

## Better, Safer Treatment for Seizure Victims Discovered

By Al Bravo, College of Medicine-Phoenix, February 15, 2012

### A national study involving the UA and Glendale Fire shows superior emergency treatment.

GLENDALE, Ariz. – A better, safer emergency treatment for potentially fatal seizure victims has been found, according to a federal study that involved the [University of Arizona Emergency Medicine Research Center](#) and the Glendale Fire Department.

The National Institutes of Health announced today the results of a two-year study involving the drugs administered by emergency personnel to seizure victims showing that an alternate drug, given by intramuscular injection, is faster and is a more effective way to stop a prolonged seizure lasting longer than five minutes.

The RAMPART study was conducted through 17 "hubs" nationally, including the UA center, which worked with the Glendale Fire Department to identify victims and administer the study treatment.

"We are thrilled to see that this new treatment improves the emergency care of those with prolonged seizures," said Dr. Dan Spaite, the local principal investigator for the study and director UA College of Medicine-Phoenix of emergency medical services research at the UA Emergency Medicine Research Center, part of the university's [College of Medicine](#).

"How these patients are treated by emergency personnel is critical for those with prolonged seizures, which kills 55,000 Americans annually."

The study showed that using the auto-injector was faster and more effective at stopping seizures than other methods.

"Starting IVs in the field can be very challenging for first responders and can be dangerous to emergency personnel," Spaite said. "So treating victims with an intramuscular injection has numerous advantages over the traditional intravenous route, and has now been proven to be more effective also."

The RAMPART study, sponsored by the National Institutes of Health, sought to determine whether an intramuscular injection, which quickly delivers anticonvulsant medicine into a patient's thigh muscle, is as safe and effective as giving medicine directly into a vein. The study, which was carried out by paramedics, compared how well delivery by each method stopped patients' seizures by the time the ambulance arrived at the emergency department.

"This finding will change the treatment of this critical, often fatal emergency throughout the state of Arizona and around the world," said Spaite. "This will have a major impact on the effectiveness of the treatment of these patients before they arrive at the hospital."

"I am pleased and proud that the individuals involved provided for such a successful outcome," said Glendale Fire Chief Mark Burdick. "The partnership among the University of Arizona College of Medicine, Arizona Department of Health Services and the Glendale Fire Department helped enhance the treatment of a disease that impacts more than 50,000 people a year. We are excited to continue our partnership to help save lives and provide benefit to the community."

In the study, investigators compared midazolam and lorazepam, two medicines known to be effective in controlling seizures. Midazolam is rapidly absorbed after being given in the muscle but lorazepam must be given by IV, which may be difficult or impossible in a seizing patient.

The study found that 73 percent of patients in the group receiving midazolam were seizure-free upon arrival at the hospital, compared to 63 percent of patients who received IV treatment with lorazepam. Patients treated with midazolam were also less likely to require hospitalization than those receiving IV lorazepam.

Among those admitted, both groups had similarly low rates of recurrent seizures. The NIH study appears in the Feb. 16 issue of The New England Journal of Medicine.

"We express our tremendous gratitude to the Glendale paramedics, fire department leadership, City Council and the citizens of the city of Glendale for their strong support of this study," said Dr. Kurt Denninghoff, principal investigator for the Arizona hub of the national research collaboration that carried out the study and associate director for the UA center.

"The collaboration between the Glendale Fire Department and the University of Arizona has been excellent and, as a result, it will save lives in our state."

Denninghoff added that the study results are particularly important in Arizona since the new drug midazolam is much more stable in higher temperature environments than lorazepam.

"In fact, the Glendale Fire Department and the University of Arizona will continue to study the stability of these seizure medications in the extremely hot emergency medical environment of the Arizona summer," he said.

Finally, Spaite highlighted the fact that, among all of the 17 EMS systems involved across the country, the Glendale Fire Department scored No. 1 on the parameters that measured the quality of how well they conducted the study.

"Given the highly challenging, uncontrolled environment that the paramedics work in, it is remarkable that they were able to carry out this sophisticated research study with such exceptional precision, accuracy, and quality," Spaite added. "We are greatly indebted to the Glendale Fire Department."



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