полняет свою задачу, а обмен данными между компонентами проходит корректно. На этом этапе можно говорить о технической готовности прототипа к дальнейшим шагам. Следующим логичным этапом являются пилотные внедрения и клиническая оценка, в том числе на ретроспективных данных.

Мы выделяем несколько ожидаемых эффектов от внедрения ИИ-triag-есистемы. Вопервых, снижается влияние субъективного фактора. Система использует единые алгоритмы, обученные на больших массивах клинических данных, и поэтому дает более устойчивые оценки при похожих исходных данных. Вовторых, сокращается время первичной оценки, потому что автоматический анализ и формирование предварительного заключения занимают секунды. Это особенно важно в ситуациях массового поступления пациентов. Втретьих, алгоритмы машинного обучения могут заметить сложные сочетания признаков, которые легко пропустить при беглом осмотре. Это помогает раньше выявлять критические состояния и вовремя относить пациента к «красной» зоне. Вчетвёртых, автоматическая сортировка пациентов улучшает управление потоком. Медицинская организация может рациональнее распределять пациентов по отделениям, планировать очередность осмотров и снижать нагрузку на персонал. Все это в совокупности способствует повышению качества медицинской помощи.

Выводы

Разработанная ИИtriageпрограмма имеет хороший потенциал для улучшения работы приемных отделений. Она сокращает время, необходимое для первичной оценки состояния пациента, и делает решения разных специалистов более согласованными. Система помогает видеть признаки тяжелого состояния, которые могут быть неочевидны при быстром осмотре. Это повышает уровень безопасности пациента и уменьшает риск пропуска серьезной патологии. В настоящее время многие приемные отделения работают при высокой нагрузке и ограниченных ресурсах. В этих условиях цифровые triage-алгоритмы на основе искусственного интеллекта могут стать важной поддержкой. Они помогают лучше распределять потоки пациентов, снижать риск диагностических ошибок и повышать качество помощи на первом этапе обращения.

СПИСОК ИСПОЛЬЗОВАННОЙ ЛИТЕРАТУРЫ

1. Modern triage in the emergency department / M. Christ, F. Grossmann, D. Winter [et al.] // Deutsches Ärzteblatt International. – 2010. – № 107(50). – P. 892–898. – doi:10.3238/arztebl.2010.0892

2. Davenport, T. The potential for artificial intelligence in healthcare / T. Davenport, R. Kalakota // Future Healthcare Journal. – 2019. – № 6(2). – P. 94–98. – doi:10.7861/futurehosp.6-2-94

3. Machine learning for prediction of critical illness risk in triage of emergency department patients / N. Liu, Z. Zhang, A.F.W. Ho [et al.] // NPJ Digital Medicine. – 2022. – № 5. – P. 177. – doi:10.1038/s41746-022-00732-4

УДК 616-052:004.8

Rehman Hamza

Scientific supervisor: PhD, Associate Professor K. M. Semutenko

Educational Establishment
"Gomel State Medical University"
Gomel, Republic of Belarus

COMPARISON OF AI AND CLASSICAL TRIAGE SYSTEM – DOES AI-ASSISTED TRIAGE REDUCE RATES OF MISTAKES COMPARED TO THE START TRIAGE SYSTEM?

Introduction

Since the beginning of humanity disasters have always occurred in different ways and it is something which plays an important role. The issue is how to manage them and limit the negative

outcomes as much as possible. There are promising systems like the START but since AI started taking the overhand in many fields and proved to be rapid and precise, the question remains, if AI could be way better or even outperform a classical system like START or is it just a man-made machine which has it's capacities and limits in certain circumstances. In the following we are going to dive further in this holistic approach discussing it's opportunities and risks for the future.

Goal

The aim of this study is to analyze the potential role of artificial intelligence in supporting triage during disasters and to compare its effectiveness with the traditional START triage system. The study will evaluate how AI-based tools may assist emergency situations making swift and more precise decisions when prioritizing patients according to severity and medical urgency.

In addition, the research aims to identify the advantages and limitations of implementing AI technologies into emergency medical systems. Particular attention is given to the potential improvements in decision accuracy, reduction of human error, and the ability of AI systems to process large amounts of clinical data in real time. The study also considers the practical challenges of implementing such technologies during emergency situations.

Material and methods of research

This scientific research is based on a literature review and comparative analysis of scientific literature related to AI in emergency medicine, triage systems used in disasters, and the START triage method. Relevant academic articles, clinical studies, and technological reports were analyzed to compare the principles, performance, and limitations of AI-assisted triage and classical triage systems.

The results of the research and their discussion

The analysis of available studies indicates that artificial intelligence systems can help triage decisions by quickly analyzing patient data such as vital signs, injury characteristics, and physiological parameters. AI algorithms can process multiple variables at the same time and may assist emergency teams in identifying critical patients more efficiently.

Compared with the START triage system, AI-assisted approaches may reduce the risk of human error and improve consistency in decision-making. However, the effectiveness of these systems depends on the availability of reliable data and technological structure during emergency situations (table 1).

Table 1 – Comparison of START triage and AI-assisted triage in mass casualty incidents

Parameter	START triage system	AI-triage system
Decision method	Manual assessment by emergency responders	Algorithm based analysis
Main criteria	Respiration, perfusion, mental status (RPM)	Vital signs, injury patterns, physiological data, and large datasets
Speed of Assessment	Rapid	Potentially faster
Accuracy	Can vary	Potentially higher

Conclusions

In conclusion, START remains a tried-and-true, low-tech technique in MCS that responders may use right away. It offers a regulated method, but it may inevitably misclassify some patients while also sacrificing details. AI-assisted triage systems provide fascinating new features, such as the integration of continuous data and sophisticated analytics to improve prioritization. Currently, both methods have advantages: AI has improved data processing, while START has simplicity and immediacy. Understanding the keys between the two is essential for enhancing patient outcomes

in MCIs. However, AI systems should assist rather than replace established triage methods. Further research and technological development will be necessary to ensure reliable implementation of AI-assisted triage in real disaster situations.

LITERATURE

1. Disaster triage: START, then SAVE – A new method of dynamic triage for victims of a catastrophic earthquake / M. Benson, K. L. Koenig, C. H.& Schultz // Prehospital and Disaster Medicine. – 1996. – № 11(2). – P. 117–124.

2. Mass casualty triage: An evaluation of the data and development of a proposed national guideline / E. B. Lerner, R. B. Schwartz, P. L. Coule [et al.] // Disaster Medicine and Public Health Preparedness. – 2008. – № 2(S1). – P. 25–34.

3. Kahn, C. A., Schultz, C. H., Miller, K. T., & Anderson, C. L. Does START triage work? An outcomes assessment after a disaster drill. // Annals of Emergency Medicine. – 2009. – № 54(3). – P. 424–430.

4. Garner, A., Lee, A., Harrison, K., & Schultz, C. H. Comparative analysis of multiple-casualty incident triage algorithms. // Annals of Emergency Medicine. – 2001. – № 38(5). – P. 541–548.

5. Jenkins, J. L., McCarthy, M. L., Sauer, L. M., et al. (2008). Mass-casualty triage: Time for an evidence-based approach // Prehospital and Disaster Medicine. – 2008. – № 23(1). – P. 3–8.

6. Frykberg, E. R. Triage: Principles and practice // Scandinavian Journal of Surgery. – 2005. – № 94(4). – P. 272–278.

7. Raita, Y., Goto, T., Faridi, M. K., et al. Emergency department triage prediction of clinical outcomes using machine learning models. // Critical Care. – 2019. – № 23(1). – P. 64.

8. Levin, S., Toerper, M., Hamrock, E., et al. Machine-learning-based electronic triage more accurately differentiates patients with respect to clinical outcomes compared with the Emergency Severity Index // Annals of Emergency Medicine. – 2018. – № 71(5). – P. 565–574.

9. A path for translation of machine learning products into healthcare delivery / M. P. Sendak, J. D'Arcy, S. Kashyap, [et al.] // EMJ Innovations. – 2020. – № 4(1). – P. 10–18.