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Listening to the Patient: A Typology of Contextual Red Flags in Disease Management Encounters

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Purpose	Patients send clues, often unwittingly, when they are grappling with a life challenge that complicates their care. For instance, a patient may lose control of a previously well-managed chronic condition or start missing appointments. When explored, these clues help clinicians uncover the life circumstance impacting the individual's ability to manage their health and health care. Such clues are termed "contextual red flags." Effective care requires recognizing them, asking about them, and customizing the care plan where feasible. We sought to develop a typology of contextual red flags by analyzing audio recordings along with the medical records of encounters between patients and providers in outpatient clinics.
Methods	During the course of 3 studies on physician attention to patient context conducted over a 5-year span (2012–2016), 4 full-time coders listened to the audios and reviewed the medical records of 2963 clinician-patient encounters. A list of contextual red flags was accrued and categorized until saturation was achieved.
Results	A total of 70 contextual red flags were sorted into 9 categories, comprising a typology of contextual red flags: uncontrolled chronic conditions; appointment adherence; resource utilization; medication adherence; adherence to plan of care; significant weight loss/gain; patient knowledge of health or health care status; medical equipment/supplies adherence; other.
Conclusions	A relatively small number of clues that patients are struggling to self-manage their care warrant clinicians' exploring opportunities to adapt care plans to individual life circumstances. These contextual red flags group into an even smaller set of logical categories, providing a framework to guide clinicians about when to elicit additional information from patients about life challenges they are facing. (<i>J Patient Cent Res Rev.</i> 2020;7:39-46.)
Keywords	contextual care; patient-centered care; medical decision-making; patient-provider communication; socioeconomic factors

For clinical decision-making to be effective, a patient's life circumstances, or context, should be considered along with their clinical state, the applicable research evidence, and preference for

treatment options.¹ For instance, a diabetic patient who has lost their job and can no longer afford their insulin may "stretch out" the medication, resulting in a loss of control of their chronic condition. Such an inability to afford a needed treatment, due to a change in life circumstances, has been termed a "contextual factor."² Contextual factors must be taken into account when planning patient care. Simply prescribing more insulin, for instance, without addressing the cost issue would not logically lead to better diabetes control.

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While there are many possible contextual factors that can complicate a patient's care, they sort into a relatively small number of categories. For instance, an inability to afford a needed medication is a "financial situation." If the loss of control of diabetes were due, instead, to the departure of a friend or family member who helped with cooking, the contextual factor represents a loss of "social support." Previously, we have described a typology in which all *contextual factors* sort into 12 such broad "domains of patient context."³ Six pertain to a change in life circumstance (ie, are external to the patient), and 6 pertain to intrinsic drivers of behavior (ie, are internal to the patient). Respectively, they are: Access to care, Competing responsibility, Social support, Financial situation, Environment, and Resources; and Skills/abilities/knowledge, Emotional state, Cultural perspective/spiritual beliefs, Attitude towards illness, Attitude towards health care provider and system, and Health behavior.

Practically, it is not realistic to conduct an exhaustive search for contextual factors during each clinical encounter; therefore, clinicians must instead watch for clues of their presence. In the example above, a clue is the unexpected loss of control of diabetes. Note that this is distinct from previous usage of the concept of a patient clue "as a direct or indirect comment that provides information about any aspect of a patient's life circumstances or feelings" for the purpose of "... creating an opportunity for empathy and personal connection."⁴ Rather, clues here indicate there is a broader context the clinician needs to know about to provide appropriate care. Hence, they are termed *contextual red flags*⁵ and should serve as a prompt to every clinician to explore possibilities from the 12 aforementioned domains of context.

The most straightforward approach to looking for the context is to directly ask the patient, starting by sharing the observation of the contextual red flag and then inquiring whether the patient can account for it, a task called "contextual probing."⁵ For example, "Mr. Davis, I notice that your diabetes is no longer under good control. Is there anything going on in your life that could account for the change?" With, perhaps, a few follow-up questions, the clinician should be able to ascertain the contextual factor if one is present and, if feasible, address it in the care plan.

The entire 4-step process — from a) noticing contextual red flags, to b) probing them for context, to c) eliciting contextual factors, to d) addressing them in the care plan — has been termed "contextual care."⁶ Contextualizing care is a predictor of improved health care outcomes, meaning that when a clinician identifies the contextual factor (eg, inability to afford insulin glargine) for a contextual red flag (eg, loss of control of diabetes) and is able to address it in the patient's care plan (eg, by switching to less costly NPH insulin), the red flag is more likely to resolve.⁷ Conversely, when clinicians fail to notice a contextual red flag or address it in a care plan (eg, by just adding more insulin glargine that a patient already can't afford), the contextual red flag is less likely to resolve. Such errors in clinical decision-making are termed "contextual errors."⁸

Thus, the centrality of recognizing contextual red flags becomes evident. They are the *sine qua non* to contextualizing care. Effectively doing so requires an awareness of what to look for. Herein, we describe a typology of contextual red flags to assist providers' recognition so that they are primed to contextualize care rather than to make contextual errors.

METHODS

A contextual red flag is defined as "anything a patient says or that is observed about their situation or behavior that suggests unaddressed contextual factors might be contributing to problems with their care."⁹ It should be noted that a contextual red flag need *not always* signal the presence of a contextual factor. For instance, a patient might lose control of diabetes because of a disease process, such as an infection. Yet, the former is still a red flag because it may be related to a contextual factor. Conversely, a spiking fever is not a contextual red flag because it is not likely caused by factors in any of the 12 domains of context.

The process of developing a comprehensive list of contextual red flags has been a gradual and iterative one that evolved over the course of listening to audio recordings and reviewing the charts of 2963 primary care outpatient visits during 3 separate projects: a 2012 research study with primary care residents (978 recordings);⁷ a 2016 research study with primary care providers to develop a patient inventory to identify patient context (265 recordings);³ and a 2013–2015

quality improvement project in primary care clinics at two VA facilities (1720 recordings).¹⁰

Comments made by patients that suggest an underlying contextual factor (eg, “Boy, it’s been tough since I lost my job.”) were listed as candidate “audio contextual red flags,” and those taken from the medical record (eg, frequent missed appointments) were listed as candidate “chart contextual red flags” using a spreadsheet shared by 4 coders. Each time a candidate contextual red flag was identified, the coders tracked whether the clinician asked about it (contextual probe) and if the patient revealed an underlying contextual factor that a physician could address in the care plan. Candidate red flags were taken off the list if they didn’t lead to contextual factors, and retained when they did, until saturation, meaning that coding additional encounters did not uncover new contextual red flags nor prompt a need to revise the categories into which they sorted. This process, termed “empirically grounded type construction,”¹¹ was used to develop the list of contextual red flags and to group them according to shared attributes.

Participants

Patients were recruited from two large, urban, Midwestern VA medical facilities (site A and site B) for each project. Patients were asked to carry a small audio recorder with them into their visit with their primary care provider, and to allow the study team access to their medical records. They were reimbursed \$25 for their time and travel expenses in the 2016 study. Patients were not reimbursed for the 2012 study. The two research projects were approved by the VA Central institutional review board, and the quality improvement project was approved by site-specific quality improvement committees. The approved protocols included conducting the coding (described herein), the findings of which formed the basis for the conceptual analysis in this publication.

Demographic information was not collected on participating patients but is available, from the VA data warehouse, for the general patient populations: At site A, 89% of patients are male, 39% Caucasian, and 50% African American. At site B, 91% are male, 71% Caucasian, and 18% African American. The median age group at both sites is 65–74 years, comprising 30% of patients at site A and 33% at site B.¹²

Analyses

Medical records and audio were analyzed utilizing the previously validated content coding for contextualization of care (4C) system.⁹ (Additional data on the *4C Analysis Coding Manual* can be accessed at <https://dataverse.harvard.edu/dataverse/4C>.)

As the chart contextual red flags accrued, the coding team adopted a chart extraction tool, as it became evident what to look for. Additionally, these flags were subcategorized into high impact (alarming) red flags and standard red flags. High-impact red flags include: glycosylated hemoglobin level of >9%; systolic blood pressure of >160 mmHg or diastolic blood pressure of >100 mmHg in a patient already treated for essential hypertension; and missing more than 25% of scheduled appointments in the past year if the patient had at least 16 scheduled visits. In the absence of high-impact flags, which always take priority (ie, should be probed by the provider first), the chart coder looked for standard red flags: glycosylated hemoglobin of >8%; systolic blood pressure of >140 or diastolic blood pressure of >90; 2 missed or canceled appointments in the past 4 months; or 2 or more emergency/urgent care visits in the past 4 months. A utility of creating these two subcategories, in addition to prioritizing them, is that the former are more readily quantifiable for tracking change over time, whereas the latter function more like categorical variables. For instance, if a patient has missed 8 out of 16 appointments in the last year, and then shows up for 8 of the next 10 after the care team helped address an access barrier, the change is coded as a 30% increase in show-rate. If a patient has missed 2 prior appointments and then shows up to the next one after a barrier was addressed, the change is coded only as “improved.”

Audio red flags are similar to chart red flags but are drawn from statements a patient makes during an encounter, rather than a documented finding in the medical record. Note, however, that a statement only counts as a contextual red flag if it might account for a problem the patient is having with their health or health care. Hence, the example above (“Boy, it’s been tough since I lost my job.”) would not apply if the patient appeared to be managing their care well and added, for instance, “Fortunately, I’m covered by my wife’s insurance.” That is not to say the physician should ignore the statement, only that it is not a contextual red

flag per the definition. Finally, an audio contextual red flag may reinforce a chart red flag, as when a patient with unused refills for a daily medication volunteers that they are no longer taking the medication as directed.

The research team, which included 4 trained 4C coders, met weekly to discuss and reach consensus on whether a chart or audio finding met the definition of a red flag and, when it did, to assign it to a category and, when needed, to establish new categories or consolidate existing ones. Because the volume of recorded encounters was so high, this process was able to continue until we reached saturation with no further retractions or additions as new data came in.

RESULTS

The analysis produced a list of 70 contextual red flags, which were grouped into the following 9 categories:

- 1) *Uncontrolled chronic condition*: Any condition for which the patient is being treated that is not well controlled. Example: A patient's blood pressure was previously 127/78 but is now 150/90.
- 2) *Appointment adherence*: Patient has missed or cancelled multiple appointments, including scheduled labs, tests, or screenings, within a relatively short time frame. Example: A patient missed 4 appointments in the past month.
- 3) *Resource utilization*: Patient has come to emergency department or urgent care multiple times within a relatively short time frame or requests unnecessary medical resources. Examples: A patient went to the emergency department 5 times in 2 months instead of seeing their primary care doctor; a patient requests an MRI when there are no indications for such a test.
- 4) *Medication adherence*: Patient is not taking medications as prescribed. Example: A patient mentions that they are no longer taking their blood pressure medication twice a day as directed but taking it just once instead.
- 5) *Adherence to plan of care*: Patient is not following previously agreed-on recommendations. Example: A patient mentions that they are no longer checking their blood sugars at home.
- 6) *Significant weight loss/gain*: Patient has gained or lost 10 or more pounds since their last visit. Example: A 138-pound patient lost 24 pounds since a routine appointment 4 months earlier.

- 7) *Patient knowledge of health or health care status*: Patient is unaware of a significant diagnosis, test results, appointments, or previously agreed-on plan of care. Example: When the physician discusses the need for hemodialysis, a patient comments, "No one ever told me there was something wrong with my kidneys."
- 8) *Medical equipment/supplies adherence*: Patient is not using medical equipment as directed. Example: A patient who is directed to use a walker and portable oxygen shows up at an appointment without the walker or portable tank.
- 9) *Other*: Typically, patient statements that suggest a possible disrupting life change may be complicating their health or health care, such as "I'm not eating." or "I'm not doing what I'm supposed to do."

The full list of red flags, assigned a number based on their placement in the taxonomy, is shown in Table 1. Specifically, individual red flags are grouped according to commonalities, ie, diabetes red flags are clustered, followed by blood pressure red flags, and so on.

DISCUSSION

Within and outside of health care, a red flag literally or metaphorically signals a concern, often under the surface, that requires attention. Off a beach, a red flag may mark an area with frequent turbulent water or rocks. In a patient, a rising white blood cell count is a red flag that there may be an underlying infection. A *contextual* red flag is an indication that the patient may be struggling with a life situation that is threatening their health or health care — something expressed, literally, outside the boundaries of their skin. Whereas a rising body temperature almost always signifies a physiologic disturbance, a rising glycosylated hemoglobin in a diabetic patient should raise concerns that they are struggling with contextual factors affecting their ability to eat appropriately or to take their medication as directed given their clinical condition.

The 9-category typology of contextual red flags was developed and refined as a tool for tracking clinician performance at contextualizing care. It provides audio coders a comprehensive framework for categorizing clues that a patient is struggling with a life challenge that has implications for planning their care so that coder

Table 1. Typology of Contextual Red Flags

Uncontrolled chronic conditions (not new diagnosis)	
1.01	Glycosylated hemoglobin (A1c) > 9 (High impact)
1.02	A1c > 8 (Standard)
1.03	A1c greater than goal
1.04	High/low blood glucose readings
1.05	Blood pressure (BP): systolic BP > 160 or diastolic BP > 100 (if patient is on BP medication) (High impact)
1.06	Systolic BP > 140 or diastolic BP > 90 (if patient is on BP medication) (Standard)
1.07	BP higher/lower than goal (if patient is on BP medication)
1.08	Unexpected increase in symptoms or signs of a medically treated condition (asthma, thyroid-stimulating hormone, international normalized ratio, etc)
1.09	No expected improvement in currently treated condition (eg, patient's broken arm not healing, suspect patient may be taking arm out of sling for work)
1.10	Issues managing condition (eg, patient states, "I just can't get a handle on my blood pressure.")
Appointment adherence (clinic visits, scheduled labs, imaging, tests, screenings, surgeries)	
2.01	Missed ^a or canceled appointments: scheduled appointment adherence (SAA) ^b < 75% (at least 16 appointments in 12 months) (High impact)
2.02	Missed or canceled appointments: 2 or more in past 4 months. (Standard)
2.03	Missed or canceled appointment (eg, patient states, "I didn't go to podiatry.")
2.04	>30 minutes late for appointment (registrar/clerk only)
2.05	Patient at the wrong appointment (scheduled for pharmacy but shows up for primary care) (registrar/clerk only)
2.06	Unable/declines to schedule recommended appointment (includes follow-up appointments with primary care, specialists, surgery)
2.07	Issues keeping appointments (eg, patient states, "I can't do these appointments.")
2.08	Patient over age 50 never had a colonoscopy
2.09	Unable/declines colonoscopy
2.10	Unable/declines stool card test for colon cancer
2.11	Unable/declines HIV testing
2.12	Unable/declines mammogram
2.13	Unable/declines pap smear
2.14	Unable/declines cardiac tests
2.15	Unable/declines recommended tests or screenings (not listed above)
Resource utilization	
3.01	2 or more trips to emergency department (ED)/urgent care in 4 months (Standard)
3.02	Did not contact doctor for emerging/worsening condition (eg, patient had severe chest pain and shortness of breath but didn't seek medical help)
3.03	Provider/facility and patient have communication problems (eg, messages not returned, unable to get someone on the phone, letters don't arrive)
3.04	Utilizes ED/urgent care for medication refills, finding out about lab/test results
3.05	Requests unnecessary test (eg, patient with no symptoms requests an MRI)
Medication adherence	
4.01	Unable/declines to take meds (includes "not taking," "stopped taking," "ran out")
4.02	Unable/declines to take meds as prescribed (taking too much/too little/at wrong times)
4.03	Taking a medication NOT prescribed (another's prescription or a prescription that was stopped)
4.04	Unable/declines to refill meds as expected (usually record review shows patient should have run out)
4.05	Patient has too many meds "left over" at home
4.06	Issues taking meds (eg, patient states, "I'm having a hard time taking these meds.")
Adherence to plan of care	
5.01	Unable/declines to monitor blood sugar readings at home (if previously instructed to do so)
5.02	Unable/declines to monitor BP readings at home (if previously instructed to do so)
5.03	Unable/declines to follow recommended diet (includes diabetic patient who states they aren't eating)
5.04	Unable/declines to follow exercise recommendations

Table continued on next page

Table 1 (continued). Typology of Contextual Red Flags

5.05	Unable/declines recommended vaccine(s)
5.06	Unable/declines recommended injected medications
5.07	Unable/declines to participate in weight loss program/education (if interested in weight loss)
5.08	Unable/declines to participate in smoking cessation clinic (if interested in quitting smoking)
5.09	Unable/declines to participate in addiction programs (if interested in addressing addiction)
5.10	Unable/declines to see primary care on recommended schedule (yearly, 6 months, etc)
5.11	Unable/declines to see eye doctor on recommended schedule (yearly if diabetic)
5.12	Unable/declines to check feet (if diabetic)
5.13	Unable/declines to follow other plan of care instructions not listed above (eg, elevate feet, fast for labs)
5.14	Unable/declines to treat condition (eg, patient states, "I don't want to do anything about my diabetes.")
5.15	Issues following plan of care (eg, patient states, "I can't do what the pharmacist told me.")
Significant weight loss/gain	
6.01	Significant weight gain (at least 10 pounds) since last appointment
6.02	Significant weight loss (at least 10 pounds) since last appointment
6.03	Issues with weight fluctuation
Patient knowledge of health or health care status	
7.01	Unaware of diagnosis/test results that should have been communicated to patient
7.02	Unaware of scheduled appointments (including having wrong time)
7.03	Unaware of previously agreed-on plan of care
Medical equipment/supplies adherence	
8.01	Unable/declines to use mobility devices (walker, scooter, cane, etc)
8.02	Unable/declines to use prosthetics (compression stockings, braces, shoe inserts, dentures, etc)
8.03	Unable/declines to wear eye glasses
8.04	Unable/declines to wear hearing aids
8.05	Unable/declines to use continuous positive airway pressure (CPAP) as recommended
8.06	Unable/declines to use oxygen/nebulizer (breathing equipment) as recommended
8.07	Unable/declines to use equipment not listed above
8.08	Unable/declines order for recommended equipment (eg, patient states, "I don't want a glucometer.")
8.09	Using someone else's equipment/supplies
8.10	Readings from home equipment do not correlate with readings in the clinic
8.11	Does not have needed supplies (eg, glucometer, BP machine, glucose strips, needles)
8.12	Patient is having trouble with equipment
Other	
9.01	General statements made by the patient that are concerning, such as "I'm not eating." "I'm not doing what I'm supposed to do." "I'm the least healthy person there is."

^a"missing/unable/declines" includes patient statements: "I didn't," "I'm not...", "I won't...", and "I can't..."

^bSAA is calculated by dividing number of attended appointments by total number of appointments scheduled.

can, in turn, then track whether the provider has noticed it as well. Those life challenges, when uncovered, are the contextual factors a physician must address.

While the 9 categories and their constituent red flags were developed from nearly 3000 recordings, based on data collected during primary care visits in VA medical centers, it is possible that other contextual red flags

are present in non-VA settings or in specialty clinics. Further research in civilian settings and in specialty clinics may be warranted.

While developed to assess physician performance, this typology of contextual red flags can be just as useful to clinicians directly. Whereas health care professionals are well versed in symptoms and signs

of disease processes, they are equipped with few tools for considering when to explore contextual factors during clinical encounters. The typology can serve as a guide. Rather than regarding missed appointments (2.01–2.03, Table 1), for instance, as merely a barrier to care, the clinician now recognizes it as data requiring exploration (ie, contextual probing) to identify one or more contextual factors from any of the 12 domains of patient context (eg, loss of social support, new competing responsibilities) that account for the contextual red flag (the missed appointments). When confronted with a patient who has high blood pressure despite taking antihypertensive medication (1.05–1.07, Table 1), the clinician probes, “Are you having any difficulties getting or taking your medications?” The patient may reply that their local pharmacy closed and they don’t have transportation to the new location (a contextual factor from the first domain of patient context: Access to care). Having identified the contextual factor, the clinician is now able to address it by arranging for medication to be mailed directly to the patient’s home (a contextualized care plan).

Once a clinician has identified a contextual red flag, they need to formulate the right contextual probes to elicit the underlying contextual factor(s). A substantial body of research has explored the underlying contextual factors in various sociodemographic settings that account for contextual red flags, and these findings can inform clinicians’ questions. In a study of nonadherence to screening colonoscopy (contextual red flag) at a medical center in which only about 50% of referred patients complete the procedure, patient-reported reasons (contextual factors) included fear of pain and concerns about modesty, the perception that they were not at risk for colon cancer, fear of what the test might show, competing responsibilities (eg, caring for a disabled child), lack of transportation after the procedure, and concerns about cost.¹³ Physicians can probe for these factors. In another study, this time of antihypertensive medication, patient-reported contextual factors included a discomfort asking their doctors questions about their medications, insufficient time at clinic visits to have their concerns addressed, and above all, caring for dependents.¹⁴ These findings illustrate how a single contextual red flag (nonadherence to a screening test or a medication) offers a window into a range of cognitive-emotional,

logistic, and health system factors that providers may be able to address if they consider them and ask the right questions.

Social determinants of health — the conditions in the places where people live, learn, work, and play — contribute to some but not all of the contextual factors that account for the contextual red flags clinicians see in practice.¹⁵ For instance, in colonoscopy nonadherence studies, fear of pain and misunderstandings about risk benefit are universal, modesty concerns are more common among women, and lack of transportation and cost are related to social support, insurance status, and income.^{13,16} Hence, when probing contextual red flags, physicians should be mindful of the social determinants of health while also considering each individual as unique.

In addition to having practical application in the clinical setting, the typology of contextual red flags may be useful in health profession curriculum development. When formulating case-based learning materials, instructors could include contextual red flags along with traditional biomedical indicators of disease. In so doing, they more holistically simulate the complexities of living with medical needs, more comprehensively preparing their learners for real patient care.

Patient-Friendly Recap

- Patient care is often complicated by life challenges that may be unrelated to disease. When patients offer clinicians clues to the presence of such challenges, these become *contextual red flags*.
- The authors analyzed thousands of audio-recorded clinic encounters and patient charts to classify common contextual red flags, creating a structured list, known as a typology, of 70 flags in 9 categories.
- When faced with a patient who is apparently struggling to stick to their care plan, clinicians can use this typology of contextual red flags as a framework for recognizing what clues to look for and when to ask specific questions.

Author Contributions

Study design: all authors. Data acquisition or analysis: all authors. Manuscript drafting: all authors. Critical revision: all authors.

Conflicts of Interest

Dr. Weiner is co-founder of and Ms. Binns-Calvey, Dr. Sharma, Mr. Kelly, and Ms. Ashley have received payments from the Institute for Practice and Provider Performance Improvement (Chicago, IL), which assists practices with performance improvement, including contextualization of care. Dr. Weaver has received funding from Medtronic (Minneapolis, MN) for a research project to conduct a cost analysis on veterans receiving deep brain stimulation for Parkinson's disease.

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