Observations on Documentation of Alcohol Use in Real-World Data

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Introduction

Excessive alcohol use is a leading cause of preventable death in the US, with an average of 95,000 deaths annually. During the pandemic, excessive alcohol use and its harms increased. While screening for excessive alcohol use has many barriers, the rapid adoption of Electronic Health Record (EHR) systems in the US over the past decade has enabled implementation of electronic versions of standardized questions and screening tools to assess for excessive alcohol use. To assess the utility of EHR data for screening and assessment of excessive alcohol use, we examined alcohol use items available in one health system's EHR over a five-year period. Though one study[1] of 500 records examined alcohol use documentation, it had a different purpose (i.e., reasons for use of free text).

Methods

We conducted a retrospective analysis using deidentified EHRs from the UC San Diego Health Clinical Data Warehouse. The cohort included 486,290 patients 18 years or older with 5,614,732 encounters between 11/2014 – 11/2019. Alcohol data were found in structured fields in three separate data structures: (1) social history, including alcohol use (i.e., yes, no, not currently, never) and the first three items from the Alcohol Use Disorders Identification Test (AUDIT-C): frequency of use (i.e., never, monthly of less, 2-4 times a month, 2-3 times a week, 4 or more times per week), number of drinks per day (i.e., 1-2, 3-4, 5-6, 7-9, 10 or more), frequency of drinking 6+ drinks on an occasion, and comments; (2) the complete 10-item AUDIT; and (3) Alcohol/week, including quantity and type of beverage (i.e., glasses of wine, cans of beer, shots of liquor). Besides paragraphs of free text, some clinical notes (e.g., progress notes, patient instructions) also contain a section that starts with "Alcohol use:" followed by one or more alcohol items, allowing pattern matching. We divided the cohort into two groups based on whether they had their primary care assigned to UC San Diego (i.e., without vs with). We analyzed all encounters and also by department (e.g., emergency and primary care). All encounters include 857,744 encounters with no department assigned.

Results

Most alcohol documentation occurred via the AUDIT-C and clinical notes. Alcohol data were stored in different data fields at different encounters. The AUDIT is collected in primary care departments, whereas the Alcohol/week data are collected in the emergency departments. Compared to patients without primary care assigned to UC San Diego, a larger proportion of patients with primary care assigned had alcohol data documented, even for emergency encounters.

Age >= 18				Patients with **alcohol data** recorded at any encounter of the specified type					
Cohort	Encounter Type	Encounters	Patients	1. AUDIT-C from Social History	2. AUDIT	3. Alcohol/week	Any source 1-3	4. Clinical Notes	Any source 1-4
Patients **without** primary care assigned to UC San Diego	All encounters	3,389,434	401,821	94,263 (23%)	1,170 (0.3%)	10,290 (3%)	98,417 (24%)	65,103 (16%)	133,912 (33%)
	Emergency	134,869	75,673	2,342 (3%)	-	10,290 (14%)	12,333 (16%)	4,433 (6%)	15,485 (20%)
Patients **with** primary care assigned to UC San Diego	All encounters	2,225,298	84,469	58,783 (70%)	12,247 (14%)	5,456 (6%)	62,191 (74%)	53,730 (64%)	71,071 (84%)
	Emergency	34,148	18,269	1,805 (10%)	-	5,456 (30%)	6,992 (38%)	3,159 (17%)	8,780 (48%)
	Primary care	590,335	73,731	46,827 (64%)	12,240 (17%)	-	50,964 (69%)	42,776 (58%)	60,545 (82%)

Table 1. The availability of alcohol data in various fields in the EHR

Discussion

Alcohol documentation occurred most frequently in primary care as part of standardized screening questions. Clinical notes were also a common source of alcohol data. In future work, we plan to use natural language processing on free text comments and clinical notes to identify additional alcohol data and analyze inconsistencies between these and the structured fields. While the EHR is a promising means of gathering data on alcohol use and identifying excessive alcohol use, we found that alcohol use data is recorded variably in the EHR and fragmented across multiple encounters. Standardized approaches are needed to reliably gather alcohol use information to drive personalized assessments.

Acknowledgements

References

1. Chen ES, Garcia-Webb M. An analysis of free-text alcohol use documentation in the electronic health record: early findings and implications. Applied clinical informatics, 2014; 5(2): 402-15.