Norwegian Centre for
E-health Research

Fact Sheet No. 4/2016
ISSN: 2535-2776

Wearable technologies and Sensors

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Wearable technology

Smartwatches are becoming a widely adopted piece of wearable technology. For example, diabetes applications are more commonly supporting synchronization of data between smartwatches and smartphones, e.g. [1-3]. The most important features for using a smartwatch app for diabetes self-management are:

- Quick registration, access and review of health parameters (medication, nutrition, health parameters)
- Automatic physical activity tracking
- Providing reminders to measure blood glucose or enter other health parameters

Video demonstrating how to record vital diabetes data through a smartwatch application: https://www.youtube.com/watch?v=eiJLQwxLpMU

Sensors

Medical sensors are becoming smaller and are often equipped with wireless communication (e.g. FreeStyle Libre, Dexcom G5, Bragi Dash earphones). And despite high costs for use, continuous glucose monitors (CGM), for example, are gaining popularity. However, the future impacts both to patient health and health expenses, has not yet been calculated nor factored into health and care sector planning. Also, the border between fitness products and patient products is becoming fuzzier, due to the increased quality of fitness apps and sensors and their relevance to disease-specific areas.

Wearable technology. Photo: Jarl-Stian Olsen, Norwegian Centre for E-health Research

Use of wearable technologies and sensors such as smartwatches, fitness trackers and implantable glucose monitors are on the rise.

These devices can measure parameters about the patient and patient environment such as number of steps, stress level, sleep patterns, body hydration and blood pressure.

In addition, options for sensor-wearable integration are advancing (smartwatches, wristbands and ear plugs/phones), including the ability to perform advanced biometrics such as information about stress level, sleep patterns, body hydration, blood pressure, UV exposure, etc.

The first implantable glucose sensor is about to be tested in Norway, the Eversense from Senseonics [4]. People can already buy implantable NFC-tags for access control, (health) information storage, payment, etc. Health care personnel are reluctant to perform implantations of most sensors, which limits the options for potential users.

In addition to sensors, medication dosing systems are more commonly launched with embedded wireless communication, e.g. the Bluetooth insulin pens ESYSTA [5] and InPen [6], and pill dispensers, e.g. the RxPense [7].

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