S. BOEKE, A.A. FRANCO. **Cyber security as an essential factor for healthy and active ageing.** *Gerontechnology 2016;15(suppl):6s*; doi:10.4017/gt.2016.15.s.881.00 **Purpose** Advancing information technology and increased interconnectivity not only provide enormous benefits to gerontology and the field of active and healthy aging, but also pose serious risks. Individuals and organizations have suffered many cyber-attacks in recent years, with perpetrators ranging from hactivists to cyber-criminals and nation states. The increase in and sophistication of cyber threats shows no sign of abating, and while large organizations have managed to improve their cyber security efforts, small companies and individuals are struggling to keep up. The older people living alone at home[1] are a particularly vulnerable category[2], and the health care industry is increasingly targeted by cyber criminals[3]. The purpose of this paper is to adapt current insights from the social and medical sciences and the field of cyber security to the context of gerontechnology. The authors –one a gerontologist and geriatrician, and the other a political scientist– combine insights on the potential vulnerability of older citizens and health and social organisations on the one hand, with concepts of cyber security on the other. Current cyber security thinking involves a risk management approach, and using bow-tie thinking, the threats to the specific actor can be analysed, the risk (probability multiplied by impact) of incidents can be estimated, and a set of preventive and repressive measures can be implemented to mitigate the impact[4]. Applying this model to older people and (medical) care providers, as specific targets for malicious actors in cyberspace, new conclusions can be drawn. **Results & Discussion** On a meta-level, a successful cyber intrusion or attack can have an impact on the health, economic or social well-being of victims. First, the disruption, manipulation or cessation of medical or other services can negatively influence the health of a victim. Second, an incident can have economic consequences, leading to financial loss. Hospitals, for instance, are increasingly targeted by cybercriminals using ransomware and have paid cyber criminals thousands of dollars for the restoration of IT-services[5].Third, an incident can impact the social and psychological well-being of a victim, for instance increasing loneliness when services are disrupted, or inducing psychological problems if personal data has been leaked or stolen. All these can lead to effects on a societal level, potentially impacting the functional ability of aging people[6]. Security must be seen a process and not an event or product[7]. Continual monitoring, security by design and updating of skills and technologies is therefore essential. Investing in cyber security awareness is equally important, as in many cases the human remains the weakest link. It remains easier to manipulate people through social engineering techniques (such as spear phishing) than it is to crack a password or break into a network. Just as governments have invested in improving cyber security awareness among children, campaigns specifically focusing on older people must be considered.

References

1. Franco AA. 'Vivre chez soi' ou les nouveaux paradigmes sanitaires et sociaux [Living at home or new health and social paradigms]. Administration 2011;229:114-117
2. Saariluoma P. Cybersecurity for old people. Gerontechnology 2016;14(2):63; doi:10.4017/gt.2016.14.2.002.00
3. Upendra P, Prasad P, Jones G, Fortune H. Operationalizing Medical Device Cybersecurity at a Tertiary Care Medical Center. Biomedical Instrumentation & Technology 2015;49(4):251-258; doi:10.2345/0899-8205-49.4.251
4. Berg J van der, Zoggel J van, Snels M, Leeuwen M van, Boeke S, Koppen L van de, Lubbe JCA van der, Berg B van der, Bos T de. On (the Emergence of) Cyber Security Science and its Challenges for Cyber Security Education, NATO STO/IST-122 symposium, Tallinn, Estonia; 2014
5. Zetter K. Why Hospitals are the Perfect Target for Ransomware. WIRED; 2016; www.wired.com/2016/03/ransomware-why-hospitals-are-the-perfect-targets; retrieved October 7, 2016
6. Franco AA, Bouma H, Bronswijk JEMH van. Health care paradigms in transition. Gerontechnology 2014;13(1):5-10; doi:10.4017/gt.2014.13.1.001.00
7. Schneier B. Managed Security Monitoring: Network Security for the 21st Century. *C*omputers & Security 2001;20(6):491-503; doi: 10.1016/s0167-4048(01)00607-1

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