ROLE OF CYBER SECURITY ALONG WITH NUCLEAR AND RADIOLOGICAL SAFETY IN MEDICINE

Au. Buzdugan
National Nuclear Security Support Centre, Technical University of Moldova, Chisinau, Moldova
*E-mail: aurelian.buzdugan@yahoo.com

Information technology is nowadays integrated in all domains in our lives and is used in various processes or systems, such as for monitoring, controlling units or even decision making systems. The medical domain is not an exception to this, especially in the last decades when we have witnessed new technologies being used, as well as electronic patient records that can contain for example investigation results or treatment plans. Furthermore, nuclear medicine, radio diagnostic or radiotherapy also makes use of IT systems in order to assure the radioprotection and physical security of nuclear and radioactive materials, ionizing energy generators or particle accelerators. The loss of control over ionizing radiation sources can have hazardous effects over citizens or even cities and there is a risk of losing control over these IT systems or underlying networks [1]. Attacks over medical devices are no longer only theoretical and there where cases when proof of concepts were presented for possible attacks [2, 3]. One of these attacks also refers to devices that are used in medicine and therefore can lead not only to cyber security incidents.

Cyber security risks have to be taken into consideration from the design phase of a medical system up to its operation and maintenance. Current threats can be minimized by introducing certain security controls both at the technical and policy level, including IT security controls, standards and frameworks which should be approved and enforced by the state. Currently there are different strategies and standards worldwide to assure the safe and secure use of medical data by introducing risk management frameworks [4] for the vendors or specific design requirements.
In this paper we will discuss over the current practices or plans in assuring security of the IT components used in medicine, with a focus on medicine with ionising radiation sources. We will reflect over the current legislative acts and programs in Moldova that relate to cyber security and e-health, the current EU legislation that refers to cyber security in healthcare, e-health and on-going discussions for ensuring cyber security in medical domain. We will conclude with an overview with the current state of cyber security in the medical domain and recommendations for future development in this area.

[1] http://www.wsj.com/articles/SB10001424127887324188604578543162744943762
[2] https://media.blackhat.com/bh-us-11/Radcliffe/BH_US_11_Radcliffe_Hacking_Medical_Devices_WP.pdf
[3] http://www.ibtimes.co.uk/how-security-researcher-easily-hacked-hospital-its-medical-devices-1544002
[4] EN ISO 14971:2009, Medical devices. Application of risk management to medical devices http://www.iso.org/iso/catalogue_detail?csnumber=38193