

SFDA SAFETY SIGNAL

“A signal is defined by the SFDA as reported information on a possible causal relationship between an adverse event and a drug, the relationship being unknown or incompletely documented previously. Usually more than a single report is required to generate a signal, depending upon the seriousness of the event and the quality of the information. A signal is a hypothesis together with data and arguments and it is important to note that a signal is not only uncertain but also preliminary in nature”

08-10-2026

Saudi Food and Drug Authority (SFDA) – Safety Signal of Rivaroxaban and the Risk of Respiratory failure

*The Saudi Food and Drug Authority (SFDA) recommends that all healthcare professionals be aware of the safety signal of **Respiratory failure** associated with the use of **Rivaroxaban**. The signal originated as a result of routine pharmacovigilance monitoring activities.*

Introduction

Rivaroxaban tablet is a factor Xa inhibitor indicated to: reduce the risk of major cardiovascular events in patients with coronary artery disease (CAD), reduce the risk of major thrombotic vascular events in patients with peripheral artery disease (PAD), including patients after recent lower extremity revascularization due to symptomatic PAD.^[1] Respiratory failure occurs due mainly either to lung failure resulting in hypoxaemia or pump failure resulting in alveolar hypoventilation and hypercapnia. Hypercapnic respiratory failure may be the result of mechanical defects, central nervous system depression, imbalance of energy demands and supplies and/or adaptation of central controllers.^[2] This review aims to evaluate this potential risk and to suggest regulatory recommendations if required.

Methodology

The Signal Detection Team at SFDA performed a signal review using the National Pharmacovigilance Center (NPC) database and the World Health Organization (WHO) database, Vigibase, along with a literature review to retrieve all relevant information and assess the potential link between respiratory failure and rivaroxaban use.

Results

Cases Review: The Signal Detection Team at SFDA searched the Saudi national database and the WHO database to identify individual case safety reports (ICSRs). The WHO database yielded 560 global case reports, while the NPC database yielded three local cases with possible association to rivaroxaban which originally triggers this investigation. The authors used the signal detection tool (VigiLyze) to retrieve global cases.^[3] The author applied WHO causality assessment tool on 30 cases with top completeness score. Six cases were considered probably associated with rivaroxaban, 12 cases were assessed as possibly to be associated, and the remaining 12 cases were unassessable.

Datamining: The disproportionality between the observed and expected reporting rates for a drug/adverse drug reaction (ADR) pair is estimated using the Information Component (IC), a tool developed by WHO-UMC to measure the reporting ratio. A positive IC reflects a higher statistical association, while negative values indicate a lower statistical association. The IC result for this drug/ADR combination was 1.3, reflecting a positive statistical association.^[3]



Literature: The Signal Detection team reviewed regulatory sources and published literature to identify evidence linking rivaroxaban to the risk of respiratory failure. The search identified two publications supportive to this signal. ^[4,5]

Conclusion

The cumulative weight of evidence identified from local and global cases, literature, and disproportionality analysis suggests a potential causal association between rivaroxaban and respiratory failure. Healthcare professionals and health regulators should be aware of this potential risk in patients receiving rivaroxaban.

Report Adverse Drug Events (ADRs) to the SFDA

The SFDA urges both healthcare professionals and patients to continue reporting adverse drug reactions (ADRs) resulted from using any medications to the SFDA either online, by regular mail or by fax, using the following contact information:

National Pharmacovigilance Center (NPC)
Saudi Food and Drug Authority-Drug sector
4904 northern ring branch rd
Hittin District
Riyadh 13513 – 7148
Kingdom of Saudi Arabia
Toll free number: 19999
Email: NPC.Drug@sFDA.gov.sa

References

- 1- DailyMed - RIVAROXABAN tablet (2026) Nih.gov. Available at: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=122e6f78-067b-9065-adb2-ec7fec9f008e>
- 2- Roussos, C., & Koutsoukou, A. (2003). Respiratory failure. European Respiratory Journal, 22(47 suppl), 3s-14s.
- 3- Vigilyze.who-umc.org. 2026. [online] Available at: <https://vigilyze.who-umc.org/>
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- 5- Ciofoaia, G., Chandak, T., Bilal, M., & Latef, T. (2018). RIVAROXABAN-INDUCED DIFFUSE ALVEOLAR DAMAGE. Chest, 154(4), 405A.