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Study: Lethal injection flawed

Inmates executed by this method may die in agony, says a research team who examined the drug cocktail.

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MIAMI -- Inmates put to death by lethal injection are supposed to die quickly and painlessly, but they actually might suffocate aware and in agony, a team of researchers concluded in a study released Monday.

In the report in the online publication "PloS Medicine," the eight-member team said the lethal drug cocktail used by dozens of states, including Florida, is flawed because the mixture doesn't necessarily work as intended.

"The reason that polls show most people support lethal injection is because they believe it is a humane medical procedure," said Teresa Zimmers, lead author of the study and a molecular biologist at the University of Miami's Leonard Miller School of Medicine. "We provide more evidence that it might be anything but. There's no question it's not a medical procedure. That is a sham."

Under the lethal-injection protocol, which Florida and most states copied from Oklahoma, three drugs are meant to work in combination to render inmates unconscious and then cause death by respiratory and cardiac arrest. Each drug is also supposed to be lethal on its own.

But the researchers, who analyzed drug dosages and the time between injection and death in 42 executions in North Carolina and eight in California, found that the first drug, an ultra-fast-acting barbiturate, might not be fatal or sufficient to keep inmates unconscious for the duration of their executions.

They also found that the third and final drug, potassium chloride, did not always induce cardiac arrest as intended. As a result, the researchers said, potentially aware inmates might die through painful asphyxiation induced by the second drug, pancuronium, which paralyzes the muscles.

"Thus the conventional view of lethal injection leading to an invariably peaceful and painless death is questionable," the report concluded.

A spokeswoman for Florida Corrections Secretary James McDonough said he had not reviewed the report and could not comment. But it is sure to add fodder to the continuing debate about Florida's death penalty, which former Gov. Jeb Bush suspended after the botched execution of Angel Nieves Diaz.

A convicted killer, Diaz died after 34 minutes and two doses of lethal drugs in December. A medical examiner concluded that his executioners had failed to properly insert Diaz's intravenous needles, forcing the lethal cocktail into the condemned man's tissue rather than his veins.

In the study, available on the public-access Public Library of Science at plos.org, the researchers argue that, while proper training might have avoided the "technical" mistakes made in Diaz's execution, the lethal-injection protocol is itself deeply flawed because it was adopted by most states on the opinion of two people in Oklahoma, without any experimental data or research.

"We take issue with the idea lethal injection is a humane medical means of execution," Zimmers said. "The protocol was not properly evaluated. There was no research, oversight and testing."

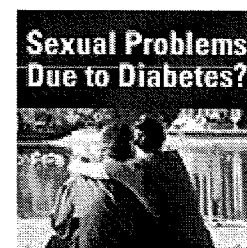
Researchers also found that most states, including Florida, specify the same dosage of the first drug, thiopental, for every condemned inmate, rather than calculate the proper dosage based on the inmate's weight. In Virginia, for example, the execution protocol calls for 2 grams of thiopental to be administered regardless of weight, which researchers said could be inadequate for a very large prisoner.

"For a large inmate, that would be less than the equivalent dosage you would use in trying to induce five to 15 minutes of anesthesia in a pig in a veterinary setting," Zimmers said.

Florida's protocol calls for 5 grams of thiopental, the same amount used in California, where one inmate continued breathing nine minutes after the first drug was injected, the report said. The researchers cited those nine minutes "as compelling evidence that even 5 grams of thiopental alone may not be lethal."

The researchers also identified what they said was a problem with the final drug, potassium chloride, which is supposed to cause cardiac arrest, but, they said, does not do so reliably. As evidence, they noted that North Carolina initially used only the first two drugs, but when the state added the third, it did not significantly speed up the time of death as expected. Researchers also cited a number of executions in which multiple doses of the third drug had to be administered.

The researchers, who in addition to Zimmers include five other UM faculty members, a pharmacologist in Spain and a Virginia lawyer who defends death-row clients, received no specific funding for their study. In addition to the lawyer, only one other researcher disclosed a potential



conflict of interest: David Lubarksy, the chairman of UM's department of anesthesiology, has been a paid expert in death-penalty litigation.

For now, the moratorium Bush imposed on Florida executions continues. The office of Gov. Charlie Crist is reviewing the Corrections Department's response to 38 recommendations issued last month by a commission Bush appointed to review lethal-injection procedures in the wake of the Diaz execution, said department spokeswoman Gretl Plessinger.

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