Chapter 8

Tele-Audiology and Security Management: Is Anyone Hearing the Threats?

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ABSTRACT

Security is a huge topic and not at all fun. It’s hard to understand. It can be scary. It is always lurking. And poor security can bring down any system, regardless of how useful or important it is. Understanding the risks and vulnerabilities in systems and the motivations and methods of attackers is important in designing and operating secure and robust systems. This chapter aims to give a perspective on how to think about information technology (IT) security, how it applies to telehealth and audiology, and finally gives some recommendations about important considerations for tele-audiology systems that include devices, data housing, smartphone applications, and patient records.
INTRODUCTION

Security matters. It’s the flip-side of all the significant advances in technology, communications, business and social interactions. For every new way that society finds to make use of technology for better efficiencies and outcomes, the bad guys find a way to abuse it. This is the reason why there seems to be an endless series of new cyber-attacks, privacy breaches and organizations being compromised.

Any system can fail. This may be because of poor design, accident, human error, misconfiguration or improper use. But assuming all this is correct, then an attacker will put the system under pressure looking for just one weak point. If the attacker finds one, then there has been a security failure. With Information Technology (IT) systems, the attacker has many advantages. Attackers can attack any of the components of a system: computers, devices, networks, applications and the people and processes around them. Each of those components may have multiple vulnerabilities. Attacks can be automated and launched from anywhere in the world via the Internet. Consequently, the Internet today experiences a continuous and never-ending flood of attacks (Kaspersky, 2017). The defenders must defend everything, but the attackers just need to find the tiniest vulnerability.

Tele-audiology is a microcosm of the world of attackers and defenders. At the device level, the hearing aid and associated configuration software may have weaknesses. At the business level, the audiology practice may have weaknesses or may be connected to external IT systems that have weaknesses.

Any attack has its consequences. Attacking a medical device may be life-threatening (e.g. pace-makers, dialysis machines etc.). Attacking a business may be also be detrimental due to economic losses, loss of reputation, litigation or stress on patients with a breach of their privacy.

This chapter aims to give an overview of security and areas that need to be considered when running a tele-audiology system. Section 2 gives a background and overview to security, why it is such a difficult area and most importantly, why it matters to tele-audiology. Section 3 provides a security analysis of tele-audiology systems. Section 4 outlines a framework for security management to ensure a reasonable level of security for a tele-audiology practice and highlights important aspects that need to be considered when implementing it.

Finally, this chapter closes with some conclusions with an emphasis on the following points:
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