Implementation Challenges for Practice Use of EHR and Patient Reported Data for Clinical Decision-Making

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Background

- The Colorado Patient Reported Outcomes and Electronic Health Record Program (PRO-EHR) partnered with a rural primary care practice to use EHR and Quality of Life (QoL) data to identify vulnerable, high-risk patients during the COVID-19 pandemic.
- Challenges to implementation included: Time, EHR extraction challenges, and Workflow issues

Setting/Population

- Mid-Valley Family Practice (MVFP)
  - Rural private practice in Basalt, CO
  - 1 MD, 1 NP, 1 PA, 3 nurses, 2 MAs, 3 front desk, 1 IT Manager and 2 admins.
- No compensation for participation
- Patient population (convenience sample of 272 patients):
  - 22% Medicaid, 27% Medicare
  - 17% 65+
  - 30% Hispanic, 70% white.

Methods

- Phase 1: pre-implementation start up (planning and prep)
- Phase 2: Patient reported outcome (PRO) QOL survey administration.
  - Patients completed the QGEN and QDIS QOL surveys (1) on iPads
  - Survey responses were EHR-accessible during the same visit
- Phase 3: For each respondent, EHR data were extracted based on the C-19 Index- a 40-variable COVID-19 Vulnerability Index (VI) (2).
- Phase 4: Data analysis is ongoing.

Results

Time required for executing/collecting QOL & VI*	
Execution	**Months**
Practice site prep	8
Survey Spanish translation	2
QOL	
Survey collection (English)	2.5**
Survey collection (Spanish)	2***
Data extraction	1
VI Extraction (overlaps with QOL)	5

Planning	**Hours**
Meetings	
Project conception	8
Design/implement	50

Personnel	**Hours**
Clinic director	105
Practice manager	27
Front desk	19
IT Manager	
QOL	
EHR Form creation	4
Create/test query	10
Data extraction	10
VI	
Query creation/test	125
Data extraction	37.5
Reformatting data	17.5
IT Manager Total	*204*
Total time, clinic personnel	**355**

*As of 3/28/2022. Data work/analysis ongoing.
**n=244; 21 were Latinx answering in English
***n=28 Latinx answering in Spanish

Time
- 16 months from start to data extraction
- 58 meetings
- Front desk time for translation and administration

EHR Extraction
- Technology choice for survey admin and collection
- 12 of 40 VI variables were available in the EHR with over 80% complete data.

Workflow
- Approximately 500 patients asked to yield 272 surveys.
- Front desk administered 244 in English, then 28 surveys in Spanish
- 49 total Latinx respondents (18% of 272)

Conclusions

- Implementation of practice-based EHR data extraction and PROs is feasible for other practices, but require significant investment in clinic, provider, and staff time.
- Factors to consider include:
  - Flexible timeline
  - Ability to adjust available technology
  - Access to designated EHR personnel
  - Assessment of EHR abilities and limits up front (3).
  - Inclusion of patients with barriers to care

Next steps:
- Recruit additional practices
- Build a replicable, automated clinical decision-making tool to identify and support high-risk individuals

References
1. Ware, J. E. (2021). Measuring functioning, well-being, and other generic health concepts. In Effect of cancer on quality of life (pp. 7-23). CRC Press.
2. COVID-19 Vulnerability Index (C-19 Index) - ClosedLoop.ai. Accessed May 6, 2022. https://www.closedloop.ai/covid-19-index
3. Kotz A. Patient Reported Outcomes and Electronic Health Records: Lessons from working with patient-reported data and extracting patient EHR data. Poster presented at: AMIA 2022 Clinical Informatics Conference; May, 2022; Huston, TX.

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