TITLE:

Telematic system supporting patients with diabetic foot ulcerations

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SCIENTIFIC DISCIPLINE: biomedical engineering

PROJECT DESCRIPTION (max. 2500 characters; *containing general information on the scientific purpose of the project and research hypotheses, the state of art, a short research plan and research methodology*)

Podiatrists dealing with patients with wounds that are complications of diabetes observe a low level of patient compliance with their recommendations. As a result the high percentage of amputations within the lower limbs is observed, which in turn contributes to high mortality comparable to cancer and cardiovascular diseases [1]. Currently, only about 30% of patients' wounds are closed within 3 months. Such low effectiveness of treatment can be compared with that of placebo. Therefore, a telematic system is needed that, based on the measurement data such as wound surface area, glycemic control (glycemia and glycosylated hemoglobin), body weight, diet and exercise, would make the patient aware that he or she is not following the recommendations and that may have a negative effect on the treatment outcome. There are proofs presented in scientific papers showing that good metabolic control leads to faster wound healing. Patients with diabetic foot syndrome are usually not aware of that and do not care about regular and proper administration of oral medications or insulin, they rarely follow a diet, do not try to achieve a proper body weight and do not care about their fitness.

The person developing such an automatic system, which, based on the rate of reduction of the wound surface area and other data, e.g. a reported lifestyle change, would automatically generate messages and sent them to the patient. These messages would take the form of: (a) advice to identify possible factors contributing to insufficient treatment progress, (b) incentives to change the lifestyle, and (c) indicate good wound healing results and praise patients who have achieved good results. After implementing such a system, a randomized study would be conducted to compare the effectiveness of such a system and the standard way of treatment.

REFERENCES:

1. Armstrong DG, Swerdlow MA, Armstrong AA et al. Five year mortality and direct costs of care for people with diabetic foot complications are comparable to cancer. J Foot Ankle Res. 2020; 13:16.