# ABSTRACT

#### Introduction:

Post-intubation hypotension (PIH) is a common complication of intubations performed in the emergency department (ED). Identification of patients at high-risk for PIH is a major challenge. We aimed to determine whether pre-intubation metabolic acidosis affects the incidence of PIH in the ED.

# Methods:

This was a single-center, retrospective, observational study of consecutive patients requiring emergent endotracheal intubation (ETI) from November 1, 2016 to March 31, 2022 at Hyogo Emergency Medical Center, an urban ED. The primary outcome was PIH, defined as a decreased systolic blood pressure (sBP) of < 90 mmHg, required initiation of any vasopressor, or a decrease in sBP by  $\geq$  20% within 30 minutes following intubation. Patients were divided into two groups: those with pre-intubation metabolic acidosis (metabolic acidosis group), defined as pH < 7.3 and base excess (BE) < -4 mmol/L on arterial blood gas analysis, and those with no metabolic acidosis (without-metabolic acidosis group). The association between PIH and pre-intubation metabolic acidosis was examined using multivariable logistic regression models. A receiver operating characteristic (ROC) curve was produced to assess the predictive value of pre-intubation BE for PIH.

#### Results:

The study included 311 patients. PIH occurred in 65.5% (74/113) of patients in the metabolic acidosis group and 29.3% (58/198) of patients in the without-metabolic acidosis group. Multivariable logistic regression demonstrated that metabolic acidosis was associated with PIH (odds ratio 4.06, 95% confidence interval 2.31-7.11). In the ROC analysis, the optimal cut-off point for BE was -4.1 (sensitivity = 71%, specificity = 70%), with the area under the ROC curve 0.74.

### Conclusion:

Pre-intubation metabolic acidosis was significantly associated with PIH. Physicians should be aware of PIH when encountering patients with metabolic acidosis who require emergent ETI.