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Using Work Domain Analysis to analyse perfusionists' conceptualisation processes during routine and failure cardio-pulmonary bypass scenarios

Anne Miller

Key Centre for Human Factors and Applied Cognitive Psychology
The University of Queensland
amiller@humanfactors.uq.edu.au

Joe Power

Department of Anaesthesia
Princess Alexandra Hospital, Brisbane
Gerald_Power@health.qld.gov.au

Abstract

Cardio-pulmonary bypass (CPB) involves the maintenance of whole body perfusion during cardiac surgery procedures. While CPB is very safe, emergencies do occur and perfusionists are expected to respond appropriately to these. However, despite their responsibilities perfusionists' training programs appear to be underdeveloped. In addition, there appears to be little understanding about how perfusionists conceptualise their work domain during routine and failure modes of operation. This paper presents a Work Domain Analysis-based (WDA) protocol for analysing perfusionists conceptualisations. A WDA of the CPB work domain is presented. A high fidelity simulation environment with a video-cued recall interview data collection protocol is described and a Markov Chain analysis of verbal protocols is outlined using two participant data sets. We conclude that with further participant data analysis this novel approach offers promising insights into conceptualisation processes and exposes additional procedural, organisational and engineering issues that may need to be included or accommodated in formal perfusion curriculum development.