



Research Article

Assessment Of Most Commonly Used Drug and Drug Category In Patients Admitted To Intensive Care Unit Of A Tertiary Care Teaching Hospital: A Retrospective Observational Study

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ABSTRACT

The study aims to identify the most commonly prescribed drugs and drug categories in the ICU setting. The study was conducted retrospectively and observationally over a period of six months, involving the analysis of 100 patient case files. Data regarding the prescribed drugs were collected from the medical records department of the hospital and analyzed. The results revealed that the most frequently prescribed drugs in the ICU were Pantoprazole, Atorvastatin, Aspirin, Ondansetron, Acetaminophen, Ceftriaxone, and Levetiracetam. These medications were primarily used for gastric protection, cardiovascular treatment, and managing nausea and vomiting. In terms of drug categories, antibiotics were the most commonly prescribed category, followed by gastrointestinal (GI) drugs, antihypertensives, analgesics/antipyretics, bronchodilators, and anti-diabetic medications. These findings align with similar studies conducted in different settings. Overall, the study provides insights into the prescription patterns of drugs in the ICU, which can contribute to optimizing pharmacological management in the ICU and improving patient outcomes.


INTRODUCTION

Intensive care unit (ICU) patients frequently have several significant medical conditions. Patients are required to be admitted to the intensive care unit due to their complicated and critical medical problems.¹ An essential part of critical care medicine is pharmacotherapy. The comorbidities brought on by a pharmacological treatment failure put ICU patients at risk and make them financially

untenable. Pharmacotherapy in the intensive care unit is a problem because patients may be treated with numerous sedative-analgesics, antibiotics, antifungal medicines, anticoagulants, antiarrhythmics, and occasionally paralytics in addition to treatments that block gastric acid output.² Furthermore, critically sick patients are not like most other hospital patients in that they are

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unable to fully engage in their care and do not have the physiologic reserve necessary to withstand further injury. Patients' critical circumstances and the usage of several drugs enhance the incidence of poor treatment response and drug interactions.³

MATERIALS AND METHODS

Study Design & Method:

A Retrospective and Observational study was carried out to determine the most commonly prescribed drug and drug category in ICU of Srinivas Institute of Medical Science & Research Centre, Mukka, Mangalore a tertiary care hospital in Dakshina Kannada district of Karnataka state. The study was conducted for duration of 6 months and the data(s) for the study were collected from the patient case files of Medical Records Department (MRD) of Srinivas Hospital Mukka, Mangalore using data collection form. Data collected include prescription details-name of the drugs. The collected data were analysed for determining commonly prescribed drugs and category. The result obtained were analysed in Microsoft excel and all the data(s) were kept confidential.

Ethical Clearance:

The study protocol was approved by the Institutional Ethics Committee (IEC) of Srinivas Institute of Medical Science and Research Centre (SIMS & RC), Mangalore with reference number: SIEC/SIMS&RC/2022/10/08.

Study Criteria:

- Patients who were admitted in the Intensive Care Unit are included in the study.
- Patients who were not admitted in Intensive Care Unit are excluded in the study.

Data Analysis

Statistical analysis involved collecting and scrutinizing of every data sample in set of items from which samples were drawn and analysed using Microsoft Excel 2021 and study report is prepared using Microsoft Word 2021.

Operational Modality:

The study methodology was divided into 3 phases; the first phase involved preparation for the study in which patient's data collection form were prepared which include the patient's demographic details, Prescription details-name of drugs.

After the ethics approval, the next phase was started in which the investigators visited Srinivas Hospital in Mukka and collected patients case files from MRD based on the inclusion and exclusion criteria and required information was filled in data collection form. Based on the data collected, commonly prescribed drug and drug category is determined.

RESULTS

Most Commonly Prescribed Drugs In ICU

Prescription from the study participants were thoroughly analysed to check most commonly prescribed drug in ICU. Out of 100 prescriptions analyzed, most frequently used drugs were Pantoprazole (7.32%), Atorvastatin (3.57%), Aspirin (3.33%), Ondansetron (3.12%), Acetaminophen (3.12%), Ceftriaxone (2.58%), Levetiracetam (2.14%). Pantoprazole given as gastroprotectant and Ondansetron is used to reduce Nausea and Vomiting in majority of the cases.

Table 02: Most commonly prescribed drugs in ICU

Drug administered	Route of administration	No of drugs (n=1120)	Percentage
Pantoprazole	Parenteral/Oral	82	7.32
Atorvastatin	Oral	40	3.57
Aspirin	Oral	37	3.33
Ondansetron	Parenteral/Oral	35	3.12
Acetaminophen	Parenteral/Oral	35	3.12



Ceftriaxone	Parenteral	29	2.58
Multivitamins	Oral	25	2.23
Levetiracetam	Parenteral/Oral	24	2.14
Furosemide	Parenteral	24	2.14
Thiamine	Oral/ Parenteral	23	2.05
Heparin	Parenteral	22	1.96
Meropenem	Parenteral	21	1.80
Budesonide	Nasal	19	1.70
Human Insulin	Parenteral	18	1.60
Clopidogrel	Oral	17	1.50
Pantoprazole	Parenteral/Oral	82	7.32
Atorvastatin	Oral	40	3.57
Aspirin	Oral	37	3.33

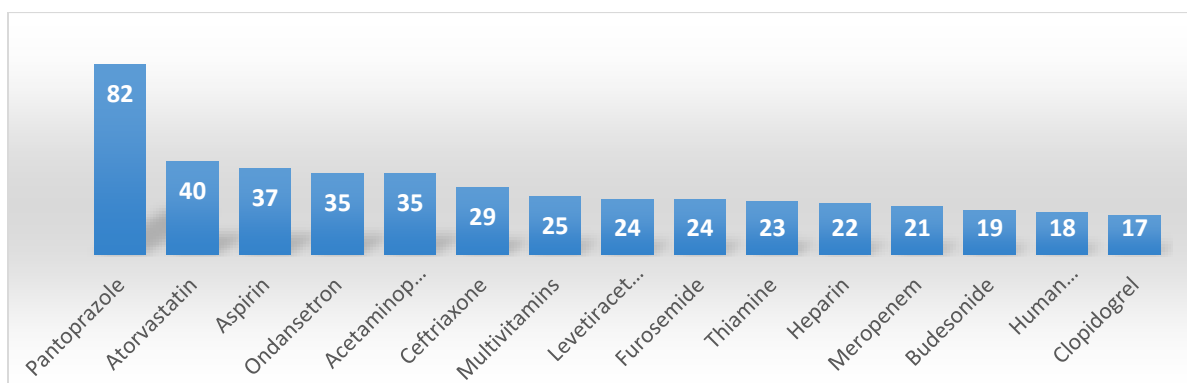


Fig 04: Commonly prescribed drugs in ICU

Most commonly prescribed drug category in ICU

Most commonly prescribed category of drugs in ICU were Antibiotics 161(14.37%), GIT Drugs 120 (10.71%), Antihypertensive 105(9.37%), Analgesic/Antipyretic 61(5.4%) Bronchodilator

57(5.08%), Anti Diabetic 48 (5.28%), Anti-Epileptic 48 (4.19), Anti – Hyperlipidemic 46 (4.10) and Multivitamins 20 (4.10%) and least commonly prescribed category of drugs is Anti – Thyroid 10 (0.83%).

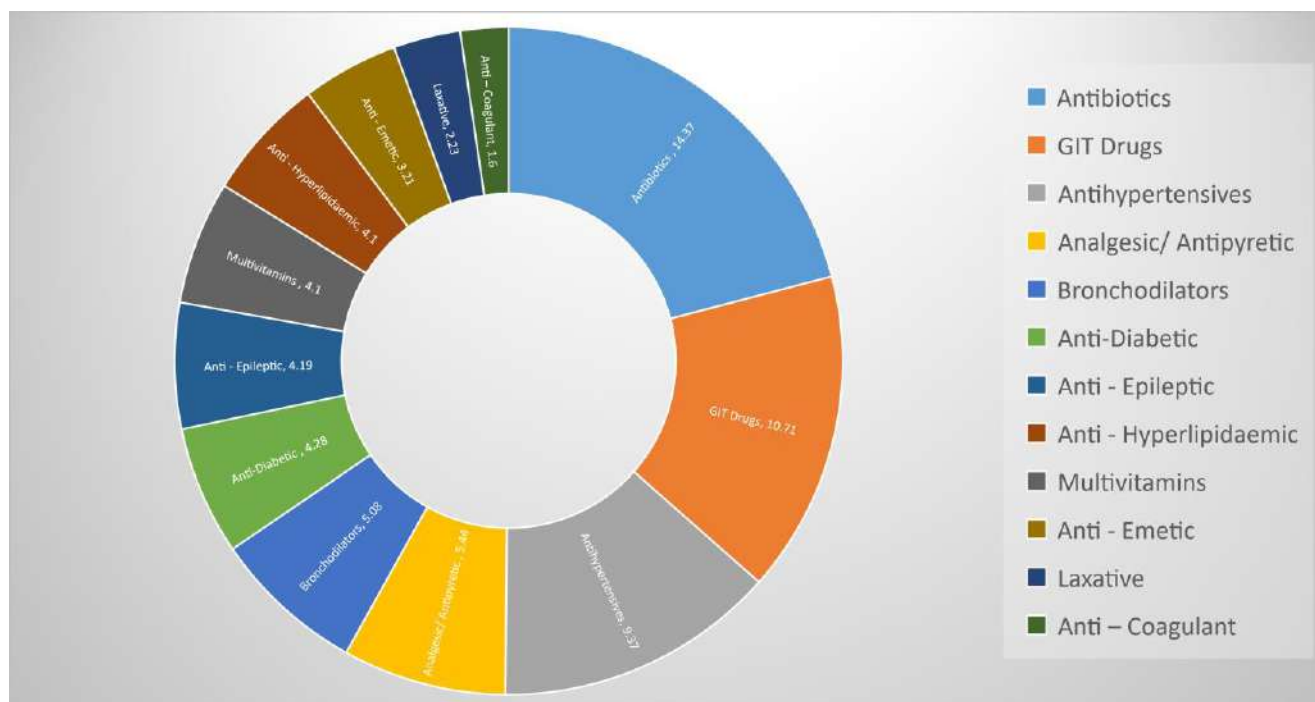


Table 03: Most commonly prescribed drug category in ICU

Category of drug utilized	No of Drugs (n = 1120)	Percentage %
Antibiotics	161	14.37
GIT Drugs	120	10.71
Antihypertensives	105	9.37
Analgesic/ Antipyretic	61	5.44
Bronchodilators	57	5.08
Anti-Diabetic	48	4.28
Anti - Epileptic	47	4.19
Anti-Hyperlipidaemic	46	4.10
Multivitamins	46	4.10
Anti - Emetic	36	3.21
Laxative	25	2.23
Anti - Coagulant	18	1.60

DISCUSSION

Intensive Care Unit is an environment where drug-related issues arise frequently. Patients with multiple ailments and a grave illness are admitted.⁴ These patients usually require complex pharmacological management, which includes the administration of multiple drug classes that increase their risk of medication errors, poor treatment responses, adverse drug reactions, increased health care costs, and increased morbidity and mortality.⁵

A retrospective observational study was done in tertiary care hospital for a period of 6months and

the prescription data of 100 patients who were admitted in the ICU was collected and analysed. Out of 100 prescriptions analysed, the total number of drugs prescribed was found to be 1120. In that the most commonly prescribed drugs in ICU were Pantoprazole followed by Atorvastatin, Aspirin, Ondansetron, Acetaminophen, Ceftriaxone and Levetiracetam and least prescribed drugs were Lorazepam and Atropine. Similar results were observed in studies of Paudel R et al⁶, Patidar R et al⁷ and Sulaiman M. et al⁸ where pantoprazole was most commonly prescribed drug which is given for gastric protection. Pantoprazole has been delisted from WHO essential list but prescribing it for GI protection cannot be considered totally irrational as it is still included in NLEM⁹. Atorvastatin is given for treatment of cardiovascular diseases and ondansetron to reduce chance of vomiting and nausea in majority of the cases. Antibiotics were the most common category of drugs used in ICU followed by GI protective drugs, Antihypertensive, Analgesics/Antipyretics, Bronchodilators and Anti-diabetics. This result of

the most common classes of drugs prescribed are corresponding with the most frequent indications. Similar results were observed in studies of Ujwala et al¹⁰, Al-zakwani et al⁴ were Antibiotics and GIT drugs were most commonly prescribed. In view of the long period of stay and unconscious status of ICU patients, they are more prone to hospital-acquired (nosocomial) infections. This is one of the reasons for the increase in number of prescribed anti-microbial agents¹¹.

CONCLUSION

To conclude with keeping in considerations the aim and objectives, this study provided an insight into the most used drugs and drug category in the ICU. The data on pattern of drug utilization was largely comparable to other studies conducted in various parts of India. The results of the study showed that the most commonly prescribed drugs in the ICU were Pantoprazole, Atorvastatin, Aspirin, Ondansetron, Acetaminophen, Ceftriaxone, and Levetiracetam. These medications were primarily used for gastric protection, cardiovascular treatment, and managing nausea and vomiting. In terms of drug categories, antibiotics were the most commonly prescribed category, followed by gastrointestinal (GI) drugs, antihypertensives, analgesics/antipyretics, bronchodilators, and anti-diabetic medications. The findings of this study are consistent with similar studies conducted in different settings. This can contribute to optimizing pharmacological management and improving patient outcomes in intensive care settings.

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