

# Technological development for Peruvian health reality

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## **Height and weight measuring device prototype**

Child malnutrition is a very important issue in Peru, since 7.6% (2005) of the children aged less than five have global malnutrition. Therefore, malnutrition measurement campaigns are conducted in several rural populations which, mainly, register two anthropometric measurements: weight and height. The difficulty lies in the fact that said measurement devices decalibrate frequently, and they are heavy and hard to transport. Therefore, effort and considerable time is required to obtain a measurement per person.

This prototype consists of one device that enables to calculate the weight and height of a specific person. Due to its application in rural areas, this device is portable and easy to transport. Likewise, it can record up to 1000 patients with their corresponding height and weight stored in a Flash Drive. The device can be calibrated semi-automatically and the time required for each people measurement is no longer than one minute.

## **Secretion aspirator prototype**

A secretion prototype is a medical device used to suck fluids of critical-state patient airways. Its use covers emergency rooms and intensive care units.

The devices located in the hospitals are completely mechanical therefore they have some problems of obstruction and filtering defects in the internal bomb mechanism. Likewise, these devices do not keep constant fluid absorption strength for a long time. Based on the foregoing, said devices require a permanent control of the nursery staff.

The prototype presented has four constant suction strength modes achieved thanks to automation mechanism. Such strength values are the typical ones used by nursery staff. Moreover, the equipment has an alarm system to detect obstructions in suction and the liquid level in the secretion container. In addition, this prototype has an easy-access digital menu for nursery staff.

### **Diabetic foot template prototype**

Diabetes is a disease which affects the human body capacity to produce insulin. It is proved that 70% of diabetic people experience any peripheral neuropathy. Particularly, foot lesions are dangerous for diabetic people because their treatment is not easy and consequently it is preferably not to suffer from them.

For this reason, it is aimed to develop an electronic template for diabetic foot and thus to know which strength points in a patient foot can commence a preventive treatment.

The prototype presented consists of a sensor template used to identify regions with risk of skin tears. The template catches strength data and it is shown in a computer machine by using particular software. In this case, the specialist physician can see a scheme showing the patient skin and strength points described by a color indicator. In this way, the skin points which are generating more strength can be identified easily and thus the corresponding preventive treatment can commence.

### **Geriatric spring scale prototype**

During his old age, the man reduces his physical activity which causes a degenerative loss called Sarcopenia. For said reason, some devices which can diagnose a patient's frailty have been developed, so that it can be helpful to decide which limit a patient can tolerate in a treatment.

An example of this case arises out when deciding if an adult can face a chemotherapy treatment. In this case, the patient's frailty develops a main role in such decision.

This geriatric spring scale prototype is a low-cost digital device which can obtain force measurements (in kilograms-strength) through the manual sensor strength modulated by the patient. Strength is measured on real time and it is seen, either in a device screen or in a computer, through a software application designed to communicate with the instrument. Each trial has a maximum duration of 10 seconds.