

## ADVANCED BODY SENSORS AND NETWORKS FOR INFLIGHT BIOMEDICAL MONITORING

*DÉTECTEURS DE CORPS AVANCÉS ET RÉSEAUX POUR LA SURVEILLANCE BIOMÉDICALE INFLIGHT*

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**Introduction:** Wearable sensors include clothing and accessories that incorporate computer and advanced electronic technologies. A body area network (BAN), also referred to as a wireless body area network (WBAN) or a body sensor network (BSN), is a wireless network of wearable computing devices.

**Background:** BAN devices may be embedded inside the body, implants, may be surface-mounted on the body in a fixed position or may be accompanied devices which humans can carry in different positions, in clothes pockets, by hand or in various bags. Wearable devices are available in various types including smart glasses, smart contact lenses, smart socks, smart patches and electrodes, smart fabric, electronic shirts and suits, electronic skin patches, flexible electronics, smart earphones, smart watches, smart bracelets, smart necklaces, smart rings, transient electronics, etc. Wearable devices such as physical activity trackers are embedded with electronics, software, sensors and connectivity to enable objects to exchange data with the manufacturer, the user and/or other connected devices, without requiring human intervention. Wearable medical devices are designed for the monitoring of blood pressure, blood glucose, alertness, sleep, physical activity/exercise, vital signs (heart rate, respiratory rate, body temperature), pulse oximetry, body fat percentage, body position and posture, fall detection, electrocardiography, electro-myography, ultraviolet light exposure, bowel movements, medication intake, sweat composition (lactate, electrolytes), skin pressure, etc. Advanced body sensors and networks could be used as the next generation of non-invasive, wireless, small, light-weight, low mass, and self-powered inflight biomedical monitoring devices for aerospace crews, passengers and air ambulance patients.

**Summary:** The development and practical application of these advanced medical technologies are rapidly changing the scope and complexity of Aerospace Medicine and its impact on human safety and performance during flight.