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Title

Artificial Intelligence at Primary and Emergency Care Interface to Improve Care Delivery

Priority 1 (Research Category)

Healthcare Services, Delivery, and Financing

Presenters

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Abstract

Context: Transition of care between primary and emergency care settings is fraught with challenges in both the U.S. and Canada. Artificial intelligence (AI) tools for this interface are emerging, but their use cases remain ill-defined.

Objective: To understand the care gaps at the intersection of primary and emergency care, and to identify opportunities, barriers, and use cases for AI in transitional care.

Study Design and Analysis: To use the first 3 stages of the Stanford Design Thinking Framework: 1) literature view, 2) current state landscape analysis, and 3) future state ideation.

Setting or Dataset: We conducted a literature review between September 2021 and June 2022 using PubMed, Ovid MEDLINE, and Google Scholar using search terms related to AI and machine learning in primary care, emergency care, transitional care, and hospital discharge.

Population Studied: English-language articles describing AI-based solutions or potential solutions were reviewed and findings were used to inform the landscape analysis.

Intervention/Instrument: A current state landscape analysis was conducted using process mapping and cause-and-effect Ishikawa diagrams to define care gaps and alignment with AI solutions. From the landscape analysis, a series of future state ideation workshops was conducted using affinity mapping and prioritization matrices to identify the opportunities and barriers for AI to improve transitional care. Primary care and emergency medicine researchers from both the U.S. and Canada participated in these virtual sessions.

Outcome Measures: Key use cases and barriers for AI at primary and emergency care interface.

Results: From the 32 transitional care gaps identified in the literature review and landscape analysis, 10 use cases were determined to be high-impact and best-fit for AI solutions. Use cases were grouped into

6 categories: support for discharge and follow-up, triage and predictive analytics, data summarization, access to mental health care, patient education and language support, and health system navigation for vulnerable populations. Barriers include lack of interoperability and data standards, lack of funding for innovations in transitional care, and misalignment of incentives in fee-for-service models.

Conclusions: Meaningful use cases exist for AI to support patient care at the intersection of primary and emergency care. Mitigation of barriers and further health services research are needed to advance AI innovations at this interface.