Implementation and Impact of a Pharmacist-driven Stress Ulcer Prophylaxis Discontinuation Protocol in the Intensive Care Unit

Authors: Cristina Kaifer, PharmD, BCPS; Mollie Grant, PharmD, BCPS, BCCCP

WakeMed Health & Hospitals

Purpose/Background: Stress ulcer prophylaxis (SUP) is indicated in critically ill patients who are at risk for stress-related mucosal bleeding. Previous studies have identified risk factors for clinically important bleeding in ICU patients. These risk factors include mechanical ventilation for > 48 hours or coagulopathy. SUP is indicated in intensive care unit (ICU) patients who have the risk factors listed above, however when these risk factors are longer present, SUP is often continued unnecessarily. Several studies have found that inappropriate SUP in continued in approximately 70% of both ICU and floor patients. Prolonged use of acid suppressive therapy has been associated with adverse effects and increased healthcare costs. Some of these adverse effects include increased risk of nosocomial pneumonia and Clostridium difficile infections, particularly with proton pump inhibitors (PPIs). Previous studies have reported that implementation of SUP discontinuation protocols resulted in improved outcomes, including a reduction in the inappropriate use of SUP and decreased costs. Therefore the objective of this study was to evaluate the clinical and cost impact of a pharmacist-driven SUP discontinuation protocol in the ICU.

Methodology: This study was a single-center, retrospective study comparing pre- and post-implementation of the pharmacist-driven protocol for discontinuation of acid suppressive therapy. The study population consisted of adult (≥ 18 years old), non-pregnant, ICU patients receiving SUP, who met criteria for the pharmacist-driven protocol to discontinue unnecessary acid suppressive therapy from June 1st to July 30th 2016 (pre-protocol) and August 1st to September 30th 2016 (post-protocol). This protocol was approved by the Pharmacy and Therapeutics Committee and allowed pharmacists the ability to discontinue SUP within the context of a predefined institutional protocol. The primary endpoint was the incidence of inappropriate SUP per 100 patient days. Secondary endpoints were duration of SUP, continuation of inappropriate SUP when transferred out of the ICU, re-initiation of inappropriate SUP after protocol discontinuation, clinically important GI bleeding, nosocomial pneumonia, Clostridium difficile infection, and drug acquisition costs.

Results: Of the 203 study patients, 103 were included in the pre-protocol arm and 100 were included the post-protocol arm. The use of H2RAs was 27 (26%) in the pre-protocol arm when compared to 66 (66%) in the post-protocol arm (p < 0.0001). The use of PPs was 63 (61%) in the pre-protocol arm when compared to 28 (28%) in the post-protocol arm (p < 0.0001). The primary end point defined as incidence of inappropriate SUP per 100 patient days was 61 in the pre-protocol arm compared to 24 in the post-protocol arm (p < 0.0001). Mean duration of SUP was 8 days in the pre-protocol arm compared to 4 days in the post-protocol arm (p < 0.0001). Continuation of inappropriate SUP upon transfer to the floor was 78 (76%) in the pre-protocol arm compared to 21 (21%) in the post-protocol arm (p < 0.0001). Re-initiation of inappropriate
SUP after protocol discontinuation occurred in 7 (7%) of patients. Clinically important GI bleeding did not occur in either arm and there were no differences between nosocomial pneumonia or *Clostridium difficile* infections. Estimated inappropriate drug cost was $1142.49 in the pre-protocol arm compared to $230.95 in the post-protocol arm with an estimated annualized cost savings of $5496.24.

Conclusions: The incidence of inappropriate SUP was significantly lower after implementation of the pharmacist-driven discontinuation protocol. Implementation of this protocol did not increase the risk of bleeding and led to a reduction in overall drug costs.