

Breakthrough study sheds new light on best medication for children with seizures

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A recently published clinical study in the *Journal of the American Medical Association* has answered an urgent question that long puzzled ER pediatricians: Is the drug lorazepam really safer and more effective than diazepam – the U.S. Food and Drug Administration-approved medication as first line therapy most often used by emergency room doctors to control major epileptic seizures in children?

The answer to that question – based on a double-blind, [randomized clinical trial](#) that compared outcomes in 273 seizure patients, about half of whom were given lorazepam – is a clear-cut "no," said Prashant V. Mahajan, M.D., M.P.H., M.B.A., one of the authors of the study.

"The results of our clinical trial were very convincing, and they showed clearly that the two medications are just about equally effective and equally safe when it comes to treating status epilepticus [major epileptic brain seizures in children]," Dr. Mahajan said. "This is an important step forward for all of us who frequently treat kids in the ER for [epilepsy-related] seizures, since it answers the question about the best medication to use in ending the convulsions and getting these patients back to normal brain functioning."

Describing the brain convulsions that were targeted by the study, its authors pointed out that status epilepticus occurs when an epilepsy-related seizure lasts more than 30 minutes. Such seizures – which occur in more than 10,000 U.S. pediatric epilepsy patients every year – can cause permanent brain damage or even death, if allowed to persist.

Published in *JAMA*, the [study](#), "Lorazepam vs Diazepam for Pediatric Status Epilepticus: A Randomized Clinical Trial," was designed to test earlier assertions by many clinicians that lorazepam was more effective at controlling pediatric seizures. The study-authors wrote,

"Potential advantages proposed in some studies of lorazepam include improved effectiveness in terminating convulsions, longer duration of action compared with diazepam, and lower incidence of respiratory depression. Specific pediatric data comparing diazepam with lorazepam suggest that lorazepam might be superior, but they are limited to reports from single institutions or retrospective studies with small sample sizes, thus limiting generalizability."

Based on data collected over four years at 11 different U.S. pediatric emergency departments, the new study found that "treatment with lorazepam [among pediatric patients with [convulsive status epilepticus](#)] did not result in improved efficacy or safety, compared with diazepam."

That determination led the study authors to conclude: "These findings do not support the preferential use of [lorazepam](#) for this condition."

Dr. Mahajan, a nationally recognized researcher in pediatric emergency medicine and a Wayne State University School of Medicine pediatrics professor recently appointed chair of the American Academy of Pediatrics Executive Committee of the Section on Emergency Medicine, said the *JAMA* study provides "a compelling example of how effective research in pediatric medicine, based on treatment of patients right in the clinical setting, can play a major role in improving outcomes."

Children's Hospital of Michigan Chief of Pediatrics Steven E. Lipshultz, M.D., said this recent breakthrough will "undoubtedly result in better care for pediatric patients who present in the emergency room with seizures related to epilepsy.

"There's no doubt that combining excellent research with excellent treatment is the key to achieving the highest-quality outcomes for patients – and Dr. Mahajan's cutting-edge study is a terrific example of how kids are benefiting from the

research that goes on here at Children's every single day," said Dr. Lipshultz.

Provided by Wayne State University

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