2017 likely marks the beginning of a new era for the hearing aid industry. Not only did over-the-counter (OTC) hearing aids become law of the land, but breakthroughs in artificial intelligence also offered hope in solving the hearing-in-noise problem.

OTC hearing aids aim to provide a safe and effective means to help millions of mild-to-moderately hearing-impaired listeners who could benefit from amplification but do not use hearing aids due to cost, inaccessibility, or both. There is little to no doubt regarding the safety of OTC hearing aids, which are no more dangerous than commercially-available headphones, ear buds, and other personal amplification systems. There are diminishing concerns about the quality of OTC hearing aids because their key technologies—from microphones and speakers to digital signal processing chips and noise-canceling algorithms—are indistinguishable from that in state-of-the-art hearing aids. Scientific evidence is accumulating for the effectiveness of OTC hearing aids, for they have produced similar performance to that of high-end devices fitted by certified audiologists (Am J Audiol. 2017;26[1]:53). As discussed by the panel in this issue’s cover story, important questions remain, such as how the FDA plans to regulate OTC devices and how audiologists can integrate these devices into their services. We shall see whether OTC hearing aids will be able to compete against the existing market or increase the market penetration in the next several years.

A breakthrough in artificial intelligence has notably improved the speech-in-noise understanding of actual hearing aid users (IEEE Spectr. 2017;54[3]:32). Deep learning, which is rooted in brain circuitry, has been successfully used to test self-driving cars and beat the best human Go players. Using a single microphone in speech babble background noise, deep learning raised word recognition from 29 to 84 percent, a level of performance similar to that of normal-hearing people listening in the same condition. Although the deep learning algorithm has not been implemented in any hearing aid due to power and real-time limitations, it offers realistic hope to solve the number one complaint of hearing-impaired people. Deep learning and other artificial intelligence technologies such as virtual and augmented reality can enhance and enrich the performance even of normal-hearing people. An intelligent hearing aid will offer a personalized, immersive, and interactive hearing experience like sound scene analysis, sound protection and warning, simulation of the best seat in the Disney Hall, and even real-time language translation. A great outcome of the wide adoption of such an intelligent device is the elimination of the long-standing stigma associated with wearing hearing aids.

Audiologists and hearing aid companies should embrace the changes, as they also represent opportunities in the new landscape. These opportunities are game changers, like the birth of electronic and digital hearing aids. We will see an expanded role for audiologists to care for both hearing-impaired and normal-hearing populations, and possibly the first $10-billion hearing aid company in the next decade.

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