Advanced platform for Real-Time Predictive Analytics for Earlier Intervention of Patient Instability

VitalMiner is an advanced analytic patient monitoring platform that is capable of early detection and prediction of clinical deterioration in patients at high risk due to injury or medical illness well before there are changes in the monitored parameters (by current patient monitors) in order to save lives, reduce hospital costs, contribute to better patient outcomes, faster recovery and shorter hospital stays.VitalMiner synthesises patient vital signs and translate it into meaningful information that helps care providers identify patients most at risk at any given moment and allocates resources accordingly.

The need

Hemodynamic instability is considered as one of the most critical events that require effective and prompt intervention in the intensive care unit (ICU).It is most commonly associated with an abnormal or unstable blood pressure (BP), especially hypotension, or more broadly associated with inadequate global or regional perfusion. Inadequate perfusion may result in damage of vital organs.Earlier recognition and intervention can save more lives and prevents complications such as kidney failure and neurologic impairment. The currently available patient monitors contribute to the late or missed diagnosis of shock because they measure and display absolute values of blood pressure and do not provide trend alarms, but rather issue an alert once a threshold is crossed. Conventional patient monitoring and treatment mainly rely on manual inspections and experienced-based judgments from clinicians and nurses and they are not capable of learning predictive models.This approach is labor intensive and is susceptible to human errors especially in the high stressed environments of the intensive care units, emergency rooms, and the operating room. A widely recognised challenge is that pediatric patients with potentially life threatening injuries or infections often do not have obvious or typical signs suggesting that their injuries or illnesses are severe.
The unmet medical need is earlier prediction of physiologic deterioration of patients. This need could be met with an 'intelligent' patient monitoring software.

Market Opportunity

The driving factors of the patient monitoring market include growing population size of the elderly, rising incidences of unhealthy lifestyle, and technological developments like portability of equipment. The cardiac monitors segment had the largest share in 2015 of the total patient monitoring devices market, whereas neuromonitoring devices segment will be the fastest growing segment by 2020. On the basis of products, patient monitoring devices market is segregated into nine main segments, namely, hemodynamic, neurology, cardiac, respiratory, fetal and neonatal, multiparameter, remote patient monitors, temperature, and weight management monitors. The respiratory monitors segment is also expected to grow at a high pace in the forecast period.

The patient monitoring market is expected to reach USD 27.71 Billion by the end of 2020, growing at a CAGR of around 5.8% from 2016 to 2021

Possible applications for predication and early detection of life threatening complications and patient deterioration:

- Elderly/chronic illness patients in ICU
- Home/remote monitoring
- Platform for remote sensing Incorporated with wearable device
- Prioritising the next level of care of combat/mass casualties
- Respiratory deterioration events
- Early detection of Critically ill elderly patients in senior living or nursing homes

VitalMiner Key Benefits:

- Cutting edge real-time predictive analytics
- Reduced morbidity
- Foster care coordination with confidence
- Early alerts for patient instability condition
- Reducing time in ICU
- Clinical decision support tool
- Reduce hospital's treatment costs
- Clinical and operational benefits to all layers of caregivers

Patent status:pending

Contact for Information: Itzik Mashiach, BGN Technologies Ltd., itz@ovelatech.com

VitalMiner is an outcome of collaborative development between Cincinnati Children's Hospital, US & Ben Gurion University, Israel