

Researchers create road map of care for children with severe head trauma

January 24 2019, by Bobbi Nodell

Severe traumatic brain injury is a leading cause of death and disability in children leaving 61 percent of survivors with a lifelong disability, according to the U.S. Centers for Disease Control and Prevention and the National Institutes of Health.

Guidelines have existed to treat [pediatric patients](#) with severe [head trauma](#), but there has been no standardized measure of their effectiveness.

Now, researchers at Harborview Medical Center in Seattle have developed a protocol that incorporates current guidelines and assesses their effectiveness. The "Pediatric Guideline Adherence and Outcomes" protocol (PEGASUS), was tested among 199 pediatric cases at Harborview, and the results were recently published in *The Lancet Child & Adolescent Health*.

PEGASUS is the first comprehensive care model for children with head trauma, said lead researcher Monica Vavilala, director of Harborview's Injury Prevention and Research Center.

"We've been able to provide a roadmap for what is agreed-upon as good quality care," she said.

In an accompanying editorial, author Jose Pineda of the Washington University School of Medicine in St. Louis said the PEGASUS approach could benefit other acute-care settings.

"More studies are needed, but the PEGASUS investigators clearly took an important step towards rigorous implementation and testing of available evidence," he said.

Vavilala and colleagues evaluated three essential parts of the PEGASUS protocol in the first 72 hours after the diagnosis of severe traumatic [brain](#) injury: Maintenance of cerebral perfusion pressure (>40 mm HG), which indicates [blood flow](#) to the brain; avoidance of hypocarbia (reduced carbon dioxide in the blood) without brain herniation; and early initiation of nutrition.

Of the 199 patients, 105 contributed data for all three key performance indicators. Adherence to at least one key performance indicator was achieved by 101 (96 percent) and 44 (42 percent) achieved adherence to all three targets.

Higher discharge survival was associated significantly with achieving adherence to cerebral perfusion pressure and nutrition targets, according to the study.

The protocol also benefited children with mild to moderate traumatic brain injury, who often deteriorate in hospital.

"Our study is, as far as we know, the first to assess both implementation and effectiveness of a hospital-wide program to improve care and outcomes for pediatric traumatic brain injury," the researchers said.

Vavilala said further research is needed to study the PEGASUS program in other contexts, particularly in low resource healthcare settings, where most children with severe traumatic brain [injury](#) receive care.

Harborview Medical Center, a level 1 trauma center for the region, sees about 120 children a year suffering from [traumatic brain injury](#) most

often by falls or car accidents.

More information: Monica S Vavilala et al, The Pediatric Guideline Adherence and Outcomes (PEGASUS) programme in severe traumatic brain injury: a single-centre hybrid implementation and effectiveness study, *The Lancet Child & Adolescent Health* (2018). [DOI: 10.1016/S2352-4642\(18\)30341-9](https://doi.org/10.1016/S2352-4642(18)30341-9)

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