ORIGINAL RESEARCH

ISSN (O): 2349-5332
CODEN: IRJPHY

ORAL ANTICOAGULANT USE PATTERNS AMONG INTENSIVE CARE UNIT PATIENTS IN THE JORDANIAN ROYAL MEDICAL SERVICES DURING THE PERIOD OF 2019-2021

Amani Mahmoud Al-Tarawneh;PH1, Nour hasan Ahmad Al-Mhaidat;PH1, Reem Khaled Mahmoud Fakeh;PH1, Esra'a Abdul-Karim Shhadeh Al-Qudah ;PH1, Eman Abdelkarim Hussein Odat;PH1.

[1]Pharmacist, Royal Medical Services, Jordan.

Submitted on: 01.06.2024; **Revised on:** 03.06.2024; **Accepted on:** 05.06.2024

ABSTRACT

1. Introduction: Oral anticoagulant therapy is crucial for preventing thrombotic events in critically ill patients admitted to intensive care units (ICUs). However, there is limited researchon the utilization patterns of oral anticoagulants among ICU patients in the Jordanian hospitals. This study aims to address this issue by examining the prescribing practices for oral anticoagulant from 2019 to 2021, focusing on several hospitals within the Jordanian Royal Medical Services.

2. Objective: The primary objective of this study is to investigate the utilization patterns of oral anticoagulants among ICU patients in Jordanian Royal Medical Services hospitals over a three-year period (2019-2021). Specifically, the study aims to analyze trends in prescription rates of Apixaban, Dabigatran, Rivaroxaban, and Warfarin.

3. Methodology: This retrospective study will utilize data extracted from hospital electronic records of ICU patients admitted to selected Jordanian Royal Medical Services hospitals (Princess Haya Military Hospital and Queen Alia Heart Institute) between 2019 and 2021. Descriptive statistical analysis will be conducted to elucidate trends in oral anticoagulant prescribing practices over the study period. Ethical approval for the study will be obtained from the institutional review board, ensuring compliance with ethical standards and data protection regulations.

Keywords: Warfarin, Apixaban, Rivaroxaban, Dabigatran, Blood clot management, Jordanian Royal Medical Services, Intensive Care Unit, Oral Anticoagulant.

Corresponding author: Amani Mahmoud Al-Tarawneh
e-mail: altarawnehhaya1981@yahoo.com,
Mobile No:00962798332334

Indian Research Journal of Pharmacy and Science; 39(2024)3044-3048;
Journal Home Page: https://www.irjps.in

1. INTRODUCTION:

Patients with severe medical disorders need specialized treatment in the intensive care unit (ICU), which includes interventions to prevent thrombotic complications[1]. ICU patients are at high risk for thrombosis, which is characterized by blood clots forming in blood vessels as a consequence of immobility, inflammation, and underlying health conditions. Oral anticoagulant therapy constitutes a vital component of the management and prevention of thrombotic events in these susceptible patients[2].

The Jordanian Royal Medical Services (JRMS) consists of multiple hospitals with cutting edge equipment and a staff of medical professionals committed to providing patients - including those admitted to intensive care units - with the best care possible. Still, there is a shortage of research on the use of oral anticoagulants by ICU patients in these hospitals, even with advances in medical understanding and treatment alternatives. Comprehending the patterns in the prescription of oral anticoagulants in this particular setting is crucial for maximizing patient care, improving clinical results, and complying with evidence-based guidelines.

In light of this, the purpose of this study is to look into the usage of oral anticoagulants by ICU patients in Jordanian Royal Medical Services hospitals from 2019 to 2021. Through the examination of prescription data for important anticoagulants, such as Apixaban, Dabigatran, Rivaroxaban, and Warfarin, this study aims to clarify patterns, spot possible discrepancies, and provide information on what influences prescribing behaviors in the intensive care unit. This study aims to add to the body of knowledge focused on improving the quality of care for critically ill patients in Jordanian healthcare settings by a thorough investigation of oral anticoagulant use patterns.

2. METHOD:

This retrospective observational study utilized data extracted from hospitalselectronic records of ICU patients admitted to selected Jordanian Royal Medical Services hospitals mainlyPrincess Haya Military Hospital and Queen Alia Heart Institute and others including(King Hussein Medical Hospital, King Talal Military Hospital, Pr. Hashem Bin Alhussein Hospital, Prince Ali Bin Al Hussein Military Hospital, Prince Hashem Ben Abdullah Ii Hospital and Queen Rania Pediatric Hospital) between 2019 and 2021. The inclusion criteria encompassed all patients admitted to the ICU during the specified period, while exclusion criteria were limited to cases with incomplete or missing data relevant to anticoagulant therapy. Data on oral anticoagulant prescriptions were primarily sourced from hospital electronic records on Hakeem Software Program Used in the JRMS.

To clarify patterns in the prescription of oral anticoagulants over the study period, statistical analysis was carried out. The frequency of prescriptions for each anticoagulant in each of the three years (2019, 2020, and 2021) was calculated using descriptive statistics. The institutional review board granted ethical approval for the study, guaranteeing adherence to confidentiality regulations and ethical guidelines.

3. RESULTS:

The analysis of anticoagulant prescription patterns among ICU patients in Jordanian Royal Medical Services hospitals from 2019 to 2021 revealed noteworthy trends and variations(table 1).

Table 1: Anticoagulant prescription patterns among ICU patients in Jordanian Royal Medical Services hospitals

	2019	2020	2021
Apixaban	0	6	8
Dabigatran	0	3	17
Rivaroxaban	1	6	5
Warfarin	519	404	415
Total	520	419	445

Throughout the study period of 2019–2021, the most commonly prescribed oral anticoagulant was warfarin (519,404 and 415 prescription/year, respectively), with fluctuating prescription rates observed for Apixaban, Dabigatran, and Rivaroxaban (Figure 1).

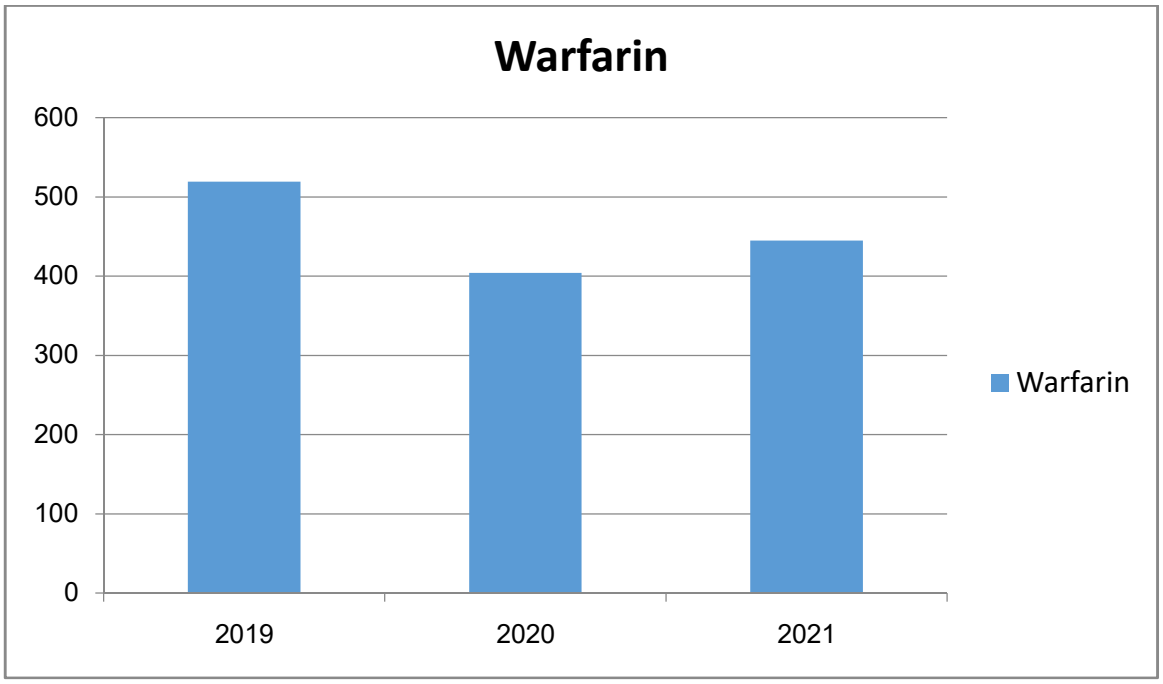

Figure 1: Warfarin prescription patterns through 2019-2021

Almost all oral anticoagulant prescriptions in 2019 were for Warfarin; the next most common prescription, Rivaroxaban, was used barely at all. But while the use of Warfarin remained largely consistent, there was a noticeable rise in the prescription rates of newer oral anticoagulants (NOACs) during the years that followed, especially Apixaban and Dabigatran, alongside a relatively stable utilization of Warfarin (Figure 2).

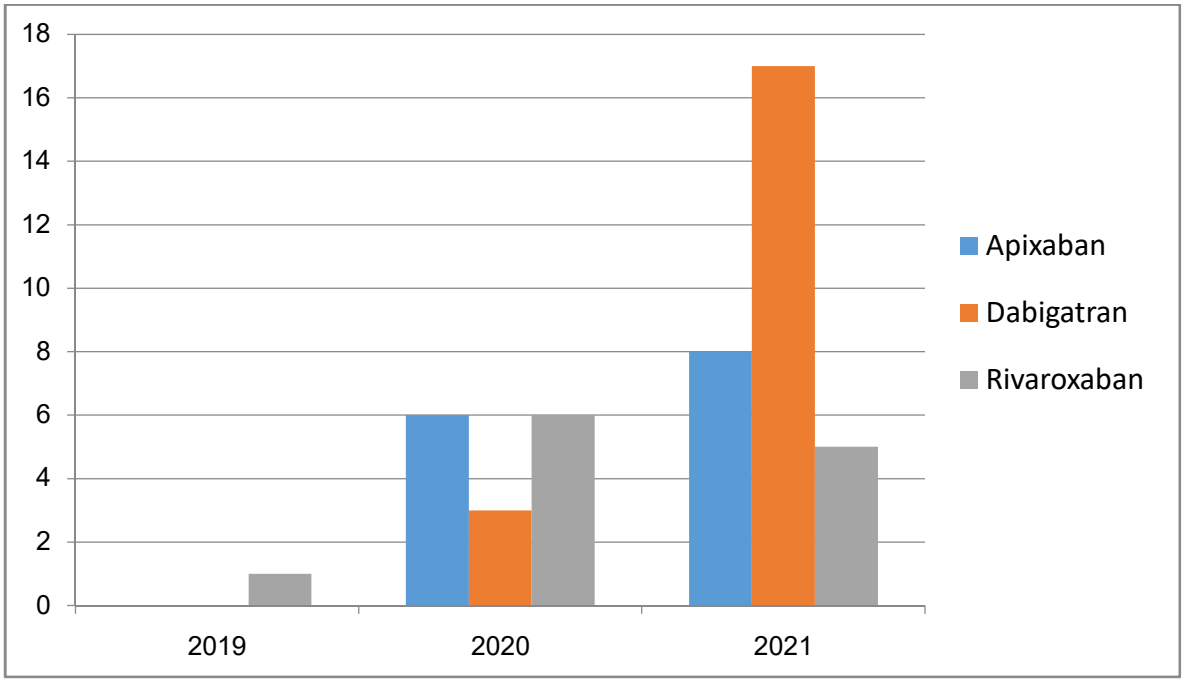

Figure 2: Prescription patterns of oral anticoagulants through 2019-2021

4. DISCUSSION:

The study's conclusions highlight a number of important issues about the ways in which ICU patients at Jordanian Royal Medical Services hospitals utilize oral anticoagulants. First off, the majority of prescriptions for oral anticoagulants contain Warfarin, which is consistent with past practices and reflects the drug's recognized use in thromboprophylaxis and treatment of a variety of

patient categories. Nonetheless, the noted rise in the use of NOACs - Apixaban and Dabigatran, in particular - indicates a possible change in the preferences for prescription in favor of more recent, maybe safer options[3,4].

The growing popularity of NOACs in intensive care units (ICUs) can be attributed to multiple elements, such as their dependable pharmacokinetics, diminished need for monitoring, and diminished likelihood of drug-drug interactions in contrast to Warfarin[5,6]. Moreover, clinical data demonstrating the safety and effectiveness of NOACs in particular patient populations, such as those suffering from venous thromboembolism or atrial fibrillation, could have affected healthcare professionals' decisions to prescribe[7,8]. Additionally, the choice of anticoagulant therapy was probably influenced by patient-specific characteristics such medication adherence, bleeding risk, and renal function.

Further research of institutional procedures, physician preferences, and patient groups treated is necessary given the variation in prescribing trends throughout participating hospitals. Differences in the accessibility of specialized services, formulary limitations, and resource availability may all have an impact on how oral anticoagulants are used in various healthcare contexts. In order to improve the quality of care for ICU patients who need oral anticoagulant treatment, interdisciplinary teamwork, evidence-based recommendations, and ongoing education programs may be used to address such disparities and encourage standardization in prescribing practices[9].

Furthermore, the observed variations in the rates of oral anticoagulant prescriptions throughout the course of the study underscore the constantly shifting nature of clinical practice and the changing terrain of thromboprophylaxis in critical care environments. Healthcare professionals need to be on the lookout for newer research and changes in clinical guidelines so they may adjust their prescribing strategies to improve patient outcomes and stay in line with best practices. Effective implementation of quality improvement initiatives, promotion of safe oral anticoagulant use in intensive care units, and adherence to evidence-based guidelines require collaborative efforts among doctors, pharmacists, and hospital administrators.

5. CONCLUSIONS:

This research offers important new information about the use of oral anticoagulants by ICU patients in Jordanian Royal Medical Services hospitals between 2019 and 2021. The results show that prescriptions for oral anticoagulants primarily contain Warfarin, but there is also a growing use of NOACs, such as Dabigatran and Apixaban. The importance for established procedures and continuous quality improvement programs to maximize oral anticoagulant therapy in critically sick patients is highlighted by variations in prescribing trends throughout institutions.

Subsequent research initiatives ought to concentrate on clarifying the clinical results linked to various oral anticoagulant regimens, assessing the influence of prescribing interventions on patient care, and tackling obstacles to the most effective use of oral anticoagulants in intensive care units. Healthcare professionals can improve oral anticoagulant therapy's efficacy, safety, and quality by promoting an environment that values evidence-based practice, interdisciplinary teamwork, and continuous quality improvement. This will eventually improve the outcomes for ICU patients in Jordanian Royal Medical Services hospitals.

6. LIMITATIONS OF THE STUDY:

There are a few limitations that need to be noted, even if this study offers insightful information about the usage trends of oral anticoagulants among ICU patients in several Jordanian Royal Medical Services hospitals. primarily because there's a chance that the study's retrospective design will result in incomplete and inaccurate data. Furthermore, the study's emphasis on prescription patterns might not account for all aspects of the use of oral anticoagulants, such as adherence, dosage, and clinical results. Moreover, the generalizability of the results may be impacted by differences in data recording procedures throughout institutions as well as modifications to clinical procedures during time. In order to overcome these shortcomings and offer a more thorough understanding of oral anticoagulant utilization in intensive care units, future research utilizing prospective data collection methods, extensive clinical endpoints, and multidimensional analysis is necessary.

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CONFLICT OF INTEREST REPORTED: NIL; SOURCE OF FUNDING: NONE REPORTED