Croat Nurs J. 2025; 9(2): 279-302

Review

Technological Advancements in Triage: How the Development of Artificial Intelligence Is Changing Medical Practice – A Literature Review

[1] Helena Mayerhoffer
[1] Boris Ilić

[1] University of Applied Health Sciences, Zagreb, Croatia

Article received: 04.04.2025.

Article accepted: 28.08.2025.

https://doi.org/10.24141/2/9/2/13

Author for correspondence:
Helena Mayerhoffer
University of Applied Health Sciences, Zagreb, Croatia
E-mail: mayerhoffer.helena@gmail.com

Keywords: artificial intelligence, triage, medical practice, nursing practice

Abstract

Introduction. Artificial intelligence can analyze large-scale datasets to enhance decision-making and efficiency. Artificial intelligence has potential in trauma triage, yet remains underexplored. Effective triage is essential for optimizing patient outcomes and resource allocation, but current systems heavily rely on nurses' judgment, which is subject to variability. AI-driven models could enhance accuracy, reduce bias, and support clinical decision-making in emergency care.

Aim. This literature review explores the role of artificial intelligence in medical triage, assessing its impact on accuracy, efficiency, and decision-making in patient assessment and prioritization.

Methods. A systematic search was conducted in March 2025 using PubMed, Web of Science and Hrčak databases to identify studies published between 2022 and 2025. Articles meeting predefined inclusion criteria were selected, resulting in 31 studies being included in the final review. The review followed PRISMA guidelines. Inclusion criteria consisted of systematic reviews, review articles, original research papers, cross-sectional studies, clinical trials, randomized controlled trials, and meta-analyses published in Croatian or English. The search terms included "artificial intelligence", "triage", "medical practice" and "nursing practice".

Results. The reviewed studies demonstrate that AI models can enhance triage accuracy and reliability, sometimes outperforming healthcare professionals

in specific tasks. They showed high specificity in identifying critical cases and improving triage consistency. However, limitations were noted, including reduced accuracy in complex cases, overestimation of urgency, and variability in performance across different triage systems. Key limitations identified include suboptimal reproducibility in disaster simulations, poor performance in complex triage scenarios, training data bias, and lack of algorithm transparency. These inconsistencies highlight the need for cautious interpretation and refinement before clinical implementation. While AI supports triage decision-making, human oversight remains essential. The potential of artificial intelligence depends on model training, data quality, and clinical integration. While some models perform well in emergency triage, others show inconsistencies in disaster scenarios. AI should be seen as a complement to human expertise rather than a replacement. The implications of these limitations include risks to patient safety, limited generalizability and challenges in regulatory validation. Addressing these issues is crucial to ensure safe and effective integration of AI into clinical workflows. Challenges such as data bias, transparency, and model variability must be addressed for successful AI implementation in emergency medicine.

Conclusion. AI-driven triage systems improve accuracy and efficiency but require further refinement for reliability in complex cases. They function best as supportive tools rather than independent decision-makers. Future research should focus on optimizing AI integration into clinical practice to enhance emergency care outcomes.

Introduction

Technological advancements have played a crucial role in shaping global development, with artificial intelligence emerging as one of the most rapidly evolving fields, particularly in medicine (1). Artificial intelligence (AI) refers to the ability of non-human systems to analyze input data and make decisions accordingly. Within artificial intelligence, machine learning focuses on developing algorithms that continuously improve through data exposure, allowing them to identify key patterns linked to specific outcomes. These patterns are stored in model parameters, which guide data processing and decision-making. Deep learning, a subset of machine learning, enables models to recognize and apply intricate data patterns (2). Artificial intelligence models are typically developed by training on extensive datasets to generate meaningful outputs that address predefined objectives. In medicine, such objectives may include patient diagnosis or prognosis, drug discovery and note transcription (3). Despite its growing applications, one underexplored area where artificial intelligence could be transformative is trauma triage. Triage involves categorizing patients based on injury severity to ensure they receive appropriate care at the right time and location (4). Effective triage minimizes preventable disabilities and fatalities while preventing emergency departments from becoming overwhelmed (5).

Nurses play a highly specialized role in the triage process, particularly within emergency departments where clinical urgency and time pressures demand rapid, accurate decision-making. Triage nurses are responsible for conducting fast yet thorough clinical assessments, determining the urgency and severity of patient conditions and ensuring appropriate prioritization for care. This complex task requires not only clinical experience but also critical thinking, decision-making skills, and the ability to perform under pressure. To perform triage effectively and minimize the risk of error, nurses must undergo structured education and continuous training tailored to the demands of this high-stakes environment (6).

Errors in triage can lead to over-triage, where non-critical patients are sent to higher-level facilities unnecessarily, or under-triage, where critically injured patients do not receive specialized trauma care. Both scenarios contribute to poor patient outcomes and inefficient resource allocation (7). Currently, nurses use various conventional triage tools, such as the *National Early Warning Score*, *Modified Early Warning Score*, *Revised Trauma Score*, and *Trauma and Injury Severity Score*, depending on hospital protocols. These tools rely on basic physiological data, including respiratory rate, systolic blood pressure, heart rate, capillary refill time and *Glasgow Coma Scale*. Nurses integrate this information with diagnostic reasoning to determine a patient's triage category. This typically follows an analytical reasoning approach where

past experience and existing knowledge inform decision-making (8). However, the effectiveness of these tools depends on nurses' judgment, which can be influenced by stress levels, variability in physical examinations, and differences in clinical experience (9). Artificial intelligence, machine learning and deep learning offer a potential solution to these limitations by leveraging predictive analytics and large trauma databases such as the *Trauma Audit & Research Network* (9). Although several studies have explored the application of artificial intelligence in various domains of medicine, there is a notable lack of focused reviews that critically assess its role specifically in emergency and trauma triage. Existing literature often discusses artificial intelligence applications broadly, without addressing the unique challenges and opportunities related to triage settings. Therefore, this review aims to fill this gap by synthesizing recent findings on the integration of artificial intelligence into triage systems, evaluating its impact on decision-making accuracy, efficiency and potential clinical implications.

Aim

This literature review aims to explore the impact of artificial intelligence on triage processes in medical practice, examining how technological advancements enhance efficiency, accuracy, and decision-making in patient assessment and prioritization.

Methods

Search strategy

A systematic literature search was performed in March 2025 utilizing PubMed, Web of Science and Hrčak databases, covering the period from January 2022 to January 2025. The selection process was guided by predefined inclusion and exclusion criteria to ensure that only high-quality and relevant studies were included in the review (Table 1). The rationale for selecting this time frame was to focus on the most recent developments in AI applications in triage, as rapid advancements have occurred in the field in the last three years. The literature search was conducted independently by a single researcher under the guidance of a mentor, as part of a manuscript prepared for publication. We selected PubMed, Web of Science and Hrčak for our systematic literature review to ensure comprehensive coverage across international biomedical and multidisciplinary research, alongside regionally specific Croatian scientific output. While this combination maximizes relevance for our topic, it may inherently limit the inclusion of studies from other specialized databases.

Eligibility criteria

Eligible studies included systematic reviews, review articles, original research papers, cross-sectional studies, clinical trials, randomized controlled trials and meta-analyses. These study types were chosen due to their methodological rigor and ability to provide comprehensive, evidence-based insights relevant to the research question. To maintain focus on the most recent advancements, only articles published between 2022 and 2025 were considered. Additionally, studies had to be published in either Croatian or English to be included in the analysis. These language criteria were selected to ensure accurate interpretation of the content by the researchers.

Search terms and strategy

During the search, the authors used the following keywords for the inclusion criteria: "artificial intelligence", "triage", "medical practice" and "nursing practice". These terms were selected based on their relevance to the intersection of artificial intelligence and emergency care, as well as their frequent appearance in the literature. Boolean operators such as "AND" and "OR" were used to combine keywords effectively and broaden the search scope. For example, the query in PubMed was structured as: "artificial intelligence" OR "machine learning" AND "triage" AND "medical practice" AND "nursing practice". No additional filters were applied regarding article type or study design, to avoid prematurely excluding relevant literature.

Data collection and synthesis

The screening process followed the PRISMA guidelines to ensure the selection of relevant studies (Figure 1). Initially, records were identified from three databases, two international and one Croatian database: PubMed (n=289), Web of Science (n=15) Hrčak (n=1), resulting in a total of 305 records. Duplicate records (n=13) were removed, along with records excluded for other reasons (n=246), such as being outside the scope of the review, not being peer-reviewed articles or lacking relevance to the research question. Following these exclusions, 46 records were screened based on their titles and abstracts. During this phase, 15 records were excluded, with the primary reason being the unavailability of a full-text version. The remaining 31 studies were assessed for eligibility, all of which met the inclusion criteria and were subsequently included in the final review. The data from the included studies were synthesized narratively. Key themes, findings, and methodological characteristics were extracted and summarized in a descriptive manner to identify common patterns, trends, and gaps in the literature. No quantitative synthesis (meta-analysis) was performed due to the heterogeneity of the included studies.

Table 1. **Inclusion and exclusion criteria**

	Inclusion criteria	Exclusion criteria
Type/category of the article	Systematic review Review article Original research paper Cross-sectional study Clinical trial Randomized controlled trials Meta-analyses	Letters Editorials Book chapters
Content (keywords)	Artificial intelligence Triage Medical practice Nursing practice	Other
Publication date	2022-2025	Articles published before 2022
Language	Croatian English	Other

Results

This systematic review included 31 articles published in the last three years (2022-2025). Due to the heterogeneity in study designs, populations, and outcome measures, a narrative synthesis was conducted. These articles were selected to provide an overview of the role of artificial intelligence models, particularly large language models, in emergency department triage and decision-making processes. The results were thematically grouped into key areas relevant to triage accuracy, model reliability, comparison of AI models with healthcare professionals and clinical implications.

Table 2 includes a detailed compilation of the results from these articles. We included the information about the authors, the year the paper was written, the aim, the type of study and the population of the research.

Triage accuracy and performance of artificial intelligence models

A total of 12 studies demonstrated that AI models, particularly fine-tuned large language models achieved high levels of triage accuracy, often outperforming or closely matching healthcare professionals in specific scenarios (10,12-15,20,22,25-27,33,36). For example, GPT-4.0 and Claude-3 Opus models showed sensitivity greater than 77% and specificity greater than 91% in pediatric emergency cases (10). ChatGPT also demonstrated strong agreement with expert assessments, achieving accuracy greater than 94% in identifying high-acuity patients (14,20,23,25,27,34,36). In contrast, the AI-powered tool SMASS showed worse performance compared to nurses (11).

Reliability and consistency

While AI models showed high initial performance, their consistency varied depending on context and case complexity. Five studies identified reproducibility issues in simulated disaster scenarios and complex patient cases. For example, ChatGPT showed suboptimal repeatability in mass casualty triage (17,18,28,29,31), with performance heavily dependent on prompt design and prior training. In contrast,

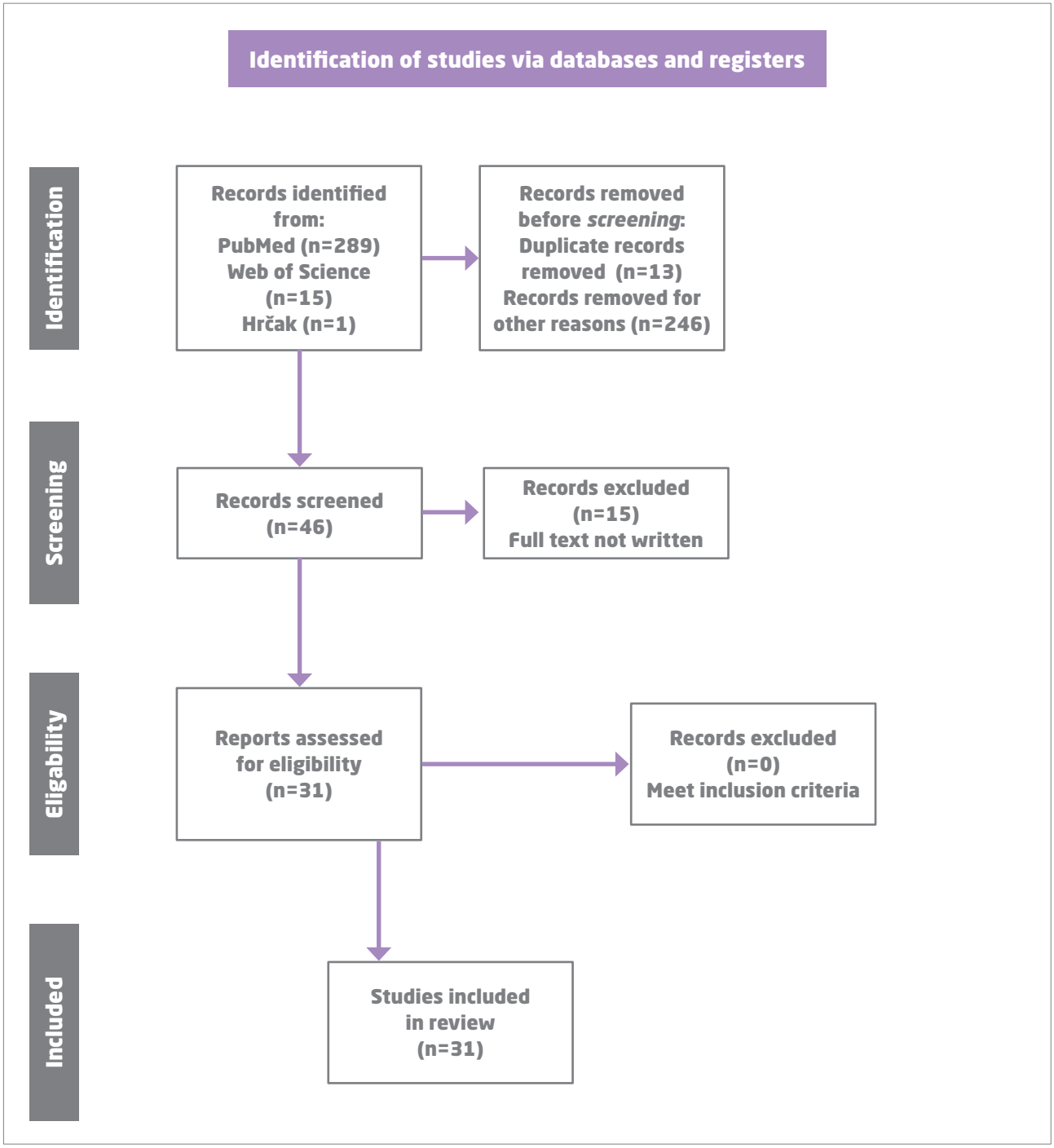

Figure 1. **PRISMA flow diagram**

four studies reported improved reliability metrics for fine-tuned models, suggesting that targeted training can enhance consistency (10,20,23,30).

Comparison with healthcare professionals

Although artificial intelligence demonstrated strong capabilities, eight studies consistently highlighted the superior accuracy and contextual judgment of trained healthcare professionals, especially in complex or high-stakes triage scenarios (16,18,19,23,28-30,36). In several cases, artificial intelligence models underperformed or showed tendencies toward over-triage or under-triage, underscoring the continued need for human oversight. For instance, a real-time voice AI system for medical record input demonstrated mixed results for completeness and accuracy compared to manual nurse input, despite improving efficiency (40).

Clinical implications and integration challenges

Seven studies addressed the broader implications of artificial intelligence implementation. Benefits include reduced administrative workload, earlier identification of critical cases, and improved decision support (15,21-23,26,33). However, significant challenges were also identified, such as data bias, lack of transparency, ethical concerns, and variability in performance depending on the model and specific use case (15,30,35).

Discussion

This literature review has identified a collection of studies that provide substantial evidence supporting the advantageous impact of artificial intelligence in triage across various emergency care settings. The findings highlight the ability of artificial intelligence to enhance accuracy, reduce human bias, improve consistency, and support clinical decision-making in both routine and mass casualty incidents. While artificial intelligence demonstrates significant potential in optimizing emergency triage, its effectiveness varies depending on the model, training data, and the complexity of cases.

However, these benefits must be interpreted cautiously in light of significant limitations. Key limitations include model inconsistency, lack of transparency and potential algorithmic biases. These factors may compromise decision-making accuracy and raise concerns regarding patient safety. Inadequate transparency makes it difficult for healthcare providers to understand and trust AI-generated decisions, potentially leading to resistance in adoption or delayed critical interventions.

In addressing the research question, "How does the application of artificial intelligence influence the accuracy, consistency, and efficiency of triage in various emergency care settings?", the findings indicate a multifaceted impact, demonstrating both significant promise and areas requiring careful consideration.

Accuracy and reliability of artificial intelligence in emergency triage

Artificial intelligence models have demonstrated remarkable accuracy in triage classification, often performing at levels comparable to, or exceeding, human clinicians. Fine-tuned GPT-4.0, for example, achieved a sensitivity of 77.1% and specificity of 92.5% in predicting *Emergency Severity Index (ESI)* levels, while Claude-3 Opus exhibited the highest reliability among tested AI models, with a Fleiss κ of 0.85 in pediatric triage (10). Similarly, ChatGPT showed strong agreement with human experts in emergency department triage (Kappa = 0.659) and a high specificity of 99.86% in identifying critical cases (11). This addresses the part of the research question by showing that artificial intelligence generally enhances triage accuracy, particularly in identifying high-acuity patients and predicting ESI levels. However, AI's accuracy is not uniform across all triage systems. When tested on the *Canadian Triage and Acuity Scale (CTAS),* ChatGPT exhibited only 47.5% accuracy, with a substantial rate of over-triage (38.7%) and under-triage (13.7%), raising concerns about its reliability in certain frameworks (17). Similarly, ChatGPT's triage performance in simulated disaster scenarios using the START protocol was suboptimal (63.9%) due to inconsistencies in repeatability and reproducibility (16). These variations highlight that while artificial intelligence holds promise, its effectiveness is highly dependent on the triage system used and the complexity of cases it encounters.

Table 2. **Overview of the research findings on technological advancements in triage**

Authors, year	Type of study	Population	AI Models Evaluated	Comparators	Key findings	AI vs. Human performance
Ho et al. (2025). (10)	Original research paper	70 pediatric vignettes (ESI Handbook v4)	Claude-3 Opus, GPT-4.0 (fine-tuned), Mistral-Large	N/A	Claude-3 Opus: Sensitivity 80.6%, Specificity 91.3%, F1 73.9%; Fine-tuned GPT-4.0 improved: F1 74.6%, P < 0.04	AI models (especially fine-tuned) show strong accuracy and reliability (κ: 0.85)
Lindner, Ravioli (2025). (11)	Original research paper (retrospective)	1021 adult ED patients	SMASS (AI-powered assessment tool)	MTS (Manchester Triage System)	SMASS showed significant over-/under-triage vs. MTS (Kappa 0.167). Sensitivity 62%, specificity 73% for acute/non-acute.	SMASS performed worse than human-applied MTS, requires significant training on real-world ED data to improve accuracy and consistency.
Porcellato et al. (2025). (12)	Systematic review	24 studies on critical care patients	Diverse AI techniques (machine learning, deep learning, LLMs	Varies by included study (traditional methods, other AI models)	Predictive models show varying performance (e.g., one AI-ECG model showed 76% accuracy, 73% sensitivity=	AI significantly enhances human decision-making in trauma triage, outperforming conventional tools (AUC-ROC 0.09), though study variations prevent universally firm conclusions.
Arslan et al. (2024). (13)	Observational study	468 adult ED patients	ChatGPT, Copilot	Triage nurses	ChatGPT: 66.5%, Copilot: 61.8%, Nurses: 65.2%; AI better at identifying high-risk patients (87.8% vs. 32.7%)	AI outperformed nurses in high-risk identification, more consistent across ages
Colakca et al. (2024). (14)	Cross-sectional study	745 adult ED patients	ChatGPT-4	Expert triage	High agreement (Kappa = 0.659); Specificity: ESI-1: 99.86%, ESI-2: 95.38%	AI highly effective at identifying critical cases
Di Sarno et al. (2024). (15)	Literature review	Pediatric patients in emergency medicine settings	AI-driven Clinical Decision Support Systems (CDS), Socially Assistive Robots (SARs)	Traditional clinical assessment methods	AI improves triage accuracy, early sepsis detection, and traumatic brain injury evaluation; SARs reduce pediatric stress	AI models outperform traditional methods in accuracy and efficiency, but issues with data bias, transparency, and clinical integration remain

Table 2. **Overview of the research findings on technological advancements in triage**

Authors, year	Type of study	Population	AI Models Evaluated	Comparators	Key findings	AI vs. Human performance
Eraybar et al. (2024). (16)	Observational study	86 clinicians (ED professionals)	ChatGPT, Google Bard	Human professionals	Professionals: 30.7 correct, AI: 25.5; No significant AI difference (p=0.821)	Humans outperformed AI; AI not yet as accurate
Franc et al. (2024). (17)	Original research paper	391 disaster triage vignettes	ChatGPT-4	START protocol (no human comparator)	Accuracy: 63.9%; Poor reproducibility; caution advised	AI performance suboptimal for disaster triage
Franc, Cheng et al. (2024). (18)	Original research paper	61 CTAS vignettes	ChatGPT	Canadian Triage Scale	Accuracy: 47.5%; Over-triage 38.7%, Under-triage 13.7%	ChatGPT showed high variability and low reliability
Kim et al. (2024). (19)	Original research paper	202 virtual patient cases	ChatGPT-3.5, ChatGPT-4.0	Human paramedics	GPT-4.0 κ=0.523 vs. 3.5 κ=0.320; Human κ=0.646	AI less reliable than humans, but GPT-4.0 better than 3.5
Liu et al. (2024). (20)	Original research paper – retrospective and prospective cohort study	Retrospective - 30 outpatient medical records Prospective - manual vs. ChatGPT triage for 45 outpatients based on age, gender, and symptoms	ChatGPT	Manual triage	Prospective: 93.3–100% agreement; Retrospective: 17/30 rated 9.5-10	High consistency with manual triage
Mani et al. (2024). (21)	Review article	Patients, healthcare providers, and AI systems in emergency departments	AI tools for triage, patient monitoring, diagnosis, treatment planning, and decision support	Conventional nursing workflows	AI applications improve triage accuracy, monitoring, diagnosis, treatment planning, and decision-making, enhancing patient outcomes and workflow efficiency.	AI enhances performance but requires addressing data security, ethics, algorithm reliability, and staff training to achieve effective implementation.
Ventura et al. (2024). (22)	Literature review	Patients that needed triage assessment	Deep learning models for injury diagnosis and outcome prediction	Traditional triage methods	Deep learning achieved high accuracy in diagnosing traumatic injuries and predicting hospitalization, mortality, and ICU admission.	AI outperformed traditional triage methods in accuracy and predictive performance.
Masanneck et al. (2024). (23)	Original research paper	124 anonymized ED case vignettes	ChatGPT (GPT-3.5, GPT-4)	Untrained doctors	GPT-4 ≈ untrained doctors; GPT-3.5 worse; Over-triage common	LLMs showed potential, but didn't match experts

Table 2. **Overview of the research findings on technological advancements in triage**

Authors, year	Type of study	Population	AI Models Evaluated	Comparators	Key findings	AI vs. Human performance
Preiksaitis et al. (2024). (24)	Review article	Patients needing triage assessment	Large Language Models (LLMs)	Traditional triage and administrative methods	LLMs improve emergency care by enhancing real-time triage, recognizing patient urgency earlier, reducing administrative workload, and supporting patient-centered care.	LLMs show potential to support clinicians by increasing efficiency and triage accuracy, but direct performance comparisons with humans were not detailed.
Sorich et al. (2024). (25)	Original research paper	48 case vignettes	GPT-4o, Claude 3.5, Gemini 1.5 Pro	N/A	Triage accuracy ~92% across models; Claude-3.5 best overall	AI shows strong diagnostic and triage performance
Tyler et al. (2024). (26)	Review article	Patients admitted to emergency departments in the USA	AI and Machine Learning models for triage, specific models not mentioned	Traditional triage systems (e.g., Emergency Severity Index)	AI and ML models improved triage by reducing mis-triage, enhancing prediction of critical outcomes, and outperforming conventional systems in forecasting admissions, disease identification, and deterioration.	AI models outperformed human-based systems in triage accuracy, efficiency, and resource allocation.
Yi et al. (2024). (27)	Systematic review	Patients needing triage assessment	AI-based triage models, specific models not mentioned	Manual triage methods	AI demonstrated high accuracy (80.5%–99.1%), improved triage speed, reduced mis-triage, and enabled urgency classification and prognosis prediction more effectively.	AI triage outperformed manual methods in both accuracy and time efficiency.
Mayerhoffer H. (2024). (28)	Original research paper	AI triage categorization	ChatGPT	Traditional triage	Correct in 43.33%; Tendency to over-triage for safety	AI errs conservatively but lacks high precision

Table 2. **Overview of the research findings on technological advancements in triage**

Authors, year	Type of study	Population	AI Models Evaluated	Comparators	Key findings	AI vs. Human performance
Fraser et al. (2023). (29)	Original research paper	Original research paper / 40 emergency department patients	ChatGPT 3.5, ChatGPT 4.0, WebMD, Ada Health	ED diagnoses and physician reviews	ChatGPT 3.5 had the highest diagnostic accuracy (40% top-1, 63% top-3), but the highest unsafe triage rate (41%). ChatGPT 4.0 had better triage agreement (76%) and lower unsafe rate (22%), making it more reliable.	ChatGPT models showed moderate diagnostic accuracy but varied in triage safety—ChatGPT 4.0 performed better than 3.5 in triage alignment with physicians.
Gan Uddin et al. (2023). (30)	Cross-sectional study	Simulated MCI scenarios	ChatGPT vs. Google Bard	Medical students	Bard: 60%, ChatGPT: 26.7%, Students: 64.3%	Bard comparable to students; ChatGPT significantly lower
Gan, Ogbodo et al. (2023). (31)	Cross-sectional study	Simulated MCI scenarios	ChatGPT vs. Google Bard	Medical students	Bard: 60%, ChatGPT: 26.7%, Students: 64.3%	Bard comparable to students; ChatGPT significantly lower
Gebrael et al. (2023). (32)	Original research paper	56 prostate cancer patients in ED	ChatGPT	ER physicians	ChatGPT showed 95.7% sensitivity for admission decisions, 18.2% specificity for discharges, aligned with physician diagnosis in 87.5% of cases, used more accurate medical terminology, and offered more comprehensive recommendations.	ChatGPT showed cautious but accurate diagnostic support; outperformed physicians in terminology and completeness but lacked discharge precision.
Adebayo et al. (2023). (33)	Systematic review	Systematic review / Triage patients	AI, ML, DL models	Conventional triage tools	AI-based models significantly improved prediction of mortality, hospitalization, and ICU admission, surpassing traditional triage tools.	AI models statistically outperformed conventional tools in predictive accuracy for critical outcomes.
Jacob J. (2023). (34)	Original research paper	Polytrauma scenarios	ChatGPT	ESI and Australasian Triage Scales	ChatGPT accurately classified polytrauma patients with one initial misclassification corrected upon review; AI demonstrated potential in rapid classification.	ChatGPT showed strong potential for fast and accurate triage support with self-correction capability.

Table 2. **Overview of the research findings on technological advancements in triage**

Authors, year	Type of study	Population	AI Models Evaluated	Comparators	Key findings	AI vs. Human performance
Masoumian et al. (2023). (35)	Systematic review	Triage patients	Various AI applications, specific models not mentioned	Not directly compared	AI used for triage, disease prediction, emergency management; ethical concerns highlighted, particularly regarding transparency.	AI showed clinical potential, but lack of transparency challenges trust and adoption.
Sarbay et al. (2023). (36)	Cross-sectional study	50 ESI scenarios	ChatGPT	Emergency Medicine (EM) specialists	ChatGPT showed fair agreement (κ=0.341), 22% over-triage, 18% under-triage, strong in high-acuity cases with 76.2% sensitivity and 93.1% specificity.	ChatGPT effective in high-acuity triage; moderate agreement with specialists suggests supportive role.
Boonstra, Laven. (2022). (37)	Systematic literature review	ED patients	General AI tools, specific models not mentioned	Not directly compared	AI improved decision-making, triage efficiency, reduced overcrowding and clinician burden; designed to support, not replace clinicians.	AI supports human clinicians by optimizing workflow and resource allocation.
Ilicki J. (2022). (38)	Systematic review	Triage patients	Patient-operated AI triage systems	Not directly compared	Main limitations were epistemological, ontological, and methodological; caution required in interpreting accuracy claims.	AI triage systems need critical appraisal; performance evaluation is complex and context-dependent.
Mueller et al. (2022). (39)	Review article	Triage patients	ML applications in emergency medicine, specific models not mentioned	Traditional triage	ML enhances triage by analyzing patient data, improving prioritization, reducing delays, and predicting risk.	AI enhances traditional methods, offering faster and more precise risk assessment.
Cho et al. (2022). (40)	Original research paper	1063 triage cases from a Level 1 ED (19 ED nurses)	RMIS-AI (Real-time medical record input assistance system with voice AI, utilizing voice recognition & NLP)	Manual EMR input by nurses	RMIS-AI significantly shortened triage time (204s vs 231s). Mixed results for record completeness and accuracy compared to manual input.	RMIS-AI improved efficiency, but accuracy/ completeness varied, suggesting a supportive rather than replacement role for human nurses.

Such inconsistency in performance introduces risk when AI systems are used without adequate human oversight. This underscores the need for stringent validation of AI tools before widespread deployment.

Role of artificial intelligence in reducing human bias and improving triage consistency

Artificial intelligence improves triage by reducing human biases that lead to patient misclassification. In one study, ChatGPT identified high-risk patients more accurately than nurses (87.8% vs. 32.7%) and showed consistent accuracy across age groups, minimizing age-related bias (10). Additionally, AI models enhance triage consistency, with ChatGPT-4.0 achieving an inter-rater agreement of κ=0.523, though still lower than human professionals (κ=0.646). However, artificial intelligence struggles with complex cases—ChatGPT-3.5 had poor performance in severe emergencies (κ=0.067), highlighting the need for further improvements in high-risk triage scenarios (18).

Artificial intelligence in mass casualty and disaster triage

Artificial intelligence has also demonstrated potential in mass casualty incidents, where rapid and accurate triage is essential for optimizing patient outcomes. Studies have shown that AI can improve triage performance in these scenarios. After being trained on the START protocol, ChatGPT's accuracy in MCI triage reached 80%, surpassing medical students (29). However, when compared to Google Bard, ChatGPT underperformed, achieving only 26.67% accuracy versus Bard's 60% (30). These results highlight the variability across different models, underscoring the need for further training and validation before deployment in disaster response. In real-world mass casualty incidents, AI's lack of contextual awareness and inability to adapt dynamically to chaotic environments further complicates its practical utility. The risk of over-reliance on AI in such high-pressure settings could delay life-saving interventions without immediate human correction.

Challenges and future directions

Artificial intelligence in triage faces challenges such as data bias, transparency issues, and inconsistent reliability across models (20). Ultimately, AI is most effective in a hybrid model, complementing human expertise rather than replacing it. Continuous assessment and refinement will be essential for its safe and effective use in emergency medicine. Future research should focus on improving AI's performance in complex triage cases, enhancing model interpretability, and ensuring seamless integration with existing healthcare systems. A promising direction involves collaboration among multiple AI models, as demonstrated in studies where LLMs worked together to achieve a diagnostic accuracy of 98% (24).

Equally important are the practical barriers to implementation. These include high development and integration costs, the need for technical training, resistance from clinical staff, and unresolved regulatory and legal frameworks. Establishing trust in AI systems will require transparent reporting, independent validation, and ethical oversight. Comparing the performance of AI models and nurses should be a key focus of future research to clarify the capabilities and limitations of AI. Tasks that require complex thinking and emotional understanding should still be handled by humans, because AI does not yet understand context or have moral judgment. To deal with current problems, we need better solutions like making AI more understandable, reducing bias when creating datasets and training AI systems to adjust as medical environments change. We also need real-life studies and pilot programs to test how AI performs in practice. These should assess patient outcomes, staff acceptance, and cost-effectiveness across different healthcare settings.

Conclusion

This review shows that artificial intelligence has the potential to improve triage accuracy, reduce certain human biases and assist in clinical decision-making across emergency settings. Studies show artificial intelligence driven models improve risk identification, triage consistency, and emergency care assessments, reinforcing their value in healthcare. However, artificial intelligence models still face important challenges such as model inconsistency, limited transparency and varying performance across clinical contexts. These challenges can affect patient safety and decision making. Current evidence suggests artificial intelligence is best used as a support tool rather than an independent triage system.

Future research should focus on validating AI tools in real-world clinical environments, improving their performance in complex and high-risk cases, and ensuring transparency to build clinician trust. Studies should assess not only diagnostic accuracy but also patient outcomes, staff acceptance and cost-effectiveness. Efforts are also needed to develop guidelines for ethical use, legal accountability, and integration into existing emergency protocols. Ongoing validation and refinement will be essential to ensuring safe and effective deployment in emergency medicine.

Author contributions

Conceptualization and methodology (BI, HM); Data curation and formal analysis (HM); Investigation and project administration (HM); Writing – original draft (BI, HM); and Review & editing (BI, HM). All authors have approved the final manuscript.

Conflict of interest

The authors declare no conflicts of interest.

Acknowledgments

Not applicable.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Tang X, Li X, Ding Y, Song M, Bu Y. The pace of artificial intelligence innovations: speed, talent, and trial-and-error. J Informetr. 2020;14(4):101094. https://doi.org/10.1016/j.joi.2020.101094
2. Cho B, Geng E, Arvind V, Valliani A, Tang J, Schwartz J et al. Understanding artificial intelligence and predictive analytics. JBJS Rev. 2022;10(3). https://doi.org/10.2106/JBJS.RVW.21.00142
3. LeCun Y, Bengio Y, Hinton G. Deep learning. Nature. 2015;521:436–44. https://doi.org/10.1145/3448250
4. Jenkins JL, McCarthy ML, Sauer LM, Green GB, Stuart S, Thomas TL et al. Mass-casualty triage: time for an evidence-based approach. Prehosp Disaster Med. 2008;23(1):3–8. https://doi.org/10.1017/s1049023x00005471
5. Malik NS, Chernbumroong S, Xu Y, Vassallo J, Lee J, Bowley DM et al. The BCD triage sieve outperforms all existing major incident triage tools: comparative analysis using the UK national trauma registry population. EclinicalMedicine. 2021;36:100888. https://doi.org/10.1016/j.eclinm.2021.100888
6. Thawley A, Aggar C, Williams N. The educational needs of triage nurses. Health Education in Practice: Journal of Research for Professional Learning. 2020;3(1):26-38. https://doi.org/10.33966/hepj.3.1.14121
7. Frykberg ER, Tepas JJ. Terrorist bombings: lessons learned from belfast to beirut. Ann Surg. 1988;208(5):569–76. https://doi.org/10.1097/00000658-198811000-00005
8. Ying Y, Huang B, Zhu Y, Jianx X, Dong J, Ding Y et al. Comparison of five triage tools for identifying mortality risk and injury severity of multiple trauma patients admitted to the emergency department in the daytime and nighttime: a retrospective study. Appl Bionics Biomech. 2022;25;9368920. https://doi.org/10.1155/2022/9368920
9. Rutschmann OT, Kossovsky M, Geissbühler A, Perneger TV, Vermeulen B, Simon J et al. Interactive triage simulator revealed important variability in both process and outcome of emergency triage. J Clin Epidemiol. 2006;59(6):615–21. https://doi.org/10.1016/j.jclinepi.2005.11.003
10. Ho B, Lu M, Wang X, Butler R, Park J, Ren D. Evaluation of Generative Artificial Intelligence Models in Predicting Pediatric Emergency Severity Index Levels. Pediatr Emerg Care. 2025;41(4):251-5. https://doi.org/10.1097/PEC.0000000000003315.
11. Lindner G, Ravioli S. Performance of the artificial intelligence-based Swiss medical assessment system versus Manchester triage system in the emergency department: A retrospective analysis. The American Journal of Emergency Medicine. 2025;94:46-9. https://doi.org/10.1016/j.ajem.2025.04.023
12. Porcellato E, Lanera C, Ocagli H, Danielis M. Exploring Applications of Artificial Intelligence in Critical Care Nursing: A Systematic Review. Nursing Reports. 2025;15(2):55. https://doi.org/10.3390/nursrep15020055
13. Arslan B, Nuhoglu C, Satici MO, Altinbilek E. Evaluating LLM-based generative AI tools in emergency triage: A comparative study of ChatGPT Plus, Copilot Pro, and triage nurses. Am J Emerg Med. 2025;89:174-81. https://doi.org/10.1016/j.ajem.2024.12.024
14. Colakca C, Ergın M, Ozensoy HS, Sener A, Guru S, Ozhasenekler A. Emergency department triaging using ChatGPT based on emergency severity index principles: a cross-sectional study. Sci Rep. 2024:27;14(1):22106. https://doi.org/10.1038/s41598-024-73229-7
15. Di Sarno L, Caroselli A, Tonin G, Graglia B, Pansini V, Causio FA et al. Artificial Intelligence in Pediatric Emergency Medicine: Applications, Challenges, and Future Perspectives. Biomedicines. 2024:30;12(6):1220. https://doi.org/10.3390/biomedicines12061220
16. Eraybar S, Dal E, Aydin MO, Begenen M. Transforming emergency triage: A preliminary, scenario-based cross-sectional study comparing artificial intelligence models and clinical expertise for enhanced accuracy. Bratisl Lek Listy. 2024;125(11):738-43. https://doi.org/10.4149/BLL_2024_114

17. Franc JM, Hertelendy AJ, Cheng L, Hata R, Verde M. Accuracy of a Commercial Large Language Model (ChatGPT) to Perform Disaster Triage of Simulated Patients Using the Simple Triage and Rapid Treatment (START) Protocol: Gage Repeatability and Reproducibility Study. J Med Internet Res. 2024;26:e55648. https://doi.org/10.2196/55648
18. Franc JM, Cheng L, Hart A, Hata R, Hertelendy A. Repeatability, reproducibility, and diagnostic accuracy of a commercial large language model (ChatGPT) to perform emergency department triage using the Canadian triage and acuity scale. CJEM. 2024;26(1):40-6. https://doi.org/10.1007/s43678-023-00616-w
19. Kim JH, Kim SK, Choi J, Lee Y. Reliability of ChatGPT for performing triage task in the emergency department using the Korean Triage and Acuity Scale. Digit Health. 2024;10:20552076241227132. https://doi.org/10.1177/20552076241227132
20. Liu X, Lai R, Wu C, Yan C, Gan Z, Yang Y et al. Assessing the utility of artificial intelligence throughout the triage outpatients: a prospective randomized controlled clinical study. Front Public Health. 2024;12:1391906. https://doi.org/10.3389/fpubh.2024.1391906
21. Mani Z, Albagawi B. AI frontiers in emergency care: the next evolution of nursing interventions. Front Public Health. 2024;12:1439412. https://doi.org/10.3389/fpubh.2024.1439412
22. Ventura CAI, Denton EE, David JA. Artificial Intelligence in Emergency Trauma Care: A Preliminary Scoping Review. Med Devices (Auckl). 2024;17:191-211. https://doi.org/10.2147/MDER.S467146
23. Masanneck L, Schmidt L, Seifert A, Kölsche T, Huntemann N, Jansen R, et al. Triage Performance Across Large Language Models, ChatGPT, and Untrained Doctors in Emergency Medicine: Comparative Study. J Med Internet Res. 2024;26:e53297. https://doi.org/10.2196/53297
24. Preiksaitis C, Ashenburg N, Bunney G, Chu A, Kabeer R, Riley F et al. The Role of Large Language Models in Transforming Emergency Medicine: Scoping Review. JMIR Med Inform. 2024;12:e53787. https://doi.org/10.2196/53787
25. Sorich MJ, Mangoni AA, Bacchi S, Menz BD, Hopkins AM. The Triage and Diagnostic Accuracy of Frontier Large Language Models: Updated Comparison to Physician Performance. J Med Internet Res. 2024;26:e67409. https://doi.org/10.2196/67409
26. Tyler S, Olis M, Aust N, Patel L, Simon L, Triantafyllidis C et al. Use of Artificial Intelligence in Triage in Hospital Emergency Departments: A Scoping Review. Cureus. 2024;16(5):e59906. https://doi.org/10.7759/cureus.59906
27. Yi N, Baik D, Baek G. The effects of applying artificial intelligence to triage in the emergency department: A systematic review of prospective studies. J Nurs Scholarsh. 2024;57(1):105-118. https://doi.org/10.1111/jnu.13024
28. Mayerhoffer H. The Future of Triage: The Analysis of Traditional Methods Compared to ChatGPT. Croatian Nursing Journal. 2024;8(1):29-36. https://doi.org/10.24141/2/8/1/3
29. Fraser H, Crossland D, Bacher I, Ranney M, Madsen T, Hilliard R. Comparison of Diagnostic and Triage Accuracy of Ada Health and WebMD Symptom Checkers, ChatGPT, and Physicians for Patients in an Emergency Department: Clinical Data Analysis Study. JMIR Mhealth Uhealth. 2023;11:e49995. https://doi.org/10.2196/49995
30. Gan RK, Uddin H, Gan AZ, Yew YY, González PA. ChatGPT's performance before and after teaching in mass casualty incident triage. Sci Rep. 2023;13(1):20350. https://doi.org/10.1038/s41598-023-46986-0
31. Gan RK, Ogbodo JC, Wee YZ, Gan AZ, González PA. Performance of Google bard and ChatGPT in mass casualty incidents triage. Am J Emerg Med. 2024;75:72-78. https://doi.org/10.1016/j.ajem.2023.10.034
32. Gebrael G, Sahu KK, Chigarira B, Tripathi N, Mathew Thomas V, Sayegh N et al. Enhancing triage efficiency and accuracy in emergency rooms for patients with metastatic prostate cancer: a retrospective analysis of artificial intelligence-assisted triage using ChatGPT 4.0. Cancers. 2023;15(14):3717. https://doi.org/10.3390/cancers15143717
33. Adebayo O, Bhuiyan ZA, Ahmed Z. Exploring the effectiveness of artificial intelligence, machine learning and deep learning in trauma triage: A systematic review and meta-analysis. Digit Health. 2023;9:20552076231205736. https://doi.org/10.1177/20552076231205736
34. Jacob J. ChatGPT: Friend or Foe?-Utility in Trauma Triage. Indian J Crit Care Med. 2023;27(8):563-6. https://doi.org/10.5005/jp-journals-10071-24498
35. Masoumian Hosseini M, Masoumian Hosseini ST, Qayumi K, Ahmady S, Koohestani HR. The Aspects of Running Artificial Intelligence in Emergency Care; a Scoping Review. Arch Acad Emerg Med. 2023;11(1):e38. https://doi.org/10.22037/aaem.v11i1.1974
36. Sarbay İ, Berikol GB, Özturan İU. Performance of emergency triage prediction of an open access natural language processing based chatbot application (ChatGPT): A preliminary, scenario-based cross-sectional study. Turk J Emerg Med. 2023;23(3):156-61. https://doi.org/10.4103/tjem.tjem_79_23
37. Boonstra A, Laven M. Influence of artificial intelligence on the work design of emergency department clinicians a systematic literature review. BMC Health Serv Res. 2022;22(1):669. https://doi.org/10.1186/s12913-022-08070-7
38. Ilicki J. Challenges in evaluating the accuracy of AI-containing digital triage systems: A systematic review. PLoS One. 2022;17(12):e0279636. https://doi.org/10.1371/journal.pone.0279636
39. Mueller B, Kinoshita T, Peebles A, Graber MA, Lee S. Artificial intelligence and machine learning in emergency medicine: a narrative review. Acute Med Surg. 2022;9(1):e740. https://doi.org/10.1002/ams2.740
40. Cho A, Min IK, Hong S, Chung HS, Lee HS, Kim JH. Effect of applying a real-time medical record input assistance system with voice artificial intelligence on triage task performance in the emergency department: prospective interventional study. JMIR Medical Informatics. 2022;10(8):e39892. https://doi.org/10.2196/39892

Supplementary file

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Abdulgader, S. M.	Diagnosing Tuberculosis: What Do New Technologies Allow Us to (Not) Do?	2022	Not related to the topic
Abi-Rafeh, J.	Complications Following Facelift and Neck Lift: Implementation and Assessment of Large Language Model and Artificial Intelligence (ChatGPT) Performance Across 16 Simulated Patient Presentations	2023	Not related to the topic
Abou Chaar, M. K.	ChatGPT vs Expert-Guided Care Pathways for Postesophagectomy Symptom Management	2024	Not related to the topic
Acharji, S.	Prognostic significance of elevated baseline troponin in patients with acute coronary syndromes and chronic kidney disease treated with different antithrombotic regimens: a substudy from the ACUITY trial	2012	Published before 2022.
Acosta, J. N.	The Need for Medical Artificial Intelligence That Incorporates Prior Images	2022	Not related to the topic
Adams, S. J.	Artificial Intelligence Solutions for Analysis of X-ray Images	2021	Not related to the topic
Agarwal, S.	Systematic Review of Artificial Intelligence for Abnormality Detection in High-volume Neuroimaging and Subgroup Meta-analysis for Intracranial Hemorrhage Detection	2023	Not related to the topic
Aggelidis, X.	Tele-Monitoring Applications in Respiratory Allergy	2024	Not related to the topic
Ahmed, A.	Role of Digital Health During Coronavirus Disease 2019 Pandemic and Future Perspectives	2022	Not related to the topic
Akkerhuis, K. M.	Recurrent ischemia during continuous 12-lead ECG-ischemia monitoring in patients with acute coronary syndromes treated with eptifibatide: relation with death and myocardial infarction. PURSUIT ECG-Ischemia Monitoring Substudy Investigators. Platelet...	2000	Published before 2022.
Alizadehsani, R.	Coronary artery disease detection using artificial intelligence techniques: A survey of trends, geographical differences and diagnostic features 1991-2020	2021	Published before 2022.
AlNuaimi, D.	The role of artificial intelligence in plain chest radiographs interpretation during the Covid-19 pandemic	2022	Not related to the topic
Altamimi, I.	Snakebite Advice and Counseling from Artificial Intelligence: An Acute Venomous Snakebite Consultation With ChatGPT	2023	Not related to the topic
Amundson, S. A.	Transcriptomics for radiation biodosimetry: progress and challenges	2023	Not related to the topic
Anderson, P.	Stress granules: the Tao of RNA triage	2008	Published before 2022.
Ankolekar, A.	Using artificial intelligence and predictive modelling to enable learning healthcare systems (LHS) for pandemic preparedness	2024	Not related to the topic
	CADTH Horizon Scans	2023	Not related to the topic
	CADTH Horizon Scans	2023	Duplicate
Ayoub, M.	Mind + Machine: ChatGPT as a Basic Clinical Decisions Support Tool	2023	Not related to the topic
Bahl, M.	Updates in Artificial Intelligence for Breast Imaging	2022	Not related to the topic
Bahl, M.	Artificial Intelligence for Breast Ultrasound: AJR Expert Panel Narrative Review	2024	Not related to the topic
Baker, A.	A comparison of artificial intelligence and human doctors for the purpose of triage and diagnosis	2020	Published before 2022.
Barlow, A.	Pulmonary arterial hypertension in the emergency department: A focus on medication management	2021	Published before 2022.
Batra, P.	Artificial Intelligence in Teledentistry	2022	Not related to the topic
Baughan, N.	Past, Present, and Future of Machine Learning and Artificial Intelligence for Breast Cancer Screening	2022	Not related to the topic
Behrens, A. J.	Glycosylation profiling to evaluate glycoprotein immunogens against HIV-1	2017	Published before 2022.
Ben Alaya, I.	Applications of artificial intelligence for DWI and PWI data processing in acute ischemic stroke: Current practices and future directions	2022	Not related to the topic
Ben Alaya, I.	Automatic triaging of acute ischemic stroke patients for reperfusion therapies using Artificial Intelligence methods and multiple MRI features: A review	2023	Not related to the topic
Bhattaram, S.	ChatGPT: The next-gen tool for triaging?	2023	Full text not written

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Biswas, S.	Utility of artificial intelligence-based large language models in ophthalmic care	2024	Not related to the topic
Biswas, S.	Utility of artificial intelligence-based large language models in ophthalmic care	2024	Duplicate
Boochoon, K.	Deep Learning for the Assessment of Facial Nerve Palsy: Opportunities and Challenges	2023	Not related to the topic
Boyd, C. J.	Artificial Intelligence as a Triage Tool during the Perioperative Period: Pilot Study of Accuracy and Accessibility for Clinical Application	2024	Not related to the topic
Buchlak, Q. D.	Charting the potential of brain computed tomography deep learning systems	2022	Not related to the topic
Bydon, M.	Commentary: A Quantitative Assessment of Chat-GPT as a Neurosurgical Triaging Tool	2024	Not related to the topic
Cao, X. F.	Application of artificial intelligence in digital chest radiography reading for pulmonary tuberculosis screening	2021	Published before 2022.
Cascella, M.	The Breakthrough of Large Language Models Release for Medical Applications: 1-Year Timeline and Perspectives	2024	Not related to the topic
Casterella, P. J.	Review of the 2005 American College of Cardiology, American Heart Association, and Society for Cardiovascular Interventions guidelines for adjunctive pharmacologic therapy during percutaneous coronary interventions: practical implications, new clinical...	2008	Published before 2022.
Chandrabhatla, A. S.	Artificial Intelligence and Machine Learning in the Diagnosis and Management of Stroke: A Narrative Review of United States Food and Drug Administration-Approved Technologies	2023	Not related to the topic
Chennareddy, S.	Portable stroke detection devices: a systematic scoping review of prehospital applications	2022	Not related to the topic
Choe, J.	Artificial Intelligence in Lung Imaging	2022	Not related to the topic
Chu, K.	Evaluating risk stratification scoring systems to predict mortality in patients with COVID-19	2021	Published before 2022.
Chu, L. C.	Pancreatic ductal adenocarcinoma staging: a narrative review of radiologic techniques and advances	2024	Not related to the topic
Cicero, M. X.	60 seconds to survival: A pilot study of a disaster triage video game for prehospital providers	2017	Published before 2022.
Ciecierski-Holmes, T.	Artificial intelligence for strengthening healthcare systems in low- and middle-income countries: a systematic scoping review	2022	Not related to the topic
Corbacho Abelaira, M. D.	Use of Conventional Chest Imaging and Artificial Intelligence in COVID-19 Infection. A Review of the Literature	2021	Published before 2022.
Dafni, M. F.	Empowering cancer prevention with AI: unlocking new frontiers in prediction, diagnosis, and intervention	2024	Not related to the topic
Daneshjou, R.	Lack of Transparency and Potential Bias in Artificial Intelligence Data Sets and Algorithms: A Scoping Review	2021	Published before 2022.
Dangi, R. R.	Transforming Healthcare in Low-Resource Settings with Artificial Intelligence: Recent Developments and Outcomes	2024	Not related to the topic
Daripa, B.	Artificial Intelligence-Aided Headache Classification Based on a Set of Questionnaires: A Short Review	2022	Not related to the topic
Dasegowda, G.	Suboptimal Chest Radiography and Artificial Intelligence: The Problem and the Solution	2023	Not related to the topic
David, D.	The use of artificial intelligence based chat bots in ophthalmology triage	2024	Not related to the topic
Davidović, M.	Facility-Based Indicators to Manage and Scale Up Cervical Cancer Prevention and Care Services for Women Living With HIV in Sub-Saharan Africa: a Three-Round Online Delphi Consensus Method	2024	Not related to the topic
Delgado, J.	Bias in algorithms of AI systems developed for COVID-19: A scoping review	2022	Not related to the topic
Delsoz, M.	The Use of ChatGPT to Assist in Diagnosing Glaucoma Based on Clinical Case Reports	2023	Not related to the topic
Denkinger, C. M.	Defining the needs for next generation assays for tuberculosis	2015	Published before 2022.
Desai, S. M.	Direct Transfer to the Neuroangiography Suite for Patients with Stroke	2023	Not related to the topic

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Desmet, C. M.	Factors Affecting the Quality of Tooth Enamel for In Vivo EPR-Based Retrospective Biodosimetry	2016	Published before 2022.
Dheda, K.	A position statement and practical guide to the use of particulate filtering facepiece respirators (N95, FFP2, or equivalent) for South African health workers exposed to respiratory pathogens including Mycobacterium tuberculosis and SARS-CoV-2	2021	Published before 2022.
Dias Gonçalves Lima, F.	The Accuracy of Anal Swab-Based Tests to Detect High-Grade Anal Intraepithelial Neoplasia in HIV-Infected Patients: A Systematic Review and Meta-analysis	2019	Published before 2022.
DiCarlo, A. L.	Radiation injury after a nuclear detonation: medical consequences and the need for scarce resources allocation	2011	Published before 2022.
Dimitsaki, S.	Benchmarking of Machine Learning classifiers on plasma proteomic for COVID-19 severity prediction through interpretable artificial intelligence	2023	Not related to the topic
Doeleman, T.	Artificial intelligence in digital pathology of cutaneous lymphomas: A review of the current state and future perspectives	2023	Not related to the topic
Dossantos, J.	Eyes on AI: ChatGPT's Transformative Potential Impact on Ophthalmology	2023	Not related to the topic
Eaby-Sandy, B.	Side effects of targeted therapies: rash	2014	Published before 2022.
Ebrahimian, S.	FDA-regulated AI Algorithms: Trends, Strengths, and Gaps of Validation Studies	2022	Not related to the topic
Ellis, M. J.	Ki67 Proliferation Index as a Tool for Chemotherapy Decisions During and After Neoadjuvant Aromatase Inhibitor Treatment of Breast Cancer: Results from the American College of Surgeons Oncology Group Z1031 Trial (Alliance)	2017	Published before 2022.
Escalé-Besa, A.	The Use of Artificial Intelligence for Skin Disease Diagnosis in Primary Care Settings: A Systematic Review	2024	Not related to the topic
Fanni, S. C.	Artificial Intelligence-Based Software with CE Mark for Chest X-ray Interpretation: Opportunities and Challenges	2023	Not related to the topic
Feit, F.	Safety and efficacy of bivalirudin monotherapy in patients with diabetes mellitus and acute coronary syndromes: a report from the ACUITY (Acute Catheterization and Urgent Intervention Triage Strategy) trial	2008	Published before 2022.
Flood, A. B.	Benefits and challenges of in vivo EPR nail biodosimetry in a second tier of medical triage in response to a large radiation event	2023	Not related to the topic
Fox, K. A.	Management of acute coronary syndromes: an update	2004	Published before 2022.
Freeman, K.	Use of artificial intelligence for image analysis in breast cancer screening programmes: systematic review of test accuracy	2021	Published before 2022.
Frosolini, A.	The Role of Large Language Models (LLMs) in Providing Triage for Maxillofacial Trauma Cases: A Preliminary Study	2024	Not related to the topic
Galatsis, P.	Leucine-rich repeat kinase 2 inhibitors: a patent review (2014-2016)	2017	Published before 2022.
Galecio-Castillo, M.	Direct to angiosuite strategy versus standard workflow triage for endovascular therapy: systematic review and meta-analysis	2023	Not related to the topic
Garrido, C.	Heat shock proteins 27 and 70: anti-apoptotic proteins with tumorigenic properties	2006	Published before 2022.
Gershlick, A. H.	The acute management of myocardial infarction	2001	Published before 2022.
Gibler, W. B.	Continuum of Care for Acute Coronary Syndrome: Optimizing Treatment for ST-Elevation Myocardial Infarction and Non-St-Elevation Acute Coronary Syndrome	2018	Published before 2022.
Gilotra, K.	Role of artificial intelligence and machine learning in the diagnosis of cerebrovascular disease	2023	Not related to the topic
Giordano, P.	ChatGPT e il suo utilizzo nel supporto decisionale clinico: una scoping review	2024	Not in the language criteria
Giuffrè, M.	Systematic review: The use of large language models as medical chatbots in digestive diseases	2024	Not related to the topic
Giustino, G.	Safety and Efficacy of Bivalirudin in Patients with Diabetes Mellitus Undergoing Percutaneous Coronary Intervention: From the REPLACE-2, ACUITY and HORIZONS-AMI Trials	2016	Published before 2022.

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Goh, E.	ChatGPT Influence on Medical Decision-Making, Bias, and Equity: A Randomized Study of Clinicians Evaluating Clinical Vignettes	2023	Full text not written
Goldstein, J.	Determinants for scalable adoption of autonomous AI in the detection of diabetic eye disease in diverse practice types: key best practices learned through collection of real-world data	2023	Not related to the topic
Goto, K.	Predictors of outcomes in medically treated patients with acute coronary syndromes after angiographic triage: an Acute Catheterization And Urgent Intervention Triage Strategy (ACUITY) substudy	2010	Published before 2022.
Goto, K.	Prognostic value of angiographic lesion complexity in patients with acute coronary syndromes undergoing percutaneous coronary intervention (from the acute catheterization and urgent intervention triage strategy trial)	2014	Published before 2022.
Gradíssimo, A.	Molecular tests potentially improving HPV screening and genotyping for cervical cancer prevention	2017	Published before 2022.
Guermazi, A.	How AI May Transform Musculoskeletal Imaging	2024	Not related to the topic
Gulati, S.	Artificial intelligence in luminal endoscopy	2020	Published before 2022.
Gunasekera, K. S.	Development of treatment-decision algorithms for children evaluated for pulmonary tuberculosis: an individual participant data meta-analysis	2023	Not related to the topic
Gunzer, F.	Reproducibility of artificial intelligence models in computed tomography of the head: a quantitative analysis	2022	Not related to the topic
Gurgitano, M.	Interventional Radiology ex-machina: impact of Artificial Intelligence on practice	2021	Published before 2022.
Gutierrez, G.	Examining the role of AI technology in online mental healthcare: opportunities, challenges, and implications, a mixed-methods review	2024	Not related to the topic
Haase, L.	Horse Diagnosis and Triage Accuracy of GPT-4o	2024	Not related to the topic
Haider, S. P.	Admission computed tomography radiomic signatures outperform hematoma volume in predicting baseline clinical severity and functional outcome in the ATACH-2 trial intracerebral hemorrhage population	2021	Published before 2022.
Halaseh, F. F.	ChatGPT's Role in Improving Education Among Patients Seeking Emergency Medical Treatment	2024	Not related to the topic
Hamilton, A.	Artificial Intelligence and Healthcare Simulation: The Shifting Landscape of Medical Education	2024	Not related to the topic
Hamilton, A. J.	Machine learning and artificial intelligence: applications in healthcare epidemiology	2021	Published before 2022.
Hamza, I.	Artificial Intelligence Echocardiography in Resource-Limited Regions: Applications and Challenges	2024	Not related to the topic
Haq, M.	Revolutionizing Acute Stroke Care: A Review of Food and Drug Administration-Approved Software as Medical Devices for Stroke Triage	2024	Not related to the topic
Hayat, J.	The Utility and Limitations of Artificial Intelligence-Powered Chatbots in Healthcare	2024	Not related to the topic
Hickey, M. D.	Effect of a patient-centered hypertension delivery strategy on all-cause mortality: Secondary analysis of SEARCH, a community-randomized trial in rural Kenya and Uganda	2021	Published before 2022.
Hickman, S. E.	Adoption of artificial intelligence in breast imaging: evaluation, ethical constraints and limitations	2021	Published before 2022.
Hickman, S. E.	Machine Learning for Workflow Applications in Screening Mammography: Systematic Review and Meta-Analysis	2022	Published before 2022.
Hirtsiefer, C.	Capabilities of ChatGPT-3.5 as a Urological Triage System	2024	Full text not written
Hogarty D. T.	Current state and future prospects of artificial intelligence in ophthalmology: a review.	2019	Published before 2022.
Hsieh, C.	Using Machine Learning to Predict Response to Image-guided Therapies for Hepatocellular Carcinoma	2023	Not related to the topic
Hsueh, J.	Applications of Artificial Intelligence in Helicopter Emergency Medical Services: A Scoping Review	2024	Not related to the topic
Huang, A. E.	Artificial Intelligence and Pediatric Otolaryngology	2024	Not related to the topic

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Hunter, O. F.	Science fiction or clinical reality: a review of the applications of artificial intelligence along the continuum of trauma care	2023	Not related to the topic
Ingielewicz, A.	Drinking from the Holy Grail-Does a Perfect Triage System Exist? And Where to Look for It?	2024	Not related to the topic
İsmail Mendi, B.	Artificial Intelligence in the Non-Invasive Detection of Melanoma	2024	Not related to the topic
Ittarat, M.	Personalized Care in Eye Health: Exploring Opportunities, Challenges, and the Road Ahead for Chatbots	2023	Not related to the topic
Ittarat, M.	Personalized Care in Eye Health: Exploring Opportunities, Challenges, and the Road Ahead for Chatbots	2023	Duplicate
Iyer, R.	Detection of Suicide Risk Using Vocal Characteristics: Systematic Review	2022	Not related to the topic
Jennings, L. K.	Antiplatelet and anticoagulant agents: key differences in mechanisms of action, clinical application, and therapeutic benefit in patients with non-ST-segment-elevation acute coronary syndromes	2008	Published before 2022.
Joudar, S. S.	Triage and priority-based healthcare diagnosis using artificial intelligence for autism spectrum disorder and gene contribution: A systematic review	2022	Published before 2022.
Jovin, T. G.	Thrombectomy for anterior circulation stroke beyond 6 h from time last known well (AURORA): a systematic review and individual patient data meta-analysis	2022	Published before 2022.
Kachman, M. M.	How artificial intelligence could transform emergency care	2024	Full text not written
Kalisz, K. R.	Immune Checkpoint Inhibitor Therapy-related Pneumonitis: Patterns and Management	2019	Published before 2022.
Kaluski, E.	Glycoprotein IIb/IIIa inhibitors: questioning indications and treatment algorithms	2007	Not related to the topic
Kang, C.	Artificial intelligence for diagnosing exudative age-related macular degeneration	2024	Not related to the topic
Khalsa, R. K.	Artificial intelligence and cardiac surgery during COVID-19 era	2021	Published before 2022.
Kiburg, K. V.	Telemedicine and delivery of ophthalmic care in rural and remote communities: Drawing from Australian experience	2022	Not related to the topic
Kim, K. H.	[Applications of Artificial Intelligence in Mammography from a Development and Validation Perspective]	2021	Published before 2022.
Kim, Y.	Applications of artificial intelligence in the thorax: a narrative review focusing on thoracic radiology	2021	Not related to the topic
Knebel, D.	Assessment of ChatGPT in the Prehospital Management of Ophthalmological Emergencies - An Analysis of 10 Fictional Case Vignettes	2024	Not related to the topic
Koren, J., 3rd	The Right Tool for the Job: An Overview of Hsp90 Inhibitors	2020	Published before 2022.
Koren, J., 3rd	The Right Tool for the Job: An Overview of Hsp90 Inhibitors	2020	Duplicate
Korobelnik, J. F.	Guidance for anti-VEGF intravitreal injections during the COVID-19 pandemic	2020	Published before 2022.
Krause, A. J.	An update on current treatment strategies for laryngopharyngeal reflux symptoms	2022	Not related to the topic
Krothapalli, N.	Mobile stroke units: Beyond thrombolysis	2024	Not related to the topic
Krusche, M.	Diagnostic accuracy of a large language model in rheumatology: comparison of physician and ChatGPT-4	2024	Not related to the topic
Kumar, D.	Comparison of Bivalirudin versus Bivalirudin plus glycoprotein IIb/IIIa inhibitor versus heparin plus glycoprotein IIb/IIIa inhibitor in patients with acute coronary syndromes having percutaneous intervention for narrowed saphenous vein aorto-coronary...	2010	Published before 2022.
Kumar, H.	A clinical perspective on the expanding role of artificial intelligence in age-related macular degeneration	2022	Not related to the topic
Kunze, K. N.	Editorial Commentary: The Scope of Medical Research Concerning ChatGPT Remains Limited by Lack of Originality	2024	Not related to the topic
Kunze, K. N.	The Large Language Model ChatGPT-4 Exhibits Excellent Triage Capabilities and Diagnostic Performance for Patients Presenting With Various Causes of Knee Pain	2024	Full text not written

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Kusunose, K.	Radiomics in Echocardiography: Deep Learning and Echocardiographic Analysis	2020	Published before 2022.
Laino, M. E.	Prognostic findings for ICU admission in patients with COVID-19 pneumonia: baseline and follow-up chest CT and the added value of artificial intelligence	2022	Not related to the topic
Lalla, R.	Assessing the validity of the Triage Risk Screening Tool in a third world setting.	2018	Published before 2022.
Lamb, L. R.	Artificial Intelligence (AI) for Screening Mammography, From the AJR Special Series on AI Applications	2022	Not related to the topic
Lång, K.	Artificial intelligence-supported screen reading versus standard double reading in the Mammography Screening with Artificial Intelligence trial (MASAI): a clinical safety analysis of a randomised, controlled, non-inferiority, single-blinded, screening...	2023	Not related to the topic
Lang, M.	Artificial Intelligence in Cardiovascular Imaging: "Unexplainable" Legal and Ethical Challenges?	2022	Not related to the topic
Le, K. D. R.	Applications of natural language processing tools in the surgical journey	2024	Duplicate
Le, K. D. R.	Applications of natural language processing tools in the surgical journey	2024	Not related to the topic
Leung, E. H.	Ocular and Systemic Complications of COVID-19: Impact on Patients and Healthcare	2022	Not related to the topic
Li, Y.	Emergency trauma care during the outbreak of corona virus disease 2019 (COVID-19) in China	2020	Published before 2022.
Lincoff, A. M.	Influence of timing of clopidogrel treatment on the efficacy and safety of bivalirudin in patients with non-ST-segment elevation acute coronary syndromes undergoing percutaneous coronary intervention: an analysis of the ACUITY (Acute Catheterization and...	2008	Published before 2022.
Liu, Z.	Toward Clinical Implementation of Next-Generation Sequencing-Based Genetic Testing in Rare Diseases: Where Are We?	2019	Published before 2022.
Lo Gullo, R.	AI Applications to Breast MRI: Today and Tomorrow	2024	Not related to the topic
Lodise, N. M.	Hypoactive sexual desire disorder in women: treatment options beyond testosterone and approaches to communicating with patients on sexual health	2013	Published before 2022.
Loggers, S. A. I.	Definition of hemodynamic stability in blunt trauma patients: a systematic review and assessment amongst Dutch trauma team members	2017	Published before 2022.
Lopes, R. D.	Advanced age, antithrombotic strategy, and bleeding in non-ST-segment elevation acute coronary syndromes: results from the ACUITY (Acute Catheterization and Urgent Intervention Triage Strategy) trial	2009	Published before 2022.
Luo, W.	The Influence of the Novel Computer-Aided Triage System Based on Artificial Intelligence on Endovascular Therapy in Patients with Large Vascular Occlusions: A Meta-Analysis	2024	Not related to the topic
Lyons, R. J.	Artificial intelligence chatbot performance in triage of ophthalmic conditions	2024	Not related to the topic
Malycha, J.	Artificial intelligence and clinical deterioration	2022	Not related to the topic
Marko, M.	Management and outcome of patients with acute ischemic stroke and tandem carotid occlusion in the ESCAPE-NA1 trial	2022	Not related to the topic
Marques, M.	The Medicine Revolution Through Artificial Intelligence: Ethical Challenges of Machine Learning Algorithms in Decision-Making	2024	Not related to the topic
Mehran, R.	Impact of chronic kidney disease on early (30-day) and late (1-year) outcomes of patients with acute coronary syndromes treated with alternative antithrombotic treatment strategies: an ACUITY (Acute Catheterization and Urgent Intervention Triage...	2009	Published before 2022.
Meral, G.	Comparative analysis of ChatGPT, Gemini and emergency medicine specialist in ESI triage assessment	2024	Full text not written
Meral, G.	Comparative analysis of ChatGPT, Gemini and emergency medicine specialist in ESI triage assessment	2024	Duplicate
Miller, B. S.	Emergency management of adrenal insufficiency in children: advocating for treatment options in outpatient and field settings	2020	Not related to the topic
Milne-Ives, M.	The Effectiveness of Artificial Intelligence Conversational Agents in Health Care: Systematic Review	2020	Not related to the topic

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Miyata, Y.	Molecular chaperones and regulation of tau quality control: strategies for drug discovery in tauopathies	2011	Published before 2022.
Momenaei, B.	ChatGPT enters the room: what it means for patient counselling, physician education, academics, and disease management	2024	Not related to the topic
Momenaei, B.	ChatGPT enters the room: what it means for patient counselling, physician education, academics, and disease management	2024	Duplicate
Monga, M.	Artificial Intelligence in Endourology: Maximizing the Promise Through Consideration of the Principles of Diffusion of Innovation Theory	2024	Not related to the topic
Moparthi, K. P.	Acute Care Surgery: Navigating Recent Developments, Protocols, and Challenges in the Comprehensive Management of Surgical Emergencies	2024	Not related to the topic
Morgan, M. B.	Applications of Artificial Intelligence in Breast Imaging	2021	Published before 2022.
Moscicki, A. B.	Screening for Anal Cancer in Women	2015	Published before 2022.
Mukherjee, D.	Pharmacotherapy of acute coronary syndrome: the ACUITY trial	2009	Published before 2022.
Mungmunpuntipantip, R.	ChatGPT in Trauma Triage	2024	Full text not written
Murray, N. M.	Artificial intelligence to diagnose ischemic stroke and identify large vessel occlusions: a systematic review	2020	Published before 2022.
Nardell, E.	Turning off the spigot: reducing drug-resistant tuberculosis transmission in resource-limited settings	2010	Published before 2022.
Nathavitharana, R. R.	Reimagining the status quo: How close are we to rapid sputum-free tuberculosis diagnostics for all?	2022	Not related to the topic
Nazif, T. M.	Comparative effectiveness of upstream glycoprotein IIb/IIIa inhibitors in patients with moderate- and high-risk acute coronary syndromes: an Acute Catheterization and Urgent Intervention Triage Strategy (ACUITY) substudy	2014	Published before 2022.
Nazir, T.	Artificial intelligence assisted acute patient journey	2022	Not related to the topic
Ndrepepa, G.	Bivalirudin versus heparin plus a glycoprotein IIb/IIIa inhibitor in patients with non-ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention after clopidogrel pretreatment: pooled analysis from the ACUITY and...	2012	Published before 2022.
Nikolsky, E.	Gastrointestinal bleeding in patients with acute coronary syndromes: incidence, predictors, and clinical implications: analysis from the ACUITY (Acute Catheterization and Urgent Intervention Triage Strategy) trial	2009	Published before 2022.
Nikolsky, E.	Outcomes of patients with prior coronary artery bypass grafting and acute coronary syndromes: analysis from the ACUITY (Acute Catheterization and Urgent Intervention Triage Strategy) trial	2012	Published before 2022.
O Hern, K.	ChatGPT underperforms in triaging appropriate use of Mohs surgery for cutaneous neoplasms	2023	Not related to the topic
Pai, M.	Tuberculosis diagnostics in 2015: landscape, priorities, needs, and prospects	2015	Published before 2022.
Park, J.	Validation of a Natural Language Machine Learning Model for Safety Literature Surveillance	2024	Not related to the topic
Paslı, S.	Assessing the precision of artificial intelligence in ED triage decisions: Insights from a study with ChatGPT	2024	Full text not written
Paslı, S.	Response to: Methodological issues on precision and prediction value of ChatGPT in emergency department triage decisions	2024	Full text not written
Patel, A. V.	Increasing HIV testing engagement through provision of home HIV self-testing kits for patients who decline testing in the emergency department: a pilot randomisation study	2019	Published before 2022.
Peng, H. T.	Artificial intelligence and machine learning for hemorrhagic trauma care	2023	Not related to the topic
Peng, Z.	Development and evaluation of multimodal AI for diagnosis and triage of ophthalmic diseases using ChatGPT and anterior segment images: protocol for a two-stage cross-sectional study	2023	Not related to the topic
Pépin, J. L.	New management pathways for follow-up of CPAP-treated sleep apnoea patients including digital medicine and multimodal telemonitoring	2024	Not related to the topic

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Pham, J. H.	Large language model triaging of simulated nephrology patient inbox messages	2024	Not related to the topic
Pinto, D. S.	Economic evaluation of bivalirudin with or without glycoprotein IIb/IIIa inhibition versus heparin with routine glycoprotein IIb/IIIa inhibition for early invasive management of acute coronary syndromes	2008	Published before 2022.
Posadas, E. M.	Targeting angiogenesis in renal cell carcinoma	2013	Published before 2022.
Potnis, K. C.	Artificial Intelligence in Breast Cancer Screening: Evaluation of FDA Device Regulation and Future Recommendations	2022	Not related to the topic
Preiksaitis, C.	The Role of Large Language Models in Transforming Emergency Medicine: Scoping Review	2024	Duplicate, included in the review
Pressman, S. M.	Clinical and Surgical Applications of Large Language Models: A Systematic Review	2024	Not related to the topic
Pressman, S. M.	Clinical and Surgical Applications of Large Language Models: A Systematic Review	2024	Duplicate
Ramkumar, P. N.	Editorial Commentary: Large Language Models Like ChatGPT Show Promise, but Clinical Use of Artificial Intelligence Requires Physician Partnership	2024	Not related to the topic
Razzaki, S.	A comparative study of artificial intelligence and human doctors for the purpose of triage and diagnosis	2018	Published before 2022.
Rengers, T. A.	Academic Surgery in the Era of Large Language Models: A Review	2024	Not related to the topic
Rengers, T. A.	Academic Surgery in the Era of Large Language Models: A Review	2024	Duplicate
Ricklin, D.	Manipulating the mediator: modulation of the alternative complement pathway C3 convertase in health, disease and therapy	2012	Published before 2022.
Rietjens, S. J.	Pharmacokinetics and pharmacodynamics of 3,4-methylenedioxymethamphetamine (MDMA): interindividual differences due to polymorphisms and drug-drug interactions	2012	Published before 2022.
Sabaner, M. C.	Opportunities and Challenges of Chatbots in Ophthalmology: A Narrative Review	2024	Not related to the topic
Sabaner, M. C.	Opportunities and Challenges of Chatbots in Ophthalmology: A Narrative Review	2024	Duplicate
Sabour, A.	Methodological issues on precision and prediction value of ChatGPT in emergency department triage decisions	2024	Full text not written
Saenger, J. A.	Delayed diagnosis of a transient ischemic attack caused by ChatGPT	2024	Not related to the topic
Salim, M.	AI-based selection of individuals for supplemental MRI in population-based breast cancer screening: the randomized ScreenTrustMRI trial	2024	Not related to the topic
Sammer, M. B. K.	Ensuring Adequate Development and Appropriate Use of Artificial Intelligence in Pediatric Medical Imaging	2022	Not related to the topic
Santoro, E.	[Information technology and digital health to support health in the time of CoViD-19.]	2020	Published before 2022.
Satyamitra, M.	Challenges and Strategies in the Development of Radiation Biodosimetry Tests for Patient Management	2021	Published before 2022.
Shapiro, J.	New Diagnostic Tools for Pulmonary Embolism Detection	2024	Not related to the topic
Shekhar, A. C.	Use of a large language model (LLM) for ambulance dispatch and triage	2024	Full text not written
Shlobin, N. A.	Artificial Intelligence for Large-Vessel Occlusion Stroke: A Systematic Review	2022	Not related to the topic
Singh, N.	Infarcts in a New Territory: Insights From the ESCAPE-NA1 Trial	2023	Not related to the topic
Smith, K. P.	Image analysis and artificial intelligence in infectious disease diagnostics	2020	Published before 2022.
Snow, K. D.	Trends in emergency department visits for bronchiolitis, 1993-2019	2024	Not related to the topic
Soun, J. E.	Artificial Intelligence and Acute Stroke Imaging	2021	Published before 2022.
Stegeman, I.	Routine laboratory testing to determine if a patient has COVID-19	2020	Published before 2022.
Stewart, M.	Targeting chaperone modifications: Innovative approaches to cancer treatment	2024	Not related to the topic
Stone, G. W.	Acute Catheterization and Urgent Intervention Triage strategy (ACUITY) trial: study design and rationale	2004	Published before 2022.

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Stone, G. W.	Bivalirudin in patients with acute coronary syndromes undergoing percutaneous coronary intervention: a subgroup analysis from the Acute Catheterization and Urgent Intervention Triage strategy (ACUITY) trial	2007	Published before 2022.
Swartz, H. M.	Overview of the principles and practice of biodosimetry	2014	Published before 2022.
Swartz, H. M.	Scientific and Logistical Considerations When Screening for Radiation Risks by Using Biodosimetry Based on Biological Effects of Radiation Rather than Dose: The Need for Prior Measurements of Homogeneity and Distribution of Dose	2020	Published before 2022.
Syrowatka, A.	Leveraging artificial intelligence for pandemic preparedness and response: a scoping review to identify key use cases	2021	Published before 2022.
Tarone, G.	Keep your heart in shape: molecular chaperone networks for treating heart disease	2014	Published before 2022.
Taylor, C. R.	Artificial Intelligence Applications in Breast Imaging: Current Status and Future Directions	2023	Not related to the topic
Thomas, L. B.	Artificial Intelligence: Review of Current and Future Applications in Medicine	2021	Published before 2022.
Thomassin-Naggara, I.	[French breast cancer screening: What's the place of artificial intelligence?]	2022	Not related to the topic
Ting, D. S. W.	Artificial intelligence and deep learning in ophthalmology	2019	Not related to the topic
Tortum, F.	Exploring the potential of artificial intelligence models for triage in the emergency department	2024	Full text not written
Toy, J.	Use of artificial intelligence to support prehospital traumatic injury care: A scoping review	2024	Not related to the topic
Trzeciak, A.	Biomarkers and Associated Immune Mechanisms for Early Detection and Therapeutic Management of Sepsis	2020	Not related to the topic
Tse, E.	The diagnosis and management of NK/T-cell lymphomas	2017	Published before 2022.
Vaduganathan, M.	Evaluation of Ischemic and Bleeding Risks Associated With 2 Parenteral Antiplatelet Strategies Comparing Cangrelor with Glycoprotein IIb/IIIa Inhibitors: An Exploratory Analysis from the CHAMPION Trials	2017	Published before 2022.
Vandevenne, M. M.	Artificial intelligence for detecting keratoconus	2023	Not related to the topic
Vedantham, S.	Artificial Intelligence in Breast X-Ray Imaging	2023	Not related to the topic
Verheugt, F. W.	Incidence, prognostic impact, and influence of antithrombotic therapy on access and nonaccess site bleeding in percutaneous coronary intervention	2011	Published before 2022.
Vinay, R.	Ethics of ICU triage during COVID-19	2021	Published before 2022.
Vinny, P. W.	Critical Appraisal of a Machine Learning Paper: A Guide for the Neurologist	2021	Published before 2022.
Walsh, L.	A Systematic Review of Current Teleophthalmology Services in New Zealand Compared to the Four Comparable Countries of the United Kingdom, Australia, United States of America (USA) and Canada	2021	Published before 2022.
Wang, C.	Diagnostic Test Accuracy of Deep Learning Prediction Models on COVID-19 Severity: Systematic Review and Meta-Analysis	2023	Not related to the topic
Wang, X.	ChatGPT: promise and challenges for deployment in low- and middle-income countries	2023	Not related to the topic
Ward, M.	A Quantitative Assessment of ChatGPT as a Neurosurgical Triaging Tool	2024	Not related to the topic
Ward, M.	Analysis of ChatGPT in the Triage of Common Spinal Complaints	2024	Not related to the topic
Warsinske, H.	Host-response-based gene signatures for tuberculosis diagnosis: A systematic comparison of 16 signatures	2019	Published before 2022.
Weisberg, E. M.	The first use of artificial intelligence (AI) in the ER: triage not diagnosis	2020	Published before 2022.
White, H. D.	Safety and efficacy of bivalirudin with and without glycoprotein IIb/IIIa inhibitors in patients with acute coronary syndromes undergoing percutaneous coronary intervention 1-year results from the ACUITY (Acute Catheterization and Urgent Intervention...	2008	Published before 2022.
Wójcik, S.	Beyond ChatGPT: What does GPT-4 add to healthcare? The dawn of a new era	2023	Not related to the topic
Woodfin, M. W.	ChatGPT Effectively Triages Real-World Neoplasms Using Mohs Appropriate Use Criteria	2024	Not related to the topic

Table 1. **Excluded studies**

Author	Name	Year	Reason of exclusion
Xavier, D.	Artificial intelligence for triaging of breast cancer screening mammograms and workload reduction: A meta-analysis of a deep learning software	2024	Not related to the topic
Xie, Y.	Reviewing Hit Discovery Literature for Difficult Targets: Glutathione Transferase Omega-1 as an Example	2018	Published before 2022.
Xie, Y.	Reviewing Hit Discovery Literature for Difficult Targets: Glutathione Transferase Omega-1 as an Example	2018	Duplicate
Xu, R.	Generative artificial intelligence in healthcare from the perspective of digital media: Applications, opportunities and challenges	2024	Not related to the topic
Yamasaki, S.	Reprogramming mRNA translation during stress	2008	Published before 2022.
Yang, Z.	Understanding natural language: Potential application of large language models to ophthalmology	2024	Not related to the topic
Yi, X.	Action plan for hit identification (APHID): KAT6A as a case study	2020	Published before 2022.
Yuba, M.	Systematic analysis of the test design and performance of AI/ML-based medical devices approved for triage/detection/diagnosis in the USA and Japan	2022	Not related to the topic
Zaboli, A.	Human intelligence versus Chat-GPT: who performs better in correctly classifying patients in triage?	2024	Full text not written
Zandi, R.	Exploring Diagnostic Precision and Triage Proficiency: A Comparative Study of GPT-4 and Bard in Addressing Common Ophthalmic Complaints	2024	Not related to the topic
Zarella, M. D.	Artificial intelligence and digital pathology: clinical promise and deployment considerations	2023	Not related to the topic
Zhang, Z.	Associations of immunological features with COVID-19 severity: a systematic review and meta-analysis	2021	Published before 2022.
Susanty, S.	Questionnaire-free machine-learning method to predict depressive symptoms among community-dwelling older adults	2022	Not related to the topic
Al-Zaiti, SS.	Machine learning for ECG diagnosis and risk stratification of occlusion myocardial infarction	2023	Not related to the topic
Charan, GS	Impact of Analytics Applying Artificial Intelligence and Machine Learning on Enhancing Intensive Care Unit: A Narrative Review	2023	Not related to the topic
van Maurik, IS	Targeted Development and Validation of Clinical Prediction Models in Secondary Care Settings: Opportunities and Challenges for Electronic Health Record Data	2024	Not related to the topic
Switzer, DF	Ethics Crisis Standards of Care Simulation	2024	Not related to the topic
Zaboli, A.	Human intelligence versus Chat-GPT: who performs better in correctly classifying patients in triage?	2024	Full text not written
Yang, J	Development and evaluation of an artificial intelligence-based workflow for the prioritization of patient portal messages	2024	Not related to the topic
Duncan, SF	Radiograph accelerated detection and identification of cancer in the lung (RADICAL): a mixed methods study to assess the clinical effectiveness and acceptability of Qure.ai artificial intelligence software to prioritise chest X-ray (CXR) interpretation	2024	Not related to the topic
Chenard, SW	ChatGPT provides safe responses to post-operative concerns following total joint arthroplasty	2024	Not related to the topic
Arends, BKO	Barriers, facilitators and strategies for the implementation of artificial intelligence-based electrocardiogram interpretation: A mixed-methods study	2025	Not related to the topic
Zaboli, A	Chat-GPT in triage: Still far from surpassing human expertise - An observational study	2025	Full text not written
Mani, Z	AI frontiers in emergency care: the next evolution of nursing interventions.	2024	Duplicate