

Alerting Doctors About Patient Life Challenges: A Randomized Control Trial of a Previsit Inventory of Contextual Factors

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Frances M. Weaver , Amy Binns-Calvey, Beverly Gonzalez, Carol Kostovich, Sherri LaVela, Kevin T. Stroupe, Brendan Kelly, Naomi Ashley, Scott Miskevics, Ben Gerber, Lisa Burkhart, Alan Schwartz, and Saul J. Weiner

Abstract

Objective. Effective care attends to relevant patient life context. We tested whether a patient-completed inventory helps providers contextualize care and increases patients' perception of patient-centered care (PCC). **Method.** The inventory listed six red flags (e.g., emergency room visits) and if the patient checked any, prompted for related contextual factors (e.g., transportation difficulties). Patients were randomized to complete the inventory or watch health videos prior to their visit. Patients presented their inventory results to providers during audio-recorded encounters. Audios were coded for physician probing and incorporating context in care plans. Patients completed the Consultation and Relational Empathy (CARE) instrument after the encounter. **Results.** A total of 272 Veterans were randomized. Adjusting for covariates and clustering within providers, inventory patients rated visits as more patient-centered (44.5; standard error = 1.1) than controls (42.7, standard error = 1.1, $P = 0.04$, CARE range = 10–50). Providers were more likely to probe red flags (odds ratio = 1.54; confidence interval = 1.07–2.22; $P = 0.02$) when receiving the inventory, but not incorporating context into care planning. **Conclusion.** A previsit inventory of life context increased perceptions of PCC and providers' likelihood of exploring context but not contextualizing care. Information about patients' life challenges is not sufficient to assure that context informs provider decision making even when provided at the point of care by patients themselves.

Keywords

contextual error, patient-centered care, provider behavior, randomized trial, socioeconomic factors

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Many definitions and models of patient-centered care (PCC) have evolved over the past 20 years, particularly since a National Academy of Medicine (formerly Institute of Medicine) report included PCC as an essential domain of health care quality.¹ For health care decisions to be centered on the patient, they must accommodate any specific life challenges a patient is facing that could be addressed through a customized plan of care.² Such a process has been described as “contextualizing care.”³ Contextualizing care is a three-step process that requires, first, recognizing clues, termed

“contextual red flags” that a patient is facing a life challenge that may be complicating their care.⁴ Second, effective providers not only recognize but also ask about contextual red flags, referred to as “contextual probing.” Contextual probing is intended to help elicit an underlying “contextual factor” such as an inability to afford a

Corresponding Author

Frances M. Weaver, Center of Innovation for Complex Chronic Healthcare (151H), 5000 S. 5th Avenue, Hines, IL 60141, USA; Telephone: (708) 202-5866 (Frances.weaver@va.gov).



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medication, or a lack of transportation, that threatens to derail an otherwise appropriate plan of care. In the third step, the clinician incorporates elicited contextual factors into the care plan (e.g., attempting to address the medication cost or the transportation issues). Aboumatar and Cooper describe contextualization as a blending of patient-centeredness and cultural competence.⁵

Contextualizing care predicts both health care outcomes and costs. In a study in which over 700 patients audio recorded their visits, contextualized care plans predicted resolution of the contextual red flag identified at the index visit.⁶ For instance, an elevated glycosylated hemoglobin was more likely to improve if the contextual factor, for example, inability to reliably read the syringe, was addressed. In a separate study, employing unannounced standardized patients, physicians were more likely to order unnecessary tests and treatments when they overlooked the contextual information actors were trained to reveal, inappropriately driving up costs.⁷ These errors in care planning are termed “contextual errors” because they are medical errors due to inattention to patient context.⁸

Across a variety of health care settings physicians are prone to contextual error.⁹ Attempts to prevent them simply by training physicians to pay attention to patient contextual factors have not been successful.¹⁰ Reviews of efforts to change provider behavior point out that

educational strategies alone have little impact on change,¹¹ and that organizational and system factors (e.g., high patient volume), provider factors (e.g., old habits and routines), and patient factors (e.g., low health literacy) must variously be considered as well.¹²

Interventions that alter processes rather than those that just focus on persuasion seem to be more successful. In particular, patient-mediated strategies, such as collecting depression screens at the point of care and giving them to providers, can contribute to normative restructuring of physician practice.^{13,14} In this study, we assessed whether a patient-completed instrument can help clinicians avoid contextual errors. To assist providers, we developed and tested a brief patient inventory that elicits contextual information from patients and makes it available to providers during the clinical encounter—a patient-mediated intervention. As one of the authors (SW) has given presentations on contextualizing care to the participating providers, they were nearly all familiar with the topic.

Methods

The study was designed as a randomized controlled trial in which randomization was stratified by study site and primary care provider. The study sites included two Veterans Administration (VA) hospitals with primary care clinics located in a large metropolitan area in the Midwest. One facility was located within the city limits (site A) and the other approximately 10 miles west of the city (site B). VA Central Institutional Review Board approval was obtained to conduct the study.

The invention involved asking patients to complete a brief questionnaire on an iPad just prior to seeing their provider for a regularly scheduled visit. The questionnaire, or “patient inventory,” consisted of six questions eliciting contextual red flags that could signal that the patient may be having difficulties managing their health care. Specific red flags included the following: difficulty keeping health care appointments, taking medications as prescribed, or adhering to a plan of care; using the emergency room (ER) or urgent care more than once in the past 6 months; not completing scheduled tests, treatments, or procedures; and difficulty with medical equipment. If a patient checked yes for a flag, they were asked to select from a list of related contextual factors.

The list of contextual factors for each red flag was developed using three rounds of a virtual (email and online surveys) Delphi panel involving researchers, clinicians, health care and policy leaders, and patients, a process detailed previously.¹³ We conducted several

Hines VA Hospital, Center of Innovation for Complex Chronic Healthcare, Hines, Illinois (FMW, ABC, BG, SL, KTS, SM, CK, LB); Public Health Sciences, Loyola University Stritch School of Medicine, Maywood, Illinois (FMW, KTS); Marcella Niehoff School of Nursing, Loyola University, Maywood, Illinois (CK, LB); Jesse Brown VA Medical Center, Center of Innovation for Complex Chronic Healthcare, Chicago, Illinois (SL, BK, NA, SJW); Department of Medicine, College of Medicine (ABC, BK, NA, BG, SJW), Department of Biostatistics and Epidemiology (BG), and Department of Medical Education, College of Medicine (AS), University of Illinois at Chicago, Chicago, Illinois. The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Drs. Weiner and Schwartz are co-founders and Ms. Binns-Calvey, Mr. Kelly, and Ms. Ashley have received payments from the Institute for Practice and Provider Performance Improvement (I3PI), which assists practices with performance improvement including contextualization of care. The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Financial support for this study was provided entirely by a grant from Health Services Research & Development, Veterans Health Administration (SDR 12-280). The funding agreement ensured the authors' independence in designing the study, interpreting the data, writing, and publishing the report. The following authors are employed by the sponsor: Weaver, Binns-Calvey, Gonzalez, Kostovich, LaVela, Stroupe, Kelly, Miskevics, Burkhart, and Weiner. The views represented here are of the authors and do not necessarily reflect those of the Veterans Health Administration.

cognitive interviews with Veterans to ensure the language and meaning of the contextual factors was congruent with their understanding of these issues before deploying the inventory (see Appendix A). Patients completed the inventory on an iPad in 5 minutes, on average. Only a few required assistance.

After completing the inventory, the research assistant generated a one-page printout for the patient to give the provider. The printout listed the red flags patients checked and any contextual factors they identified for those red flags.

Patients randomized to the control group reviewed two brief (4 minute) educational videos on “eating wisely” and “being physically active,” developed by VHA’s education service, on the iPad just prior to seeing their providers.

Providers

We invited all primary care providers ($n = 61$; physicians and nurse practitioners) at the two study facilities to participate in the study via email invitation. Participation required a willingness to be audiotaped by patients with concealed recorders over the course of the study (approximately 18 months). Twenty providers agreed and signed informed consent forms: 6 physicians and 2 nurse practitioners (who ran their own clinics) at site A; 12 physicians at site B. They were informed that approximately 12 patients would come to their appointments to record the encounter and that some of them would also give the provider a printout of responses to an inventory they completed prior to the start of their visit. Providers were assured that no identifiable information about them would be retained or utilized in any reports.

Patients

We obtained the patient lists for each provider who consented to the study and randomly selected patients based on panel size. Patients who had sensitive records (e.g., employees), were in another study, had dementia, were blind/vision impaired, or had a behavioral flag on the chart were excluded. The remaining patients were sent a letter inviting them to participate. They were given a 2-week period in which they could opt out by calling the study team to decline participation. If we did not hear back, we called them 1 to 2 weeks prior to their next appointment with their participating provider to obtain their verbal interest to participate and to schedule a meeting approximately 1 hour prior to their appointment to complete the consent process and randomization. We

used a block randomization scheme to randomize patients for each provider to either the intervention or control group.

Procedures

Patients who verbally consented were contacted by telephone 1 to 2 days before their appointment to remind them to meet the research assistant prior to their appointment with their provider. The research assistant met each patient at a designated spot and then moved to a quiet, semi-private area to conduct the informed consent process, and administer either the intervention or the control. The patient was given a small audio recorder (turned on by the research assistant) and asked to conceal it in a pocket or bag during their visit. Patients were assured that their provider had consented to have random visits recorded, and were asked not to reveal the recorder. Patients in the intervention group were instructed to give the one-page summary of their responses to their provider. Approximately half way through the study, we asked intervention patients to also verbalize what they had marked on the inventory during their visit. We added this prompt after we discovered from patient disclosure and while listening to the audiotapes that many providers did not appear to look at the printout. With institutional review board approval, we added the prompt to strengthen the likelihood that providers would process what the patient was attempting to tell them. We compared data before and after the prompt using sensitivity analyses.

At the end of the visit, patients returned the audio recorder to the research assistant. They also completed a paper-and-pencil questionnaire regarding their care. Patients were given \$20 for their participation.

Post-Visit Questionnaire

The questionnaire included several existing instruments covering PCC, empathy, decision making, and satisfaction with care. The Consultation and Relational Empathy (CARE) instrument is a 10-item measure of patients’ perceptions of doctors’ communication in primary care, focusing on empathy and holistic care in the context of a therapeutic relationship (score range 10–50; higher is more positive).¹⁵ It has been found to be significantly associated with overall satisfaction and whether a patient would recommend the doctor to friends and family.¹⁶ The Consultation Care Measure (CCM) includes five subscales that assess a patient’s perceptions of PCC during their last visit with their provider (communication

and partnership, personal relationship, health promotion, positive approach, interest in effect on patient's life; lower scores are more positive).¹⁷ To assess preferences for decision making, we utilized four items from Flynn et al. to classify patients' preferences for four components of decision making: provider knowledge of patient medical history, provider disclosure of treatment choices, discussion of treatment choices, and selection of treatment choice.¹⁸ Finally, to evaluate patient satisfaction, we used four items from the "Health Center Patient Satisfaction Tool."¹⁹ The questions, examined separately, were rated from 1 = poor to 5 = great and included "provider listens to you," "provides takes enough time with you," "provider explains what you want to know," and "provider gives you good advice."

Post-Visit Audio Coding and Medical Record Review

We utilized the Content Coding for Contextualization of Care (4C) coding system to analyze the audio recordings of patient/provider encounters.⁴ Trained 4C coders reviewed the medical record and listened to audio recordings to identify contextual red flags, probing of red flags, contextual factors, and incorporation of contextual factors into the care plan. Details of the coding methods have been reported elsewhere and are also available online.²⁰

Statistical Analyses

Sample size estimates were computed based on the primary outcome measure, the CARE score (range of 10–50), while accounting for clustering of patients within provider. The multiplicative effect on the standard error due to clustering is $1 + (m - 1) * ICC$, where m represents the size of each cluster (patients per physician) and ICC the intraclass correlation of same-physician patient CARE outcomes. A total of 25 doctors with 11 patients each, or 24 doctors with 12 patients each, would be sufficient to detect a moderate effect size (Cohen's $d = 0.5$) at the 0.05 level with 0.8 power. Including a 10% attrition rate, a sample of 25 to 26 providers would require 150 to 154 patients per group.

Data Description

Data were collected for 272 patients. Baseline demographic information was obtained for each patient, in addition to data pertaining to whether the patient was randomized to the inventory or control group, red flags,

and contextual factors. Using this information, the data was set up in a long format where each row represented the provider-patient unique encounter due to each provider having multiple patients. Reshaping the data in this format and keeping track of the providers' unique identifier allowed us to account for variability from provider to provider by running repeated measures analyses.

Analysis Plan

Descriptive analyses of baseline demographics were used to characterize the study sample and inventory use. We hypothesized that use of the inventory would increase patients' assessments of PCC and increase the likelihood that providers would probe for and use contextual information in their decisions regarding care. The CARE measure was examined using LINEAR mixed model regression with site, treatment group, and patient characteristics as fixed effects and a random effect of provider to adjust for patient clustering (Table 3). We included patient characteristics found to be the strongest predictors for the outcome after using backward selection. Since the outcomes "probing" and "incorporating contextual information" are dichotomous in nature, we used pooled logistic regression clustering on patients within providers. Data were analyzed using STATA with significance at $\alpha = 0.05$.

Results

Invitation letters were mailed to 2,348 patients across the two sites between January 2014 and May 2016, sent in several batches over the course of the study recruitment period. Of the patients contacted, 1,674 did not have appointments with their primary care providers during the study period. We contacted the remaining patients ($n = 674$) by telephone if they did not opt out and had an appointment scheduled within the next 2 weeks. A total of 386 declined to participate (57%; 141 chose to opt out, 225 declined when contacted by telephone, and 20 declined in person). Twelve could not be reached after five attempts. In total, we consented and enrolled 276 patients (41%; 139 at site A and 137 at site B). Of the consented patients, we excluded data from four participants: two were not Veterans, one saw a different provider (who had not consented to the study), and one patient left before seeing the provider. For the remaining 272 patients, 136 patients were randomized to each study arm. The audio recording failed in eight cases (five control, three intervention); and there were eight cases in which we were unable to provide the printed inventory

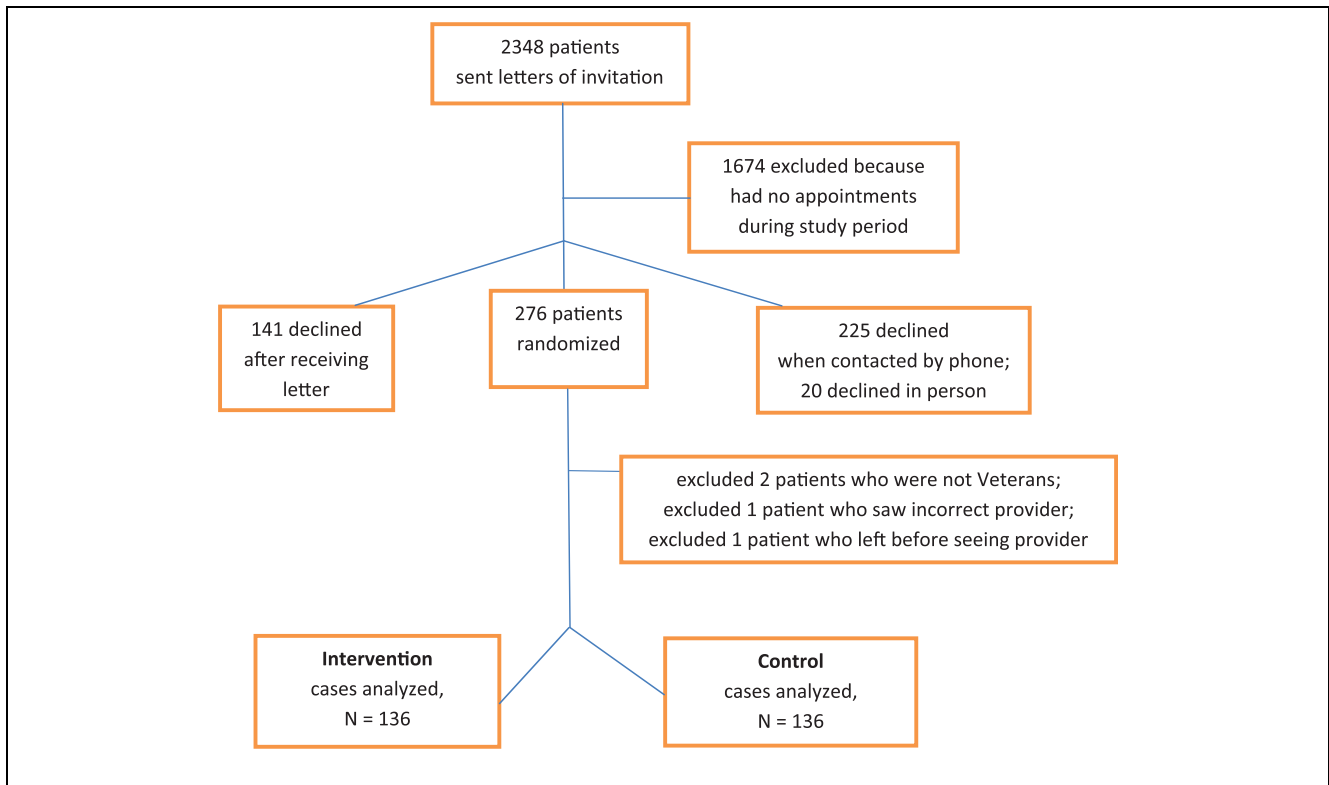


Figure 1 Study cohort.

Intent to treat analyses: 8 cases audio failed (5 control, 3 intervention); 8 cases for inventory did not print; 2 control patients did not see education video; 2 patients did not complete posttest questionnaire (1 control, 1 intervention); 1 patient missing last page of questionnaire (intervention). All were included in analyses.

summary to patients to give to their providers. In the control group, two patients did not see the education videos as they were called by the provider before they could view the material. Furthermore, two patients did not complete the post-visit questionnaire and one did not complete the last page of the questionnaire (see Figure 1 for CONSORT diagram). We retained all 272 in the analysis following an intent to treat approach.

Providers at site A saw an average of 17.4 study patients (range 10–21), while providers at site B had visits from an average of 11.3 study patients (range 3–20) over the 18-month study recruitment period. Some differences were noted in our sample by study site (see Table 1). Site A had a larger proportion of black participants (80% v. 22%, $P < 0.0001$), and more patients who had never been married (61% v. 47%, $P = 0.02$) than those at site B. Site A participants were also more likely to have a substance use disorder documented in the medical record (25% v. 10%, $P = 0.001$) and more often had chronic health conditions when compared to those at site B.

Table 2 provides red flags identified on the inventory for intervention patients and verbally revealed by control patients. The total number of red flags identified was higher in the inventory group (111 v. 86). Two differences were noted: patients more often revealed medication difficulties verbally than on the inventory (48% v. 13%, $P < 0.0001$), but were more likely to identify use of emergency room/urgent care on the inventory but did not reveal this use verbally in the comparison group (29% v. 1%, $P = 0.001$). The most frequently selected contextual factors included issues related to skills, knowledge, and abilities ($n = 59$), access to care ($n = 50$), and attitudes toward illness ($n = 42$).

PCC Findings

A primary outcome was patient score on the CARE, a measure of PCC. Adjusting for covariates, inventory patients rated visits as more patient-centered with a higher mean CARE score for the intervention than the comparison group (44.5 [SE = 1.1] versus 42.7 [SE =

Table 1 Patient Characteristics by Site and by Treatment Group

	Study Sites			Treatment Groups		
	Site A (n = 138)	Site B (n = 134)	P Value	Intervention (n = 136)	Control (n = 136)	P Value
Age (mean, SD)	61.5 (11.3)	64.13 (13.3)	0.08	62.60 (13.2)	62.95 (11.5)	0.82
Male (n, %)	123 (91.8)	124 (93.9)	0.50	127 (93.2)	126 (92.5)	0.81
Hispanic (n, %)	8 (5.9)	9 (6.8)	0.77	6 (4.4)	11 (8.2)	0.20
Race (n, %)			<.0001			0.37
White	12 (8.7)	96 (71.6)		47 (34.6)	61 (44.9)	
Black	111 (80.4)	29 (21.6)		76 (55.9)	64 (47.1)	
Other	11 (8.0)	7 (5.2)		10 (7.3)	8 (5.9)	
Missing	4 (2.9)	2 (1.5)		3 (2.2)	3 (2.2)	
Marital status (n, %):			0.02			0.96
Married	53 (39.0)	71 (53.4)		62 (46.3)	62(45.9)	
Not married	83 (61.0)	62 (46.6)		72 (53.7)	73(54.1)	
Education (n, %):			0.14			0.23
Less than college	47 (34.3)	34 (25.9)		45 (33.6)	36(26.9)	
Greater than college	90 (65.7)	97 (74.1)		89 (66.4)	98(73.1)	
Health rating (n, %):			0.24			0.85
Excellent	6 (4.4)	7 (5.4)		8 (6.0)	5 (3.8)	
Very good	27 (20.0)	41 (31.8)		35 (26.3)	33 (25.2)	
Good	70 (51.9)	53 (41.1)		62 (46.6)	61 (46.6)	
Fair	27 (20.0)	24 (18.6)		23 (17.3)	28 (21.4)	
Poor	5 (3.7)	4 (3.1)		5 (3.8)	4 (3.0)	
Mental health diagnosis (n, %) ^a			0.42			0.90
Yes	50 (36.2)	55 (41.0)		52 (38.2)	53 (39.0)	
Substance use disorder (n, %) ^b			0.001			0.63
Yes	34 (24.6)	13 (9.7)		25 (18.4)	22 (16.2)	
Chronic conditions (n, %)						
COPD	9 (6.5)	2 (1.5)	0.04	7 (5.2)	4 (2.9)	0.36
CHF	3 (2.2)	2 (1.5)	0.99	2 (1.5)	3 (2.2)	0.65
CAD	16 (11.6)	10 (7.5)	0.25	16 (11.8)	10 (7.4)	0.22
HTN	82 (59.4)	71 (53.0)	0.28	78 (57.4)	75 (55.2)	0.71
Diabetes	43 (31.2)	28 (20.9)	0.05	36 (26.5)	35 (25.7)	0.89

CAD, coronary artery disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; HTN, hypertension; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.

^aFor mental health we included the following conditions if they were included in the patient's chart: Depressive disorder/depression (SCT 35489007) (ICD-9-CM 311), H/O: attempted suicide (SCT 161474000), Major depressive disorder single (ICD-9-CM 296.20) (296.30), Major depressive disorder recurrent (ICD-9-CM 296.30), Posttraumatic stress disorder (ICD-9-CM 303.90) (ICD-9-CM 309.81), Anxiety (SCT 48694002), Panic disorder (SCT 371631005), Panic D/O w/Agoraphobia (ICD-9-CM 300.21), Panic disorder (ICD-9 CM 300.01), Observation of adult antisocial behavior (ICD-9-CM V71.01), Bereavement (ICD-9-CM V62.89), Major depressive disorder, recurrent moderate (ICD-9-CM 296.32), Prolong postpartum (ICD-9-CM 309.81), Delirium (ICD-9-CM 293.0), Attention deficit hyperactivity disorder (ICD-9-CM 314.01), Bipolar disorder (SCT 13746006), Organic brain syndrome (SCT 2776000), Adjustment disorder with depressed mood (SCT 57194009), Schizoaffective disorder, mixed type (SCT 270901009), Delusional disorder (ICD-9-CM 297.9); Paranoia (ICD-9-CM 297.1), Explosive personality (ICD-9-CM 301.3); Schizotypal personality (ICD-9-CM 301.22), Cognitive disorder NOS (ICD-9-CM 294.9), Other or unspecified psychological factors affecting medical condition (ICD-9-CM 316), Unspecified psychosis (ICD-9-CM 298.9), Psychoactive substance-induced organic mood disorder (ICD-9-CM 292.84), Organic mood disorder (SCT 23645006), Stress (ICD-9-CM 308.9), Generalized anxiety disorder (ICD-9-CM 300.02), Adjustment disorder with depressed mood (ICD-9-CM 309.0).

^bFor substance use disorder, we included the following conditions if they were included in the patient's chart: Substance induced mood disorder (ICD-9-CM 292.84), Substance abuse NOS (ICD-9-CM 171.9), Polysubstance abuse (ICD-9-CM 305.90), Alcohol dependence (ICD-9-CM 303.90), Opioid dependence (ICD-9-CM 304.01), Cocaine abuse (ICD-9-CM 305.60), Suicide and self-inflicted poisoning by unspecified drug or medicinal substance (ICD-9-CM E950.5), Other and unspecified alcohol dependence, episodic drinking behavior (ICD-9-CM 303.92), Cocaine dependence (ICD-9-CM 304.20), Schizophrenia (SCT 58214004), Marijuana abuse episodic (ICD-9-CM 305.22), Heroin abuse in remission (ICD-9-CM 305.53), Polysubstance dependence (ICD-9-CM 304.80).

Table 2 Red Flag Identification on the Inventory Tool (Intervention) versus Revealed Verbally by Patient (Control)

	Inventory (n = 136)	Control (n = 136)	P Value*
At least 1 red flag checked?	107	NA	NA
Total red flags checked or verbalized:	111	86	NA
Medication difficulties	14 (13%)	41 (48%)	<0.0001
Difficulty with appointments	14 (13%)	13 (15%)	0.13
Difficulty following health plan	26 (23%)	15 (17%)	0.77
Multiple visits to emergency room	32 (29%)	1 (1%)	0.001
Not following through with tests and procedures	12 (11%)	8 (9%)	Ref
Difficulties with medical equipment	13 (12%)	8 (9%)	0.70

*P value assessed at the $\alpha = 0.05$ level of significance using logistic regression analysis.

Table 3 Mixed Model Predicting CARE Score Adjusting for Clinical and Demographic Variables and Accounting for the Nesting of Patients Within Providers^a

	Coefficient	SE	P Value	95% CI
Intervention	1.80	0.91	0.05	0.02 to 3.58
Gender				
Female	Reference	Reference	Reference	Reference
Male	-4.41	2.30	0.06	-8.93 to 0.10
Hispanic	0.12	1.93	0.95	-3.65 to 3.90
Marital status				
Not married	Reference	Reference	Reference	Reference
Married	2.86	0.93	0.002	1.03 to 4.68
Education				
Less than college	Reference	Reference	Reference	Reference
Any college	1.12	1.02	0.27	-0.88 to 3.12
Mental health condition	-1.09	1.00	0.28	-3.06 to 0.87
Substance abuse	-0.27	1.30	0.83	-2.82 to 2.27
Site				
A	Reference	Reference	Reference	Reference
B	1.08	1.95	0.58	-2.74 to 4.90
Constant	44.57	2.91	<0.0001	38.87 to 50.27

CI, confidence interval; SE, standard error.

^aFrom mixed model after adjusting for gender, ethnicity, education, marital status, mental health condition, substance disorder, site, and accounting for clustering of patients within providers.

1.1]; $P = 0.04$). Using a linear mixed model (see Table 3), there is an expected 1.8 unit increase in the CARE score for intervention versus control participants ($\beta = 1.80$; $P = 0.04$), after adjusting for patient characteristics, site, and accounting for patients within provider panel. To test for the effect of the addition of the verbal prompt halfway through the study, we re-ran the model controlling for the verbal prompt instructions and other variables and found very similar results, but there was no effect for introducing the verbal prompt ($P = 0.7$).

Similar mixed models were run for the other patient reported outcomes including the subscales of the CCM and patient satisfaction questions. None of these

outcomes were significantly different by group as a result of using the inventory.

Contextualizing Care Findings

Using a pooled logistic regression, we determined the adjusted odds of probing for context at least once based on whether or not the provider was given the inventory summary. Providers were 54% more likely to probe for contextual factors with patients in the inventory group than those in the control group (odds ratio = 1.54, confidence interval = 1.07–2.22; $P = 0.019$), after adjusting for site and patient characteristics (gender, ethnicity,

Table 4 Pooled Logistic Regression Predicting Whether Provider Probed for Contextual Factors^a

	Odds Ratio	SE	P Value	95% CI
Intervention	1.54	0.29	0.02	1.07–2.22
Gender				
Female	Reference	Reference	Reference	Reference
Male	1.57	0.89	0.42	0.52–4.74
Hispanic	1.20	0.77	0.78	0.34–4.25
Marital status				
Not married	Reference	Reference	Reference	Reference
Married	0.94	0.26	0.82	0.55–1.61
Education				
Less than college	Reference	Reference	Reference	Reference
Any college	0.72	0.31	0.44	0.31–1.66
Mental health condition	1.64	0.47	0.08	0.94–2.86
Substance abuse	1.71	0.69	0.18	0.78–3.79
Site				
A	Reference	Reference	Reference	Reference
B	1.00	0.37	0.99	0.49–2.06
Constant	0.85	0.46	0.76	0.29–2.45

CI, confidence interval; SE, standard error.

^aFrom pooled logistic model after adjusting for gender, ethnicity, education, marital status, mental health condition, substance disorder, site, and accounting for clustering of patients within providers.

marital status, education, mental health, substance abuse, site) and clustering of patients within providers (see Table 4). Controlling for introduction of the verbal prompt did not change the findings.

Next, we tested whether providers were more likely to contextualize care in the intervention group when there were contextual factors, than the control group. Using a logistic mixed model, we did not find a difference between the intervention and control groups on the likelihood that a provider contextualized care (odds ratio = 0.80, confidence interval = 0.44–1.46, $P = 0.468$; results not shown). Contextualization did not improve after we introduced the verbal prompt.

Discussion

Approximately half of patients reported one or more contextual red flags. Furthermore, patients with contextual red flags frequently specified a contextual factor, such as “I have other things I need to do that interfere with receiving routine care” for a red flag such as “visiting an emergency room more than once in the past 6 months.” While providers were more likely to ask or follow-up when patients identified contextual red flags and/or factors on the inventory compared to the absence of such information in the control group, doing so did not increase the likelihood of their incorporating what they learned into the care plan.

Patients’ assessment of the patient-centeredness of their visit was approximately 3 points higher in the intervention group than the control group based on the CARE measure. The intervention group scored close to the 75th percentile while the control group scored between the 50th and 25th percentiles based on normative values, a meaningful difference in assessment of PCC.²¹ Interestingly, the other measure of patient-centeredness, the CCM, was not related to the use of the inventory. The CCM includes five subscales that address areas of communication, health promotion, positive and clear approach to the problem, interest in effect in life, and personal relationship.¹⁷ We believe that the limited scoring range of the CCM (neutral and disagree categories are combined into one) limits its sensitivity and may account for the lack of correlation between the CARE and CCM measures.

An important question is why, even when presented with contextual factors that should alter a care plan, physicians often remain inattentive to the information. Why, for instance, would a provider not discuss with a patient their assertion that they visited the emergency room because they have work or school responsibilities during regular clinic hours? Possibilities include that providers are unsure as to how to address contextual factors when making a plan of care, or perhaps feel that it is not part of their responsibility. Note, however, in a prior study of contextual factors sorted into 12 broad categories or

domains, such as loss of social support, or financial hardship, we conducted focus groups with providers and patients to arrive at consensus that these factors—whether it is a patient’s confusion about how to take a medication correctly, or lack of bus fare—are relevant to care delivery and that clinicians should be able to address or refer patients as needed, for instance, to a social worker.²² Another possibility is that physicians are less likely to pay attention to information handed to them than information they elicit on their own. Work published after the inception of this study provides evidence in support of this phenomenon.²³ Providing clinicians with information about their patients’ life challenges appears to be a necessary but not sufficient condition for assuring that contextual information informs decision making.

There are limitations to this study. In some encounters clinicians may have placed appropriate orders addressing a contextual factor without discussing the plan during the audio-recorded encounter, although most interventions—such as consulting a social worker—require informing the patient. Furthermore, our sample was composed of almost all men; women may be more forthcoming with contextual issues. Additionally, providers were not blinded to the intervention, and thus were likely aware that they were being recorded when seeing patients in the intervention group, but not when seeing patients in the control group. However, to the extent to which this introduced a confounder, one would anticipate that it would have prompted more rather than less vigilance in patient care. A more comparable approach would have been to have both groups present something in writing to the provider.

Implications

Collecting contextual information in advance of an encounter and sharing it with the provider did not improve providers tailoring care plans to account for these contextual factors. While discouraging, the finding that actionable information about life challenges relevant to care planning provided by patients directly to their doctors in concise written form at the point of care is often ignored has practice implications. Inattention to relevant patient context appears to be more than just an information problem. Simply knowing that a patient is not taking a medication because they cannot afford it or is missing appointments because of a lack of transportation may not be sufficient to prompt a physician to adapt the care plan accordingly. Providers may either not know how to address contextual factors (e.g., how to find a less

costly medication) or feel that doing so falls outside of the scope of their responsibilities. Furthermore, attention to context in care planning, despite its importance to both health care outcomes and costs, is currently not assessed or incentivized in physician practice. Approaches include auditing performance by inviting patients to audio record their visits and coding the encounters utilizing 4C, or by deploying unannounced standardized patients for the same purpose.^{9,24} As noted, attempts at pre-intervention academic detailing have not been adequate.¹⁰ Multi-intervention strategies based on action and education have been the most successful at changing behavior in health care.^{13,14} Hence, combining our patient-mediated intervention with audit and feedback could be a promising strategy for modifying peer group norms about the importance of attention to patient context along with reinforcing those modified norms through periodic feedback.¹³


Conclusion

A previsit inventory of life context increased perceptions of PCC and providers’ likelihood of exploring context but not contextualizing care. Information about patients’ life challenges is not sufficient to assure that context informs provider decision making even when provided in writing at the point of care by patients themselves.

Authors’ Note

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ORCID iD

Frances M Weaver  <https://orcid.org/0000-0002-5495-4649>

Supplemental Material

Supplementary material for this article is available on the *Medical Decision Making Policy & Practice* website at <https://journals.sagepub.com/home/mpp>.

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