Combating Complex, Chronic, and Costly Conditions Using a Learning Health System Approach: A Scoping Review

Rebekah A. Davis, MPH[1], Kathryn Sine[2], Ella Burguera-Couce[2], Jabeen Ahmad, PhD, MPH[1], Brant Oliver PhD, MS, MPH, FNP-BC, PMHNP-BC[1*]

1 The Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, NH
2 The Warren Alpert Medical School of Brown University, Providence, RI

*Corresponding Author: Brant J. Oliver, PhD, MS, MPH, APRN-BC, Department of Community and Family Medicine, Geisel School of Medicine at Dartmouth, 46 Centerra Parkway (Hinman Box 7250), Lebanon, NH 03756. E-mail: brant.j.oliver@dartmouth.edu.

Abstract

Introduction
The purpose of this scoping review was to investigate in the literature how a Learning Health System (LHS) can be implemented in cases of complex, costly, chronic conditions.

Methods
A scoping review of literature published in English since 2007 was conducted using Medline, CINAHL, SCOPUS. Two authors screened the resulting articles and two authors extracted study details on the structure, process, and outcome of each LHS. Eligibility criteria included studies of LHSs that focused on populations experiencing a chronic condition. A narrative synthesis of data was conducted using deductive qualitative methods.

Results
Application of our search strategy resulted in 656 publications that were analyzed for this review. We included 17 studies that focused on 13 LHSs. The structure of the LHSs had many components, and many included data from either patient surveys or patient charts. The processes varied widely, from engaging patients in the process to exclusively analyzing the data. The outcomes were largely patient reported, though several clinical outcomes were also used to benchmark the success of the LHS.

Conclusion
Our review shows a variety of ways to implement a LHS in units of patients with chronic conditions. These cases showcase the potential of LHS to be implemented in a wide variety of contexts with varying populations.