

## Wearable Sensors and Systems: Integrating Technology for Clinical Applications

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When designing wearable systems to be used in clinical practice, it is important to adopt a user-centred design approach. Wearable sensors should be easy to use, comfortable to wear, and minimally obtrusive. Sensors should be easy to clean and should be water-proof as subjects need to be able to shower or take a bath without having to remove the sensors. Remote access to the data should be fully integrated into the system design, thus addressing data flow management and performance of analysis of the physiological information gathered using wearable systems. The adoption of wearable technology to monitor health status in individuals at the point of care (including, for instance, the office of the general practitioner) would likely lead to early diagnosis of medical conditions with great benefit to the patient. Besides, the healthcare system would witness a reduction in medical costs due to enhanced ability that the adoption of wearable technology provide allow practitioners with. Trials aimed at demonstrating clinical validity of these technologies should be pursued in order to facilitate adoption of wearable systems. We anticipate that providers (e.g. physicians) would accept the diagnostic quality of the recordings performed using wearable sensors only if extensive clinical studies are performed using such technology. Evaluation procedures comparing new sensor technologies to conventional equipment should be established to facilitate the validation of wearable systems. This process is challenging. For instance, if one had developed a new wireless ECG sensor, comparison with traditional technologies would be problematic because, for instance, the recordings may not be directly comparable to traditional methods relying on standardized ECG leads. Finally, one has to face the challenge of obtaining certification of the equipment for medical application.