

## Emerging Care Pathways for Managing Adult Hearing Loss

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### Background

In the United States, hearing loss management has traditionally been situated in tertiary healthcare settings and independent private practices, viewed as specialized care. During the past decade, there has been a shift towards promoting self-management of adult hearing loss (Arnold et al., 2019). This change was initiated by a formal recognition of inadequate access and affordability of hearing healthcare during a multi-stakeholder expert group meeting (Donahue et al., 2009).

To address issues of hearing healthcare access and affordability, recent policy changes have included direct access to hearing assessments without physician referral and the introduction of a new over-the-counter (OTC) hearing aid category (National Archives, 2022). In addition, various technological advancements, including the merger of medical grade hearing aids with consumer grade earphones, has created a range of direct-to-consumer (DTC) hearing devices including hearables and personal sound amplification products (PSAPs) (Manchaiah et al., 2017). These developments have improved device accessibility and affordability, with consumers now able to purchase DTC hearing devices for as low as \$100 per pair. Despite the potential benefits of more affordable options, the availability of a wide range of products has created confusion among consumers regarding price, appearance, features, functionality, and distribution channels (Manchaiah et al., 2024). The lack of consumer decision-making support for hearing devices and hearing loss management is likely contributing to suboptimal utilization of hearing health solutions.

Unlike some acute otologic conditions that require urgent diagnosis and treatment, most adult hearing loss is gradually progressive and chronic in nature. Consequently, support models for

hearing health require ongoing interaction, likely throughout a patient's lifetime. Because of the chronicity, proposed models should be considerate of the potentially significant demand they place on hearing health and other involved medical professionals. Several models have emerged to address the demand for consumer support in the hearing health care realm; these models, and their associated benefits and challenges are outlined below and within Table 1.

### **Emerging Pathways for Hearing Health Care**

**Self-care:** Many individuals with hearing loss acquire the skills and knowledge needed to self-manage their hearing loss. In the past, these efforts were often limited to coping strategies, such as effective communication techniques (Arnold et al., 2019). However, the availability of DTC hearing devices, such as OTC hearing aids or PSAPs, now allows many individuals access to these devices as a primary method for managing their hearing and communication issues. Frequently, these devices are also purchased by significant others as a gift (Manchaiah et al., 2019) as an initial step of hearing care. Currently, this is the dominant, albeit potentially confusing, care pathway for individuals who are interested in DTC devices. Self-management, however, could likely be facilitated through the development of digital platforms for screening, information provision, and decision-making guidance (Humes et al., 2024).

**Primary care:** Chronic disease management is a routine part of primary care through provision of screening, health promotion, and access to first line treatment. While these care pathways have the potential to reach a large population through their existing infrastructure, there has been limited use of primary care for hearing care provision to date (Loescher et al., 2022). The underutilization of primary care as a touch point for hearing health is multifactorial but includes resource limitations, lower prioritization of hearing compared to other medically critical diseases, underutilization of screening technology, and a lack of primary care provider hearing health literacy (Sydlowski et al., 2022). Models seeking to utilize the primary care patient touchpoint to expand hearing health services would benefit from minimizing additional tasks for the already over-burdened primary care provider. The utilization of app-based technology may be beneficial in this scenario; after examination by a primary care provider, individuals with suspected hearing loss can be provided with hearing screening (Smith et al., 2024) and resources for accessing DTC hearing devices.

**Pharmacy care:** Many pharmacies carry a range of hearing products such as hearing amplifiers and tinnitus maskers. In addition, pharmacies are also serving as an active distribution channel for OTC hearing aids. Pharmacies are the only healthcare channels that are within reasonable distance for many Americans, particularly those in rural regions (Gallagher, 2022). For this reason, it has been suggested that collaboration between hearing healthcare specialists and brick and mortar pharmacies can help develop this care pathway further to aid management of hearing loss in adults (Berenbrok et al., 2022).

**Community-based care:** World Health Organization (WHO) recommends community-based care as the preferred model for hearing aid service delivery in low-income settings (World Health Organization, 2024). Several studies have demonstrated that a community-based model leveraging mobile health (mHealth) technologies and community health workers, can yield positive hearing health outcomes (Eubank et al., 2022, Frisby et al., 2022). Despite these studies

performed in smaller regions, it is unclear if such models have been scalable to large populations; as with many grassroots efforts, structural expansion may be difficult, given the unique needs for each community and region.

**Volunteer supported care:** As most insurers in the United States do not include hearing aids as a covered benefit, many individuals with hearing loss rely on free of cost hearing aids provided through charity organizations (e.g., Miracle Ear Foundation). Currently, such programs are administered on a small scale through collaboration with local hearing healthcare providers; however, similar programs can be scaled to larger populations using trained volunteers with minimal support from hearing healthcare professionals (Pryce et al., 2015). For instance, local aging population societies and organizations (e.g., National Council on Aging, American Association of Retired Persons [AARP]) provide advice on hearing device purchase and support hearing device loner programs. In addition, these organizations can provide group communication training, as well as individual consultations to help with hearing device handling and management.

Table 1 illustrates key features, benefits and challenges associated with these five care pathways. Some of the afore-mentioned care pathways may be more applicable to some populations and contexts than others. For instance, community-based care has been studied in the context of individuals in remote, low-income countries and communities which are geographically difficult to access (Eubank et al., 2022), whereas volunteer-led care is often accessible to urban, low-income communities with fewer geographic constraints. Although, self-care is theoretically an option for any individual, those with higher levels of education and digital device proficiency may be at an advantage for success using this model, as access to accurate and useful information is disparate across populations. Importantly, care pathways can be combined, and an individual may take advantage of multiple pathways in addition to routine audiological care within medical and/or private practice settings.

**Table 1:** Key features, benefits and challenges associated with the emerging care pathways for hearing loss care

<b>Hearing Care Pathway</b>	<b>Key Features</b>	<b>Benefits</b>	<b>Challenges</b>
<b>Self-care</b>	<ul style="list-style-type: none"> <li>▪ Requires skills and knowledge for self-management</li> <li>▪ Use of DTC hearing devices (OTC aids, PSAPs)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Empowers individuals</li> <li>▪ Reduces reliance on specialized care</li> </ul>	<ul style="list-style-type: none"> <li>▪ Can be difficult to navigate a wide range of products</li> <li>▪ Requires digital and health literacy and information accessibility</li> </ul>
<b>Primary care</b>	<ul style="list-style-type: none"> <li>▪ Routine screening and health promotion</li> <li>▪ Access to first-line treatments</li> </ul>	<ul style="list-style-type: none"> <li>▪ Leverages existing infrastructure</li> <li>▪ Potential to reach large populations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited current use in hearing care provision</li> <li>▪ Need for training primary care providers</li> </ul>

			<ul style="list-style-type: none"> <li>▪ No existing standardized hearing screening and referral protocol</li> </ul>
<b>Pharmacy care</b>	<ul style="list-style-type: none"> <li>▪ Availability of hearing products in pharmacies</li> <li>▪ OTC hearing aids</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing, highly accessible distribution channels</li> <li>▪ Convenient for consumers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Need for collaboration with hearing healthcare specialists</li> <li>▪ Need for education for pharmacists</li> <li>▪ Variability in product quality</li> </ul>
<b>Community-based care</b>	<ul style="list-style-type: none"> <li>▪ Mobile health (mHealth) technologies</li> <li>▪ Involvement of community health workers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing models with positive outcomes in low-income settings</li> <li>▪ Cost-effective</li> </ul>	<ul style="list-style-type: none"> <li>▪ Potentially limited scalability</li> <li>▪ Requires community health worker training</li> </ul>
<b>Volunteer supported care</b>	<ul style="list-style-type: none"> <li>▪ Hearing aids provided through charities</li> <li>▪ Support from trained volunteers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provides financial assistance</li> <li>▪ May be scalable with minimal professional support</li> </ul>	<ul style="list-style-type: none"> <li>▪ Currently practiced on a small scale</li> <li>▪ Coordination and oversight challenges</li> </ul>

## Conclusions

Technological advancements as well as policy changes have helped shift adult hearing loss management from specialized tertiary care to mainstream public healthcare. While this has been a step in the right direction, navigation of the hearing healthcare system remains challenging for those with hearing loss. We identify five emerging care pathways (i.e., self-care, primary care, pharmacy care, community-based care, and volunteer supported care) that have potential to help manage chronic hearing loss in adults. These pathways can be supplemental to routine medical care, thereby mitigating issues of access with the potential to reduce hearing health cost and improve outcomes both at the individual and population levels. Prior to the expansion of these proposed pathways, additional high-level evidence to demonstrate efficacy, scalability, and sustainability are required, particularly to garner support through future healthcare policies that promote these hearing health care pathways.

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