Key Considerations for Standards

Standards for personal audio devices

WHO-ITU Consultation on the Make Listening Safe Initiative

Brian Fligor, ScD, PASC  brian.fligor@gmail.com
WHO-ITU Risk Assessment and Definitions Subgroup

- **Experts in academia, industry, public health:**
  Ian Wiggins, Jeremie Voix, Warwick Williams, Peter Thorne, Richard Neitzel, Christian Giguère, Christian Huggonet, Chuck Kardous, Michael Santucci, and Brian Fligor

- **Guidance and participation from Shelly Chadha for WHO**
Purpose of Subgroup on Standards for PAS

- Provide guidance to PAS manufacturers, end users, and public health professionals how to provide and use tools to make PAS use safer
- Guidance in the form of written reports, reviews, and critiques from the scientific literature
  - Gap analysis
  - Current scientific consensus
  - Acknowledgement of limitations of current knowledge
Key Considerations for Standards for PAS

- The use of PAS poses some risk for non-occupational noise-induced hearing loss (NIHL): this is despite efforts for level-limiting earphones, Android device warnings, and EU standards for maximum PAS output.
- There is **benefit** to using PAS, and there is a dose-effect relationship between level and benefit.
  - Rubinelli et al (Listening Habits review): excitement, relaxation, concentration, define personal space ("urban sherpa"), combat boredom.
- Ambient noise in listening environment further influences chosen/preferred listening level.
Key Considerations for Standards for PAS

- Seminal studies of dose-effect relationship in occupational NIHL provide baseline guidance ("Damage Risk Criteria")
  - Limitations of generalizing occupational noise exposure to non-occupational noise exposure
  - Durations of exposure (40-year working lifetime vs. lifespan)
  - Threshold for "acceptable" risk
- No clear dose-effect relationship between noise exposure and onset of bothersome tinnitus (or other auditory injury; e.g., hyperacusis, diplacusis)
Key Considerations for Standards for PAS

Framework of solutions:

• Dosimetry, rather than level-limiting, is thoroughly supported in the scientific literature as the appropriate metric for dose-monitoring/NIHL risk
  • Level limits against acute acoustic trauma

• Current PAS technology has the capacity to provide dosimetry metrics, with some definable error

• Best-practices in health communication can draw from multiple fields to craft the information provided to end users
  • Product packaging, IFU, User Interface, Parental Controls
Next Steps, Standards for PAS

• Agree upon framework for standards
  • Dosimetry (with upper threshold for level-limit)
  • Health communication driven interface with end user
  • Ability to integrate data to learn from and improve standards, screening protocols, user behaviour
  • Messaging from public health respects user autonomy while holding to accurate information
  • Manufacturers given freedom to innovate within the standards’ framework
• Update the standards, as a living document, as new knowledge becomes available