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### Feasibility Assessment of a Pre-Hospital Automated Sensing Clinical Documentation (ASCD) System

**Background:** Limited resources and fast-paced, high-acuity are challenges to clinical documentation in the pre-hospital setting. The development of an automated documentation system would increase the accuracy and amount of information that is relayed to receiving physicians in emergency departments. The goals of this project were to assess the feasibility of deploying an Automated Sensing Clinical Documentation (ASCD) system in the pre-hospital setting and to find solutions to the barriers encountered.

**Methods:** The Nashville Fire Department (NFD) in partnership with Vanderbilt University Medical Center, a level I trauma center that receives a high volume of acute trauma patients, deployed the ASCD system. NFD provided two paramedic participants to test the system, and their informed consent was obtained. Since patients were not directly involved in the study, their consent was not required. At the start of each shift, the clinical researcher equipped one of the paramedics with the ASCD system. During each patient transport, the researcher sat in the "airway" seat of the ambulance. To mark the start and stop times for each procedure that the paramedic performed, an observational study technique and a custom time-motion tool was used. These data were sent to the bioinformatics team, who used it to determine the accuracy of the equipment. Following each observation, the paramedic completed a debrief questionnaire regarding their perception of using such a system. In addition, paramedics used a field journal to document

observations that included any challenges encountered along with their solutions.

**Results:** The majority of the barriers encountered pertained to system connectivity. Several live feedback systems were installed in order to ensure that the individual components of the system were constantly collecting data during the observation. Additionally, the debrief survey indicated that despite the equipment being slightly uncomfortable, the paramedics were willing to wear it for the entire duration of their shift and thought the ASCD system would be a useful supplement to current documentation techniques.

**Conclusions:** The preliminary results suggest that the ASCD system is feasible for use in the pre-hospital setting, and also elucidated several barriers and their solutions. Other than the equipment being moderately uncomfortable, the paramedics suggested that the ASCD system did not impede their ability to perform procedures and that it would be a helpful tool for documentation, thereby improving care for patients.

