

# A Quality Review of Fluoroscopy Time as a Surrogate for Radiation Exposure During Intramedullary Nailing of Tibia, Femur, and Hip

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**Introduction:** Orthopedic trauma surgeons experience increased radiation exposure from frequent fluoroscopy use. Despite doses being within limits, cancer rates, especially breast and hematologic, are higher in female surgeons. This study examines the use of fluoroscopy in intramedullary nailing, analyzing trends by surgeon experience and case type.

**Methods:** A quality review was completed of intramedullary nailing of isolated hip, femur, and tibial shaft fractures at an urban level II trauma center between 2023-24. A total of 211 patient charts were reviewed: 94 males and 117 females. Injury, patient, and surgery details were recorded, along with fluoroscopy time. Surgeons were stratified by years of practice and specialty training. Descriptive statistics were used.

**Results:** Surgeons with 11–20 years of experience had an average fluoroscopy time of 94 seconds, and surgeons with less than 11 years of experience averaged 39.3 seconds. Trauma surgeons possessed a higher average fluoroscopy time of 98.72 seconds. Non-trauma surgeons averaged 87.92 seconds. Procedures performed on weekdays had an average fluoroscopy time of 87 seconds, while weekends showed increased usage, averaging 122 seconds.

**Discussion:** The study found higher fluoroscopy times in experienced surgeons and trauma cases, likely due to complexity. Non-trauma and weekday procedures had lower usage, suggesting more predictability and staffing. Weekend cases showed increased times, possibly from reduced staff or unfamiliarity among weekend teams at the Level II trauma center. Limitations of the study are the sample size, the population was from a single institution, and we looked at a single year. To increase the generalizability of the research it'd be of interest to look at cases from different hospitals, increase patient size, and increase the number of years the study analyzes.

## **Clinical Relevance:**

Intramedullary nailing of hip, femur, and tibia fractures is a mandatory case for case logs in residency training yet, or standardly reported for surgeons; nowhere is fluoroscopy time recorded. Our study demonstrated variability based on surgeon experience, training, and fracture type in fluoroscopy time as a metric for radiation exposure intraoperatively.