INTRODUCTION AND OBJECTIVE: While it is known that shockwave lithotripsy (SWL) results in fewer emergency department (ED) visits than ureteroscopy (URS) among patients treated for kidney and ureteral stones, limited evidence is available on whether it is possible to risk-stratify patients on their risk of presenting to the ED. Availability of such a model would allow for targeting of interventions to high-risk patients. We sought to determine whether 30-day ED visits following URS or SWL can be predicted using data from a large prospective clinical registry.

METHODS: The Michigan Urological Surgery Improvement Collaborative (MUSIC) is a consortium of 46 diverse urology practices, of which 40 have participated in a registry of patients with kidney and ureteral stones since 2016. Among patients who underwent URS or SWL, we developed separate logistic regression models for each procedure to predict the occurrence of 30-day ED visits using demographic and stone-related factors, including age, sex, body mass index, presence of diabetes, size of largest stone visualized, location of stone(s), number of stones, and presence of pre-procedure hydronephrosis and urinary tract infection. We assessed model discrimination using 5-fold cross-validated area-under-the-curve (AUC) and calibration by comparing deciles of predicted risk with observed risk.

RESULTS: We identified 9,183 patients who underwent URS and 5,465 patients who underwent SWL, of whom 724 (7.9%) and 234 (4.3%) had an ED visit within 30 days, respectively. Logistic regression models predicted ED visits with an AUC of 0.59 in URS and 0.58 in SWL. Calibration plots revealed a narrow range of low predicted risk across the deciles (Figure 1).

CONCLUSIONS: ED visits appear to be unpredictable in patients undergoing URS or SWL for management of kidney or ureteral stones.

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