The ContextifyHub - Providing Essential Data to Improve Patient Outcomes in Neurocritical Care

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Team

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Need

• Traumatic brain injury is a leading cause of death and disability in the US, resulting in an estimated 288,000 hospitalizations, most of which require neurocritical care.[1]

• 'Contextual factors' include environmental conditions, patient interventions, and intracranial pressure draining stopcock usage
  • These factors may impact patient outcomes, but a lack of quantitative data exists to fully define their impact.[2,3,4]

Design Inputs

Key Constraints

- Disinfection by EPA certified solutions
- No emissions above background level
- Labeled MR unsafe
- Power 18 days

Requirements

- Light 0-5000lux
- Sound 20Hz-20kHz
- Temp 60-90°F
- SPS 4 positions

Verification Testing

• Each hub sensor underwent testing to ensure its requirement was met
• The SPS was further evaluated to ensure function

Deployment

• Currently being tested at UT Southwestern Medical Center in an IRB approved study
• Initial feedback from clinicians is positive
• Allows for better informed treatment decisions, potentially improving patient outcomes

Future Work

• Optimization of SPS battery-life
• Additional sensing modalities
• Tracking of patient interventions
• Enhanced integration with hospital data systems

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