Listening to Speech in Noise…

According to research, 16% of people with hearing aids never wear them. Of those individuals, 25% reported that it was either because the hearing aid provided no help in difficult listening environments, they amplified loud sounds too much or that listening in background noise was impossible.

In order to understand how hearing in speech in noise happens, we first have to understand how listening happens. In the inner ear there are 4 rows of hair cells: 3 rows of outer cells whose job it is to listen to soft sounds and detect speech in background noise, and 1 row of inner cells designed to manage loud sounds and stimulate the auditory nerve which sends the sound signal up to the brain. In most cases of hearing loss (particularly to do with aging), the outer hair cells are damaged first, hence most peoples' complaint of not hearing soft speech when there is noise in the environment. Should the hearing loss be more severe and the inner cells also be damaged, the signal would not be sent to the nerve. Should the *nerve* be damaged, the sound may not even reach the brain at all, or it will reach it in bits and pieces which sound like nonsense. After all of this travelling, the sound signal finally reaches the real ear – the brain. In combination, all of these structures are referred to as the Auditory System. We have found that in most cases people with limited damage to their auditory system do well with hearing aids, given that they received appropriate training and allowed adaptation to happen. After all, we can't expect an external, electronic device to replace the real thing

Just like we forget names, places or faces when we get older, the auditory system forgets and needs to be reminded and retrained. Complex sounds are more difficult to listen to, process and understand and hearing aids can only work with a loss of hearing, not a loss of understanding. Listening is not only a decision, it is a skill which has to be perfected and like all skills, it takes training and practice. If you have not heard properly in background noise for years and you expect to hear perfectly in noisy places with your new hearing aids, you would probably feel that the aids are making the noise louder than the speech. This is because the noise is easier to recognise and requires little to no understanding, than speech. The brain forgets how to process things it hasn't experienced in a while and reverts back to the language it does know. Usually, this language is noise, especially when its amplified. The alternative is: don't get old, never watch television and lock yourself in a quiet room where you only ever speak to one person at a time who has been trained to speak slowly and clearly!

Manufacturers tend to put a lot of emphasis on a hearing aid's ability to reduce background noise and amplify speech, however, research is showing that the ear's ability to do this is unique and is very difficult, if not impossible to recreate. To decipher speech properly, one needs fast cognitive abilities. I.e. One needs to be able to predict speech based on the context of the conversation and to be able to correct what you may have misheard, without requesting any more information. For this to happen smoothly, you need an active short term memory. Younger people are better at this because they are better able to listen, hear and think all at the same time! Older people need to devote cognitive effort to each of these processes in turn. Although some hearing aid technology can give you a fighting chance by controlling background noise, enhancing speech and automatically adjusting to the environment (some devices can do this at a speed of 100 times per second!), it can't slow things down to a pace that each aging individual brain can cope with – yet!

The moral of the story is to visit a professional audiologist before too much damage sets in, get the best set of hearing aids that you can to make use of as much new technology as possible. Follow this up with good training with your audiologist and practise, practise, practise!