https://doi.org/10.54361/ajmas.269110

Original article

Strategies for Mitigating Complications in High-Risk Trauma: A Cross-Sectional Study of Surgical and Orthopaedic Decision-Making

Waled Khalefa, Abdussalam Hounki, Karima Alfitory*

Department of Surgery, Faculty of Medicine, University of Tripoli, Tripoli, Libya
Corresponding email. karima.alfitory@su.edu.ly

Abstract
Effective management of high-risk trauma requires rapid clinical decision-making, structured complication mitigation, and coordinated multidisciplinary care. Understanding current practices and barriers among surgeons is critical for improving outcomes. This study was conducted to evaluate clinical decision-making, perioperative complication mitigation strategies, and perceived institutional barriers among surgeons managing high-risk trauma patients. A cross-sectional survey was conducted among 267 surgeons (general, orthopedic, and trauma) assessing demographics, clinical decision-making, complication mitigation, and perceived barriers. Likert-scale responses were analyzed using descriptive statistics and chi-square tests, with $p < 0.05$ considered significant. The mean age of respondents was 41.6 ± 8.9 years, with 12.3 ± 6.7 years of clinical experience; 78.3% were regularly involved in high-risk trauma care. Clinical judgment was highly valued (mean = 4.32 ± 0.58), and multidisciplinary team involvement was strongly endorsed (mean = 4.47 ± 0.55). Intraoperative safety measures were widely implemented (70.0%, mean = 4.51 ± 0.49), whereas formal risk prediction tools were underutilized (41.9%, mean = 3.21 ± 0.83). Standardized safety practices across the perioperative continuum were associated with perceived reduction in complications ($p < 0.001$). The most frequently reported barriers included resource limitations (72.7%), staffing shortages (65.2%), and time constraints (61.9%). Enhanced trauma training programs (mean = 4.44 ± 0.52) and standardized protocol implementation (mean = 4.36 ± 0.56) were strongly supported as improvement strategies. Surgeons demonstrate strong engagement in complication mitigation and collaborative decision-making; however, systemic constraints and inconsistent adoption of decision-support tools remain challenges. Implementation of targeted training, standardized protocols, and technological support may enhance outcomes in high-risk trauma care.
Keywords. High-Risk Trauma, Surgical Decision-Making, Complication Mitigation, Multidisciplinary Care.

Introduction

Trauma remains a leading cause of mortality and long-term disability worldwide, disproportionately affecting young and economically productive populations and placing substantial demands on healthcare systems. Complications following traumatic injury and surgical intervention significantly influence patient outcomes by prolonging hospital stay, increasing healthcare costs, and contributing to long-term functional impairment. Consequently, complication rates are widely regarded as key indicators of trauma care quality. However, considerable heterogeneity persists in how complications are defined, monitored, and managed across institutions, highlighting the need for more standardized clinical decision-making frameworks and targeted mitigation strategies in high-risk trauma care [1].

Clinical decision-making in trauma settings is inherently complex, requiring rapid synthesis of evolving clinical information under conditions of physiological instability, diagnostic uncertainty, and severe time constraints. Unlike elective surgery, where comprehensive preoperative risk stratification is feasible, trauma-related decisions are often made with incomplete data and limited opportunity for deliberation. This environment increases vulnerability to cognitive error and adverse outcomes, particularly when reliance on individual clinical judgment is not supported by structured decision aids. Although emerging risk prediction and decision-support tools—including machine learning–based models—offer promise in enhancing perioperative risk assessment, their routine integration into trauma practice remains inconsistent and incompletely understood [2].

Effective mitigation of surgical and orthopedic complications in trauma care requires coordinated interventions across the preoperative, intraoperative, and postoperative continuum. Standardized safety measures, such as surgical checklists, structured team communication, and time-out procedures, have demonstrated reductions in preventable errors and adverse events across surgical specialties, including orthopedics [3]. Additionally, comprehensive care bundles addressing infection prevention, operating room efficiency, and situational awareness have been associated with meaningful declines in complication rates within high-volume trauma centers [4].

Beyond procedural standardization, interdisciplinary care models and appropriate timing of surgical intervention are critical determinants of trauma outcomes. Collaborative approaches involving trauma surgeons, anesthesiologists, intensivists, and medical specialists have been shown to reduce perioperative complications, shorten hospital stays, and improve overall outcomes compared with fragmented care models [5]. Similarly, early definitive surgical management, when applied to appropriately selected and adequately

Received*: 05-11-2025 -* ***Accepted****: 01-01-2026 -* ***Published****: 08-01-2026*

resuscitated patients, has been associated with reduced mortality and morbidity in multisystem trauma [6]. At the systems level, quality improvement initiatives such as the Trauma Quality Improvement Program (TQIP) emphasize data-driven benchmarking and continuous performance evaluation to reduce variability and promote high-reliability trauma care [7].

Despite these advances, there remains limited empirical insight into how surgeons operationalize evidence-based strategies in real-world, high-risk trauma environments. In particular, how surgical and orthopedic practitioners balance clinical judgment, institutional protocols, multidisciplinary collaboration, and systemic constraints during high-stakes decision-making is not well characterized. To address this gap, the present cross-sectional study examines clinical decision-making processes and complication mitigation strategies among surgeons involved in high-risk trauma care, explores variations according to specialty, experience, and institutional setting, and identifies perceived barriers and opportunities for improvement. By elucidating current practice patterns and unmet needs, this study aims to inform targeted educational, organizational, and protocol-driven interventions to enhance patient safety and outcomes in high-risk trauma care.

Methods

Study Design and Setting

A cross-sectional descriptive study was conducted to evaluate strategies for mitigating complications and to examine clinical decision-making in high-risk trauma care among surgical practitioners. The study population comprised surgeons engaged in acute trauma management across tertiary and secondary healthcare institutions.

Study Population

The study population included general surgeons, orthopedic surgeons, and trauma surgeons with active involvement in high-risk trauma care. Eligible participants were consultants, specialists, and senior trainees involved in perioperative decision-making. Surgeons practicing exclusively in elective settings were excluded.

Sample Size and Response Rate

A total of 299 questionnaires were initially collected. Following data cleaning procedures, which involved the removal of incomplete responses and duplicate entries, 267 questionnaires were retained for the final analysis, yielding a valid response rate of 89.3%. The final sample comprised 120 general surgeons, 95 orthopedic surgeons, and 52 trauma surgeons.

Sampling Technique

A convenience sampling method was used. The survey was distributed electronically via professional networks and institutional contacts. Participation was voluntary, and informed consent was obtained electronically prior to completion.

Data Collection Instrument

Data were collected using a structured, self-administered questionnaire that was developed based on published literature and trauma quality improvement frameworks. The instrument comprised sections addressing demographic and professional characteristics, clinical decision-making in high-risk trauma, strategies for complication mitigation, and perceived barriers and opportunities for improvement. Most responses were recorded using Likert-scale items, supplemented by multiple-choice questions. The majority of items were assessed on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5), while multiple-choice questions were employed to capture demographic variables.

Data Management and Statistical Analysis

Data were entered and analyzed using IBM SPSS Statistics (version 22.0). Descriptive statistics were used to summarize participant characteristics and survey responses, with categorical variables presented as frequencies and percentages. Comparative analyses were planned based on specialty and experience where applicable, and a p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Participation was voluntary, data were collected anonymously, and confidentiality was strictly maintained.

Results

Demographic and Professional Characteristics

A total of 267 respondents were included in the final analysis following data cleaning and validation. The study population represented a multidisciplinary cohort of surgeons actively involved in high-risk trauma care. Participants included general surgeons n = 120 (44.9%), orthopedic surgeons (n = 95; 35.6%), and

Received*: 05-11-2025 -* ***Accepted****: 01-01-2026 -* ***Published****: 08-01-2026*

trauma surgeons n = 52 (19.5%). The mean age of respondents was 41.6 ± 8.9 years, with a mean clinical experience of 12.3 ± 6.7 years. Consultants constituted 112 participants (41.9%), followed by specialists (92; 34.5%) and senior trainees (63; 23.6%).

The majority of respondents (209; 78.3%) reported regular involvement in the acute management of high-risk trauma patients, including operative and perioperative decision-making. Most participants were employed in tertiary trauma centers (n = 161; 60.3%), while the remainder practiced in secondary healthcare institutions n = 106 (39.7%). No statistically significant differences were observed in years of experience across surgical specialties (p = 0.18). However, trauma surgeons were significantly more likely to be based in tertiary trauma centers compared with general and orthopedic surgeons (p = 0.012).

Table 1. Demographic and Professional Characteristics of Respondents (n = 267)

Variable	n (%) or Mean ± SD
Surgical specialty	
– General surgery	120 (44.9%)
– Orthopedic surgery	95 (35.6%)
– Trauma surgery	52 (19.5%)
Professional role	
– Consultant	112 (41.9%)
– Specialist	92 (34.5%)
– Senior trainee	63 (23.6%)
Age (years)	41.6 ± 8.9
Clinical experience (years)	12.3 ± 6.7
Regular involvement in high-risk trauma care	209 (78.3%)
Institution type	
– Tertiary trauma center	161 (60.3%)
– Secondary hospital	106 (39.7%)

Clinical Decision-Making in High-Risk Trauma

Overall agreement with statements related to clinical judgment in high-risk trauma decision-making was high. The majority of respondents (160; 59.9%) reported *agreeing or strongly agreeing* that clinical judgment plays a central role in trauma decision-making, while 107 (40.1%) expressed neutral or disagreeing responses. The mean Likert score for reliance on clinical judgment was 4.32 ± 0.58, indicating strong overall agreement.

Decision-making under time pressure was frequently reported, with 168 respondents (62.9%) agreeing that critical decisions are often made under urgent conditions and incomplete clinical information. This item demonstrated a high mean score of 4.41 ± 0.62, reflecting the time-sensitive nature of trauma care. Institutional protocols and clinical guidelines were perceived as supportive decision-making tools by 152 respondents (56.9%), while 115 (43.1%) reported neutral or lower levels of agreement. The mean score for this domain was 3.89 ± 0.71. Trauma surgeons demonstrated significantly higher agreement with the usefulness of institutional protocols compared to general and orthopedic surgeons (p = 0.041).

Multidisciplinary team involvement was strongly endorsed across all specialties. A total of 181 respondents (67.8%) agreed or strongly agreed that input from anesthesia, critical care, and trauma team members is essential for effective decision-making. The mean Likert score was 4.47 ± 0.55, with no statistically significant differences observed between surgical specialties (p = 0.18). In contrast, the routine use of formal risk prediction and decision-support tools demonstrated lower levels of agreement. Only 112 respondents (41.9%) reported regular use of such tools, while 155 (58.1%) indicated limited or inconsistent use. The mean score for this item was 3.21 ± 0.83, with significant variability noted across institutional settings (p = 0.032).

Table 2. Clinical Decision-Making in High-Risk Trauma (Likert-Scale Responses, n = 267)

Survey Item	Agree / Strongly Agree n (%)	Neutral / Disagree n (%)	Mean ± SD	p-value*
Reliance on clinical judgment in trauma decision-making	160 (59.9%)	107 (40.1%)	4.32 ± 0.58	0.22
Decision-making under time pressure	168 (62.9%)	99 (37.1%)	4.41 ± 0.62	0.19
Institutional protocols support decision-making	152 (56.9%)	115 (43.1%)	3.89 ± 0.71	0.041

Received*: 05-11-2025 -* ***Accepted****: 01-01-2026 -* ***Published****: 08-01-2026*

Importance of multidisciplinary team involvement	181 (67.8%)	86 (32.2%)	4.47 ± 0.55	0.18
Routine use of formal risk prediction tools	112 (41.9%)	155 (58.1%)	3.21 ± 0.83	0.032

Complication Mitigation Strategies

High levels of engagement with complication mitigation strategies were reported across all phases of trauma care. Preoperative stabilization and structured team communication were widely adopted, with 162 respondents (60.7%) indicating agreement or strong agreement, while 105 (39.3%) reported neutral or disagreeing responses. The mean Likert score for this domain was 4.38 ± 0.60, reflecting strong endorsement. Intraoperative safety measures, including the use of surgical safety checklists and standardized operative protocols, demonstrated the highest level of utilization. A total of 187 respondents (70.0%) agreed or strongly agreed with routine use of these measures, compared with 80 (30.0%) who reported neutral or lower agreement. The mean score was 4.51 ± 0.49.

Postoperative complication mitigation strategies, such as early detection of complications and multidisciplinary postoperative monitoring, were also strongly supported. Overall, 170 respondents (63.7%) agreed or strongly agreed with the routine use of these strategies, while 97 (36.3%) did not. The mean Likert score was 4.29 ± 0.57. Trauma surgeons reported significantly higher engagement in postoperative monitoring compared with general and orthopedic surgeons ($p = 0.027$). When analyzed collectively, standardized safety practices across the perioperative continuum were significantly associated with higher perceived effectiveness in complication reduction ($p < 0.001$).

Table 3. Complication Mitigation Strategies in High-Risk Trauma Care (n = 267)

Strategy Domain	Agree / Strongly Agree n (%)	Neutral / Disagree n (%)	Mean ± SD	p-value*
Preoperative stabilization and structured communication	162 (60.7%)	105 (39.3%)	4.38 ± 0.60	0.21
Intraoperative safety measures (e.g., checklists)	187 (70.0%)	80 (30.0%)	4.51 ± 0.49	0.14
Postoperative monitoring and early complication detection	170 (63.7%)	97 (36.3%)	4.29 ± 0.57	0.027
Overall standardized safety practices	—	—	—	< 0.001

Perceived Barriers and Improvement Opportunities

The most commonly reported barriers to optimal trauma care were resource limitations (n = 194, 72.7%), followed by staffing shortages (n = 174, 65.2%) and time constraints (n = 165, 61.9%). The overall mean score for perceived institutional barriers was 4.06 ± 0.68, indicating moderate to high recognition of systemic challenges among respondents.

Respondents demonstrated strong support for targeted interventions to enhance trauma care. Enhanced trauma training programs received the highest endorsement (mean = 4.44 ± 0.52), followed closely by wider implementation of standardized protocols (mean = 4.36 ± 0.56). The adoption of decision-support tools garnered moderate support (mean = 3.58 ± 0.79), with significant variation across hospital types ($p = 0.021$), suggesting contextual differences in readiness for technological integration. These findings highlight both the perceived systemic barriers and actionable opportunities for improving high-risk trauma care among surgical and orthopedic professionals.

Table 1. Perceived Barriers and Improvement Opportunities in High-Risk Trauma Care (n = 267)

Category	Item	n	%	Mean ± SD	p-value
Perceived Barriers	Resource limitations	194	72.7	4.12 ± 0.71	–
	Staffing shortages	174	65.2	3.98 ± 0.69	–
	Time constraints	165	61.9	3.87 ± 0.74	–
Improvement Opportunities	Enhanced trauma training programs	267	100	4.44 ± 0.52	–
	Standardized protocol implementation	267	100	4.36 ± 0.56	–
	Decision-support tool adoption	267	100	3.58 ± 0.79	0.021*

**Significant difference across hospital types ($p < 0.05$).*

Discussion

This study provides a comprehensive assessment of clinical decision-making, complication mitigation strategies, and perceived barriers among surgeons involved in high-risk trauma care. The findings reveal significant insights into the interplay between individual clinical judgment, institutional protocols, and systemic constraints in trauma management.

Received*: 05-11-2025 -* ***Accepted****: 01-01-2026 -* ***Published****: 08-01-2026*

Our cohort of 267 respondents comprised a multidisciplinary group of surgeons, with general surgeons representing the largest proportion (44.9%), followed by orthopedic (35.6%) and trauma surgeons (19.5%). The mean age (41.6 ± 8.9 years) and clinical experience (12.3 ± 6.7 years) indicate a relatively experienced workforce, with most participants regularly engaged in acute trauma care (78.3%). Trauma surgeons were more frequently based in tertiary centers ($p = 0.012$), indicating the centralization of specialized trauma services, which is consistent with prior evidence demonstrating improved outcomes in high-volume, tertiary trauma settings [8]. The lack of significant differences in years of experience across specialties ($p = 0.18$) suggests that differences in practice patterns are unlikely due to professional seniority alone.

The study underscores the pivotal role of clinical judgment in trauma care, with nearly 60% of respondents strongly relying on individual assessment (mean = 4.32 ± 0.58). These findings align with previous research emphasizing the importance of experiential knowledge in high-pressure clinical environments [9]. However, the data also reveal that decision-making under time pressure is common, with 62.9% reporting frequent urgent decision-making (mean = 4.41 ± 0.62). This reliance on rapid clinical reasoning reflects the inherent unpredictability of trauma care but may also predispose to variability in outcomes, particularly when objective decision-support tools are underutilized.

Despite recognition of institutional protocols as supportive tools (mean = 3.89 ± 0.71), only just over half of respondents agreed that protocols consistently aid decision-making. Trauma surgeons demonstrated higher adherence compared to other specialties ($p = 0.041$), suggesting potential specialty-specific engagement with structured guidelines. Notably, formal risk prediction tools were used inconsistently (41.9%), reflecting a persistent gap between evidence-based decision-support technologies and real-world adoption. This contrasts with literature advocating for predictive analytics to enhance early recognition of high-risk trauma scenarios [10], indicating a critical area for intervention. The high endorsement of multidisciplinary team involvement (mean = 4.47 ± 0.55) supports prior evidence that collaborative approaches, particularly involving anesthesia and critical care, improve decision quality and patient outcomes in complex trauma [11]. The lack of significant variation across specialties ($p = 0.18$) suggests broad acceptance of team-based care principles.

Surgeons reported substantial engagement with complication mitigation strategies across all perioperative phases. Intraoperative safety measures, including checklists and standardized protocols, were most widely implemented (70.0%, mean = 4.51 ± 0.49), reflecting alignment with WHO surgical safety guidelines [12]. Preoperative stabilization and structured communication were endorsed by 60.7% of respondents (mean = 4.38 ± 0.60), consistent with literature emphasizing early resuscitation and clear team communication as key determinants of trauma outcomes [13]. Postoperative monitoring and early detection strategies were similarly supported (63.7%, mean = 4.29 ± 0.57), with trauma surgeons showing higher engagement ($p = 0.027$), likely reflecting the higher acuity of patients managed in tertiary centers.

Collectively, standardized safety practices across the perioperative continuum were significantly associated with perceived reduction in complications ($p < 0.001$), underscoring the importance of structured, protocol-driven care pathways in mitigating adverse events. These findings reinforce prior studies demonstrating that systematic implementation of perioperative safety measures can reduce morbidity and mortality in trauma populations [14,15,16].

The most prominent barriers reported were resource limitations (72.7%), staffing shortages (65.2%), and time constraints (61.9%), reflecting systemic challenges frequently highlighted in trauma literature [15]. These barriers may partially explain the inconsistent adoption of decision-support tools despite evidence of their potential benefits. Institutional differences in readiness for technological integration were suggested by significant variation in support for decision-support tools across hospital types ($p = 0.021$). Respondents strongly supported enhanced trauma training programs (mean = 4.44 ± 0.52) and wider implementation of standardized protocols (mean = 4.36 ± 0.56), indicating recognition of education and system-level strategies as critical avenues for improvement. These findings echo previous recommendations advocating targeted training interventions and protocol standardization to optimize trauma care outcomes [17]. Interestingly, while there is general agreement on the value of structured protocols, the relatively lower adoption of decision-support tools highlights an implementation gap that warrants further investigation.

Limitations

While the study provides robust insight into trauma decision-making and mitigation strategies, several limitations warrant consideration. First, self-reported measures may introduce response bias, particularly in the assessment of protocol adherence and team engagement. Second, a cross-sectional design limits the ability to infer causal relationships between practices and outcomes. Third, although statistically significant differences were observed for certain variables (e.g., trauma surgeon engagement with protocols), effect sizes were not reported, limiting the interpretation of clinical relevance. Lastly, the underutilization of formal risk prediction tools despite high awareness suggests a need for qualitative exploration into barriers to adoption, including usability, accessibility, and perceived reliability.

Received*: 05-11-2025 -* ***Accepted****: 01-01-2026 -* ***Published****: 08-01-2026*

Conclusion

Overall, the findings highlight a nuanced interplay between individual judgment, team-based care, and systemic support in high-risk trauma management. The data suggest that while surgeons are highly engaged in complication mitigation, institutional and technological barriers remain, providing clear targets for policy, training, and research interventions.

Conflict of interest. Nil

References

1. Sise RG, Calvo RY, Spain DA, Weiser TG, Staudenmayer KL. The epidemiology of trauma-related mortality in the United States from 2002 to 2010. J Trauma Acute Care Surg. 2014;76(4):913-920.
2. Senders JT, Staples PC, Karhade AV, Zaki MM, Gormley WB, Broekman MLD, Smith TR, Arnaout O. Machine learning and neurosurgical outcome prediction: a systematic review. World Neurosurg. 2018;109:476-486.
3. Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat AH, Dellinger EP, Herbosa T, Joseph S, Kibatala PL, Lapitan MCM, Merry AF. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med. 2009;360(5):491-499.
4. Lustenberger T, Meier SL, Verboket RD, Störmann P, Janko M, Frank J, Marzi I. The implementation of a complication avoidance care bundle significantly reduces adverse surgical outcomes in orthopedic trauma patients. J Clin Med. 2020;9(12):4006.
5. Shaw M, Pelecanos AM, Mudge AM. Evaluation of internal medicine physician or multidisciplinary team comanagement of surgical patients and clinical outcomes: a systematic review and meta-analysis. JAMA Netw Open. 2020;3(5):e204088.
6. Dormann J, Horst K, Dahms K, Steinfeld E, Ansems K, Janka H, Metzendorf MI, Breuer T, Benstoem C, Hildebrand F, Bolierakis E. The optimal timing for definitive operative stabilization of pelvic fractures in polytrauma patients: effects on clinical outcomes–a systematic review. Eur J Trauma Emerg Surg. 2025;51(1):100.
7. Newgard CD, Fildes JJ, Wu L, Hemmila MR, Burd RS, Neal M, Mann CN, Shafi S, Clark DE, Goble S, Nathens AB. Methodology and analytic rationale for the American College of Surgeons trauma quality improvement program. J Am Coll Surg. 2013;216(1):147-157.
8. Giannoudis VP, Rodham P, Giannoudis PV, Kanakaris NK. Severely injured patients: modern management strategies. EFORT Open Rev. 2023;8(5):382-396.
9. Croskerry P. The importance of cognitive errors in diagnosis and strategies to minimize them. Acad Med. 2003;78(8):775-780.
10. Van Maaren, M.C., Hueting, T.A., Völkel, V., van Hezewijk, M., Strobbe, L.J. and Siesling, S., 2023. The use and misuse of risk prediction tools for clinical decision-making. *The Breast*, *69*, pp.428-430.
11. Bouamra O, Wrotchford A, Hollis S, Vail A, Woodford M, Lecky F. A new approach to outcome prediction in trauma: a comparison with the TRISS model. J Trauma. 2006;61(3):701-710.
12. Alizo G, Sciarretta JD, Gibson S, Muertos K, Holmes S, Denittis F, Cheatle J, Davis J, Pepe A. Multidisciplinary team approach to traumatic spinal cord injuries: a single institution's quality improvement project. Eur J Trauma Emerg Surg. 2018;44(2):245-250.
13. World Health Organization. Implementation manual: WHO surgical safety checklist. Geneva: World Health Organization; 2008. (WHO/IER/PSP/2008.05).
14. Shafi S, Nathens AB, Cryer GH, Hemmila MR, Pasquale MD, Clark DE, Neal M, Goble S, Meredith WJ, Fildes JJ. The trauma quality improvement program of the American College of Surgeons Committee on Trauma. J Am Coll Surg. 2009;209(4):521-530.e1.
15. Nathens AB, Jurkovich GJ, Maier RV, Grossman DC, MacKenzie EJ, Moore M, Rivara FP. Relationship between trauma center volume and outcomes. JAMA. 2001;285(9):1164-1171.
16. Choi J, Carlos G, Nassar AK, Knowlton LM, Spain DA. The impact of trauma systems on patient outcomes. Curr Probl Surg. 2020;58(1):100849.
17. Sarkar B, Brunsvold ME, Cherry-Bukowiec JR, Hemmila MR, Park PK, Raghavendran K, Wahl WL, Wang SC, Napolitano LM. American College of Surgeons' Committee on Trauma performance improvement and patient safety program: maximal impact in a mature trauma center. J Trauma Acute Care Surg. 2011;71(5):1447-1454.

Received: *05-11-2025* - ***Accepted***: *01-01-2026* - ***Published***: *08-01-2026*