



**National Institute on
Deafness and Other
Communication Disorders**
WISE EARS!®
Campaign

Environmental Scan

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ORC MACROSM

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WISE EARS! ENVIRONMENTAL SCAN

INTRODUCTION

In 1999, the National Institute on Deafness and Other Communication Disorders (NIDCD), in collaboration with the National Institute for Occupational Safety and Health (NIOSH), launched WISE EARS![®] as a national campaign to raise public awareness about noise-induced hearing loss (NIHL) and opportunities to prevent it.

The goals of the campaign are to:

- Increase awareness about NIHL among workers, employers, health professionals, teachers, parents, children, unions, industry, state and local government workers, and the general public.
- Motivate these audiences to take action against NIHL by having knowledge about the problem and solutions; that is, to understand that everyone is at risk, to recognize the availability of hearing protection devices, to advocate for changes in the workplace, and to develop hearing loss prevention programs.

This environmental scan reviews the progress made by the WISE EARS! campaign in attaining these goals. Based on the findings, we offer recommendations to help guide future planning efforts by identifying segments of the population that would benefit most from information on NIHL and by proposing communication strategies for reaching those audiences.

APPROACH

The environmental scan consisted of several interrelated components, each designed to contribute insight into what information about NIHL is available and who is bringing this information to the public's attention. The components and their purpose are:

1. *Literature/media reviews*: to analyze recent published literature to discover issues, trends, and potential target audiences to identify and assess media coverage of WISE EARS! and competing and complementary campaigns to identify key players in prevention efforts.
2. *Materials audit*: to review WISE EARS! print materials and WISE EARS! Web pages to determine the consistency of messages, copy, and graphics as well as the extent to which the information provided is accurate, complete, useful, and current.
3. *Publications distribution information and analysis*: to identify organizations that are the most frequent requesters of WISE EARS! materials and the most popular materials.
4. *Additional internal and external messages and programs review*: to review related programs within NIDCD and in other organizations (such as the House Ear Institute's EarBud campaign) to determine how they complement or compete with the WISE EARS! campaign.

RECOMMENDATIONS

We have organized our recommendations into three categories: programmatic, strategic, and tactical. Our assumption is that NIDCD intends to continue with a campaign to prevent NIHL, although the name and branding elements of the campaign may change to reflect a new direction. In the following recommendations, we have used WISE EARS! to indicate where NIDCD could enhance its current campaign. We simply refer to a “campaign” when the recommendation applies to any campaign that NIDCD might conduct to prevent NIHL, including WISE EARS!.

PROGRAMMATIC

- **Give WISE EARS! a higher priority within NIDCD and NIOSH.** As evidenced by the limited resources and visibility allotted to the campaign, WISE EARS! is not viewed as a high-priority program. For instance, neither institute promotes the campaign on its Web site home page or has a clearly identified link to WISE EARS! materials. If the current campaign is relaunched, NIDCD should coordinate with NIOSH to develop new materials, promote WISE EARS! products, and provide consistent and informative links to the WISE EARS! site.
- **Assign leadership responsibility for promoting WISE EARS! and maintaining its momentum.** Promotion of the WISE EARS! campaign has been limited during the past two years, consisting primarily of distributing materials through the NIDCD Information Clearinghouse and at some of the conferences attended by NIDCD. No one within the two sponsoring institutes has taken leadership responsibility for aggressively promoting the campaign. Communication with coalition members nearly has lapsed, no calls to action has been issued, and the WISE EARS! Web pages have been maintained but not updated. The consequence is that the WISE EARS! campaign is perceived by some coalition members as inactive and the media no longer cite it as a source of information about NIHL. Reinvigoration of the campaign implies that short- and long-term goals will be established and some individual will be charged with conducting activities designed to achieve them.
- **Conduct a comprehensive campaign evaluation.** Two “[Healthy People 2010](#)” [objectives](#) specifically address the reduction of NIHL in children and adolescents and in adults. However, there has been no research to date to assess the impact, if any, of WISE EARS! and to identify those needs that have not yet been addressed through current educational and promotional methods. At a minimum, we recommend that any re-launch of the current campaign or creation of a new one include both process and outcome evaluation measures from the planning stage so that future efforts can be measured against communication objectives.

STRATEGIC

- **Focus on a specific target audience.** Although the ultimate goal is to prevent NIHL among all audiences, it is unrealistic to expect one campaign to achieve that goal. The most effective communication campaigns target a specific audience or audience segments so that messages can be tailored to the audience’s needs, interests, and desired behavior changes. In addition, delivery channels can be selected based on their

effectiveness in attracting and engaging the target audience. As an example, the EarBud campaign targets adolescents and young adults with a message about the dangers of excessive exposure to loud music. By collaborating with MTV, the EarBud campaign has registered nine million hits to its site in 10 months. Although numbers reached is not a measure of effectiveness (i.e., behavior change), the numbers do indicate that the target audience is at least being exposed to the message.

- **Tailor materials to appeal to a specific target audience or target audience segment.**
- **Conduct audience research** to test campaign materials with intended audiences.
- **Select partners and delivery channels that have the highest potential to attract and engage the target audience.**
- **Target the campaign at ‘twens.’** Research points to the occurrence of NIHL in individuals of increasingly younger age. Therefore, it follows that the Fiscal Year 2006 Senate Appropriations Subcommittee for Labor, Health and Human Services, and Education Report requested that NIDCD expand its WISE EARS! campaign among school-age children. Additionally, our review of existing and complementary campaigns indicates a gap among nationwide programs and messages targeting the nine- to 14-year-old audience. NIDCD can maximize available resources by building on available materials, such as the curriculum produced by the National Institutes of Health for the seventh and eighth grade and the curriculum and focus group testing it has helped to fund for the Dangerous Decibels campaign. We note that focusing on a target audience does not limit NIDCD’s ability to extend its message to related groups. A campaign targeted at tweens could involve and educate parents (who also tend to be workers), educators, sports groups, and others who work with this age group.
- **Reach additional target audiences by supporting programs conducted by other organizations.** This recommendation also relates to focusing the resources available to NIDCD to conduct a campaign to prevent NIHL. Other organizations and agencies are mission-driven or mandated to educate specific audiences, such as employers and employees, about NIHL. For example, the mission of NIOSH is to help ensure safe and healthful working conditions for workers by providing research, information, education, and training in occupational safety and health, including hearing health. While it is important for NIDCD to support broad-based education efforts as part of its mission, attempting to address all of these audiences through one campaign dilutes the ability of NIDCD to create strong, focused messages.
- **Capitalize on growing public awareness of the potential risk to hearing posed by personal audio and video players.** This issue appears to be long-lived, as more companies are introducing devices with even more features. For example, Microsoft intends to start selling before Christmas a wireless digital music and video player to compete with Apple’s iPod. In fact, many articles described a future in which “the MP3 generation” would develop into a generation of hearing-impaired adults. Several articles draw parallels between the potential damage that can result from improper iPod use and the evidence of NIHL from Walkmans and similar devices that first started appearing in the 1980s. NIDCD’s campaign would benefit from an association with this public

health issue and should position itself as a resource for educating the public about risky behaviors.

- **Reinvigorate the WISE EARS! coalition or organize a new one around new target audiences.** Based on our review of media, materials, and competing messages, we recommend that NIDCD make strategic decisions about partners based on their ability to reach the target audience, interest in the issue, and commitment to helping advance the campaign agenda. NIDCD interests will be served best by partners that are fully engaged and will both contribute to and benefit from their involvement in a campaign to prevent NIHL.

TACTICAL

- **Position WISE EARS! as a resource and credible source of information in the national dialogue on the risk of NIHL associated with personal listening devices and other factors contributing to NIHL.** WISE EARS! is no longer appearing in the mass media and not reaching target audiences. To reposition itself, NIDCD should develop new materials that address current issues. These issues include prolonged exposure to loud music and other recreational noises, the relationship between smoking and NIHL, and steps military personnel can take to reduce NIHL in noncombat situations.
- **Conduct a more aggressive and responsive media outreach.** To help align WISE EARS! more closely with emerging issues, we recommend that NIDCD reach out more aggressively to the media to increase its profile in news outlets. Activities could range from opportunistic outreach such as sending a letter to the editor in response to a story on NIHL to more planned activities such as identifying newsworthy events or observances for WISE EARS! to tie into with relevant announcements or events. Greater visibility of WISE EARS! will help to correct and update some of the misinformation available online to the general public.
- **Develop WISE EARS! talking points for all NIDCD spokespeople.** To increase the association between WISE EARS! and hearing loss prevention in media coverage, we recommend developing and distributing three to five key messages that NIDCD and WISE EARS! spokespeople can include in interviews. Whenever spokespeople provide information to reporters about the dangers of excessive noise exposure and offer expert advice on protecting oneself, they also should promote WISE EARS! as a valuable resource for information related to hearing loss prevention.
- **Enhance the WISE EARS! Web site to include up-to-date content, resource highlights, and additional interactive features.** The Internet provides expanded opportunities to reach WISE EARS! target audiences, particularly young people. However, to increase traffic and engage the audience, the site should be updated and enhanced on an ongoing basis. We recommend that NIDCD highlight new and existing materials on a rotating basis, group materials more effectively, and delete outdated materials that give the erroneous impression that the campaign is inactive.
- **Capitalize on existing communication channels to engage coalition partners, maintain communication, and inform them of emerging issues and current research related to NIHL.** Limited personnel and other resources are a frequent

challenge to sustaining a level of communication that keeps partners active and informed. To eliminate the workload of a separate campaign newsletter, we recommend that NIDCD include a WISE EARS! update as a regular feature of *Inside*. This strategy also would have the advantage of educating organizations in other communication fields about NIHL.

- **Make greater use of technology to expand campaign outreach.** The Internet provides multiple opportunities to link resources together and to share information. In planning future education and outreach efforts, NIDCD should consider the options of subscription and user-generated content whereby users who grant permission would receive updates, tips, and news on a regular basis through, for instance, an e-newsletter, audio or video podcasts, and desktop alerts.

1. LITERATURE REVIEW AND MEDIA AUDIT

LITERATURE REVIEW METHODOLOGY

This section describes the findings of a literature review conducted in June and July 2006. We searched the PubMed, Medline*Plus*, Combined Health Information Database (CHID), and Education Resources Information Center (ERIC) databases to locate articles focusing on noise-induced hearing loss (NIHL) and efforts to reduce and prevent NIHL among various target groups. The electronic journal database of the Centers for Disease Control and Prevention (CDC) provided access to hundreds of medical journals. The National Library of Medicine at the National Institutes of Health (NIH) provided additional materials. This review covers articles published between 2000 and 2006. A few studies conducted by researchers in countries other than the United States were included to expand the available knowledge base.

Search terms for the literature review were:

- Hearing conservation
- Hearing protection
- NIHL
- Tinnitus
- Age-related hearing loss
- Attitudes to noise
- Leisure noise
- Hearing/temporary threshold shift
- Occupational health/noise

KEY FINDINGS

Trends

- NIHL among children and adolescents is perceived as a problem of potentially increasing severity. Approximately 13 percent of youth between the ages of 6 and 19, or 5.2 million children, already have experienced some type of hearing loss.
- Early NIHL also may accelerate age-related hearing loss. Ongoing research emphasizes the need for greater education of adolescents and young adults about NIHL. According to a Web-based survey conducted through the MTV Web site, only 16 percent of adolescent and young adult respondents reported that they had heard, read, or seen anything related to the issue of hearing loss, and only nine percent received this information through their school.
- NIHL is on the rise among U.S. servicemen and servicewomen. One-third of soldiers returning from Afghanistan and Iraq during 2004 were referred to audiologists for hearing evaluations due to acute acoustic blast exposure; 72 percent were identified with hearing loss.
- Our nation faces long-term economic and public health consequences due to the growing numbers of Americans with early NIHL. For example, job safety decreases as a function of increased noise level and hearing loss across all ages of workers.

Contributing Factors

- Harmful levels of noise occur in the workplace, the environment, and during recreation due to poor noise control, inadequate hearing protection, and lack of education about risk factors.
- Other factors include a lack of regularly scheduled hearing tests for those most at risk, ototoxic medications, and smoking.
- Leisure noise, such as amplified music, is placing children and adolescents at higher risk of NIHL.

Potential Prevention Strategies

- A “problem-based learning” approach to school-based hearing conservation programs appears to be more effective than a pure “lecture” approach, but both approaches may result in significant improvements in children’s knowledge of hearing issues.
- A significant opportunity to encourage the use of hearing protectors by young adults seems to be to increase access at the time when the young adults realize their value. Up to 85 percent of young adults surveyed said they would respond to education and hearing protectors offered at concert doors.
- The Internet is a powerful medium to reach youth and young adults. Thirty-nine percent of adolescents and young adults surveyed report a change in personal behavior because of health information obtained online.
- Workers respond well to individually tailored programs that focus on each person’s attitudes and behaviors about hearing protection. The use of computers to deliver training appears to offer several advantages, including continuous availability, interactivity, and flexibility to tailor the intervention to the individual.
- To be effective, hearing conservation programs need to address language and cultural barriers to the use of hearing protectors.

PREVALENCE TRENDS

One-quarter (Fausti, Wilmington, Helt et al. 2005) to one-third (Murphy, Themann, and Stephenson 2006) of all hearing loss in the United States can be attributed to harmful levels of noise exposure, or to NIHL. Current estimates are that 22 million American adults have experienced NIHL, with older adults being most affected. This number is expected to increase as the number of Americans with overall hearing loss increases and as the baby-boomer population ages. Hearing loss from all causes affects roughly 30 percent of individuals between 65 and 74 years of age. Americans aged 65 and over now account for 13 percent of the population, but will make up an estimated 20 percent in fewer than 25 years. Fifty million American adults already have tinnitus, a ringing or buzzing in the ears that usually precedes hearing loss (Fausti et al. 2005).

NIHL among children and adolescents is perceived as a problem of potentially increasing severity. Approximately 13 percent of youth between the ages of six and 19, or 5.2 million children, have already experienced some type of hearing loss (Niskar, Kieszak, Holmes et al. 2001). This percentage exceeds the current distribution of hearing loss among the general population, which is 10 percent. In addition, 15 percent of college graduates have hearing problems equal to or greater than those reported by their parents (Fausti et al. 2005). Early NIHL also may accelerate age-related hearing loss. A study involving a mouse model indicated

that neural damage to the cochlea initiated by early noise exposure caused the inner ears of mice to be significantly more vulnerable to hearing loss associated with aging (Kujawa and Liberman 2006).

Such research emphasizes the need for greater education of adolescents and young adults about NIHL. Leisure noise, such as amplified music (Biaassoni, Serra, Richter et al. 2005; Borchgrevink 2003; Weichbold and Zorowka 2003) and personal stereo systems and car loudspeakers (Crandell, Mills, and Gauthier 2005), is placing children and adolescents at higher risk of NIHL.

In the workplace, noise exposure is the most common occupational hazard to health. Members of the U.S. military are at particular risk of NIHL due to increased intensity and magnitude of current operations and extended training and tours of duty. As a consequence, NIHL is on the rise among U.S. servicemen and servicewomen. One-third of soldiers returning from Afghanistan and Iraq during 2004 were referred to audiologists for hearing evaluations due to acute acoustic blast exposure; 72 percent were identified with hearing loss (Schulz 2004). According to the Veterans Benefits Administration, the number of veterans receiving compensation for hearing impairment increased 168 percent between 2000 and 2004 (Fausti et al. 2005).

Our nation faces long-term economic and public health consequences due to a growing number of Americans with early NIHL. Job safety decreases as a function of increased noise level and hearing loss across all ages of workers (Crandell, Mills, and Gauthier 2005).

TARGET AUDIENCES

People of all ages, genders, ethnicities, and occupations who are exposed to damaging noise levels are at risk for NIHL. NIHL is common, its consequences are permanent, and its impact on communication and a person's quality of life can be significant (Kujawa and Liberman 2006). NIHL can result when individuals experience a one-time exposure to extremely high levels of sound or from long-time exposure to damaging levels of sound. Harmful levels of noise occur in the workplace, the environment, and during recreation due to poor noise control, inadequate hearing protection, and lack of education about risk factors (Fausti et al. 2005).

Forty million Americans work in environments with potentially harmful levels of noise and more than 50 million Americans routinely use firearms—a common cause of NIHL (Crandell, Mills, and Gauthier 2004). Harmful levels of noise also are associated with popular leisure time activities, such as gardening (e.g., leaf blowers) (Fausti et al. 2005) and recreation (e.g., motor boating) (Cradell, Mills, and Gauthier 2004).

Other factors contributing to NIHL include poor implementation of hearing conservation programs in schools and the workplace and a lack of regularly scheduled hearing tests for those most at risk. The prevalence of ototoxic medications is taking a toll. More than 200 medications, including cancer-fighting drugs and antibiotics, affect hearing adversely. These medications compound damage from noise exposure and accelerate the natural decline of normal auditory function (Fausti et al. 2005). Smoking also appears to have an adverse effect on hearing, both as a single factor (Uchida, Nakashimat, Ando et al. 2005) and in synergy with age and noise exposure (Ferrite and Santana 2005).

Overall, hearing loss from all causes affects older adults more frequently than younger age groups. Men are more likely than women to experience hearing loss, with a ratio of 2:1 (Fausti et al. 2005). Older white men are most affected by hearing loss, followed by white women, black men, and black women (Helzner, Cauley, Pratt et al. 2005). This literature search produced current research about the potential risk of NIHL among various demographic groups.

CHILDREN, ADOLESCENTS, AND YOUNG ADULTS

Several studies have reported an increasing trend of NIHL in children and adolescents (Chung, Des Roches, Meunier et al. 2005; Fausti et al. 2005; Folmer 2003; and Niskar et al. 2001). Numerous authors point to a lack of early education and to the absence of national policies as contributing factors. Chung et al. (2005) observed that no safety standards or guidelines for non-occupational noise exposure—from music, toys or other sources—exist in the United States, despite evidence of hazardous noise exposure among adolescents and young adults. Folmer (2003) noted that the U.S. government mandates “a continuing, effective hearing conservation program” for workers exposed to excessive sound levels, but does not require hearing conservation practices to be taught in schools. The following list summarizes findings from the literature review related to children, adolescents, and young adults.

- Children and young adults participate in activities where leisure noise is prevalent. These include motor sports; playing with noisy toys, instruments, and video games; listening to personal music players and stereos at high sound levels; attending night clubs/discos, concerts, and movies; using guns and fireworks; and motorcycling (Peters 2003).
- The number of children playing with loud electronic gadgets and toys and of young adults listening to portable music devices at high volumes is increasing (Fausti et al. 2005).
- Among children with noise-induced threshold shifts, boys (14.8 percent) had a significantly higher prevalence than girls (10.1 percent). Children aged 12 to 19 years (15.5 percent) had a significantly higher prevalence estimate for threshold shifts than did six- to 11-year-olds (8.5 percent). These differences may be explained by different levels of participation in noisy activities and because older children have had more years of noise exposure (Niskar et al. 2001).
- Typically, more boys than girls are subject to some form of hearing loss. Boys were more frequently exposed to dangerous sound levels due to their greater involvement with musical entertainment, noisy sports and tasks, and guns and tools (Serra et al. 2005). (Note: The study took place in Argentina, where gender differences in activities may differ from those of the United States. Argentina is experiencing a high percentage of young people—ages 20 to 25—whose pre-employment medical examination reveals hearing loss but no ear disease.)
- Children and young adults of parents of low socio-economic status had the highest occurrence of noise-induced threshold shifts (Widen and Erlandsson 2004).

RACIAL/ETHNIC MINORITIES

While some ethnic groups are overrepresented in occupations that carry risk for NIHL, it appears that non-Hispanic whites have the highest levels of hearing loss. Literature review findings related to racial and ethnic minorities follow.

- On average, non-Hispanic black adults have the best hearing thresholds and non-Hispanic whites the worst, with Mexican Americans in between (Murphy, Themann, and Stephenson 2006).
- In one study comparing Caucasian and African-American college students, the Caucasian students participated in significantly more potentially hazardous activities (e.g., attendance at car races and motor boating) (Crandall, Mills, and Gauthier 2004). The researchers found that the majority of the students (72 percent) never wore hearing protection when exposed to loud noises, regardless of ethnicity.
- Aleut, Eskimo, and Native Americans show more vulnerability to hearing impairment than do other ethnicities. This may be related to the limited availability of health care and lack of education about hearing loss (Caban, Lee, Gomez-Marín et al. 2005).
- Hispanics are disproportionately represented in laborer jobs, leading to a proportionally increased risk for exposure to the higher rates of occupational injury and illness, such as NIHL (Raymond, Hong, Lusk et al. 2006).
- Hispanics with limited English skills may be underusing hearing protection in the workplace (Rabinowitz and Duran 2001). Less acculturated immigrant workers, who often are employed in more hazardous jobs, may find it difficult to understand training programs presented in a language other than their own. They also may find that hearing protectors interfere with speech communication, which already is made difficult by their limited English skills.

WORKFORCE

Occupational hearing loss is a pervasive workforce problem, affecting workers in manufacturing, construction, transportation, agriculture, and the military. As many as 40 million Americans are exposed to potentially hazardous noise levels that, alone or in combination with other ototraumatic agents, can damage hearing. At present exposure limits, the National Institute for Occupational Safety and Health (NIOSH) estimates that one in four Americans will develop a permanent work-related hearing loss. Findings in the literature review related to the workforce follow.

- Industrial workers exposed to impulse, or intermittent, noise experience greater degrees of hearing losses than do those exposed to steady-state noise. Workers exposed to both steady-state and impulse noise experience more damage than from either noise source alone because the effects are synergistic (Fausti et al. 2005). Biassoni et al. (2005), in their study of music exposure, cite Fleisher's theory for the greater damage that can result from impulse noise. Fleisher conjectures that the auditory system is more adaptable than currently assumed and adapts to continuous noise by reducing its sensitivity. In settings with impulse noise, however, the ear does not have enough time to take protective measures.

Members of the military remain at particular risk of NIHL due to harmful levels of noise. During the past 30 years, their exposure to excessive noise has increased due to the scope of current operations and extended training (Schulz 2004).

- Acoustic trauma—exposure to very loud noises—poses the greatest threat to the hearing of troops currently serving in Afghanistan and Iraq (Schulz 2004).

- Occupational NIHL is epidemic among airmen and radio operators. Sailors and Marines have hearing thresholds above U.S. Department of Labor Occupational Safety and Health Organization (OSHA)-accepted levels (Borchgrevink 2003).
- Many veterans are not encouraged to get audiometric testing during medical treatment; thus, they do not become aware of hearing loss until their communication is impaired (Fausti et al. 2005).
- The risk of NIHL may be greater for military recruits who already have a hearing loss when they enter service. Young men with mild hearing loss at the time they reported for combat training were found to be at higher risk of significant hearing threshold shifts when compared with those with initially normal hearing (Muhr, Mannson, and Helstrom 2006).

KNOWLEDGE, AWARENESS, AND BEHAVIOR

CHILDREN, ADOLESCENTS, AND YOUNG ADULTS

Various studies of youth demonstrate a lack of knowledge about NIHL and a frequent gap between knowledge of risk factors and positive choices based on that knowledge. According to a Web-based survey conducted through the MTV Web site, only 16 percent of adolescent and young adult respondents reported that they had heard, read, or seen anything related to the issue of hearing loss, and only nine percent received this information through their school. Only eight percent defined hearing loss as “a very big problem.” Hearing loss was considered less of a problem than sexually transmitted diseases (50 percent), alcohol/drug use (47 percent), depression (44 percent), smoking (45 percent), nutrition and weight issues (31 percent), and acne (18 percent). Respondents were more likely to consider hearing loss a “big” or “somewhat big” problem if they had been educated about hearing loss previously or if they had experienced hearing loss (Chung et al. 2005). The number of respondents who intended to wear hearing protection at future concerts or clubs with loud music increased dramatically from 20 percent to 66 percent when they were made aware of the risks of NIHL.

Among attendees at Canadian rock concerts, 34 percent thought it was somewhat likely and 40 percent thought it was very likely that concert noise could damage their hearing (Bogoch, House, and Kudla 2005). Despite this level of awareness, 80 percent of attendees (who had an average age of 21) said they never wore hearing protection at concerts. Only three percent of those surveyed reported that they always wore protection.

A study by Crandell, Mills, and Gauthier (2004) concluded that a majority of college students demonstrated a high degree of knowledge concerning noise exposure and NIHL. However, 72 percent reported that they never wore hearing protection even though 70 percent identified earplugs and earmuffs as the most effective way to protect hearing. The authors surmise that cultural pressures to conform to stylistic norms and youthful images of attractiveness and healthy bodies outweigh the perceived risk to hearing and the perceived benefits of hearing protection devices. The main obstacle to getting young adults to wear hearing protection devices may be a perception that it is a sign of “old age” (Crandell, Mills, and Gauthier 2004). Sadhra, Jackson, Ryder et al. (2002) attributed underuse of hearing protectors by a sample of college students working in areas with amplified music to difficulties in communication or discomfort while wearing the protectors or simply to not accepting the need for them.

RACIAL/ETHNICITY MINORITIES

Hispanics report greater hearing abilities than do other racial groups, despite increased exposure to NIHL. It may be that Hispanic workers are more aware of the risks of NIHL. A study of hearing protector use by Hispanic factory workers found significantly more use by Hispanics than by non-Hispanic whites. The analysis of factors that might predict protector use showed that Hispanic workers placed greater emphasis on the perceived benefits of hearing protection and had stronger encouragement from others to wear protectors (Raymond et al. 2006).

There is a need for more culturally competent NIHL education and prevention efforts. In one study, African Americans consistently were less likely than Caucasians to correctly identify symptoms of excessive noise and the risk for hearing damage (Crandell, Mills, and Gauthier 2004). The results of this study suggest that hearing conservation programs should be tailored to racial or ethnic groups.

Rabinowitz and Duran (2001) found a correlation between improper hearing protector fit and the level of English language skills and acculturation among Hispanic and Asian workers. The authors stress that, to be effective, hearing conservation programs for immigrant workers need to address language and cultural barriers to the use of hearing protectors. Companies with substantial proportions of immigrant employees should consider offering a program in the native language of the majority of their workers.

WORKFORCE

Even though the United States has regulated workplace noise and hearing protection programs for more than 20 years, occupational hearing loss is one of the most common occupational diseases and the second most self-reported occupational illness or injury. Some workplaces do not take the initiative to help reduce excessive noise levels, instead putting the responsibility of prevention on their employees' shoulders (Neitzel and Seixas 2005). In these settings, it is up to workers to protect their hearing through the use of hearing protection devices such as earplugs and earmuffs.

Worker awareness of the risks of noise exposure can be low. Occupational hearing loss is prevalent in the construction industry, in which hearing conservation programs are relatively rare. This industry's reliance on an individual's use of hearing protection devices, rather than on noise control, places the burden of protection on the worker. Neitzel and Seixas (2005) point to studies attributing the low use of the devices by the workers to inadequate education, limited access to appropriate devices, and to perceived barriers to their use. Fausti et al. (2005) cite communication difficulties, comfort issues, attitudes about self-protection, and the worker's perception of how others will view them if they use hearing protectors as barriers to hearing protection.

Risk perception seems to be the strongest predictor of a worker's use of hearing protectors. However, workers seem to be poor judges of the current level of risk (Arezes and Miguel 2005). A survey of employees in eight industries with high numbers of claims for occupational hearing loss found that only 62 percent wore hearing protection "all" or "most" of the time when exposed to loud noises (Daniell, Swan, McDaniel et al. 2006). Neitzel and Seixas (2005) found that workers who reported "always" wearing hearing protectors when exposed to damaging noise levels actually only wore the protectors about one-third of the time needed.

Usage of hearing protectors is higher in work settings where the risk of NIHL is consistent and high. Daniell et al. (2006) found the highest use in the three industries—lumber milling, heavy-gauge metal manufacturing, and fruit/vegetable processing—where excessive noise was most prevalent. Workers at greatest risk appear to be those employed by companies in which a low to moderate number of employees are exposed to damaging noise levels. Underuse of protection appears to be attributable substantially to incomplete or inadequate employer efforts. Consequently, interventions to improve the use of protective devices may need to focus on the company as well as employees (Daniell et al. 2006).

A 2004 study found limited military compliance with hearing conservation requirements. For example, only 46 percent of Army soldiers who required an annual hearing evaluation because they were exposed to hazardous noise as a part of their routine duties received one. Additionally, hearing conservation services at basic training sites were limited or nonexistent despite an official U.S. Department of Defense requirement to provide them (Schulz 2004).

While best practice procedures for hearing loss prevention and hearing conservation identification exist, clinics and hospitals operated by the U.S. Department of Veterans Affairs and the majority of other medical care institutions lack systematic models and system wide implementation (Fausti et al. 2005). For example, the Department of Defense hearing conservation program requires that service members receive a reference audiogram at initial entry training—before noise exposure. In the Army, only Fort Sill (field artillery) and Fort Benning (infantry) are in compliance (Niebuhr, Completo, Heifer et al. 2006).

PREVENTION

Biassoni et al. (2005) suggest that one of the simplest approaches to raising awareness and reducing the risks of NIHL is to conduct routine audiometry tests of adolescents. Others have conducted or evaluated school-, music-, or workplace-based interventions.

SCHOOL-BASED

Researchers and others have advocated for hearing conservation instruction in schools for 30 years, but few schools have implemented even the most basic of programs. Information about valuing and protecting hearing is rarely offered while the potentially harmful effects of sex and alcohol and other drug use are continuously covered in educational curriculums. In addition, public awareness about the existence and importance of hearing conservation programs in schools is lacking (Folmer 2003).

Numerous hearing conservation programs targeting youth have been developed. A review by Folmer, Griest, and Martin (2002) of 29 organizations found that various programs had effective materials and resources, but that dissemination of these materials to schools was inadequate. WISE EARS! was cited as having one of the most comprehensive curricula available on the Internet.

Folmer (2003) cited several studies that indicated positive results occur when children received hearing conservation education. Some studies showed an increase in knowledge, such as when elementary school students performed significantly better on hearing knowledge and noise awareness questionnaires improved after program participation. Other studies suggested behavioral changes, such as increased use of hearing protection by students in noisy environments. Weichbold and Zorowka's (2003) review of several school-based hearing

conservation programs concluded that a “problem-based learning” approach was more effective than a pure “lecture” approach, but that both approaches resulted in significant improvements in children’s knowledge of hearing issues.

Positive results from hearing conservation programs conducted in Ohio high schools suggest that the classic public health techniques of information and persuasion would be highly effective at entertainment venues (Chung et al. 2005).

MUSIC-RELATED

Most of the current literature on children and young adults focused on music and ways to reduce their exposure to damaging noise levels. Widen and Erlandsson (2004) noted that youth involved in music in leisure time (i.e., playing in a band or orchestra) are more likely to use hearing protection at concerts, perhaps due to a heightened awareness of potential hearing damage. The authors suggest that involving youth in school band or playing instruments on their own would make them more aware of the risk of NIHL.

Offering hearing protectors to young adults at events where they are needed may offer a tremendous opportunity to promote hearing protection. Studies suggest that young adults would respond to education and hearing protectors offered at concert doors. Forty percent of attendees in the survey by Bogoch, House, and Kudla (2005) said they would wear earplugs if the plugs were provided for free at the door. And eighty-five percent of the college students in the survey by Crandell, Mills, and Gauthier (2005) said they would consider wearing earplugs if the devices were provided free in high-decibel environments.

In Argentina, researchers at the Centro de Investigación y Transferencia en Acústica (Acoustics Research and Transfer Center) are using the results of a four-year study of recreational noise exposure among adolescents to educate government policymakers. Based on their findings of a relationship between amplified music and NIHL, the researchers have met with municipal authorities to discuss regulation of noise levels at concerts and in discos (Biassoni et al. 2005).

INTERNET-BASED

Chung et al. (2005) point to the Internet as a powerful medium to reach youth and young adults. The authors present the results of the *GenerationRX.com* survey. Among frequent users of the Internet, more teens and young adults searched for health information (75 percent) than downloaded music (72 percent), shopped (50 percent), or checked sports scores (46 percent). Thirty-nine percent of respondents reported a change in personal behavior because of health information obtained online.

WORKPLACE-BASED

Hearing protection programs in the workplace often are incomplete or ineffective. Some empirical studies show that industrial companies tend to ignore technical and engineering controls and often adopt programs to implement hearing protectors, which are regarded as the last solution for noise exposure protection (Arezes and Miguel 2005). Such programs shift the responsibility for protection from the company to the worker.

A study of eight industries in Washington state with high incidences of occupational hearing loss compensation claims revealed limited compliance with federal regulations. Most of the

companies had potentially important shortcomings in their hearing conservation programs, and many had substantially incomplete policies and practices (Daniell et al. 2006). Given that there are fewer gaps in knowledge about occupational hearing loss than for virtually any other occupational illness, the primary barrier to prevention seems to be application of that knowledge.

Personal hearing protection is commonly underused by workers, which indicates that companies may be addressing the issue of hearing protection inadequately. Neitzel and Seixel (2005) suggest that workplace reliance on hearing protection alone to reduce noise exposure is a flawed strategy and emphasize the need for concerted efforts to develop more effective noise controls. On a more positive note, Daniell et al. (2006) found that worker use of hearing protection devices was highest at companies with the highest commitment to hearing loss prevention. This correlation indicates that educational programs for workers can be effective, with the potential benefit proportional to the level of company effort.

Workers respond well to individually tailored programs that focus on each person's attitudes and behaviors about hearing protection, with significant post-education increases in the use of hearing protection (Lusk et al. 2003). The use of computers to deliver training appears to offer several advantages, including continuous availability, interactivity, and flexibility to tailor the intervention to the individual (Lusk, Ronis, Kazanis et al. 2003).

The military has been increasing its emphasis on hearing conservation for deployed service members by establishing hearing conservation test sites in Iraq, Kuwait, Kosovo, Bosnia, and other countries where they currently serve. Troops at these sites receive hearing protection, training, counseling, and hearing tests from staff audiologists and support technicians. In addition, the military issued more than 372,000 pairs of combat earplugs as standard equipment in 2004 (Schulz 2004). Increased education and access to hearing protectors appears to be reducing the rate of hearing loss. In many incidents where troops wearing earplugs were exposed to acute acoustic trauma from bombs, mortar attacks, and rocket-propelled grenades, they did not sustain ear injuries. In similar situations, soldiers without earplugs did suffer ear injuries, including ruptured eardrums, hearing loss, and tinnitus (Schulz 2004).

MEDIA AUDIT METHODOLOGY

We conducted a media review to determine the breadth and depth of WISE EARS! media coverage over time and to identify other participants in current efforts to prevent NIHL. Within this framework, we also looked at prevention of NIHL as a message and positioning of WISE EARS! as a source of information. We used Nexis news search to collect stories from newspapers, magazines, trade journals, and wire reports that contained key terms related to WISE EARS! and to NIHL. The Nexis search engine draws results from more than 1,000 news Web sites, including Reuters, BBC.co.uk, WashingtonPost.com, MedicalNewsToday.com, MSNBC.com and InternetNews.com.

We used a one-year timeframe to search key phrases to identify current public exposure to WISE EARS! and to NIHL and occupational hearing loss as a health problem. We used a five-year timeframe to track media coverage of specific public education campaigns to see how coverage changed over time.

KEY FINDINGS

- NIHL has received increasing coverage in the media during the past year. Most of this coverage was related to the increasing popularity of digital music players and other personal electronic devices and the risk they present to hearing.
- WISE EARS! has not received any recent media coverage related to NIHL. Of the 76 articles that mention NIHL and were published during the past year, only one included a reference to WISE EARS!
- Other campaigns related to preventing NIHL have been launched since WISE EARS! was initiated. Nationally based programs are Dangerous Decibels (partly funded by the National Institute on Deafness and Other Communication Disorders [NIDCD]), EarBud, and Listen to Your Buds. Don't Lose the Music, a program based in the United Kingdom, received the most media in the past year.
- NIDCD spokespersons speaking on the topic of NIHL do not appear to be citing WISE EARS! as a source for information.

SEARCH RESULTS

Table 1 shows the search terms, the number of unique articles in which each term was mentioned and our search timeframes.

Table 1. Search Terms for Media Analysis

Term	Number of articles	Time Frame
"Noise induced hearing loss"	76	June 2005–June 2006
"Work related hearing loss"	3	June 2005–June 2006
"Workplace hearing loss"	0	June 2005–June 2006
"Wise Ears"	8	June 2001–June 2006
"Dangerous Decibels"	9	June 2001–June 2006
"Don't Lose the Music"	47	June 2001–June 2006
"Earbud House Ear Institute"	7	June 2001–June 2006
"Listen to Your Buds"	0	June 2001–June 2006

Media coverage between June 2005 and June 2006 for the term "noise induced hearing loss" produced 76 citations. Most articles appeared in mainstream publications such as *USA Today*, *The Columbus Dispatch*, *Richmond Times Dispatch*, *Tampa Tribune*, and *Billboard* magazine. A smaller portion appeared in trade journals such as *Disability Compliance Bulletin*, *Safety and Health Practitioner*, and *Occupational Health*. Most of this coverage was related to the increasing popularity of digital music players and other personal electronic devices. These devices often were cited for potential damage to hearing from prolonged exposure to high music volume.

We also looked at the number and placement of articles from June 2004 to June 2005 that mention "noise-induced hearing loss." These figures present a general picture of increasing coverage of NIHL as a matter of public interest. Eighty-five percent of citations from June 2005 to June 2006 were found in daily newspaper and consumer magazines. By contrast, between June 2004 and June 2005, only 55 percent of NIHL-related articles appeared in mainstream media. Before NIHL became a "hot topic," NIHL was most often mentioned in

academic publications, human resources and occupational trade journals, and other non-mainstream media.

The term “work-related hearing loss” appears in just three articles published between June 2005 and June 2006. Two of the articles appeared in business journals and attributed statistics to the NIOSH. No citations were found for “workplace hearing loss.”

MEDIA REFERENCES TO WISE EARS!

WISE EARS! (<http://www.nidcd.nih.gov/health/wise>). The Nexis search for the term “Wise Ears” resulted in a total of eight hits from June 2001 to June 2006. Seven of these were articles in national magazines, such as *Newsweek*, and daily newspapers that varied in size and readership from the *Los Angeles Times* to *The Daily Record* (Morristown, NJ). WISE EARS! also was the topic of a brief 2001 vignette appearing in the journal entitled *Family Practice News*.

With the exception of the journal article, the WISE EARS! campaign was not the main topic for any article in which it appeared. Instead, the campaign or its Web site was provided as an additional resource in or at the end of the article or in a sidebar. The articles appeared in such publication sections as Health, Living/Lifestyle, and News, and dealt with the topic of noise exposure in both the workplace and everyday life.

Coverage that mentioned WISE EARS! also included mentions of other organizations with similar missions, including the Better Hearing Institute, League for the Hard of Hearing, House Ear Institute, and American Speech-Language-Hearing Association. These organizations typically were presented as additional resources for those seeking information regarding NIHL or as the source for statistics.

MEDIA REFERENCES TO OTHER CAMPAIGNS

We also searched for media coverage between June 2001 and June 2006 of campaigns with goals similar to WISE EARS! to determine how their positioning compared with that of WISE EARS! Media coverage of these campaigns was related most often to potential hearing damage from iPods and other personal listening devices that use ear plugs inserted directly into the listener’s ear. Below is a summary of the findings, organized by campaign or program. The materials audit section, which follows this one, contains a table comparing campaigns, audiences, messages, and materials.

Dangerous Decibels (www.dangerousdecibels.org). Almost all of the nine hits received by this Oregon-based public health project and Oregon Museum of Science and Industry came from newspapers within the state; it also was mentioned on a National Public Radio broadcast. The education campaign is positioned as a resource to inform children and their parents about premature hearing loss and the problems this sort of damage can cause later in life. The program encourages individuals to limit the amount of time they are exposed to personal listening devices as well as everyday items (e.g., leaf blowers) that can damage hearing. This program was launched in June 2002. NIDCD awarded the program a five-year Science Education Partnership Award in 2004.

Don’t Lose the Music (www.dontlosethemusic.com). This British campaign is sponsored by the Royal National Institute for Deaf People. Since its launch in 2004, the program has been referenced in 47 publications, including *The Weekend Australian*, *The Daily Telegraph*, *The*

Ottawa Citizen, and *The Times* (London). The campaign uses rock stars and popular entertainers to raise awareness about the public health risk of excessive noise from clubs, concerts, and personal listening devices. It encourages attendees at music venues to take breaks and to wear earplugs while at concerts and dance clubs and to turn down the volume and limit their use of personal listening devices. The program uses personal stories from rock stars, popular entertainers, and visitors to the Web site to promote its message.

EarBud (www.earbud.org). This new public education campaign launched in 2005 by the House Ear Institute received seven hits from articles distributed between daily newspaper articles and trade journal articles. The House Ear Institute's campaign priority message—"It's How You Listen that Counts"—promotes responsible use of personal MP3 players through advertisements airing on MTV and several Web sites. It targets young digital music player users to inform them about the irreversible damage that can occur as a result of improper use and encourages them to take steps to prevent hearing loss.

Listen to Your Buds (www.asha.org/listentoyourbuds/default.htm). No media coverage was found for this consumer awareness campaign aimed at teaching young children about safe music listening. It was launched in December 2005 and is sponsored by the American Speech-Language-Hearing Association.

MESSAGING AND POSITIONING

Many newspaper articles describe NIHL as damaging and irreversible. Because its cumulative effects can occur slowly over time and pain is not often associated with damage, the term "insidious" has been used to describe it and the manner in which it afflicts sufferers.

Some articles focused on hearing damage associated with workplace noise, loud dance clubs and music concerts, and increased cell phone use. Some of the messages related to these issues include recommendations to:

- Use earplugs or other sound-isolating preventative measures when exposed to loud noises for long time periods.
- Take a break to rest one's ears while in high volume environments.
- Be mindful of the noise pollution to which one is regularly exposed.

Stories of celebrities (e.g., Pete Townshend of the band The Who) or other individuals suffering from NIHL are offered as anecdotal evidence of the damage caused by long-term exposure to excessive noise. Many stories provide decibel scales demonstrating safe and unsafe noise levels. Nearly all articles explain that NIHL is preventable and cite sources of excessive noise, such as digital music players, music concerts, dance clubs, power tools, and leaf blowers, all of which have been linked to the affliction.

The majority of messages about NIHL focused on dangerous behaviors associated with the use of iPods and other personal listening devices. Messages regarding the dangers specific to these devices include:

- Increasing the device's volume to drown out external or ambient sounds.
- Prolonging personal exposure through the technology's relatively long battery life and fewer interruptions because of the technology's increased capacity to hold more songs.
- Placing newer "earbuds" in the ear canal, closer to sensitive parts of the inner ear.

WISE EARS! is not mentioned within any of the recent articles related to the potential hazards associated with misuse of personal listening devices. Of the 76 articles that mention NIHL and were published during the past year, only one included a reference to WISE EARS! The absence of any current reference to WISE EARS! indicates that the campaign and its messages about NIHL are not well positioned for media attention.

Most articles that mention WISE EARS! simply cite it as the source of statistics describing the national incidence of irreversible hearing damage and NIHL. Little more is offered regarding campaign messages, activities, or resources. Three of the articles quote an NIDCD spokesperson. The *Las Vegas Review Journal* quotes NIDCD Director James Battey, M.D., Ph.D, as he provides commentary on statistics regarding the noted increase of hearing loss cases in Americans age 45 to 64 years old:

“It is alarming that Americans are losing their hearing at a younger age,” says NIDCD Director Dr. James Battey, Jr. “Noise exposure appears to be the culprit.” (*Las Vegas Review-Journal*; July 15, 2002)

Dr. Battey also was quoted twice in a *Los Angeles Times* article discussing the physiological causes of hearing loss and the potential cures for the affliction:

“Hair cells are the Achilles heel of the auditory system,” says Dr. James F. Battey, director of the National Institute on Deafness and other Communications Disorders in Bethesda, MD. “If we could regenerate these cells, we could cure deafness.

No one expects to cure deafness anytime soon, but scientists are optimistic. “Despite the remarkable complexity of auditory hair cells,” says Battey, “the amount and rate of progress in finding ways to stimulate their growth has been substantial.” (*Los Angeles Times*; January 26, 2006)

Two quotes from NIDCD’s Amy Donahue appeared in *The Tennessean*. Her remarks relate to the everyday dangers that can contribute to NIHL.

“Noise is a hazard and people do need to consider their exposures,” says Amy Donahue, chief of the hearing and balance section of the National Institute on Deafness and Other Communications Disorders with the National Institutes of Health. “You wouldn’t think of using woodworking tools without eye protection. It’s the same with hearing.

“With most injuries, you know you’re hurt because there is pain or blood or bruising. There is some sort of sign damage is occurring,” Donahue says. “But with noise-induced hearing loss, you frequently have no knowledge you are creating damage. This type of damage is called sensorineural and it is permanent.” (*The Tennessean*; May 1, 2001)

If campaign spokespeople provided these reporters with information about WISE EARS! during their respective interviews, the message was not included in the resulting coverage. The articles fail to make a connection between NIDCD, WISE EARS!, and their shared mission of reducing and preventing NIHL.

METHODOLOGY

We selected 12 WISE EARS! print publications and examined them for consistency of key messages, format, and design as well as the extent to which the information provided is accurate, complete, useful, and compelling. The materials selected carry the name, logo, tag line, or some combination of features of the campaign brand. To obtain an objective opinion, we asked a communications specialist with no previous knowledge of the WISE EARS! campaign to evaluate the products. In addition, we analyzed the WISE EARS! Web site as a gateway to information. Our analysis considered content, currency, and organization of materials on the site as well as usage of the site and access to it. We present key findings for print materials and for the Web site separately.

KEY FINDINGS FOR PRINT MATERIALS

- WISE EARS! materials do not use brand elements consistently in promoting messages about the risk of noise-induced hearing loss (NIHL) and opportunities to prevent it. An ambiguous logo (i.e., the owl) and the inconsistent use of the tagline, design elements, and a specific URL may lessen progress toward the campaign's outreach and education objectives.
- Materials targeting a specific group (e.g., Have WISE EARS! for Life at Work for workers) appear more compelling.

SUMMARY OF PRINT MATERIALS AUDIT

The following bulleted lists summarize the results of our audit of branded WISE EARS! materials. Table 2 provides a general overview of specific products.

Messages, Content, and Graphics

- **WISE EARS! key messages are consistent throughout most materials.** These materials emphasize that excessive noise affects millions of Americans, that steps can be taken to recognize and prevent NIHL, and that the campaign was developed out of a coalition of government agencies, public organizations, businesses, industries, and unions. These materials help to position WISE EARS! as a practical resource for acquiring more information about NIHL in the workplace and, to a lesser extent, in the home.
- **WISE EARS! materials targeted at a specific group are more appealing.** Of the WISE EARS! materials we reviewed, the ones found to be most compelling were those targeting a specific and defined audience (e.g., Have WISE EARS! for Life at Work for workers and Lessons in Shooter Safety for gun users).
- **Use of URL is inconsistent.** Throughout the various materials, several different Web address were presented (www.nidcd.nih.gov/health/wise/index.html, www.nidcd.nih.gov/health/wise, www.nih.gov/nidcd/health/wise, and www.nidcd.nih.gov). This may be confusing for audience members. A single URL, preferably one that is short and easy to remember, should be selected and displayed

throughout all collateral pieces. For readers to access Web resources from printed materials, they must either search for the desired information with a search engine or physically type the long URL into their Web browser. Both options provide additional burdens for the audience and reduce the likelihood that they will find WISE EARS! information while online.

- **Logo connection to hearing protection is ambiguous.** While the owl logo is colorful and visually appealing, its connection to healthy hearing or to the WISE EARS! campaign theme is unclear. Different owls (e.g., quiet owl or too loud owl) often are presented without any description or program tagline which further disassociates it from the campaign. In addition, some Native Americans view the owl as a symbol of bad news, including death. The selected logo should support branding objectives in a way that is appropriate for the defined target audience.

Accuracy and Currency of Information

- **Content of print materials is accurate and informative.** Based on the continuing demand for WISE EARS! publications from the National Institute on Deafness and Other Communication Disorders (NIDCD) Information Clearinghouse, target audiences find the publications to be informative and educational. Some statistics cited in the materials are out of date (e.g., number of individuals with NIHL), but NIDCD is taking steps to update them.
- **Content does not address current issues.** As noted in the media audit, the potential damage to hearing from the use of personal listening devices has been featured prominently in mainstream media. NIDCD has not produced a publication that responds directly to this issue. In contrast, a search of the Health Canada site under the term “noise induced hearing loss” produced the following top two publications:

It's Your Health—Hearing Loss and Leisure Noise

Some studies suggest that many teenagers and young adults have already experienced permanent hearing loss caused by exposure to excessive noise from a...

URL: http://www.hc-sc.gc.ca/iyh-vsv/environ/leisure-loisirs_e.html

Last modified on 2006-06-17

It's Your Health—Personal Stereo Systems and the Risk of Hearing Loss

Personal stereo systems offer a convenient way to listen to music in public without disturbing others....

URL: http://www.hc-sc.gc.ca/iyh-vsv/life-vie/stereo-baladeur_e.html

Last modified on 2006-06-17

Health Canada is one of five top referral sites to the WISE EARS! site. A link to the WISE EARS! Web site is included at the bottom of the publications.

Table 2. Overview of WISE EARS! Print Materials

Material	Key Messages	Format	Look and Feel	Strengths/Weaknesses
Folder	<ul style="list-style-type: none"> • WISE EARS! is a national coalition of government agencies, public organizations, businesses, industries and unions to prevent NIHL. • Additional information is available on program Web site. 	one-pocket folder	<ul style="list-style-type: none"> • Full color, glossy • Featuring “four owls logo” • Lots of white space • Colorful 	<ul style="list-style-type: none"> • Tagline, “Hearing Matters!,” is not prominent and its intended purpose may not be clear. • Effective as a support document.
Magnets	<ul style="list-style-type: none"> • Hearing matters. • Program Web address. 	2”x 3”, color, one-sided	<ul style="list-style-type: none"> • Features “Too Loud” owl logo without description • Fun 	<ul style="list-style-type: none"> • May not be effective at conveying key messages to, or supporting branding with, the audience as a stand-alone document.
Door Hanger	<ul style="list-style-type: none"> • Hearing matters. • Program Web address. 	3”x 8”, color, two-sided	<ul style="list-style-type: none"> • Features “Too Loud” and “Quiet” owl logos • Fun 	<ul style="list-style-type: none"> • Icon descriptions (key concept) may be lost when hanging on door; text positioned too close to doorknob hole. • Purpose of “Quiet” side is ambiguous: is it informing that the environment is quiet or that it <i>should</i> be quiet? May not necessarily contribute to increasing awareness or changing behavior.

Material	Key Messages	Format	Look and Feel	Strengths/Weaknesses
Postcard	<ul style="list-style-type: none"> • Hearing matters. • Program Web address. • WISE EARS! is a national coalition of government agencies, public organizations, businesses, industries and unions to prevent NIHL. 	<ul style="list-style-type: none"> • 3”x 5’, color, two sided 	<ul style="list-style-type: none"> • Features “Too Loud” logo without description • Eye catching, colorful 	<ul style="list-style-type: none"> • As a stand alone document, it does not support brand, provide new information, or present clear call to action. • Item would benefit from including expanded contact information, simple safety information, or other audience relevant content.
Back-grounder ¹	<ul style="list-style-type: none"> • Excessive noise affects tens of millions of Americans every day, especially men. • Congress has acted to increase awareness of NIHL. • The WISE EARS! campaign was developed through partnerships to motivate audiences to take action against NIHL. 	<ul style="list-style-type: none"> • Two page (8.5” x 11”) information sheet • Component of press kit 	<ul style="list-style-type: none"> • Presented on WISE EARS! letterhead 	<ul style="list-style-type: none"> • No indication that content expands beyond first page (e.g., “-more-”). • Could benefit from expanded explanations into <i>how</i> the campaign works, explanation of the 4-owl logo, specific goals of program, etc. • More information should be provided if this is being used without a press release and if it is to be effective as public relations piece. • Literacy level is too high for a general audience.
Sample Article	<ul style="list-style-type: none"> • Excessive noise affects millions of Americans every day and can damage ears. • NIHL is preventable and steps can be taken in the workplace to reduce impact. • The WISE EARS! campaign was developed through partnerships to motivate audiences to take action against NIHL. 	<ul style="list-style-type: none"> • One page (8.5” x 11”) matte release article • Component of press kit 	<ul style="list-style-type: none"> • Presented on WISE EARS! letterhead 	<ul style="list-style-type: none"> • Amount of information is appropriate for length. • Could benefit from a more targeted headline, more compelling lead, and stronger focus on a specific audience.

¹ This piece was removed from WISE EARS! publications as of July 2006 due to lack of current information value.

Material	Key Messages	Format	Look and Feel	Strengths/Weaknesses
Partnership Description	<ul style="list-style-type: none"> • The NIDCD conducts research into sensory and communications disorders, and provides training to improve the quality of life for those with communications disorders. • NIOSH conducts research and makes recommendations for the prevention of work-related disease and injury, which potentially can affect anyone. 	<ul style="list-style-type: none"> • One page (8.5" x 11") information sheet • Component of press kit 	<ul style="list-style-type: none"> • Presented on WISE EARS! letterhead 	<ul style="list-style-type: none"> • Does not explicitly link the two organizations to WISE EARS! • Information provided might be more appropriate in a shorter "boiler plate" format or as part of the backgrounder.
Tips Sheet ²	<ul style="list-style-type: none"> • Be aware that excessive noise can affect anyone and that NIHL is preventable • Take appropriate steps with yourself and others to reduce potential permanent damage to hearing. • Protected ears are WISE EARS! and wise ears last a lifetime. 	<ul style="list-style-type: none"> • One page (8.5" x 11") fact sheet • Component of press kit 	<ul style="list-style-type: none"> • Presented on WISE EARS! letterhead 	<ul style="list-style-type: none"> • The hearing loss riddle would make an excellent lead for a newsletter or hook for other marketing materials. • "Protected ears are WISE EARS!" line would make a descriptive tagline while branding the initiative. • Tips provided could be reorganized and expanded upon to serve different populations.
Brochure (general audience)	<ul style="list-style-type: none"> • Excessive noise in the workplace affects tens of millions of Americans every day and can damage ears. • The WISE EARS! campaign was developed through partnerships to motivate audiences to take action against NIHL. • Take appropriate steps (i.e., understand, danger, use protection) with yourself and others to reduce potential permanent damage to your hearing. 	8.5" x 11", four pages, full color	<ul style="list-style-type: none"> • Lots of white space, scant graphics • Approachable, but not compelling 	<ul style="list-style-type: none"> • Could benefit from additional graphics, sidebars and pull quotes to support text and presentation. • Would be a good format to present and explain on the four owl scale. • dB scale is useful, but difficult to read.

² This tip sheet was updated in July 2006 as part of updating the WISE EARS! CD-ROM.

Material	Key Messages	Format	Look and Feel	Strengths/Weaknesses
Coalition fact sheet	<ul style="list-style-type: none"> • WISE EARS! is a national coalition of the NIDCD, the National Institute for Occupational Safety and Health (NIOSH), government agencies, public organizations, businesses, industries and unions to prevent NIHL. • Excessive noise affects tens of millions of Americans every day and it can damage ears. • Objectives are to increase awareness about NIHL and motivate public to reduce risk. 	8.5" x 11", color, two-sided	<ul style="list-style-type: none"> • Well laid out, good use of color • Professional and approachable 	<ul style="list-style-type: none"> • Amount and type of information provided is appropriate for audience. • Content could be more focused on "selling" campaign to potential partners (What's in it for them?). • Back page could benefit from better organization of listed partners; it is difficult to read.
Brochure (at work)	<ul style="list-style-type: none"> • Excessive noise is prevalent in the workplace, but NIHL is preventable. • Degree of damage is related to level and duration of noise. • Many options are available for protecting your ears that will not interfere with the job. • 	8.5" x 11", four pages, full color	<ul style="list-style-type: none"> • Well laid out, good use of color • Approachable, but not compelling 	<ul style="list-style-type: none"> • Use of "at home" owl logo is not appropriate for item and detracts from branding. • Sound chart is useful, but provides no reference point for what is considered safe (conversation, phone ringing, etc.). • Could use better hook to draw in potential reader. • Would be more effective if information for obtaining ear protection was provided. • Text-heavy on first two and last pages.

Material	Key Messages	Format	Look and Feel	Strengths/Weaknesses
Shooter Safety Sheet ³	<ul style="list-style-type: none"> • Ear protection is a vital part to gun safety. • Ten of millions of Americans are exposed to excessive noise and can suffer from NIHL. • NIHL is preventable if you take the necessary precautions. 	8.5" x 11", one sided, full color	<ul style="list-style-type: none"> • Colorful • Highly visual 	<ul style="list-style-type: none"> • Targeted toward specific audience. • Inserts support key points in text. • Workplace fact is out of place. • Strong call to action.

³ This sheet was updated as part of updating the WISE EARS! CD-ROM.

KEY FINDINGS FROM THE WEB SITE ANALYSIS

The WISE EARS! Web site should receive a major overhaul. Problems with site access, content, and organization that undermine its effectiveness as a communications tool are:

- **The Web site is not well promoted by either NIDCD or NIOSH.** Neither institute provides a clear link to the site on its homepage and the links provided on NIOSH Web site interior pages are tied to dull or inaccurate descriptions.
- **The site contains outdated information.** For example, the last posted press release is from June 1999 and the last posted coalition member newsletter is from 2003. Visitors may form the erroneous impression that the campaign is inactive due to lack of information with current dates.
- **Information is not organized to encourage casual visitors to explore content on the site.** For example, the link “student and teacher activities” does not alert teachers to the availability of a teacher guide and curriculum or students to attractive and entertaining interactive features. The Web pages have ample room to highlight such content.
- **Information is not organized to highlight the mission or branding elements of the WISE EARS! campaign.** Visitors must scroll down the page to find a brief description of the campaign. The owl logo appears at the top of the page but is not accompanied by the campaign tagline, so the casual visitor does not associate the owl with the campaign.

SUMMARY OF WEB SITE ANALYSIS

Our analysis considered currency and organization of materials on the site as well as usage of the site and access to it. We did not address technical aspects of site design.

CURRENCY AND ORGANIZATION OF INFORMATION

Currency of information on a site is critical because it establishes a site as a credible source of up-to-date information. Some of the WISE EARS! materials clearly are outdated. For example, the content of the radio spots is still current and usable, but the 1999 date—which is at the top of page—gives readers an erroneous first impression that they are out-of-date. The content of the WISE EARS! press release is preceded by a similarly old date—Monday, June 28, 1999. A WISE EARS! newsletter hasn’t been published since 2003. Although NIDCD has updated and expanded the materials available on the WISE EARS! site, indicators of an active campaign are not prominently noted. Space exists on the right-hand side to advertise new additions or to rotate materials for highlighting.

The WISE EARS! campaign targets numerous audiences, so the materials are organized into different groupings: kids and teachers, parents, general public, media, coalition partners, and Spanish-language speakers. Kids and teachers have access to a wealth of information, such as teacher guides, an interactive sound ruler, and videos. Teachers, however, must click on “Student and Teacher Activities” to locate a teacher’s guide for “I Love What I Hear” or a curriculum guide for “How Your Brain Understands What Your Ear Hears.” The positive response of teachers at the National Science Teachers Association 2006 Conference to the recently reproduced “I Love What I Hear” video suggests that teachers are seeking classroom materials

on NIHL prevention. These materials would benefit from greater Web site promotion because they are mentioned in only one WISE EARS! publication (i.e., “Have WISE EARS! for Life”).

Kids also aren’t aware immediately of features they tend to find attractive, such as videos and interactive games, that they can enjoy independently of the classroom. More descriptive terms on the home page, such as teacher guides or games for kids, could entice users to explore further.

In addition, student and teacher activities include a subcategory of “education campaigns,” which provides a link to an NIH publication on health literacy, the NIDCD Web pages for *Healthy Hearing 2010*, and back to the home page. This information might find greater readership if it were posted under information for the general public.

Information presented under “parents” is limited. The two selections do not include “WISE EARS! Tips,” which has several tips directed at parents. This publication is included with those presented to the “general public.”

“General public” appears to target workers because three of its five publications are work-related. To guide both parents and other members of the general public to all of the pertinent information available, the category of “parents” should be merged with “general public.” The bookmarks included under kids and teachers could be moved to this category as their design is appropriate for all age ranges.

There is no information category for “workers,” although workers, employers, unions, industry, and state and local government workers specifically are identified as target audiences.

The “coalition members and partners” category does not include any materials more current than January 2004. Until such time as new information is posted on the site for coalition partners, this category should be eliminated. Dated materials give the erroneous impression that the coalition is inactive even though NIDCD is working to reinvigorate membership. A current list of members could be added to “media” information in the interim.

Publications available in Spanish are presented as the final category on the page, after “media” and “coalition members.” These publications are the same as those offered in English to “parents” and the “general public,” so the Spanish-language category should come directly after these two categories.

Web site users must scroll down to the bottom of the home page to find the description for WISE EARS! Information displayed more prominently would raise public awareness of the purpose of the campaign. A shorter description to start off the page would alert readers immediately to the two primary goals (i.e., increase awareness and motivate to action). We note that the link in this paragraph goes to the wrong information: Clicking on “national campaign” takes the user to the press release related to the Fourth of July.

SITE USAGE

We looked at usage of the WISE EARS! home page located at www.nidcd.nih.gov/health/wise to establish a trend line for public interest in the WISE EARS! campaign. The following statistics focus on the WISE EARS! growth in user sessions, sessions per day, and unique users from January 2004 to December 31, 2005. During 2004, there were 12,664 user sessions, with an average number of 36 sessions per day. Unique users totaled 7,870. The year 2005 saw a 47 percent growth in user sessions at 18,670, and a 42 percent growth in sessions per day to an average of 51. Unique users increased by 19 percent to 9,361.

In 2004, NIDCD tracked visits to only the top 20 most requested pages of its Web site. None of the WISE EARS! pages reached the top 20. Each page received fewer than 3,000 views per month, or less than 0.8 percent of the traffic for the entire site. For February 2005, in preparation for a special report, NIDCD tracked hits to the 1,000 most requested pages, which included several from the WISE EARS! site. WISE EARS! Tips and WISE EARS! at Work were the most often viewed of the publications available on the WISE EARS! site. Table 3 presents this information.

Table 3. User Hits to Individual WISE EARS! Web pages

Page	Views ⁴	Ranking	Total Site Traffic (%)
wise/index.asp	1,797	57	0.32
wiseears.asp	1,373	77	0.25
tips.asp	573	155	0.1
wiseears_atwork.asp	546	162	0.1
tips_span.asp	360	213	0.06
shooter.asp	245	221	0.06
wiseorg.asp	218	332	0.04
soundchartdtag.asp	203	334	0.04

SITE ACCESS

The campaign Web site is not well promoted by either of the co-sponsoring institutes. Neither NIDCD nor NIOSH feature the campaign name or logo on their Web site home pages. A search of “wise ears” through the NIDCD home page takes the viewer to a listing of WISE EARS! publications, with the WISE EARS! home page as the second entry. Alternatively, viewers can gain access to the WISE EARS! home page through a link entitled “student and teacher activities.”

It takes an extended search of the NIOSH Web site to find a link to the WISE EARS! home page. The first item listed in a search of the site using the term “WISE EARS” is the June 1999 press

⁴ “Views” does not necessarily mean a visit by a human user. Search engines such as Google send out robots that visit pages to review and index the content of a page for searching purposes. These robots may be the source of some of the views because the robots usually hit most of the pages on a site.

release about the dangers of noise on the Fourth of July. The eighth item listed is this link, with its uninformative (and probably misapplied) description:

Noise and Hearing Loss Prevention—Resources—NIOSH Topic Page

NIOSH Hearing Loss Prevention in Mining External Link:

<http://www.cdc.gov/niosh/mining/topics/hearing/> NIOSH Topic Page on noise control and hearing loss prevention in the mining industry presents a number of techniques from prope...

The link takes the viewer to the Noise and Hearing Loss Prevention: Publications and Resources page, where NIOSH gives equal weight to both the WISE EARS! and Dangerous Decibels campaigns. The description for Dangerous Decibels (see below) is more descriptive and thus more likely to encourage the general public to click on the link provided.

Dangerous Decibels

External Link: <http://www.dangerousdecibels.org>

The Dangerous Decibels project is a public health campaign designed to reduce the incidence and prevalence of Noise Induced Hearing Loss (NIHL) and tinnitus (ringing in the ear) by changing knowledge, attitudes, and behaviors of school-aged children.

WISE EARS! Campaign

External Link: <http://www.nidcd.nih.gov/health/wise/index.asp>

A national consortium of industry, government, private organizations, non-profits, academia, etc. devoted to preventing noise-induced hearing loss.

We also looked at the top referring sites and search terms as these represent alternative pathways to the WISE EARS! site. For 2004, the top referring sites, in order, were nidcd.nih.gov, google, cdc.gov, hc-sc.gc.ca (Health Canada), and asha.org. Top search phrases were ears, wise ears, and noise induced hearing loss. The top referring sites remained the same for 2005, with Health Canada and the American Speech-Language Hearing Association (ASHA) switching order. Top search terms remained the same.

The name WISE EARS! is unique and well-suited for Internet searches. Searches for “wise ears” conducted through google, MSN, and Yahoo! produced the WISE EARS! campaign as the first selection. It took a more extensive search to find the Web site link through CDC, Health Canada, and ASHA. Most often, the site link was found as a resource listed at the end of a publication.

3. PUBLICATIONS DISTRIBUTION INFORMATION AND ANALYSIS

METHODOLOGY

We used inventory data from the National Institute on Deafness and Other Communication Disorders (NIDCD) Information Clearinghouse online ordering system as a measure of audience response to WISE EARS! materials. The review considered which groups have been requesting WISE EARS! materials and the quantities ordered. Data from 2003 to 2005 were used to identify groups ordering more than 100 copies of a publication because orders of this quantity imply a planned public education effort.

KEY FINDINGS

- The variety of groups placing orders suggests that a broad-based public is exposed to WISE EARS! campaign materials.
- Based on publication orders from 2005 and 2006, WISE EARS! coalition members other than Sertoma clubs are not ordering and distributing materials.
- Small giveaway items, such as bookmarks and magnets, are most popular.

PUBLICATION REQUESTS

WISE EARS! publications can be ordered online or through the NIDCD Information Clearinghouse, which handles day-to-day publication requests and distribution. In 2005, the NIDCD Information Clearinghouse received requests from nearly 3,000 individuals for WISE EARS! materials. These individuals placed approximately 25 percent of the total number of public inquiries received by the clearinghouse that year. Most popular are small “giveaway” items. For both 2003 and 2004, the WISE EARS! magnets were the most requested items, with orders totaling 20,275 and 38,395 pieces, respectively.

In 2005, NIDCD began substituting a CD-ROM of WISE EARS! materials for any publications requested. The CD-ROM has all of the WISE EARS! materials available in full-color, downloadable format and enables organizations to reproduce as many items as needed at the time they are needed. As a result, the total number of distributed WISE EARS! publications declined. However, popularity of the WISE EARS! materials can be gauged from the following list of the top 10 publications ordered through the clearinghouse during 2004.

1. How Loud Is Too Loud Bookmark (11,568)
2. Ten Ways to Recognize Hearing Loss Bookmark (10,867)
3. WISE EARS! Hard Hat Owl Magnet (7,298)
4. WISE EARS! Owl Magnet (6,694)
5. WISE EARS! Door Hanger (4,048)
6. Have WISE EARS! for Life Flyer (2,181)
7. NIDCD Web Site Bookmark (1,596)
8. WISE EARS! Tips (1,567)

9. Noise-Induced Hearing Loss Fact Sheet (1,494)
10. NIDCD Directory of Organizations (1,455)

Popular outlets for the materials are conferences and health fairs sponsored by public and private organizations. The majority of organizations that order publications are not WISE EARS! coalition members, although Sertoma clubs from across the United States frequently place orders. The variety of groups placing orders does suggest that a broad-based public is exposed to WISE EARS! campaign materials. Sample groups placing large-quantity orders during 2005 and 2006 include Sara Lee Bakery, Oregon Department of Transportation, Puget Sound Naval Shipyard, AAMCO Transmission, and the Kenosha (Wisconsin) Public Museum. Schools also place large orders.

4. REVIEW OF COMPETING AND COMPLEMENTARY CAMPAIGNS

METHODOLOGY

We used our knowledge of other programs and an Internet search to identify national and one international campaign to prevent noise-induced hearing loss (NIHL). We then investigated the campaigns online to identify key messages, target audiences, and outreach methods. Each of the organizations was asked to share any statistics it might have that indicated success in reaching a target audience. We also conducted a limited search to identify other organizations that are providing online information about NIHL to the general public.

KEY FINDINGS

- Competing and complementary campaigns to prevent hearing loss are targeting audiences ranging in age from elementary school to young adults.
- Campaigns targeting the music-listening behavior of older children and young adults (i.e., EarBud and Don't Lose the Music) have generated the most interest, as measured by the number of hits to their Web sites.
- Campaigns that use multimedia products to attract attention appear to be most effective in communicating the message to children and young adults.
- WISE EARS! remains the only program that targets a broad-based public and any age group older than young adult.
- Adults have online access to a wealth of information about NIHL from non-federal sources, but much of it is not clearly or accurately presented.

SUMMARY OF CAMPAIGN REVIEWS

Table 4 presents an overview of the key messages, target audiences, and marketing tools for three national and one international campaign to educate the public about NIHL and ways to prevent it. Estimates of outreach to target audiences follow.



Dangerous Decibels: Program administrators keep track of outreach efforts as part of the reporting requirements of the National Institute on Deafness and Other Communication Disorders' (NIDCD's) Science Education Partnership Award. Between 2003 and 2005, the program reached 2,550,503 museum visitors and research subjects (classrooms and various exhibit evaluations). Since then, the program has been presented to an additional 4,000 students and to about 300,000 annual visitors to the museum exhibit. An estimated 400,000 to 700,000 additional individuals are exposed to program materials each year.

Dangerous Decibels has been able to create high-impact multimedia materials, such as the 10-foot tall walk-through ear. Visitors to the ear activate a sound source and observe how the parts of the ear work together with the brain to enable hearing. Its impact is increased by its linkage to the Dangerous Decibel curriculum. (The target audience for this curriculum overlaps with that of “How Your Brain Understands What Your Ear Hears,” which is the curriculum linked to by the WISE EARS! Web site.)

Don’t Lose the Music: This organization did not respond to an e-mail request for any statistics related to outreach.

EarBud: Appendix A is a copy of the House Ear Institute’s most recent press release on the status of the “Ear Buds” program. According to the release, its targeted, multimedia messages and collaboration with key groups has engaged a large audience. It sums up the status of the program in these words: “Teens in Arizona have been the focus of the 10-month test market phase of the campaign. Now in its sixth month, phase one includes the public service spot created specifically to pique curiosity and drive teens to the campaign Web site, www.EarBud.org, where a wealth of educational material is available. MTV Network, MTV.com and five Yahoo! Web sites including Yahoo!Music.com (a.k.a. Launch.com) are part of the campaign, and together with the campaign Web site and educational spot, have garnered nine million impressions to date.”

Listen to Your Buds: According to the Earbud Web page, at least 100 million viewers, listeners, and readers have seen, heard, or read American Speech-Language Hearing Association (ASHA) news stories about the risk of hearing loss from unsafe use of popular technologies that use headphones or earbuds. An unknown percentage of this extensive audience are those reached through a news story by CNN about NIHL and personal listening devices, to which ASHA contributed.

ALTERNATIVE SOURCES OF ONLINE INFORMATION

Table 5 identifies some of the organizations offering online information about NIHL. Although these organizations are not conducting proactive campaigns, they are among the first sources of information that an individual will find on the Internet. The quality and accuracy of information available to the general public from easily accessed sources is a factor that NIDCD may consider in determining the need for information and to whom it should be directed. The results of this search of the top six sites listed in a Microsoft Network search of NIHL suggests that the general public has access to a wealth of information from non-federal sources, but that much of it is not clearly or accurately presented.

Table 4. Overview of Materials Offered by Competing and Complementary Campaigns

Hearing Loss Prevention Campaign/Sponsor	Key Message(s)	Target Audience	Types of Marketing Tools/Activities
Dangerous Decibels, Oregon Hearing Research Center at the Oregon Health & Science University and the Oregon Museum of Science and Industry, in affiliation with the Portland VA National Center for Rehabilitative Auditory Research and the American Tinnitus Association	<ul style="list-style-type: none"> • Turn it down • Walk away • Protect your ears 	<ul style="list-style-type: none"> • Children and early teens, ages five to 14 • Primarily based in Oregon 	<ul style="list-style-type: none"> • Teacher’s Guide (grades K–8) educating students about the nature of sound, physiology of hearing, and hearing loss prevention activities • Interactive museum exhibit with 11 components (located at the Oregon Museum of Science and Industry) • Web site (www.dangerousdecibels.org) with virtual exhibit
Don’t Lose the Music, Royal National Institute for Deaf People	<ul style="list-style-type: none"> • Look after your ears now • Enjoy music forever 	<ul style="list-style-type: none"> • Young adults, ages 18 to 30 • United Kingdom 	<ul style="list-style-type: none"> • T-shirts featuring logo and available for purchase online • “Don’t Lose the Music Week” (September 4–11, 2006) to raise awareness of the cause • Celebrity testimonials on the importance of their ears, endorsing campaign • Blog feature • Web site (www.dontlosethemusic.com)
EarBud, House Ear Institute	<ul style="list-style-type: none"> • It’s how you listen that counts 	<ul style="list-style-type: none"> • Teens and young adults, ages 12 to 22 • Nationwide 	<ul style="list-style-type: none"> • Public service announcement (MTV Commercial) depicting potential consequence of risky headphone use • Contest with corporate sponsor • Web site (www.earbud.org) with frequently asked questions, information on sound, hearing, and protection
Listen to Your Buds, ASHA	<ul style="list-style-type: none"> • Lower the volume • Limit listening time • Upgrade your headphones 	<ul style="list-style-type: none"> • Children ages five to 10 • Nationwide 	<ul style="list-style-type: none"> • Promotional items featuring cartoon characters and key safety messages, such as an animated screen saver, bookmarks and posters, and “send this page to a friend” feature • Web site (www.asha.org/listentoyourbuds)

Table 5. Sampling of Organizations Offering Online Information about NIHL

Organization	Target Audience	Comments
Healthlink, Medical College of Wisconsin http://healthlink.mcw.edu/article/965928293.html	General public (adult)	Information about threshold levels for NIHL is inconsistent. The fact sheet contains both of the following statements: <ul style="list-style-type: none"> • 90 decibels: prolonged exposure to any noise above 90 decibels can cause gradual hearing loss. • Know which noises can cause damage (those above 75 decibels).
FamilyDoctor.org http://familydoctor.org/226.xml	General public (adult)	Information about NIHL is inaccurate. The fact sheet includes the following text: “Long exposure to noise can damage the soft tissue of the inner ear....Whether noise harms your hearing depends on the loudness, the pitch, and the length of time you are exposed to the noise. The loudness of a sound—measured in decibels (dB)—and the length of exposure are related; the louder the sound, the shorter the exposure can be before damage occurs. For example, eight hours of exposure to 85-dB noise on a daily basis can begin to damage a person’s ears over time.” (Note: This site also offers some interesting common-sense tips to prevent NIHL, such as “use sound-absorbing materials to reduce noise at home and at work” and “don’t try to drown out unwanted noise with other sounds.”)

Organization	Target Audience	Comments
<p>Hearing Loss Web www.hearinglossweb.com/Medical/Causes/nihl/nihl.htm</p>	<p>General public (all age groups)</p>	<p>This site links to several articles about NIHL, from newspaper articles about hearing loss among baby boomers to technical information from OSHA. The site also works to make the different pieces of information understandable. For example: “Here’s an example to help you make sense of this. The Centers for Disease Control and Prevention page says that a chain saw produces noise of intensity 110 db. The U.S. Department of Labor Occupational Safety and Health Organization (OSHA) page says that the maximum exposure time for 110 db is half an hour. So the conclusion is that if you operate a chain saw without hearing protection for longer than a half an hour, you are putting your hearing at risk.” Overall, the site provides current information that covers the full variety of topics related to NIHL. This site lists several resources for additional information, but does not name NIDCD.</p>
<p>American Academy of Family Physicians www.aafp.org/afp/20000501/2759ph.html</p>	<p>General public (adult)</p>	<p>The site provides some information related to workplace regulations and some tips for preventing hearing loss. The site names four sources for additional information (i.e., the National Institute for Occupational Safety and Health, League for the Hard of Hearing, National Hearing Conservation Association, and Sight and Hearing Association). NIDCD is not cited.</p>
<p>Deafness Research Foundation http://www.drf.org/res_directory/noise_induced.htm</p>	<p>General public</p>	<p>The Deafness Research Foundation only offers links to other organizations for information, including NIDCD. This reference, however, does not refer to the WISE EARS! campaign. (Note: The foundation is a WISE EARS! coalition member.)</p>
<p>Occupational Hearing Loss Web Site www.entusa.com/noise_hearing_loss.htm</p>	<p>Workers</p>	<p>The information is poorly presented (e.g. “Noise Induced Hearing Loss is the is the second most common cause of hearing loss.”) and not clear (e.g., a chart gives noise exposure standards that differ by organization).</p>

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APPENDIX. CURRENT STATUS OF EARBUD CAMPAIGN

Teens Tune-In to Novel Hearing Conservation Outreach Campaign

The fact that teens tend to listen to loud music is nothing new. There is, however, new concern that with advances in digital technology and the advent of downloadable music, today's youth are cranking up the volume to dangerous levels for longer periods of time. Listening to any sound source louder and longer is a potential recipe for disaster when it comes to your ears.

Many teens and pre-teens expose their ears to potentially damaging decibel levels daily, putting them at high risk for permanent hearing damage in the future. Live concerts, arcades, movie theaters, car stereos, personal computers, sporting events and portable MP3 players with earphones contribute to the daily noise "diet" of many kids. The result from over exposure to loud sound levels on a regular basis without a break, and without protection, is noise-induced hearing loss (NIHL). The tragedy is that NIHL is an irreversible condition and presently accounts for an estimated 30 percent of all hearing loss in the United States.

How do we reach teens with an effective warning message so they can change their behavior now to avoid the cumulative hearing damage they may experience later? Talking to teenagers about any behavior modification is daunting. Talking to them about hearing health issues is a major challenge, and until now, no entity had tackled it. The House Ear Institute (HEI) recognized the immediate need to reach young music and video consumers with a message that would resonate, educate and bring about change. To accomplish the task, HEI garnered extensive support from various organizations who understand the value of raising awareness among the teen audience. They also were aided by the many donors who participated in the HEI's recent fundraising events.

Launched in January 2006, the HEI's "It's *How* You Listen That Counts" outreach campaign has introduced teens first and foremost to why they should care about protecting their hearing from damaging decibel levels, and secondly to the practical things they can do to enjoy music and video in ways that won't damage their hearing. HEI is using information gathered from its pre-campaign market research to tap the interests and lifestyle concerns of teens by delivering educational messages through popular teen media in ways they can appreciate and understand. For example, its [public service](#) video presents a [story](#) of teen angst to convey the importance of hearing.

Teens in Arizona have been the focus of the 10-month test market phase of the campaign. Now in its sixth month, phase one includes [the](#) public service spot created specifically to pique curiosity and drive teens to the campaign Web site, www.EarBud.org, where a wealth of educational material is available. MTV Network, MTV.com and five Yahoo! Web sites including Yahoo!Music.com (a.k.a. Launch.com) are part of the campaign, and together with the campaign Web site and educational spot, have garnered nine million impressions to date. The goal for the test market phase has been to analyze how the Institute's outreach message impacts behavior of people between the ages of 12 and 22. At the conclusion of the test phase in October 2006, the information gathered will help the Institute to further tailor and expand its outreach program for teens.

"Initial response to the campaign far exceeded our expectations," says Marilee Potthoff, director of marketing, HEI. "Within the first four days, traffic to our campaign site was heavy enough to

warrant an immediate expansion of our server capabilities to keep up.” Approximately 40 percent of all visitors to the campaign Web site have come from outside of Arizona, which indicates the message has already reached a national audience. Potthoff adds that it’s been particularly encouraging to see that the majority of young people visiting the site are requesting free hearing protection and visiting the other hearing health pages on the site. “We may just reach our ultimate goal of making the next generation smarter about protecting their hearing than we were,” she says.