



US DEPARTMENT OF DEFENSE
BLAST INJURY RESEARCH PROGRAM
COORDINATING OFFICE

Personal Protective Equipment

The Lyric Device Provides Impulse Noise Protection while Allowing for Situational Awareness

Researchers at Walter Reed National Military Medical Center (Bethesda, Maryland), evaluated the ability of a commercially available extended-wear hearing aid, the Lyric device (Figure 1), to both mitigate the effects of prior hearing loss, and prevent additional auditory injury from blast and impulse noise. Specifically, the researchers are evaluating if the Lyric device is suitable for Service members with mild-to-moderate hearing loss for use in austere operational environments that would otherwise preclude the use of normal hearing aid technologies.

The Lyric device has been electroacoustically tested for impulse noise protection, both with plastic explosive C4 and with a pneumatic blast tube, and has been found to provide impulse noise protection comparable to commonly-used passive protection earplug devices. Electroacoustic tests in continuous noise environments, as well as behavioral testing in 10 subjects using the real-ear-attenuation-at-threshold method, suggest that continuous noise protection is also comparable to conventional earplug devices. Behavioral testing on listeners with normal hearing suggests that, in the active mode, the devices allow external sounds to pass at frequencies up to 12 kilohertz, which provides excellent preservation of situational awareness and localization accuracy comparable to the open ear. Field studies are now

underway to test the devices as an alternative to conventional hearing aids for active duty Service members with hearing loss.



FIGURE 1: Idealized representation of the placement of the Lyric device in a human ear. (Figure used with permission from the authors)

The ability to adequately protect military personnel from noise-induced hearing loss, and to restore functional hearing performance to those who already have hearing loss, is a problem of extreme importance within the U.S. military. This device could be a key contributor to addressing this issue.

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