

Category : **Emergency room**

A234 - Leveraging routinely collected data and large language models to inform patients about their emergency department stay – a feasibility study.

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Introduction:

Large language models (LLMs) demonstrate impressive abilities in processing and generating text, with first studies highlighting their utility in creating discharge letters and answering medical questions[1,2]. We assessed whether LLMs could be used to provide patients with individualized and easily understandable discharge summaries, including diagnoses and interventions of their emergency department (ED)-stay and recommendations on next steps, based on routinely collected data.

Methods:

Anonymized data for 30 ambulatory ED-patients of a large level-1 trauma center in Switzerland was obtained. This study complies with the Swiss Human Research Act. Medical history, diagnoses, and interventions of the ED-stay, alongside physicians' recommendations on next steps after discharge were extracted from patient charts using GPT-4 through the *Application Programming Interface (Figure)*. Then, the LLM was prompted to combine information into an easily understandable summary. Two clinicians independently assessed completeness in the LLM's reporting of *a priori*-defined items, which included aspects a patient must be informed about by a physician before being discharged. They further checked for the introduction of medical errors in LLM-generated summaries.

Results:

The median (interquartile range) proportion of *a priori*-defined items reported in LLM-generated summaries was 75.0% (57.3-100). 8/30 (26.7%) summaries included all items. No medical errors were introduced by the LLM.

Conclusion:

After prompt refinement and validation in external cohorts, LLMs may be an effective tool to create individualized ED-patient discharge summaries. Furthermore, LLM's ability to easily translate texts to other languages might help communicate information to patients with limited proficiency in the local language. Inclusion of interactive elements, allowing for patient-chatbot interaction, could reduce follow-up questions, readmissions, and workload.

References:

[1]Ayers et al, *JAMA Intern Med* 2023 [2]Patel and Lam, *Lancet Digit Health* 2023

Image :

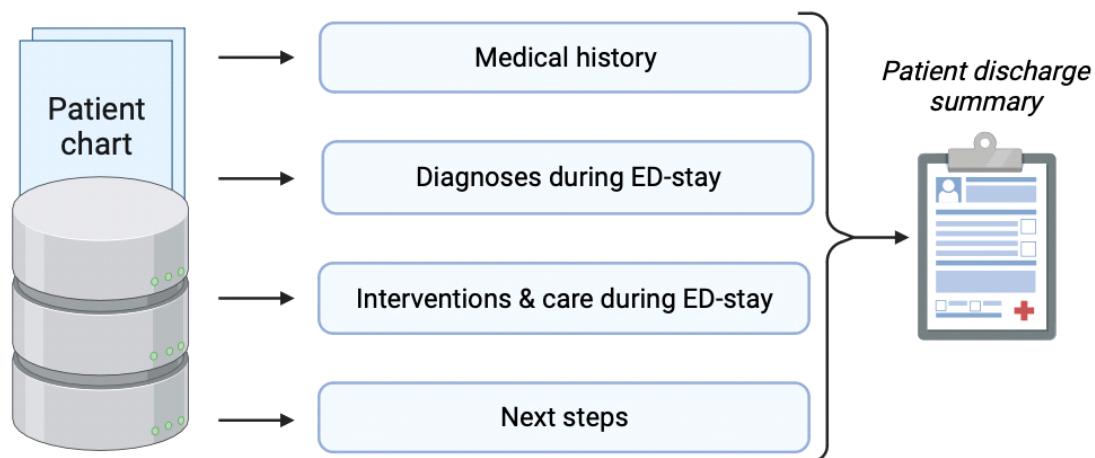


Figure. Creation of patient discharge summaries using a large language model. On November 17th, 2023, the large language model (GPT-4-1106-preview) was requested to extract relevant data from different data sources of the hospital's electronic healthcare records, including patient's medical history, diagnoses, interventions, alongside the next steps, recommended by the treating physician. Then, based on the extracted data, the large language model was prompted to summarize this information and create an easily understandable text, to inform patients about their stay in the emergency department. Standardized prompts were used and passed onto GPT-4 through the Application Programming Interface.