

Does the New CDC Definition of Postoperative Infection Make Sense for Orthopaedic Trauma?

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Purpose: In 2016, the Centers for Disease Control and Prevention (CDC) changed the time frame in their definition of deep surgical site infection from within 1 year of index surgery to within 90 days. However, it is not uncommon for orthopaedic trauma patients to present with infection following fracture fixation beyond this time period. We hypothesized that a substantial number of infections in patients that had fracture fixation present beyond 90 days and that there are patient factors that distinguish this late presenting group from the earlier presenting group.

Methods: A retrospective review yielded 452 deep surgical site infections following fracture fixation between 2006 and 2015. This cohort of 452 patients was divided into 2 groups consisting of those who became infected within 90 days (308 patients) and those who became infected after 90 days (144 patients). Data were collected on multiple factors identified as being theorized risk factors for infection. Bivariate and multiple logistic regression analyses using these variables were performed to directly compare the 2 groups. A randomly selected control group was used to build infection prediction models for both outcomes. The 2 outcomes were then modeled against each other to determine if differences in the predictors for early versus late infection exist.

Results: Of the 452 infections identified, 144 of these infections occurred beyond 90 days (31.8%). There were no statistically significant patient factors found in logistic regression models between the early and late infection groups. The need for flap coverage as a result of initial soft-tissue injury was the only injury characteristic that differed significantly between the groups, with patients in the late infection group more likely to have needed a flap. When early infection is modeled against late infection, the only predictor of infection greater than 90 days postoperatively is need for flap coverage. Predictors for early and late infection (against the control group) are identical.

Conclusion: At our Level I trauma center, 31.8% of fracture patients who became infected did not meet the new CDC definition of postoperative infection. This suggests that the new CDC definition underestimates the rate of actual postoperative infections when applied to orthopaedic trauma patients. There are no identified patient-specific variables that make patients more susceptible to early versus late infection, although patients who require a flap for soft-tissue coverage are more likely to present with a late infection.