Method for Evaluation of Surgical Wound Healing: A Case Study

We arranged a case study in order to examine whether tetrapolar bioimpedance measurement could be applied for evaluating the healing of a surgical wound. We measured the donor site surgical wound of a patient who had undergone a breast reconstruction surgery. The measurements were conducted three times in a nine days period, starting from the first postoperative day. As a reference, the impedance of an unaffected site was also measured. The electrodes were placed at equal distances, four centimetres apart in a parallel formation. The results show that, at low frequencies, the impedance of the wound increases with time. At higher frequencies, the situation is opposite; the impedance of the wound is initially higher than the reference and decreases with time. Both ends seem to approach the reference impedance as the healing proceeds. Our results are in accordance with the normal course of surgical wound healing and more specifically appear to be related to the diminishing swelling around the wound site. We conclude that the obtained results are interesting in a level that calls for further investigation.

General information
State: Published
Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Physiological Measurement Systems and Methods Group, BioMediTech, Turku Univ Hosp, University of Turku, Åbo Akademi, Tampere University Hospital
Authors: Kekonen, A., Bergelin, M., Eriksson, J., Kaartinen, I., Viik, J.
Number of pages: 4
Pages: 446-449
Publication date: 13 Jun 2017

Host publication information
Title of host publication: EMBEC & NBC 2017: Joint Conference of the European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), Tampere, Finland, June 2017
Place of publication: Singapore
Publisher: Springer
Editors: Eskola, H., Väisänen, O., Viik, J., Hyttinen, J.
ISBN (Print): 978-981-10-5121-0
ISBN (Electronic): 978-981-10-5122-7

Publication series
Name: IFBME Proceedings
Volume: 65
ISSN (Print): 1680-0737
ISSN (Electronic): 1433-9277
ASJC Scopus subject areas: Medicine(all), Health Professions(all), Surgery, Dermatology
Keywords: Bioimpedance, Tetrapolar, Surgical, Wound, Monitoring, Healing, Assessment, Method

Bibliographical note
jufoid=58152
Research output: Scientific - peer-review › Conference contribution

Foundational eHealth Curricula for the health care workforce
The European Union supported project EU*US eHealth work aims at developing the eHealth skills and competencies of the people working in health care. A part of this work is to develop curricula describing what the personnel should learn about the various aspects of eHealth.

General information
State: Published
Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Sleep and Sensory Signal Analysis Group-SSSAG, Research group: Personal Health Informatics-PHI
Authors: Värri, A., Tolonen, J.
Number of pages: 6
Pages: 1-6
Publication date: 23 May 2017
Peer-reviewed: Unknown
Keywords: health informatics competency, health informatics skills, health informatics workforce, health informatics education, health information technology
ASJC Scopus subject areas: Computer Science(all), Health Professions(all)
Electronic versions:
EU*US eHealth Works to Improve Global Workforce Development

For the past several decades, healthcare organizations and providers in the United States, the European Union and other countries around the globe, have advanced the digital transformation of healthcare to help increase quality, safety and efficiency. Health information technology/eHealth enables healthcare workers and providers the opportunity to maximize their care delivery, ultimately resulting in better outcomes for patients, consumers and society.

The core of any healthcare system is its workforce. Therefore, healthcare systems require a robust supply of highly skilled professionals who are proficient in eHealth/health IT to use, operate and maintain the digital services, which are an increasingly essential part of their infrastructure. Some of these professionals are front-facing care providers such as doctors, nurses, pharmacists and other caregivers and need “eSkills” to achieve and sustain success in their work. Others are on the extended healthcare team, such as clinical informaticists, health information sta?, biomedical engineers and researchers, employ eHealth on a daily basis where the use of ICT (information and communications technology) is critical. Furthermore, some healthcare sta? that may not be traditionally thought of as using ICT in their work, such as pastoral care workers (clergy), environmental workers, or nutritional sta?, who are also more frequently relying on digital services and technology to manage their daily tasks.

To take on these expanded duties, all workers within the healthcare environment must be trained in eHealth, preferably before they even receive their first job. Therefore, the development and advancement of a healthcare workforce equipped with eHealth skills is vital to the present and future state of healthcare. This eHealth enabled workforce will assure that systems keep working functionally, that clinical workflows are incorporated into technology, and that healthcare is delivered in a manner that is safe, secure and qualityinfused.

This paper will discuss the ways in which the EU*US eHealth Project, in cooperation with its Consortium members and a large stakeholder community, will work to measure, inform, educate and advance development of a skilled eHealth workforce throughout the European Union, United States and globally, with the goal of creating a legacy of digitally empowered health care professionals now and in the future.

General information
State: Published
Ministry of Education publication type: D2 Article in professional manuals or guides or professional information systems or text book material
Authors: Blake, R., Shaw, T., Blake, A., Hübner, U., Kaye, R., Schug, S., Thye, J., Värri, A.
Number of pages: 12
Pages: 1-12
Publication date: 7 Mar 2017