

Health and Climate Changes: "Ippocrate" a New Alert System to Monitor and Identify High Risk

Authors : A. Calabrese, V. F. Uricchio, D. di Noia, S. Favale, C. Caiati, G. P. Maggi, G. Donvito, D. Diacono, S. Tangaro, A. Italiano, E. Riezzo, M. Zippitelli, M. Toriello, E. Celiberti, D. Festa, A. Colaianni

Abstract : Climate change has a severe impact on human health. There is a vast literature demonstrating temperature increase is causally related to cardiovascular problem and represents a high risk for human health, but there are not study that improve a solution. In this work, it is studied how the climate influenced the human parameter through the analysis of climatic conditions in an area of the Apulia Region: Capurso Municipality. At the same time, medical personnel involved identified a set of variables useful to define an index describing health condition. These scientific studies are the base of an innovative alert system, IPPOCRATE, whose aim is to assess climate risk and share information to population at risk to support prevention and mitigation actions. IPPOCRATE is an e-health system, it is designed to provide technological support to analysis of health risk related to climate and provide tools for prevention and management of critical events. It is the first integrated system of prevention of human risk caused by climate change. IPPOCRATE calculates risk weighting meteorological data with the vulnerability of monitored subjects and uses mobile and cloud technologies to acquire and share information on different data channels. It is composed of four components: Multichannel Hub. Multichannel Hub is the ICT infrastructure used to feed IPPOCRATE cloud with a different type of data coming from remote monitoring devices, or imported from meteorological databases. Such data are ingested, transformed and elaborated in order to be dispatched towards mobile app and VoIP phone systems. IPPOCRATE Multichannel Hub uses open communication protocols to create a set of APIs useful to interface IPPOCRATE with 3rd party applications. Internally, it uses non-relational paradigm to create flexible and highly scalable database. WeHeart and Smart Application The wearable device WeHeart is equipped with sensors designed to measure following biometric variables: heart rate, systolic blood pressure and diastolic blood pressure, blood oxygen saturation, body temperature and blood glucose for diabetic subjects. WeHeart is designed to be easy of use and non-invasive. For data acquisition, users need only to wear it and connect it to Smart Application by Bluetooth protocol. Easy Box was designed to take advantage from new technologies related to e-health care. EasyBox allows user to fully exploit all IPPOCRATE features. Its name, Easy Box, reveals its purpose of container for various devices that may be included depending on user needs. Territorial Registry is the IPPOCRATE web module reserved to medical personnel for monitoring, research and analysis activities. Territorial Registry allows to access to all information gathered by IPPOCRATE using GIS system in order to execute spatial analysis combining geographical data (climatological information and monitored data) with information regarding the clinical history of users and their personal details. Territorial Registry was designed for different type of users: control rooms managed by wide area health facilities, single health care center or single doctor. Territorial registry manages such hierarchy diversifying the access to system functionalities. IPPOCRATE is the first e-Health system focused on climate risk prevention.

Keywords : climate change, health risk, new technological system

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