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Does documented brief intervention predict decreases in alcohol use in primary care?

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Abstract

Background: Brief intervention (BI) is recommended for patients with unhealthy alcohol use, but the effectiveness of BI in usual care settings remains unclear.

Objective: We evaluated whether BI predicts decreases in drinking six months after a positive screen for unhealthy alcohol use.

Method: We enrolled patients who recently screened positive for unhealthy alcohol use during a routine screen in Veterans Health Administration primary care. We conducted medical record review to assess whether providers documented advice to reduce or abstain, feedback about risks to health, feedback about how patient drinking compares to norms or recommended limits, and discussion of drinking-related goals. BI elements were coded from seven days before the date of the positive screen to 60 days after. We conducted baseline and 6-month follow-up telephone interviews to assess change in past 30-day drinking. We fit regression models examining each BI element and another model for the total count of instances of any combination of elements.

Results: Of the 327 patients included, 86% had at least one documented instance of receiving advice, 86% had risk feedback, 55% had normative feedback, 38% had goal discussion, and 75% had 3 or more instances of any combination of elements of BI. None of the individual BI elements, nor the total number of instances, were significantly associated with decreased drinking.

Conclusions: Results suggest that provider documentation of elements of BI and increasing numbers of instances of BI elements were not associated with decreased heavy drinking at 6-month follow-up among patients identified with unhealthy alcohol use.

Keywords

brief intervention; alcohol use; primary care; medical record

Introduction

Unhealthy alcohol use (Saitz, 2005), which covers a spectrum that is associated with varying degrees of risk to health ranging from drinking in excess of recommended limits to alcohol

use disorder (AUD; Moyer, 2013), is common among primary care patients. Estimates suggest approximately 20% of primary care patients drink at unhealthy levels (Saitz, 2005; Vinson et al., 2010). Unhealthy alcohol use is associated with adverse health outcomes (Rehm et al., 2009; World Health Organization, 2014) and risk of injury and accidents (Taylor et al., 2010; U.S. Burden of Disease Collaborators, 2013). The U.S. Preventive Services Task Force (USPSTF) has recommended universal screening for unhealthy alcohol use and recommends that positive screens be followed by a brief intervention (BI; Moyer, 2013; U.S. Preventive Services Task Force, 2013), typically consisting of advice to drink within recommended limits, or abstain from drinking, and feedback about health risks associated with drinking (U.S. Department of Veterans Affairs and Department of Defense, 2015).

The Veterans Health Administration (VA) reports high rates of annual alcohol screening (over 90%; Bradley et al., 2006). Providers are encouraged to provide BI to patients who screen positive (U.S. Department of Veterans Affairs and Department of Defense, 2015) and the VA incentivizes brief intervention (Williams et al., 2014). The VA conducts medical record review to monitor BI delivery using a performance measure, with indications that over 70% of patients who screen positive have a BI documented (Williams et al., 2010). While BIs have been found to be efficacious in reducing alcohol consumption (Jonas et al., 2012; Kaner et al., 2007; O'Donnell et al., 2014), questions have been raised about the effectiveness of BI in routine practice settings (Williams et al., 2014). Our goal was to describe elements of BI documented by providers following a positive screen for unhealthy alcohol use in routine care and to evaluate whether BI, as documented in the medical record, predicts decreases in drinking (heavy drinking days, mean drinks per week) six months after the positive screen.

Methods

Study population

The AQual study enrolled Veterans who recently screened positive for unhealthy alcohol use during routine screening in primary care in the Greater Los Angeles VA Healthcare System. The VA incentivizes BI for patients who score of five or higher on the Alcohol Use Disorders Identification Test- Consumption (AUDIT-C, range 0–12) (Bush et al., 1998); using a performance measure (Williams et al., 2014). The BLINDED Human Subjects Protection Committee and BLINDED Institutional Review Board approved the study.

Eligible participants were invited to complete a baseline and six-month follow-up telephone interview (adjusted response rate was 54% at baseline and 82% at follow-up). These analyses focused on the subset of respondents who had no alcohol-related treatment within the past three months at the time of the positive screen, had no AUD diagnosis from seven days prior to 60 days after the positive screen, were engaged in care at this VA healthcare system (at least one other encounter in the past 12 months), were aged 18 years or older, were not cognitively impaired, and had a valid telephone number in the VA system. Eligible patients also had elevated drinking prior to screening on either of two drinking outcomes: at least one heavy drinking day (n=253) or mean drinks per week above recommended limits (n=226), resulting in a sample of 327 patients. Above recommended limits was defined as

mean drinks per week of more than 14 drinks per week for men and more than 7 per week for women (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2014).

Measures

Demographic characteristics were drawn from administrative data (sex, age) and survey data (marital status, education, race/ethnicity, employment, income, received all/most of care from the VA, and physical and mental health functioning) (Fleishman et al., 2010). We conducted medical record review to assess whether providers documented elements of BI including: advice to reduce or abstain (advice), feedback about risks of alcohol use to health (risk feedback), feedback about how patient drinking compares to norms or recommended limits (normative feedback), or discussion of drinking related goals (goal discussion). These specific elements were identified as part of an expert panel process to develop quality measures to assess care for unhealthy alcohol use (Hepner et al., 2017). Every instance of each documented element was coded from seven days before the date of the positive alcohol screen to 60 days after. Two registered nurse abstractors were trained to use a structured abstraction tool to collect data elements from text notes. Abstractors achieved perfect interrater reliability (percent agreement: 100%), chiefly through continuous training and feedback throughout the abstraction.

We examined changes in past 30-day drinking using two outcomes: percent heavy drinking days in the past 30 days out of days available for drinking (i.e., not incarcerated or hospitalized) and mean drinks per week in the past 30 days. A heavy drinking day was defined as 5 or more drinks for men and 4 or more drinks for women (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2014). Past 30-day drinking was assessed using the Timeline Follow-back (TLFB; Sobell et al., 1996). We characterized baseline drinking using drinking data for all days prior to the screen-positive visit for each patient. For patients with fewer than seven days of drinking data prior to the screen positive visit, we imputed the values for missing days using hot-deck multiple imputation, which borrowed data from eligible donors who had similar overall drinks per week and AUDIT-C scores (Little & Rubin, 1987).

Statistical analysis

We computed descriptive statistics for patient characteristics and the proportion of patients who received elements of BI. We examined the bivariate correlations between elements of BI. We fit Poisson and log-transformed linear regression models of the outcomes, examining each BI element (binary, present/absent) and the total count of instances of any combination of elements (continuous, zero to six or more) predicting changes in drinking from baseline to six-month follow-up. Drinks per week outcome was log-transformed since residual analyses of the non-transformed outcome indicated violations of linear regression assumptions. Analyses of heavy drinking days were restricted to patients who had at least one heavy drinking day at baseline (n=253) and analysis of drinks per week were restricted to patients who drank above recommended limits at baseline (n=226). Statistical inferences were based on estimates obtained using multiple imputation (Little & Rubin, 1987). All models were weighted for survey non-response, and adjusted for age, marital status, education, race/

ethnicity, income, mental and physical functioning, receiving all/most care in the VA, and baseline drinking.

Results

Table 1 provides patient demographics and alcohol use at baseline. While this sample of Veterans is similar in some ways to the broader VA population (e.g., over half reported an income of \$30,000 or less), this sample is perhaps more ethnically diverse reflecting the diversity of the greater Los Angeles area and includes a higher proportion of men. The higher proportion of men is likely due to recruiting with the same AUDIT-C score for men and women, rather than a lower score for women (Williams et al., 2017). Most patients had at least one documented instance of receiving advice (86%) and risk feedback (86%), while fewer had normative feedback (55%) or goal discussion (38%; Figure 1). Fifteen percent received one or two elements, 37% received three or four, and 38% received five or more elements, and only 10% received no elements.

Correlations between documented elements were positive (0.16–0.83), with the highest correlation between advice and risk feedback (Table 2). The highest correlation observed – between advice and risk feedback – is likely due to the structure of the clinical reminder tool, guiding the provider to complete and document these two aspects of BI. None of the individual BI elements, nor the total number of instances, predicted statistically significant decreases in drinking among patients with heavy drinking days or patients drinking above recommended limits (Table 3).

Discussion

We found high rates of provider documentation of at least some elements of BI in the 60 days following the alcohol screen. The majority of patients had provider documentation of at least one element of BI, and most had documentation of multiple BI elements. Yet, increased documentation of BI (i.e., individual BI elements, total instances of BI elements) was not significantly associated with decreased drinking (i.e., percent heavy drinking days, mean drinks per week) at 6-month follow-up among patients who screened positive for unhealthy alcohol use in routine VA care. These findings are generally consistent with the recent evaluation of the VA's BI program (Williams et al., 2014), but contrasts with a recent, non-VA evaluation of the US Substance Abuse and Mental Health Services Administration's Screening, Brief Intervention and Referral to Treatment grant program, which reported decreases in unhealthy alcohol use after BI (Aldridge et al., 2017). There are several possible explanations for our findings. Provider documentation may not reflect actual provider behavior. As part of its implementation of BI, VA implemented a clinical tool (i.e., a clinical reminder) within the medical record that facilitates documentation of elements of BI that were delivered. Although this clinical tool may have increased documentation of BI, the quality of documentation – and the degree to which it corresponds to actual provider behavior – is unknown. Documentation of BI in the medical record also doesn't provide information about the length or intensity of the BI, nor the skill or training of the providers in delivering BI. As widespread implementation of BI continues, it will be essential to

ensure that the intensity of BI delivery will be associated with the decreases in drinking observed in effectiveness trials (Jonas et al., 2012).

Our work had limitations. Given our sample size, we would be able to detect medium-sized BI effects on drinking outcomes. Our study cannot rule out small effect sizes (Jonas et al., 2012) such as those found elsewhere. There may be measurement error associated with documentation of BI (as noted above) and self-reported drinking. We did not include analyses on how provider documentation corresponded to patient report, which could provide additional information about the quality of the BI delivered and accuracy of provider documentation of BI. In addition, our analyses assessed care delivered to Veterans, leading to a predominantly male sample. Also, clinical support tools for screening and BI and incentives for completion of BI that are in place within the VA are not used across all healthcare systems, and may limit the generalizability of our results. Finally, although we adjusted for observable risk factors, there could be residual confounding of our estimates by other unmeasured factors.

Our study also has important strengths. We conducted detailed coding of the medical record for patients receiving routine care. Prior work, including the recent evaluation of BI effectiveness in VA (Williams et al., 2014), measured BI using existing data tags generated as a provider completes the clinical reminder, rather than coding the content of clinical notes (Lapham et al., 2015). Our medical record review included comprehensive coding of all instances of four separate elements over a period around the screen positive visit. This allowed us to create a continuous variable to assess the presence of a “dose-response” relationship between increased documented BI and decreased drinking. Further, we collected detailed daily drinking data using an approach designed to increase the reporting accuracy (i.e., the Timeline Follow-Back), rather than using clinical alcohol screening scores that may have quality problems (Bradley et al., 2011).

Our findings highlight the need to ensure the effectiveness of BI in routine settings. Despite provider training and system-wide implementation efforts, including clinical tools to facilitate provider deliver and documentation of BI, there remains a need to ensure the quality and intensity of BI being delivered. Performance measures that rely on medical record documentation of BI delivery may not adequately capture processes of care that will ultimately result in improved patient outcomes.

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Figure 1.
Percent of Patients with Documented Elements of Brief Intervention (N=327)

Table 1.

Patient Demographics Characteristics and Alcohol Use at Baseline (N = 327)

	N (Weighted %)
Male	310 (94.8%)
Married/Living as married	119 (35.8)
Education	
High School or less	87 (27.4)
Some college	171 (52.3)
College graduate or more	68 (20.3)
Race / Ethnicity	
Black	34 (10.6)
Hispanic	72 (23.5)
White, Non-Hispanic	183 (54.3)
Other ⁺	38 (11.6)
Employed	132 (41.6)
Income \$30,000 or less	181 (56.1)
All or most medical care from VA	284 (87.6)
	Weighted Mean (SD)
Age	54.6 (16.2)
SF-12	
Physical health score	46.3 (11.0)
Mental health score	51.4 (12.6)
Percent heavy drinking days [^] , of days available	
Baseline	24.9 (29.4)
Follow-up	18.6 (27.4)
Drinks per week	
Baseline	21.4 (14.8)
Follow-up	18.3 (19.2)
AUDIT-C Score	N (weighted %)
Baseline	
Less than 5	22 (6.6)
5 to less than 8	182 (55.6)
8 or more	123 (37.8)
Follow-up	
Less than 5	58 (17.9)
5 to less than 8	178 (54.2)
8 or more	90 (27.9)

⁺ Other race/ethnicity includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, multiple race/ethnicities, and unknown.

[^] Heavy drinking days were defined as five or more drinks for men and four or more drinks for women in a day.

Table 2.

Correlations between Documented Elements of Brief Intervention (N = 327)

	Advice reduce/abstain	Risk Feedback	Normative Feedback	Discussion of Goals
Advice reduce/abstain	1.00			
Risk feedback	0.83 ***	1.00		
Normative Feedback	0.41 ***	0.62 ***	1.00	
Discussion of Goals	0.50 ***	0.38 ***	0.18 ***	1.00

Note: Polychoric correlations are shown for patient-specific counts of each element of BI, where counts are coded 0, 1, or 2 with counts greater than 2 set equal to 2.

p<0.0001.

Table 3.

Association between Brief Intervention and Change in Drinking Outcomes

	Percent Change in Heavy Drinking (95% CI)	Percent Change in Drinks per Week (95% CI)
Advice Reduce/Abstain	-2.9 (-31.7, 38.1)	-15.7 (-34.7, 9.0)
Risk Feedback	-14.0 (-37.1, 17.8)	-20.4 (-38.4, 2.9)
Normative Feedback	-10.4 (-31.4, 17.2)	-0.59 (-21.8, 26.3)
Discussion of Goals	9.0 (-19.1, 46.6)	6.4 (-17.2, 36.7)
Total Brief Intervention Elements ⁺	0.5 (-6.2, 7.7)	-4.4 (-9.9, 1.5)

Note: Estimates shown are associated with the presence of one or more instances of each element of brief intervention. Model adjustments included age, marital status, college education, non-Hispanic white, income, mental and physical health functioning, receiving all or most care in VHA, and the pre-index value of the outcome variable (i.e., heavy drinking percentage or drinks per week). None of the changes were statistically significant.

⁺ Counts greater than six were set equal to six.