The aim of this paper is to discuss how recent developments in the field of big data may potentially impact the future use of wearable sensor systems in healthcare. The article draws on the scientific literature to support the opinions presented by the IMIA Wearable Sensors in Healthcare Working Group. The following is discussed: the potential for wearable sensors to generate big data; how complementary technologies, such as a smartphone, will augment the concept of a wearable sensor and alter the nature of the monitoring data created; how standards would enable sharing of data and advance scientific progress. Importantly, attention is drawn to statistical inference problems for which big datasets provide little assistance, or may hinder the identification of a useful solution. Finally, a discussion is presented on risks to privacy and possible negative consequences arising from intensive wearable sensor monitoring. Wearable sensors systems have the potential to generate datasets which are currently beyond our capabilities to easily organize and interpret. In order to successfully utilize wearable sensor data to infer wellbeing, and enable proactive health management, standards and ontologies must be developed which allow for data to be shared between research groups and between commercial systems, promoting the integration of these data into health information systems.
However, policy and regulation will be required to ensure that the detailed nature of wearable sensor data is not misused to invade privacies or prejudice against individuals.