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Targeted cardio-respiratory rhythms monitoring used as decision support system in neonatology

Patrick Pladys[1, 2, 3]
[1]Rennes University Hospital, France
[2]Rennes 1 University, France
[3]Laboratoire Traitement du Signal et de l'Image, France

In the EU, more than 200000 infants are hospitalized each year in a European neonatal care unit during a critical developmental period. During this period, the risk of sepsis is high with a high risk of mortality and many environmental exposures have been shown to impact long-term neurobehavioral outcomes. These observations justify the development new methods to monitor the risk of sepsis, the comfort and the evaluation of cardio-respiratory and sleep/neuro-behavioral development. These methods have to be as non-invasive as possible to preserve the environment of the developing brain. They have also to be useful and usable to make health care more efficient and safer by helping the clinicians and nurses in their decisions. There is an increasing amount of available clinical scores and complex physiologic variables that can be monitored for which the bedside interpretation and integration is not always easy and sometime contributes to the exposition of the nurses to alarm fatigue. A new generation of multi-modal non-invasive monitoring begins to be available based on the creation of composite indices integrating targeted clinical data together with physiological signals (heart rate and respiratory rate variability, movement and sound analysis, oxygen saturation and perfusion indices). These indices have started to be tested in clinical studies with promising results in the fields of late onset sepsis (decrease in late onset sepsis related mortality) with interesting perspectives in evaluation of cardio-respiratory maturation, risk of severe cardio-respiratory events or sleep-wake cycle maturation.

Biography

Patrick Pladys, MD-PhD, is Head of Pediatrics Department of Rennes University Hospital in France; and is Neonatologist, Expert in signal analysis, neonatal physiology and clinical studies. He is the Leader of the GCS HUGO (Hugoperen) Organization on Health Technology in Pediatrics (HUGOPEREN) in the western part of France. He is also In-charge of the pediatric team of the Research Center for Clinical Investigation of the Rennes University Hospital. He is now In-charge of the Scientific Coordination of the Digi-NewB Project which has received funding from the European Union's Horizon 2020 Research and Innovation Program under Grant Agreement N°689260.

patrick.pladys@chu-rennes.fr

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