she suggested that the figure was likely artificially low.