

# Noise-Induced Hearing Loss in Adolescents and Young Adults

## How does hearing loss affect adolescent and young adult health and well-being?

With recent increases in mobile technology usage, such as cell phones and portable music devices, hearing loss has emerged as a public health [concern](#), especially for adolescents and young adults. Approximately 36 million Americans suffer from hearing loss, with one in three developing their hearing loss as a result of exposure to noise.<sup>1</sup> In 2006, nearly one in five adolescents and young adults ages 12-19 suffered from hearing loss. Most of these youth suffer from bilateral high-frequency hearing loss, which is often caused by noise exposure.<sup>2</sup>

Hearing loss from noise damage as a result of continuous, long-term exposure, is permanent and irreversible.<sup>3-7</sup> Long-term exposure to excessive loud noise of about 90 dB or higher can lead to hearing loss.<sup>8</sup> Thus, efforts to address hearing loss are needed, in order to decrease the impact of hearing loss during adolescent years and prevent hearing loss in adulthood. Given the consequences of this emerging issue, *Healthy People 2020*, which sets the nation's public health agenda, created two [objectives](#) addressing hearing loss: (1) Reduce the proportion of adolescents who have elevated hearing thresholds, or audiometric notches, in high frequencies (3, 4, or 6 kHz) in both ears, signifying noise-induced hearing loss, and (2) Reduce the proportion of adults who have elevated hearing thresholds, or audiometric notches, in high frequencies (3, 4, or 6 kHz) in both ears, signifying noise-induced hearing loss.<sup>9</sup>

There are many causes of hearing loss, both biological and behavioral, including ear infections, trauma, ear disease, illness, certain medications, harm of the inner ear and eardrum from contact with a foreign object, and long-term exposure to excessive loud noise.<sup>10</sup> This information brief focuses on the role of noise in hearing loss and outlines strategies to recognize and reduce noise-related hearing loss.

## For Health Professionals: What existing programs address hearing loss?

In spite of the lifelong impact of hearing loss, few interventions have been developed to address this issue. Evidence for the effectiveness of existing programs is limited. Efforts in the field have focused primarily on increasing knowledge. Research is needed to identify evidence-based practices in knowledge improvement and other areas that influence behavior change.

**Dangerous Decibels** is an interactive classroom program which discusses the physics of sound, mechanisms of hearing, how loud sounds damage hearing, consequences of hearing loss, and ways to prevent hearing loss. The program was administered to 507 4<sup>th</sup> and 7<sup>th</sup> graders in Oregon and Washington schools.

**Evaluation:** An evaluation<sup>11</sup> of *Dangerous Decibels* showed that 4<sup>th</sup> grade participants showed significant long-term improvement in knowledge and attitudes related to hearing and improvements in knowledge about hearing and hearing loss prevention, and attitudes returned to baseline levels.

## Identifying and Preventing Hearing Loss in Adolescents and Young Adults

Whether you are a parent, professional, or teen, the following tips can help you prevent hearing loss, and identify signs.

### *What are some common signs of hearing loss?*

- Muffled or distorted hearing.
- Difficulty hearing sounds, such as birds singing, crickets chirping, alarm clocks, telephones, or doorbells.
- Difficulty understanding speech during telephone conversations or while participating in group conversations.
- Pain or ringing in the ears (tinnitus) after exposure to excessively loud sounds.

[\(cdc.gov\)](#)

### *How can hearing loss be prevented?*

- Use lower volume when listening to music on headphones or ear buds. The highest volume setting on headphones is too loud and can lead to hearing loss.
- Wear foam earplugs when going to loud concerts.
- Use earmuffs if engaging in any loud recreational activities, such as riding on a snowmobile or hunting.
- Talk with your school or physician about screening for both high- and low-frequency hearing loss.

[\(Preventing Hearing Loss among Children and Adolescents\)](#)

## Additional Unevaluated Programs

Listed below are several programs currently lacking evaluation data, which aim to improve knowledge and change behaviors about hearing loss:

- [WISE EARS](#)
- [Hearing Education & Awareness for Rockers](#)
- [It's How You Listen That Counts](#)
- [Operation BANG](#)
- [ClearSounds Teen Hearing Challenge](#)
- [It's a Noisy Planet](#)

# Screening for Hearing Loss: Preventing Further Damage through Early Detection

Research may also be warranted about the effectiveness of school-based screening for hearing loss in adolescents. Noise-induced hearing loss progresses over time and worsens due to repeated exposure. Early intervention as a result of screening can preserve hearing and prevent further damage. Traditionally, screening for hearing loss has focused on the pre-adolescent years. Screening in schools varies by state, and often focuses on low-frequency hearing loss, leaving high-frequency hearing loss, which is often caused by noise exposure, undetected.<sup>12,13</sup> Pure-tone threshold testing appears to be a more accurate approach to screening than the current preferred method, rapid hearing screening.<sup>12</sup> Currently, about two thirds of all school nurses follow-up for students suspected of having hearing loss.<sup>14</sup> In addition to improving screening methods, systems should be in place so that once students who are suspected of having hearing loss, follow-up occurs to ensure action has been taken to protect the student from further loss.

## Conclusions and Recommendations

The emergence of noise-induced hearing loss as a major public health concern has sparked the implementation of several hearing loss prevention programs. Despite this fact, there is limited evidence that these programs are effective in changing knowledge, attitudes, or behavioral intent as a means of preventing hearing loss. The continuing increase of hearing loss among adolescents and young adults highlights the need for developing and rigorously evaluating programs that engage children, adolescents, their families, young adults, clinicians, manufacturers, the media, and schools.

## Sources

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### Additional Reading

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#### Promoting Hearing Health in Schools:

<http://www.cdc.gov/healthyyouth/noise/promoting.htm>

#### Mechanisms of Noise-Induced Hearing Loss Indicate Multiple Methods of Prevention:

<http://www.sciencedirect.com/science/article/pii/S0378595506003017>

#### High Frequency Hearing Sensitivity in Adolescent Females of a Lower Socioeconomic Status over a period of 24 years

[http://www.jahonline.org/article/S1054-139X\(10\)00306-X/abstract](http://www.jahonline.org/article/S1054-139X(10)00306-X/abstract)

#### MP3 Players and Hearing Loss: Adolescents' Perceptions of Loud Music and Hearing Conservation:

<http://www.ncbi.nlm.nih.gov/pubmed/18280849>

#### Risk of Damage to Hearing from Personal Listening Devices in Young

**Adults:** <http://hunterp.disted.camosun.bc.ca/Journal%20article%20on%20hearing%20loss.pdf>

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