Study supports use of quick shot for seizures

February 27 2012, By John Sanford

For treating prolonged seizures outside a hospital setting, a quick intramuscular shot of anti-convulsant medication with an auto-injector, a kind of spring-loaded syringe, is as effective - if not more effective - than starting an intravenous line to administer medicine directly to the bloodstream.

That's the finding of a new study by researchers at Stanford and 16 other universities and hospitals nationwide. The study was published Feb. 16 the *New England Journal of Medicine.*

The finding is important because giving a shot to someone who is convulsing is generally safer and less time-consuming than starting an IV, said James Quinn, MD, a professor of emergency medicine at Stanford and one of the study's investigators.

"If patients are having a grand mal seizure, it can be tough to find a vein and get the medicine started, and it may increase the chance of a needle-stick injury either to the patient or medic," Quinn said.

For this reason, emergency medical technicians treating status epilepticus in the field are always looking for an alternative, although to date the intravenous route has been considered the gold standard, Quinn said. But there has not been clinical-trial data about the safety and efficacy of the shot versus the IV drip. (The shot administers midazolam, a sedative; the IV administers lorazepam, a similar sedative.)

Among the patients who received midazolam, 73 percent were seizure-

free upon arrival at the hospital, the study reports, compared to 63 percent of patients who received IV treatment with lorazepam.

The clinical trial involved about 79 hospitals and 33 emergency medical services agencies, as well as more than 4,000 paramedics and 890 patients, according to the National Institutes of Health, which helped to fund it.

One interesting, behind-the-scenes aspect of this study was the unusual way in which patients were enrolled. Normally, patients involved in a clinical trial give informed consent, but in this trial they would be unconscious due to their seizures. However, the researchers were able to conduct the study under federal rules that provide exception from informed consent in studies of life-threatening emergencies.

Stanford investigators gained approval for exception from informed consent through a process overseen by the Stanford institutional review board. This process, which took place before the trial began in 2009, involved community consultation with potentially affected groups and public disclosure through newspaper and radio ads, in addition to press releases to local news media.

Another interesting aspect of the study: Roughly 250 firefighter-paramedics in Santa Clara and San Mateo counties had to be trained on how to conduct the clinical trial, given they were the first responders. "It required tremendous coordination," Quinn said. "For most of the firefighters, it was the first time they had done research. They did a great job, and I am proud of the job they and our research team did in this unique endeavor."

In addition to the NIH, the Biomedical Advanced Research and Development Authority funded the study. The Department of Defense's Chemical Biological Medical Systems Joint Project Management Office

supplied the auto-injectors.

Provided by Stanford University Medical Center