

Artificial Intelligence Scribe Improves Arthroplasty Clinic Efficiency and Reduces Physician Workload

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INTRODUCTION: Integrating artificial intelligence (AI) for clinical documentation can enhance workflow efficiency and improve patient and provider experiences. This study evaluated the impact of an AI scribe software on clinic encounter duration and physician workload in a hip and knee arthroplasty clinic.

METHODS: A prospective dual cohort study by a single surgeon compared arthroplasty clinic encounters using one of two documentation methods: an AI scribe system (Microsoft DAX Copilot) or traditional documentation using electronic medical record templates. For a given clinic day, a single method was used for the entirety of the clinic day. Total encounter time was defined as in-room time plus any additional charting performed outside of the room. NASA Task Load Index (NASA-TLX) was completed after each clinic day to assess mental, physical, and temporal demand, as well as perceived performance, effort, and frustration.

RESULTS: AI scribe use ($n = 55$) resulted in a mean total encounter time of 12.03 ± 3.73 minutes compared to 15.06 ± 5.40 minutes without AI ($n = 57$), representing a mean reduction of 3.05 minutes ($p < 0.001$). The mean NASA-TLX total score was 30.0 ± 5.3 when utilizing the AI scribe compared to 40.2 ± 6.1 ($p = 0.485$) without AI. The most substantial reductions in the NASA-TLX domain scores were observed in temporal demand (5.8 ± 1.2 with AI vs. 10.4 ± 1.6 without AI, $p = 0.282$), effort (6.8 ± 1.3 with AI vs. 10.0 ± 1.5 without AI, $p = 0.433$), and frustration (3.4 ± 1.0 with AI vs. 5.4 ± 1.1 without AI, $p = 0.391$).

DISCUSSION AND CONCLUSION: Implementing AI scribe technology in a hip and knee arthroplasty clinic significantly decreased encounter duration and reduced actual and perceived physician workload. These findings support the use of AI scribes to improve efficiency and provider well-being in high-volume orthopedic practices.