

# How well does the Surprise Question Predict 1-year Mortality for Patients with COPD?

Dana Tripp, BA;<sup>1</sup> Jaclyn Janis, BSN, RN, MPH;<sup>2</sup> Rebecca Hutchinson, MD, MPH<sup>2</sup>  
<sup>1</sup> Tufts University School of Medicine  
<sup>2</sup> Center for Outcomes Research and Evaluation

## Introduction

- COPD is the 4<sup>th</sup> leading cause of death globally.
- Current prognostic tools are hard to use in the inpatient setting for COPD.
- The surprise question (SQ) is quick to implement and has been used in some other diseases as an effective prognostic tool.
- **Objective:** To understand how well the SQ predicts 1-year mortality and prompts advance care planning (ACP) in acute exacerbation of COPD.

## Methods

- Retrospective observational analysis of patients admitted to MMC for acute exacerbation of COPD (2015-2018).
- Inpatient providers were asked the SQ, "Would you be surprised if this patient died in the next year?"
- SQ+ response equates, "No, I would not be surprised", SQ- "Yes, I would be surprised."
- We assessed performance of the SQ in predicting mortality and prompting ACP using test characteristics and logistic regression.

## Results

- 30% of responses were SQ+.
- SQ+ patients were older and more likely to have been admitted multiple times in the six months prior than SQ- patients.
- SQ+ and SQ- patients were otherwise similar in terms of comorbidity burden and baseline characteristics.
- There were no differences in ICU admission, intubation, length of stay, code status on admission, or number of readmissions in six months by SQ response.
- More patients with SQ+ were discharged to a rehabilitation facility than SQ- patients.
- 1-year mortality was 22% overall, and for SQ+ patients was 35%.

The surprise question is associated with one-year mortality and should prompt advance care planning in patients with COPD.

Table 1. Test characteristics (95% CI) of the SQ for predicting 1-year mortality

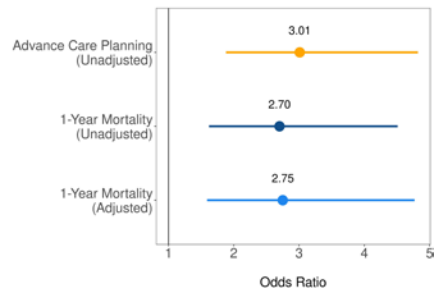
Sensitivity	0.47 (0.36, 0.58)
Specificity	0.75 (0.70, 0.80)
Positive predictive value	0.35 (0.26, 0.45)
Negative predictive value	0.83 (0.78, 0.88)

Table 2. Receipt of advance care planning by SQ response

	SQ+	SQ-
Goals of care conversation	27 (25 %)	27 (11 %)
Advance Directive or POLST completed	39 (36 %)	64 (25 %)
Code status change from full code	33 (30%)	38 (15%)
Palliative care consult	33 (31 %)	36 (14 %)

All comparison  $p < 0.01$

Unadjusted and adjusted<sup>a</sup> associations of the SQ with 1-year mortality and advance care planning<sup>b</sup>



<sup>a</sup> Adjusted for age, sex, and number of admissions in prior six months  
<sup>b</sup> ACP was considered to have occurred if any of the following were true: AD or POLST form in chart, GOCC completed, PC consultation performed, or any change in code status documented

Abbreviations: COPD, chronic obstructive pulmonary disease; SQ, surprise question; MMC, Maine Medical Center; ACP, advance care planning; CI, confidence interval; POLST, physician order for life sustaining treatment

