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Research paper

# Appropriateness of stress ulcer prophylaxis among older adults admitted to general medical wards in a university hospital

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ABSTRACT

*Introduction:* There is limited evidence to support the prescription of stress ulcer prophylaxis (SUP) in general medical patients. Many studies conducted to assess this problem did not include older patients, who are more susceptible to the consequences of inappropriate SUP. This prospective study aimed to evaluate the current practice of SUP amongst older adults outside a critical care setting in a university hospital in Malaysia.
*Methods:* All patients aged 65 and above admitted to general medical wards in our university hospital from January until March 2014 were reviewed. Patients who were newly prescribed SUP were included in the study. The American Society of Health-System Pharmacists (ASHP) guideline was used to justify appropriate indication of SUP.
*Results:* Of 285 patients aged more than 65 years old admitted to various general medical wards, 56 patients (19.6%) received SUP. Inappropriate SUP occurred in 96.4% of patients who received SUP. Of those prescribed SUP, 35.7% received inappropriate SUP regimens in terms of administration route, dose or frequency. Among the patients, 28.6% were discharged with SUP prescription without a justified indication. Ranitidine was the most common SUP agent prescribed.
*Conclusion:* This study demonstrates that a large number of older adult patients received inappropriate SUP. This can lead to an increase risk of medication related adverse events, drug interactions, iatrogenic adverse events related to administration of medication and increased cost to the patient and institution. Healthcare providers should be alerted of this issue and efforts need to be taken for education to reduce the incidence of unjustified SUP.


## 1. Introduction

Stress ulceration is a condition where inflammation occurs at the gastric mucosa and if left untreated can lead to gastric bleeding. It is the main concern in hospitalized patients who present with critical illnesses which results in physiological stress leading to gastric ulceration. The established risk factors associated with stress ulceration may be seen in patients with serious injuries who are critically ill [1]. This is the reason why the majority of stress ulceration cases occur in ICU compared to general medical patients who are considered at low risk of stress ulceration [2]. Studies have shown that the incidence of stress ulceration is very low especially in non-ICU settings [2–4]. One multicentre prospective cohort study showed that patients at low risk of gastrointestinal (GI) bleeding only accounted for 0.1% of clinically significant bleeding [3]. Despite the low incidence of GI bleeding in non-ICU settings, SUP has been reported to be overprescribed without proper indication. A study by Jain et al. (2013) indicated that out of the total of 74.1% of non-critically ill patients prescribed with SUP, only 15% were appropriate [4]. A prospective study carried out in a teaching hospital in the U.S. revealed that up to 70% of low risk general medicine patients received inappropriate SUP and more than half of them were discharged with the medication [5]. In addition, another study in United Kingdom showed that among the study population, only about 15% of patients (mean age 68 years) prescribed SUP had appropriate indications [6].

The only evidence-based and established guideline for stress ulcer prophylaxis (SUP) was published by American Society of Health-System Pharmacists (ASHP) [1]. The guideline stated that SUP should be prescribed only for high risk patients, mainly

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patients in the Intensive Care Unit (ICU) settings. For non-ICU patients, SUP may be prescribed if the patient presents with two or more risk factors. The most common SUP agents used in recent clinical practice are proton pump inhibitors (PPI) and histamine-2 receptor antagonists (H2RA). According to the guideline, omeprazole can be given orally with a loading dose of 40 mg, followed by 20 to 40 mg daily for the next day [1]. Other PPIs such as pantoprazole might be given due to their similar efficacy at comparable doses [7]. Ranitidine can be given orally with dose of 150 mg twice daily or intravenously with the dosage of 50 mg three to four times daily [1].

Inappropriate prescribing of SUP may contribute to adverse events such as pneumonia, *Clostridium difficile* colitis, and acute interstitial nephritis [2]. Older patients are more likely to suffer from adverse events and drug interactions from inappropriate prescribing because of alteration in the physiologic, pharmacokinetic and pharmacodynamic systems with increasing age [8]. Data from the United States showed that in 2008, more than one third of hospitalized patients were aged 65 years and above [9]. This proportion is significant and proves the need to optimize medication prescription in this group of patients. The incidence of GI bleeding among elderly patients has been shown to be low. A retrospective study, which mainly included elderly patients revealed that there was only a 0.2% incidence of clinically significant GI bleeding among general patients without SUP [10].

As the prevalence of inappropriate SUP in other countries appeared high, there is a need to examine the current practice of SUP among elderly patients in our local setting as the proportion of older adults is increasing in our local hospitals. In 2012, 29% of all admissions to our university hospital were aged 65 and above. Thus, the aim of the present study was to study the appropriateness of SUP among older adult patients in various general medical wards in our university hospital. In this study, the socio-demographic characteristics of elderly patients involved were studied and the risk factors for developing stress ulceration were identified.

## 2. Materials and methods

This prospective observational study was conducted in three general medicine wards (11U, 12U and 13U) in University Malaya Medical Centre (UMMC), a tertiary teaching hospital in Malaysia. The specialties in the wards were general internal medicine, geriatric medicine, respiratory medicine, endocrinology, gastroenterology,

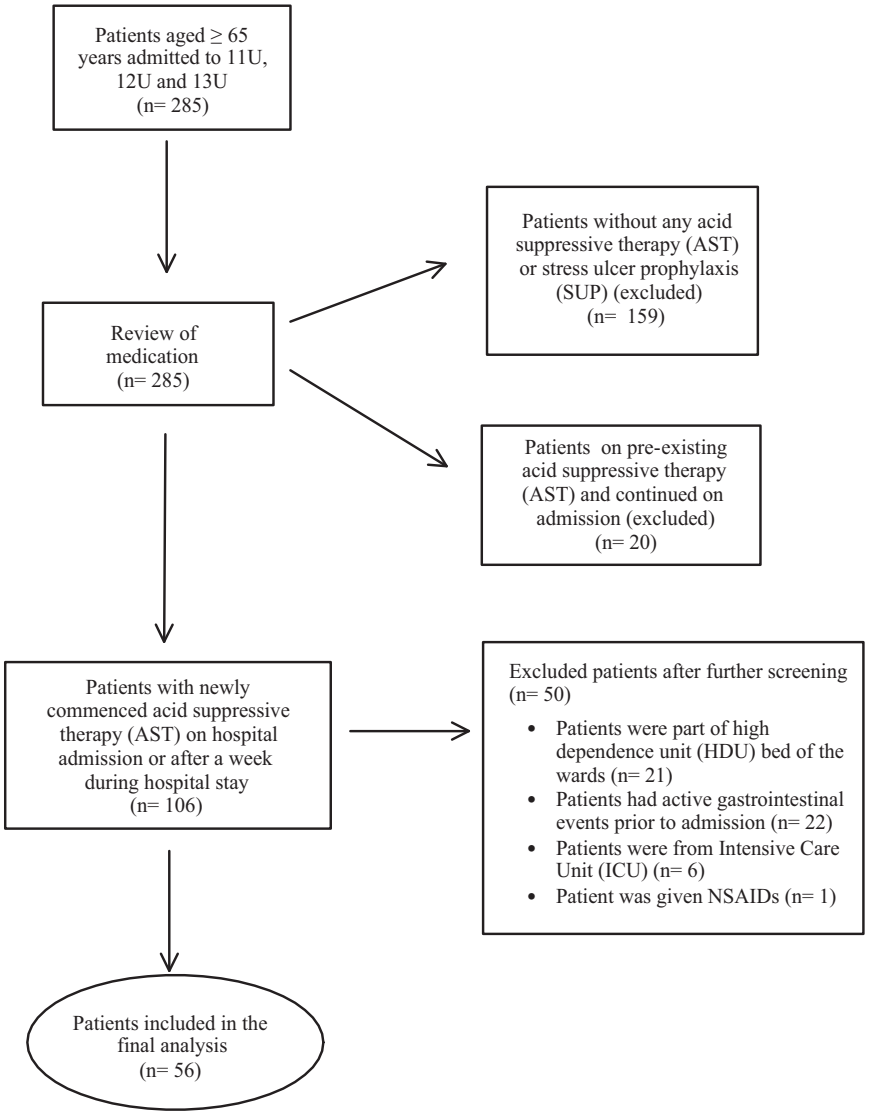


**Fig. 1.** Patients' disposition.