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Maybe Bluetooth Should be Called Blacktooth?

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The Cover Feature of this issue of *Canadian Audiologist* is about smartphone control of hearing aids. Of course, this has been made possible by the invention of the 1930s actress Hedy Lamar who held the first patent for wireless transmission; which was later to be named Bluetooth, after an 10th century king of Denmark and Norway, Harald “Bluetooth” Gormsson. Apparently he had a black front tooth so his nickname in Old Norse was “Blatonn” or “Black tooth"... I don’t know how they got from black to “blue”? Apparently, King Gormsson was able to unify Denmark and it was hoped that the Bluetooth protocol would unify and standardize wireless transmission technology... Glad it wasn’t called Genghis Khan who tried to unify the known world (under his supremacy of course).

For the past while the radio frequency (RF) transmission was in the upper MHz range (700 MHz) but most recently, in the 2.4GHz range. A principle of “antenna theory” states that the higher the transmission frequency, the smaller the antenna required to optimally pick up the signal. With the 2.4 GHz RF frequency, the antenna is so small that it can easily fit into a small custom CIC hearing aid. And because of this, no longer is there a need to have an external streamer that encased a larger antenna.

All is not perfect of course. It turns out that 2.4 GHz is very close to the resonant frequency of body fat which can be problematical for ear to ear transmission. This is why microwave ovens also use 2.4 GHz. It takes a surprising amount of power to allow the 2 hearing aids to effectively communicate at 2.4 GHz. Because of this, ear to ear transmission still tends to utilize the highly efficient, but short distance, magnetic induction (NFMI). But NFMI can be interfered with by extraneous magnetic environmental influences.

Nevertheless, an RF at 2.4 GHz allows hard of hearing consumers to use a wide range of devices to communicate directly with such as the television and telephone, via Bluetooth protocols, and is stable up to about 10 metres (35 feet). It also provides hard of hearing consumers with the option of controlling some parameters of their hearing aids with their own Apple or Android device.

This is not unlike the trend with performing artists who have a hearing loss- many purchase their own NOAH systems and software that will allow them to play with the various settings on their hearing aids. Personally, I have no problems with this as long as we don’t provide the untrained with controls for their maximum output and so far, that seems to be the case. The worst-case scenario is that these performing artists will come into the clinic with their tails between their legs wanting the programming to be restored to the previous settings. Of course, with smartphone control, the settings are restored to the clinic default once the devices are turned off.

All hearing aid manufacturers were asked to submit short summaries of their products and how smartphones can be used to control some parameters of the hearing aid. Several manufacturers declined but www.CanadianAudiologist.ca is pleased to provide our readers with a nice overview

of 9 manufacturers who agreed to participate.

We do live in exciting times! No longer do we have to get excited over a new filtered earhook! Another contribution to the “Science Matters” regular feature in this issue of www.CanadianAudiologist.ca comes from Dr. William Yost, someone whose name is known by every first-year audiology student – who hasn’t read “Fundamentals of Hearing” by William Yost (or for those of us who have been around slightly longer, by Yost and Nielsen)? In this article Dr. Yost corrects a blunder that I made in an earlier article about the missing fundamental – his response is constructive and frankly quite instructive for me. I hope that you all find it equally instructive.

We then journey over to Kenya to see some of the amazing work done by an international colleague.
And…
Well, just grab a glass of wine and enjoy this issue of *Canadian Audiologist*
I wish you all a pleasant summer, and wear a hat!

Best regards, Marshall Chasin, AuD., Editor in Chief