



## **Adjusting Antibiotic And its Dosage for Upper GI Bleeding Secondary to Varices in Patients Presenting from Emergency Department to Gastroenterology Ward in Lady Reading Hospital, Peshawar**

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**Abstract**

**Background** Upper gastrointestinal bleeding (UGIB) poses significant problem in emergency medical care, particularly when associated with varices. The adherence to antibiotic guidelines is important in managing such emergency. This clinical audit aimed to check compliance with BAVENO and NICE guidelines regarding antibiotic adjustment and dosage for patients with UGIB secondary to varices who were shifted from the emergency department to the gastroenterology ward at Lady Reading Hospital MTI, Peshawar.

**Objective** The primary objective was to check adherence to recommended antibiotic dosage, specifically ceftriaxone 1g IV daily, as per guidelines. Secondary objectives included identifying those antibiotics that were prescribed against guidelines.

**Methods** Data were collected retrospectively from 15 patient records initially, and after implementing recommendations, re-audit data were collected from another 15 patients. Criteria for assessment included adherence to ceftriaxone as the first-line antibiotic and its recommended dosage.

**Results** In the initial audit, only 20% of patients received the correct ceftriaxone dosage, while 80% required changes in dosage or antibiotic type. However, in the re-audit, 100% compliance was achieved in ceftriaxone dosage, with no patients requiring adjustments, meeting the standard criteria which was assumed at 95percent.

**Conclusion** Implementation of recommendations, including staff training and antibiotic restriction, significantly improved adherence to guidelines, leading to optimized patient care, reduced antibiotic resistance risk, cost savings, and enhanced management of UGIB secondary to varices in the hospital setting.

**Keywords:** UGIB (Upper gastrointestinal bleeding), varices , antibiotic guidelines, clinical audit, compliance.

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## Introduction

Upper gastrointestinal bleeding (UGIB) is defined as bleeding originating proximal to the ligament of Treitz; bleeding from the esophagus, stomach, or duodenum<sup>1</sup>. 55percent cases of severe upper gastrointestinal bleed is due to peptic ulcer disease while 14 percent cases of upper gastrointestinal bleed are due to esophageal and gastric varices<sup>2</sup>. 20 percent cirrhotic patients with acute variceal bleeding develop bacterial infections within 48hours<sup>3</sup>. This clinical audit aimed to evaluate the adherence to **BAVENO AND NICE GUIDELINES**<sup>4,5</sup> for adjusting antibiotic and its dosage in patients with upper GI bleeding secondary to varices who presented from the emergency department to the gastroenterology ward at Lady Reading Hospital, Peshawar.

## Objective

The primary objective of this audit was to determine the compliance with **BAVENO GUIDELINES and NICE GUIDELINES**<sup>4,5</sup> for antibiotic *dosage* such as that of 3rd generation cephalosporin (ceftriaxone 1g IV, daily) which is the first-line antibiotic in patients with upper GI bleeding secondary to varices. Secondary objective was to point out those antibiotics that were prescribed against guidelines.

## Methodology

*a. Study Population:* The audit included all patients that were initially admitted to the emergency department and then to the gastroenterology ward with upper GI bleeding secondary to varices.

*b. Data Collection:* For initial data was collected retrospectively from 10 patients' emergency prescription slips attached to the ward file. 5 of them were traced from MRs in the admission register. Patients who had no endoscopy reports were not selected. (Total 15 patients in initial audit)

For re-audit again 15 patients were selected after 1 month and data was collected in same way as initial audit

*c. Standard:* The audit assessed the following criteria based on **BAVENO GUIDELINES and NICE GUIDELINES**<sup>4,5</sup>.

### (95%) criteria was assumed for standard

- Adherence to ceftriaxone as a first-line antibiotic
- Adherence to the recommended dosage of ceftriaxone (1g IV, daily).

## Analysis

In initial audit 15 patient records that were checked, following data was identified:

- 6 patients were prescribed incorrect dosage of ceftriaxone
- 4 were prescribed an incorrect antibiotic such as Cefoperazone /Sulbactam
- 2 patients had no antibiotic prescribed in their prescription
- 3 patients received the correct dosage of ceftriaxone.

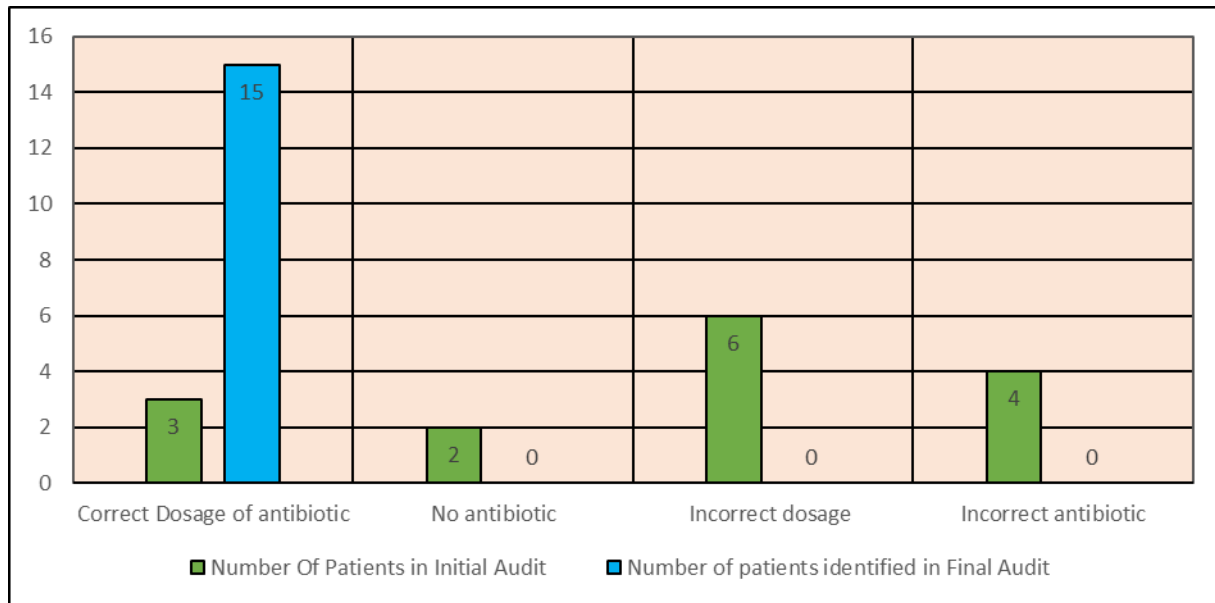
In final audit 15 patient records that were checked, following data was identified:

- 0 patients were prescribed incorrect dosage of ceftriaxone
- 0 were prescribed an incorrect antibiotic such as Cefoperazone /Sulbactam
- 0 patients had no antibiotic prescribed in their prescription
- 15 patients received the correct dosage of ceftriaxone.

Nature of data identified	Patients identified in Initial Audit	Patients identified in Final Audit
Correct dosage of ceftriaxone	3	15
No antibiotic	2	0
Incorrect dosage of ceftriaxone	6	0
Incorrect antibiotic (Cefoperazone/sulbactam)	4	0

Based on the findings of Initial audit, the compliance rates for each criterion were calculated as follows:

- Adherence to ceftriaxone dosage: 3 out of 15 patients (**20%**)
- Patients who needed adjusting in dosage or in type of antibiotic: 12 out of 15 patients (**80%**)



Based on the findings of Re-Audit audit, the compliance rates for each criterion were calculated as follows:

- Adherence to ceftriaxone dosage: 15 out of 15 patients (**100%**)
- Patients who needed adjusting in dosage or in type of antibiotic: 0 out of 15 patients (**0%**). Thus, standard criteria of standard were met (95 percent)

### Recommendations that helped us to achieve our target

Based on the audit findings, the following recommendations were proposed to align with **BAVENO AND NICE GUIDELINES**<sup>4,5</sup>

- Regular training sessions were conducted and charts were displayed (for correct antibiotic dosage) for healthcare staff in ER to ensure awareness of and adherence to the recommended antibiotic dosage (**Figure A, B**). This saved Rs 1200 per patient (stay 4 days)
- Antibiotics like Cefoperazone/sulbactam were not prescribed as they were not in the guidelines.

### Audit loop completed after Re-Audit was done after one month

These recommendations were implemented which helped us to enhance adherence to Baveno/NICE

guidelines<sup>4,5</sup>, optimized patient care, reduced the risk of antibiotic resistance, saved hospital funds, and improved the overall management of upper GI bleeding secondary to varices in patients presenting from the emergency department to the gastroenterology ward at Lady Reading Hospital, Peshawar.

**Figure (A, B) (Recommendation Charts)**

**TABLE 3. Antibiotic prophylaxis and/or treatment to prevent local infections**

Patient condition	Procedure contemplated	Goal of prophylaxis	Periprocedural antibiotic prophylaxis
Bile duct obstruction in absence of cholangitis	ERCP with complete drainage	Prevention of cholangitis	Not recommended ⊖⊖⊖⊖
Bile duct obstruction in absence of cholangitis	ERCP with incomplete drainage	Prevention of cholangitis	Recommended; continue antibiotics after procedure ⊕⊕⊕○
Solid lesion in upper GI tract	EUS-FNA	Prevention of local infection	Not recommended ⊖⊖⊖⊖
Solid lesion in lower GI tract	EUS-FNA	Prevention of local infection	Not recommended ⊖⊖⊖○
Mediastinal cysts	EUS-FNA	Prevention of cyst infection	Suggested ⊕⊕○○
Pancreatic cysts	EUS-FNA	Prevention of cyst infection	Suggested ⊕⊕○○
All patients	Percutaneous endoscopic feeding tube placement	Prevention of peristomal infection	Recommended ⊕⊕⊕⊕
Cirrhosis with acute GI bleeding	Required for all patients regardless of endoscopic procedures	Prevention of infectious adverse events and reduction of mortality	On admission ⊕⊕⊕⊕
Synthetic vascular graft and other nonvalvular cardiovascular devices	Any endoscopic procedure	Prevention of graft and device infection	Not recommended ⊖⊖⊖⊖
Prosthetic joints	Any endoscopic procedure	Prevention of septic arthritis	Not recommended ⊖⊖⊖○
Peritoneal dialysis	Lower GI endoscopy	Prevention of peritonitis	Suggested ⊕⊕○○

EUS-FNA, EUS-guided FNA

**ANTIBIOTIC PROPHYLAXIS**

Bacterial infections are reported in more than 50% of patients with cirrhosis and GI bleeding and are associated with failure to control bleeding, high risk of re-bleeding, and increased mortality. Therefore, timely short-term antibiotic prophylaxis is an essential step in the management of these patients.

Intravenous (IV) ceftriaxone (1 g/24 hours) for a maximum of 7 days is the first choice in patients with advanced cirrhosis, in patients receiving quinolone prophylaxis, and in hospitals where there is a high frequency of quinolone-resistant bacteria strains.

Prophylactic antibiotics should be used for a maximum of 7 days (consider discontinuing when hemorrhage has resolved and vasoactive drugs discontinued) and their use should not be extended after discharge from the hospital.

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