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Leveraging Smart Infusion Pump Data for Workflow, Patient Care and Usability Improvement in Human Factors

Yan Ni Ding[1], Denny Yu[1], Poching DeLaurentis[2], Joon Hong Kim[1] and Kang-Yu Hsu[1,2]
[1]School of Industrial Engineering, Purdue University, West Lafayette, Indiana
[2]Regenstrief Center for Healthcare Engineering, West Lafayette, Indiana

ABSTRACT

Infusion pumps are medical devices that deliver fluids like medication, and nutrients in a precise, timely, and controlled manner that is critical to patient care. It is widely used in clinical settings especially in hospitals, nursing homes and sometimes at home. Smart infusion pumps technology are supposed to be reduce nurses' workload, but due to the recurring number of alarms which disrupt the workflow of the infusion process, most nurses prefer to use the traditional infusion pumps or work-around the safety features of the smart pumps. Thus, the aim of this research is to leverage Smart Infusion Pump data to improve patient care, provider workflow, and usability. The data for this research is provided by the Regenstrief Center of Healthcare Engineering and a big data management hub, CatalyzeCare.org where a collaborative community of 123 health institutions contributed infusion pump data. By analyzing the data, the frequency and causes of the recurring alarms and also a detailed event of the workflow during the infusion process can be determined. However, one uncertainty about the data is the proper definition of one infusion process and ways to minimize the recurrences of the alarms. Hence, further analysis is being carried out to further investigate the problem and also to improve the usability of the Smart Infusion Pumps in the healthcare industry.

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KEYWORDS

Infusion Pumps, Human Factors, Workflow