

Charting New Paths – Building Digital Tools for COPD and Beyond

Valentina GNANAPRAGASAM^{a,1}

^a*Institute for Health Policy, Management and Evaluation, Dalla Lana School of Public Health, University of Toronto, ON, Canada*

Abstract. Chronic obstructive pulmonary disease (COPD) costs Ontario's healthcare system \$1.5 billion annually. Primary care practitioners (PCPs) often struggle to integrate clinical guidelines into their workflows. This paper examines the potential of Clinical Decision Support Systems (CDSS) embedded in electronic medical records (EMRs) to address this challenge. Barriers to adoption, facilitators, and technical solutions like SMART on FHIR are discussed to promote future CDSS use and interoperability.

Keywords. COPD, CDSS, EMR, design thinking, SMART on FHIR, interoperability

1. Background

Chronic obstructive pulmonary disease (COPD) imposes a \$1.5 billion annual cost on Ontario's healthcare system [1]. Primary care practitioners (PCPs), as frontline providers, often lack tools that deliver real-time, actionable insights at the point of care. This research explored the development of a Clinical Decision Support System (CDSS) integrated into electronic medical records (EMRs) to improve COPD management. CDSS can translate clinical guidelines into timely, evidence-based support, enhancing PCPs' ability to manage complex cases effectively [2].

2. Methodology

This study employed a user-centered, iterative approach involving stakeholder engagement, a literature review, and prototyping. Stakeholders included ten Ontario-based COPD and EMR experts and two individuals with lived experience. The IDEO design thinking framework guided prototyping and refinement based on user feedback. Existing tools and workflows were evaluated using the GUIDES Checklist to ensure best practices in CDSS design [3-5].

¹ Corresponding Author: Valentina Gnanapragasam, valentina.gnanapragasam@mail.utoronto.ca.

3. Results

SMART on FHIR addresses interoperability challenges by enabling seamless health information exchange across EHRs, reducing administrative burdens and enhancing clinical workflows. Tools like CDS Hooks provide context-aware, real-time decision support, delivering tailored insights to improve efficiency and care quality. Stakeholders emphasized the importance of integrating these tools into workflows to minimize disruption and maximize adoption [6, 7].

4. Discussion

Interoperability remains a barrier, with vendor-specific forms hindering scalability. AI-enhanced CDSS can improve diagnostic accuracy and workflow optimization but faces challenges like biases and data integration gaps. Policies like Bill C-72 and the Pan-Canadian Interoperability Roadmap are essential for advancing standards and fostering a connected, efficient healthcare system [8-10].

5. Conclusion

CDSS has the potential to transform COPD management through interoperability and user-centered design. Collaboration among policymakers, clinicians, and developers is essential to overcome barriers and build a more connected, efficient healthcare system.

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