

## Reduced Infection When Antibiotics Are Given After Trauma



A new study published in the *Journal of Orthopaedic Trauma (JOT)* shows that infection rates can be significantly reduced by giving patients antibiotics within the first hour of injury. The study included 137 trauma patients who had open fractures of the tibia (shinbone). In an open fracture, bone sticks out through the skin or a wound penetrates down to the broken bone.

The finding suggests that allowing paramedics to administer antibiotics in the field “may substantially improve outcomes for severe open fractures,” first author Dr. William D. Lack, orthopaedic trauma surgeon at Loyola University Medical Center, and colleagues write in the JOT report. “This will require a collaborative effort between first responders and hospital providers.”

For years, infection rates from open fractures have remained stubbornly high. Patients in the study had Type III breaks, the most severe type of open fractures. The study was conducted at Carolinas Medical Center, where Dr. Lack completed a fellowship in orthopaedic trauma surgery before joining Loyola.

Key findings of the study include:

- Patients who received antibiotics longer than 66 minutes after their injuries were 3.79 times more likely to experience infections.
- Patients whose wounds were not covered within the first five days were 7.39 times more likely to experience infections.
- Among patients who received antibiotics within one hour and wound closure within five days, only 2.8 percent had infections.
- Patients who had either delayed antibiotics or delayed wound closure had a 10.2 percent infection rate.
- Patients who had both delayed antibiotics and delayed wound closure suffered a 40.5 percent infection rate.

Based on the results, the efficacy of administering antibiotics “was more sensitive to the timing of administration and more important to patient outcomes than previously demonstrated,” the research team notes.

In some patients, it may not be feasible to close wounds within five days due to such factors as swelling, skin loss and additional surgery. However, it is possible for paramedics to administer antibiotics in the field, says Dr. Lack, noting that paramedics already can administer certain other medications. In the military, for example, medics routinely administer antibiotics on the battlefield to soldiers with open fractures.

More research is needed to confirm that allowing paramedics to administer antibiotics is safe and effective, and Dr. Lack is participating in such a study underway at Carolinas Medical Center.

Dr. Lack is an assistant professor in the Department of Orthopaedic Surgery and Rehabilitation at Loyola University Chicago Stritch School of Medicine. In addition to Dr. Lack, co-authors of the study are Marc Angerame, MD; Madhav Karunaker, MD; Stephen Sims, MD; James Kellam, MD; Michael Bosse, MD; and Rachel Seymour, PhD.

Source: [Loyola University Health System](#)

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