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Et al.

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Use of the Spine AdVerse Events Severity (SAVES) System to Categorize and Report Adverse Events in Spine Surgery.

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Introduction
Analysis of adverse events (AEs) in spine surgery has historically been retrospective, utilizing hospital administrative data. Our objective was to determine the incidence, severity and effect on hospital length of stay (LOS) for AEs in spine surgery using the Spine AdVerse Events Severity (SAVES V2) system.

Methods
AEs for all surgical spine patients at our institution were prospectively collected for 18 months and correlated with retrospective data from operative reports and H&Ps. Statistical analyses compared patient demographics, diagnoses, and surgical characteristics to hospital length of stay and likelihood of adverse events.

Results
This system captured 75% (765/977) of surgical cases for all indications over the study period. 73% (541/743) of patients experienced at least one AE, with an average of 1.2 AEs per patient (range 0-5). The most common AEs were pain control (31%), urinary retention (9.7%), wound infection (6.3%), and incidental durotomy (5.8%). For patients experiencing at least one AE, 30% had no effect on LOS, 48% increased LOS by 1-2 days, 15% increased LOS by 3-7 days, and 7% had prolonged LOS greater than 8 days. Our system captured 25.4% more adverse events (60.0% vs. 34.6%) than hospital administrative data. Univariate analysis revealed patient age, emergent surgery, diagnostic and surgical categories, and spine region to be predictors of both AEs and LOS. Instrumentation was predictive of increased LOS but not AEs. The type of AE was strongly associated with LOS. Multivariable analysis of AE likelihood demonstrated emergent surgery to be the strongest independent predictor with an adjusted odds ratio of 8.5 versus elective surgery.

Discussion
Spine surgery is associated with a high incidence of adverse events, which often prolong hospital length of stay. Better characterization of adverse events and their predictors could lead to improved management strategies that reduce patient morbidity and mortality.