

Content Coding for Contextualization of Care

(“4C”)

Training and Coding Manual

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Contextualizing Care is the health care provider process of adapting research evidence to individual patient life context. It entails answering the question: “What is the best next thing for *this* patient at *this* time.” 4C is a process for assessing provider performance at contextualizing care.

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Introduction

Contextualizing Care: An Overview

Contextualizing care requires taking into account patient context – that is each patient’s environment and health care related behavior – when planning their care. Content Coding for Contextualization of Care, or “4C,” is a tool for assessing how effectively clinicians provide care that is contextualized. Whereas other instruments focus on the *process* of the interaction (“Did the provider encourage questions?”), 4C focuses on specific events and behaviors (“Did the provider ask why *this* patient recently missed two appointments?”). When inattention to patient context results in an inappropriate plan of care, the oversight is coded as a “*contextual error*.”¹

While the relevance of patient context should be considered in all care planning, not all care planning requires adapting care to context. For instance, consider the case of a well-insured hypertensive patient with a history of excellent medication adherence on a single once-a-day pill that no longer is sufficient to control his blood pressure. Before adding a second medication, the clinician should assess and address any impact to the patient. However, in most cases – particularly if the second pill is also once daily and can be given at the same time as the first pill – the patient’s environment and behavior are not likely to be obstacles. Any major issues affecting care planning for this patient are likely to be biomedical – such as side effects of a new medication.

On the other hand, suppose the patient’s deteriorating blood pressure control is related to losing their job and their health insurance, or to worsening cognitive status and a loss of ability to keep track of the dosing regimen, or depression leading to apathy. Each of these variables, termed “*contextual factors*” would constitute the context in which the patient’s condition is getting worse. Failure to address the context, and automatically adding a second medication (as above), would be inappropriate. It would be a contextual error.

Contextual factors can be spotted by the attentive clinician who is attuned to them, particularly if he/she has developed the habit of always considering them in the “differential” for a patient with a health care need. Sometimes there are obvious hints, such as a patient who seems to have stopped taking his medications saying, “Boy it’s been tough since I lost my job,” (loss of health insurance); or sometimes it’s subtler, such as a patient appearing confused about his medication when asked (cognitive loss). In the absence of such hints – hints that we have termed “*contextual red flags*” – the clinician can simply ask a direct question: “I notice your blood pressure is no longer well-controlled. This could be just the natural progression of your condition, but I want to be sure. Are you having any trouble taking your medication as prescribed? Can you tell me exactly how you take it and when? Did you miss any dosages recently?” Pursuing these clues, or contextual red flags, is termed “contextual probing.”

This coding manual is about tracking a process of identifying and incorporating contextual factors into clinical decision-making by recognizing contextual red flags when present, probing them, eliciting

¹ See glossary for all terms, particularly “contextual factor,” “contextual red flag,” “contextual probe,” “contextualized care plan,” and “contextual error” as these are used repeatedly and have essential meanings.

contextual factors if present, and contextualizing care by taking those factors into account. When this process is incomplete, leading to a plan of care that is inappropriate given the patient's context, the result is a contextual error.

Identifying Contextual Factors

Just as health care providers can be trained to spot and address contextual factors essential to patient care, non-clinician coders can be trained to spot them, as recognizing them does not require biomedical knowledge. When spotted, coders can track the provider's behavior to see if he/she has also identified the contextual factors and, if so, determine if the factors have been addressed.

The following coding manual describes the process of assessing whether care plans, when appropriate, are contextualized. It is a process of classifying encounters into one of seven patient presentations and clinician responses:

- A. Neither the patient themselves nor the patient medical record presented any information suggesting *contextual factors* affecting care (no *contextual red flags*).
- B. The patient presented a contextual red flag, but the health care provider did not *probe* it.
- C. The patient presented a contextual red flag, the provider probed it, but no contextual factor was discovered.
- D. The patient presented a contextual red flag, the health care provider probed it, a contextual factor was discovered, but the provider did not incorporate the contextual factor into the plan of care.
- E. The patient presented a contextual red flag, the health care provider probed it, a contextual factor was discovered and the provider incorporated the contextual factor into the plan of care.
- F. The patient revealed a contextual factor without probing and the provider did not incorporate the contextual factor into the plan of care.
- G. The patient revealed a contextual factor without probing and the care provider incorporated the context into the plan of care.

Presentations in categories A and C do not require contextualization of care. Presentations in categories E and G represent contextualized care. Presentations in categories B, D, and F represent missed opportunities to contextualize care.

Brief Overview of 4C Process

4C may be conducted by as few as two individuals or as many as five, with the additional personnel required to verify inter-rater reliability, other sources of evidence for validity, or to track outcomes of successes or failures to contextualize care. 4C is based both on audio recordings of provider-patient encounters and review of the medical records of visits preceding those encounters. While a detailed

description of how patients and providers are engaged to participate is outside of the scope of this manual, in brief it consists of one of the two following approaches:

- *Recruitment of clinicians and patients for research:* Following an informed consent process for each participating health care provider, patients in their practice are informed when they sign in for their appointment that a research assistant is available to speak with them about voluntarily assisting with a project to evaluate their care. This assent process precedes the consent process. The consent process is structured to minimize self-selection bias, as patients are not given specifics about what aspects of the encounter will be assessed. Those who enroll (40% on average based on our experience across multiple settings) agree to carry a small digital audio-recorder into the encounter and return the device to the research assistant (RA) when they leave. A similar, IRB-approved strategy is employed for recruiting providers. Successful recruitment generally requires demonstrating how audio recorded data will be securely stored and never disclosed with identifiers that could be linked to a particular patient or provider.
- *Recruitment of clinicians and patients for quality improvement:* When 4C is employed for the purposes of collecting data on physician performance as a part of a QI initiative, rather than research, patients are not research subjects, but they are still volunteers. The staff audio recording the visits are not research assistants; they are a part of a QI program. While patients volunteer, providers will ideally all participate, consistent with most QI programs. However, because audio recording can elicit anxiety in some providers, we recommend an opt-out option if concerns remain even after assurances that the audios are secure and that any shared data is de-identified.

The coding process:

Coding consists of identifying contextual red flags, contextual probes, contextual factors, and contextualization of the care plan. An additional optional step, also described in this manual, is tracking the impact of contextualization of care on health care outcomes. *The specific purpose of 4C coding, however, is to assess whether the provider is identifying contextual factors and addressing them in the care plan.* A contextual factor is defined as any factor “expressed outside of the boundaries of a patient’s skin that is relevant to planning their care,” including their life circumstances and behaviors. The assessment process proceeds as follows:

- 1) *Contextual red flag identification:* Following an encounter, the first step for coders is to determine if there were any indicators that a contextual factor may be impacting the patient’s health care, which is called a “contextual red flag.” **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 may be contributing to problems with their care.** The search for contextual red flags begins with a structured chart review by a contextual red flag coder looking for evidence of preventable deterioration of a chronic condition (such as poor diabetes or blood pressure control), missed appointments, non-adherence with medications, follow-through on tests or labs, or repeated visits to the emergency department (ED) or an urgent care clinic. Then

a coder listens to the audio-recording to determine if the patient made statements indicative of underlying contextual factors essential to their care.

Examples:

- a. Contextual red flag identified from chart review: Rising Hgb A1c (which has been previously well-controlled) in a patient with diabetes.
 - b. Contextual red flag identified from audio-recording: Visually impaired veteran with diabetes mentions that his daughter, who doses his insulin, is relocating to another city to maintain her employment.
- 2) *Coder(s) formulate an unambiguous direct probe of red flag:* Once a contextual red flag has been identified, the coder(s) compose an unambiguous health care provider probe of the identified contextual red flag, e.g. "I notice that your diabetes used to be well controlled but your sugars have been very high over the last couple of months. What do you think is going on in your life that might be a factor in this problem?" The probe is always in the form of a question by the clinician in response to a contextual red flag. The purpose of this exercise is to clearly frame in the coder's mind what they should be listening for to indicate that the health care provider has noticed and is pursuing the contextual red flag.
 - 3) *Coder listens for clinician probe:* The coder then listens for whether the provider pursued the contextual red flag in a manner that substantively approximates their direct probe.
 - 4) *Coder listens for a contextual factor revealed either in response to a probe or spontaneously offered by the patient:* The coder determines whether the patient revealed a contextual factor that is relevant to care, such as "I've been moved to the night shift and it's a lot more difficult for me to take my medication when I'm supposed to."
 - 5) *Coder formulates an unambiguous direct response to the contextual factor revealed:* If the patient reveals contextual factors in response to the probe, or provides information regarding a contextual factor without being prompted by the provider, the coder formulates an unambiguous response to the contextual factor revealed that indicates the health care provider recognized the need to contextualize the care plan, e.g. "Let's talk about how you could adapt your medication schedule to fit your new work schedule."
 - 6) *Coder listens for contextualization of care plan:* The coder then listens for whether the provider recommends a plan of care that substantively approximates their direct probe.

These six steps are the framework for Content Coding for Contextualization of Care. The findings from steps 1, 3, 4 and 6 generate the data by providing answers to several questions: 1 -- Is there an indication that a contextual factor may be present? 3 -- Did the health care provider explore it? 4 -- Did the patient reveal contextual factors that need to be addressed? 6 -- Did the clinician incorporate the contextual factor into the plan of care and avoid a contextual error? The findings are entered for each

encounter into a database. If there is no contextual red flag, the encounter is notated as having “no contextual chart or audio red flag.”

Coding can be quite nuanced. The nuances of 4C coding pertain to the variation in how clinicians demonstrate their attention to context. In the examples above, clinicians directly question patients about red flag issues. But what about instances in which health care providers demonstrate from their behaviors that they are attending to context, even if they never probe? Our coding instructions are designed to always give the clinician the benefit of the doubt (see “Awareness”, “Benefit of the Doubt” and “Simon’s Rule” coding principles). The instructions are also designed to minimize uncertainty for well-trained coders by providing multiple examples of how to code ambiguous situations. Inter-rater agreement for an experienced coding team is about 90%.

Composition of Coding Team

As noted, 4C can be conducted by as few as 2 coders and as many as 5 with greater numbers providing greater opportunities for measurement of inter-rater agreement and evidence of validity. This manual describes the process with two coders. (Please see Appendix A for a recommendation on using more coders for inter-rater tracking.):

1. *Chart coder* – identifies chart red flags (described below) from medical record, scores for outcomes
2. *Audio coder* – listens to and codes audio encounters, identifies possible audio red flags

In this manual, 4C Analysis is divided into three phases: Identifying Red Flags, Coding the Encounters, and Tracking Outcomes (optional). Each is described in the following sections. The last chapter, Chapter 4, describes the step-by-step process of entering data into spreadsheets.

Chapter 1: Identifying Red Flags

Definition

The first step in 4C is screening for contextual red flags. 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 may be contributing to problems with their care. Red flags can be found in the medical chart or by listening to issues brought up in the audio recording.

Chart Red Flags

The chart coder begins the coding process by accessing the patient's medical record to look for red flags. The chart coder follows an algorithm and adheres to a data extraction instrument to confirm a chart red flag or flags have been found. This algorithm is based on predetermined criteria using chart extraction instruments. The chart coder first looks for high impact red flags that are quantifiable and large enough such that the statistical significance of interventions to improve outcomes can be demonstrated with a reasonable sample or effect size. For instance, addressing the underlying cause of a patient's missing 16 appointments in a year should result in a statistically measurable improvement.

The following protocol may be adapted based on the characteristics of the selected patient population. For instance, other medical conditions such as COPD or asthma could be substituted for the chronic conditions below.

The chart coder checks for:

1. Diabetes – To be considered as a red flag the patient's Hemoglobin A1c must be greater than 9.0.
2. Hypertension – To be considered as a red flag, the patient's SBP must be greater than 160 OR the DBP must be greater than 100.

The chart coder then checks for the following:

3. Appointment Adherence – Patient must have had 16 or more scheduled visits in the past 12 months. To count as a red flag, the patient's Scheduled Appointment Adherence rate must be less than 75%. The SAA rate is calculated by dividing the number of attended appointments by the total number of appointments scheduled. The appointments include clinic visits, scheduled labs, imaging, tests, screenings and surgeries.

Note that there may be more than one Chart Red Flag for each patient.

If the chart coder finds nothing in the medical record that fits the criteria for a high impact red flag, he/she will look for more modest but also quantifiable chart red flags that consist of the following:

1. Diabetes - Patient's A1c is greater than 8.0

2. Hypertension - Patient's SBP greater than 140 OR the DBP greater than 90
3. Patient misses or cancels TWO or more appointments in the past 4 months
4. Patient misses ONE or more medication fill/refill in the past 4 months
5. Patient misses ONE or more lab tests or procedures in the past 4 months
6. Patient has TWO or more visits to the Urgent Care Clinic or Emergency Room in the past 4 months

Note: The list of red flags above is unlikely to be useful for demonstrating statistical significance of an intervention that appears to resolve them. For instance, addressing the underlying cause of missed appointments in a patient who has missed just two appointments in the last 4 months should result in no further missed appointments, but – absent a large sample size -- this effect is not statistically significant.

When the chart coder finds a chart red flag(s), he/she adds the information to a Master List of Coded Encounters (see Chapter 4 below, and accompanying Master Coding Spreadsheet).

Chart Red Flags that are nullified

Occasionally, encounters will have chart red flags that the provider might not have an opportunity to address because the patient is being seen for an emergent/urgent condition or for an in-office procedure. If, for example, a patient is in respiratory distress, the provider would probably not have the opportunity to address whether the patient had missed appointments.

In these encounters, the chart red flag is withdrawn, but the coder still listens to the encounter in case audio red flags emerge. For example, a patient in respiratory distress might have not been using their albuterol inhaler because they could no longer afford it.

Chart red flags are not counted if:

- a patient is sent directly to the ER after/during the visit (an emergent condition eclipses the chart red flag(s))
- the patient is in exclusively for a procedure like suture removal, ear cleaning, blood pressure check, endoscopy, cardiac stress (for specialty care)
- the visit is listed as an urgent care visit

Another reason a chart red flag could be nullified is if, before the provider has an opportunity to probe, the patient says that they prefer to leave the red flag unaddressed. An example of this would be if the chart red flag were that the patient's blood pressure was elevated (150/87) but the patient started the encounter by stating, "I know my blood pressure is high, but I've been over this a dozen times. I have all the information, and I don't want to treat my blood pressure." In this circumstance, the chart red flag would be withdrawn, but again, the coder still listens to the encounter in case audio red flags emerge.

Audio Red Flags

After the chart coder looks for red flags in the patient's chart, the audio coder will listen to the encounter and proceed with 4C coding. There may be one or more additional red flags found within the dialog of the encounter. An audio red flag has the characteristics of a chart red flag, except the information is revealed during the encounter rather than noted in the record prior to the encounter. Examples of audio red flags are listed below.

1. It is revealed (by health care provider or patient) that a previously managed hypertensive patient's blood pressure is running high during visit.
2. It is revealed (by health care provider or patient) that patient has modified or stopped taking medications without consulting with health care provider.
3. It is revealed (by health care provider or patient) that patient has run out of medications or medication has expired.
4. Patient reveals a misunderstanding of general procedures for making appointments or labs, or the clinic protocol for scheduling is ineffective.
5. Patient reveals a discrepancy such as getting good blood sugar or blood pressure readings at home, but poor readings in the clinic (or vice-versa).
6. Patient refuses procedure, such as a colonoscopy.
7. Patient refuses flu, pneumonia, or tetanus vaccine.
8. Patient reveals there is a problem with following health care provider's orders (adhering to medications, exercise, diet, appointments, labs, etc.)

Proactive Red Flag: A proactive red flag is a type of audio red flag that refers to contextual issues that arise during an encounter that signify a potential emerging challenge to a patient's ability to manage their care. This is in contrast to the examples above, in which the red flag suggests the presence of a contextual factor adversely impacting a patient's current management of their care. For instance, a patient may volunteer he or she is experiencing financial problems without apparent evidence that it is currently impacting his or her healthcare. However, because the patient brought it up during the medical encounter, the proactive provider will consider the possibility that the patient is concerned that this contextual issue has implications for their health care.

RED FLAG	IDEAL PROBE
Pt states things have been tight since he lost his job (but there is no indication he is not refilling his meds)	Is this affecting your ability to take care of your diabetes?

When contextual red flags originate from biomedical conditions

Recall that a contextual red flag is anything a patient says or that is observed about their situation or behavior that suggests unaddressed contextual factors may be contributing to problems with their care. A contextual factor, in turn, is any factor “expressed outside of the boundaries of a patient’s skin that is relevant to planning their care.”

Sometimes factors expressed outside the skin originate under the skin. Three in particular are depression, anxiety, and substance abuse. All have a physiologic basis and are considered biomedical-based conditions, but once they are expressed outside of the body, they also become part of the patient’s context.

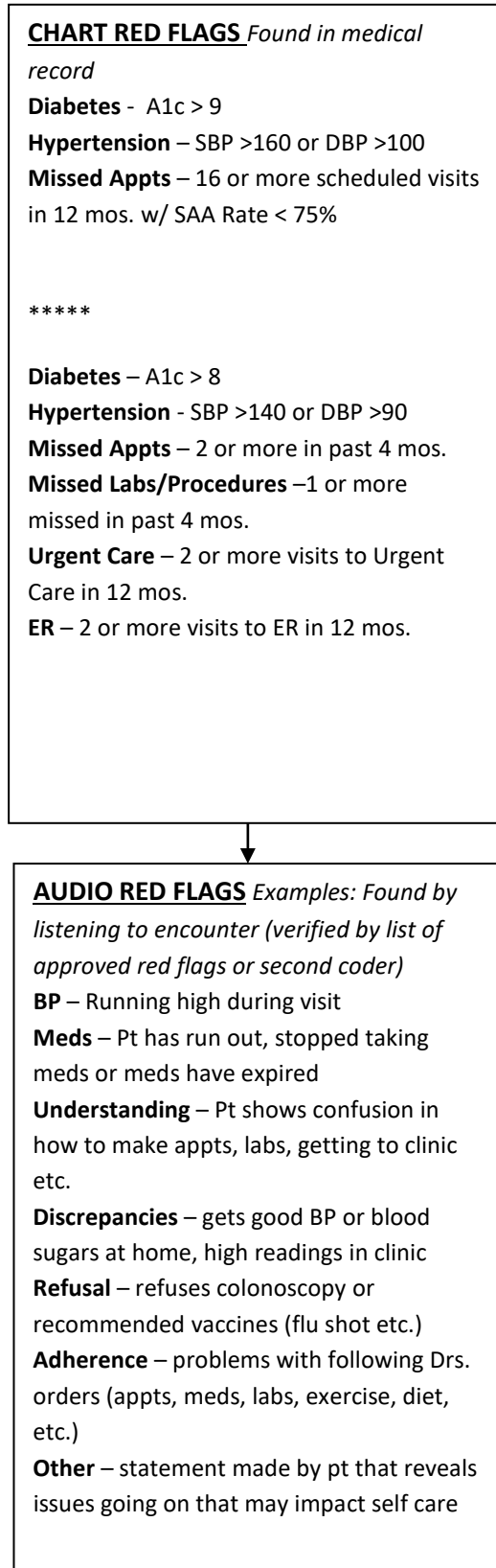
A substance abuse problem is not, in and of itself, a contextual red flag but the behaviors it generates can be. If a patient with a known substance abuse problem loses control of their diabetes and is no longer taking insulin as needed due to the behavioral effects of substance abuse, the erratic behavior is a red flag. This substance abuse may be a contextual factor accounting for their poorly controlled diabetes. Further elaboration on the contextual dimensions of these biomedical conditions is provided below in the section on Probing Guidelines, sub-section, Depression, Anxiety and Substance Abuse.

A compendium of red flags identified by the audio coders is organized in a list of contextual red flags (see Appendix B). If a coder thinks they have identified an audio-recorded red flag that is not on the list in appendix B, a second coder should confirm that it is a contextual red flag. Once confirmed, the audio red flag is added to the Master List of Coded Encounters.

More than One Red Flag per Encounter

While reviewing the chart and/or listening to audio of the encounter, a coder may find more than one contextual red flag. If an encounter has more than one red flag, an additional line is added to the Master List for each subsequent red flag. The new red flag is indicated by numbering the red flags, 1, 2, 3...in the RED FLAG cell of the Master Spreadsheet, and marked in the correct column as either a chart or audio red flag.

The following flow diagram illustrates the processes described above: **IDENTIFYING RED FLAGS**



Chapter 2: Coding Encounters

Once a contextual red flag has been identified, an encounter is coded to determine whether the provider noticed it too and, if so, what followed. This all requires a tracking system. When participants consent, and are assigned an ID, the date and ID number are entered in the Master List spreadsheet. The chart coder will indicate if a chart red flag is present. The coders then listen to the encounter and code for audio red flags, contextual probes, contextual factors identified (through probing or as revealed by the patient) and contextual plans of care (POC).

Definitions (See glossary for precise definitions. These are intended to simplify concepts to facilitate an understanding of how coding works):

Contextual Probe

A **contextual probe** is defined as anything a health care provider says that indicates that he or she is investigating *contextual* reasons for problem(s) with a patient's care.

I see your blood pressure is out of control. Why is that?

You've missed 7 out of 10 of your last appointments. How come?

You haven't refilled your asthma meds and the record shows they have expired. What's going on?

You mentioned losing your job. Is that affecting your ability to take care of your condition?

Note that contextual probes generally begin with an observation followed by a question about what was observed.

Contextual Factor

A **contextual factor** may be thought of as the underlying situation that determines why a patient's care plan is not or will not likely be effective until it is addressed. Patient context is everything relevant to a clinical situation of interest or health concern.

Domains of Context

The contextual factors that cause problems for care planning fall into one of the following twelve **domains of context**:

1.	Access to Care The patient's ability to receive care in a timely manner.
2.	Competing Responsibility An obligation or commitment the patient has that impacts their ability to manage their health care.
3.	Social Support The patient's access to a supportive network of individual(s) able to assist if needed.
4.	Financial Situation The patient's ability to afford health and health care needs.

5.	Environment The physical and social setting that encompasses a patient.
6.	Resources The possessions and materials available to a patient that can facilitate a person’s ability to manage their care.
7.	Skills, Abilities and Knowledge A patient’s intellectual understanding and physical ability to manage health care.
8.	Emotional State The emotional condition of a patient as it relates to their ability to manage their health care.
9.	Cultural Perspective/Spiritual Beliefs The customs or a faith-based practice a patient has that impacts health care.
10.	Attitude Towards Illness The feelings a patient has towards their condition that impacts their ability to manage it.
11.	Attitude Towards Health Care Provider and System The patient’s feelings and attitudes towards their providers and the health care system that impact their ability to manage their health care.
12.	Health Behavior The patient’s actions and lifestyle choices that impact their health care.

Note that the first six pertain to the patient’s circumstances (i.e. are literally “outside” the patient’s skin), and the last six drive behaviors (i.e. are *expressed* outside the patient’s skin).

Example:

Red Flag: The patient refuses to take a medication.

Ideal Probe: “Why don’t you want to take the medication?”

The following chart illustrates a patient’s response to the ideal probe in each of 12 domains and an ideal plan of care that incorporates that patient’s contextual factor:

Domain of Context	Patient Contextual Factor	Contextual Plan of Care (<i>more about contextual POC in the next section</i>)
Access to Care	“That medication isn’t carried at the pharmacy by my house.”	Arrange for the medication to be mailed.
Competing Responsibility	“I have to take care of my daughter and I don’t want to be sleepy.”	Prescribe a medication that does not have drowsiness as a side effect.

Social Support	"I used to have someone help measure the dosage, but I now live alone."	See if there's a version of the medication that does not have to be measured (pre-filled syringes); see if patient is eligible for home health care.
Financial Situation	"I can't afford the co-pay."	See if there is a cheaper option/refer to social worker.
Environment	"I can't have any pain meds in my house, my roommate will take them."	Strategize to see if there is a safe place for the patient to store his medication (perhaps a locker at work,) or see if it's possible to prescribe a different medication that the roommate would not be interested in.
Resources	"I was told I had to order the medication online and I don't have a computer."	Strategize other ways for the patient to order the medication.
Skills, Abilities and Knowledge	"Ever since my vision got bad, I've become uncomfortable giving myself injections."	See if there is a version of the medication that does not have to be measured (pre-filled syringes); see if patient is eligible for home health care.
Emotional State	"I am afraid of having any meds in the house, I'm afraid I'll become addicted."	Prescribe a medication that is non-addictive, or inform patient if they are on a non-addictive medication.
Cultural Perspective/Spiritual Beliefs	"I believe God gave me this condition for a reason."	Ask patient if they can discuss this with someone from their religious institution to see if they agree.
Attitude Towards Illness	"I'm a man – I'm going to tough out this pain. Painkillers are for weaklings"	Counsel the patient that taking medication for pain is not a sign of weakness and that some very strong men have occasionally used pain medicines as a tool.

Attitude Towards Health Care Provider and System	"I'm not taking anything you prescribe for me; I don't trust you."	See if patient would prefer to see another provider whom he or she trusts. Explore the reasons for trust issues.
Health Behavior	"I'm a rock climber and that's not going to change. I was told I couldn't take a blood-thinner and continue to climb."	See if there's a medication that would be safe for the patient's lifestyle. Explore other treatment options besides the medication.

The factor may fall into the category of patient preference which is NOT one of the 12 Domains of Context.

Patient Preference <i>*not one of the 12 domains</i>	"Ever since my vision got bad, I've become uncomfortable giving myself insulin injections. They offered to give me pre-filled syringes, but I'm just not comfortable with them. I'd prefer to stick with pills even though my sugar runs a little higher than it should."	The patient is informed, and free from any contextual issues; his or her decision to not take the medication should be respected.
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Note: The following three terms are easy to confuse. The first, *patient preference*, is not a contextual domain. Patient preference represents the values of the patient, how they wish to live their life, and the risks they are willing to take under conditions of uncertainty (e.g. whether to have an elective surgery to gain some benefit, but at some risk). Respecting patient preference, however, does not mean overlooking life challenges (contextual factors) that a patient thinks s/he has to live with. A provider can still respect preference while probing for what can be addressed.

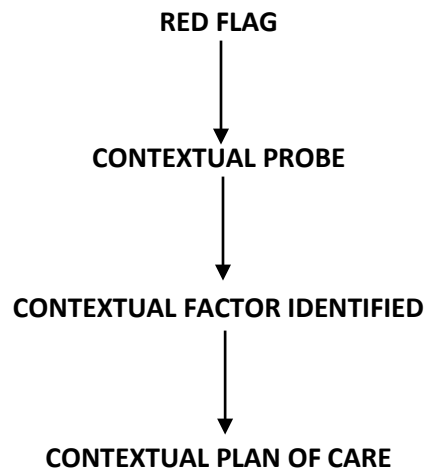
- **Patient preference** – An informed choice a patient makes among two or more options for evaluation or treatment after any contextual factors have been addressed.
- **Health Behavior** – lifestyle decisions and actions that have health implications
- **Attitude Towards Illness** – The patient's perspective that guides how they integrate their medical condition into their daily life.

Contextualized Plan of Care

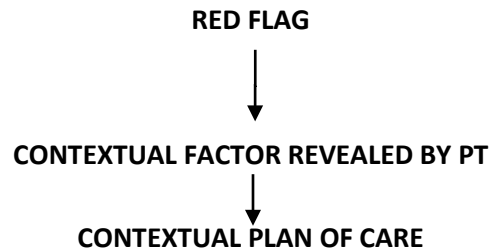
A **contextualized plan of care (POC)** takes into account a patient's contextual factors, so as to resolve obstacles to their benefiting from the plan of care.

- *I'll write down each of your meds, as well as when to take them. Put this on your refrigerator.*
- *There is a clinic closer to where you live, would you like to switch your care over there?*
- *There is a generic available that is much cheaper. I will prescribe it for you.*

Content coding requires the coder to follow the actual logic of the discussion: the contextual probe must include a question by the provider about the red flag. The contextual factor must be the information either uncovered by the contextual probe or incidentally revealed by the patient – see below. * The contextual POC must also be a logical way of addressing the contextual factor. Here is the sequence:



*Sometimes patients reveal a contextual factor before a health care provider has probed. In these cases, the coder skips over coding for a contextual probe, records the problems, and listens for a contextual POC. In these cases, the sequence is as follows:



Coding Algorithm

The coding algorithm consists of a series of questions each coder asks themselves to identify the presence or absence of a contextual probe, a contextual factor, and a contextual POC. The algorithm always begins with the contextual red flag.

An essential task for the coder in steps 2 and 7 below is generating an unambiguous “ideal probe” and an unambiguous “ideal plan of care.” These are, respectively, questions and statements that – if they were to come from the provider – would indicate indisputably that the provider is addressing the contextual factor. They serve as an anchor, or point of comparison, for the provider’s actual behaviors. We have found that this approach leads to high inter-rater agreement across multiple coders. In other words, coders independently agree on what would constitute an ideal response to a red flag or a contextual factor.

Once an ideal probe is generated, the coder listens for the provider’s probe (if any) and then makes a judgment call about whether the provider’s probe is close enough to the ideal probe to count. Again, while this is a judgment call, we’ve found that trained coders tend to agree independently.

The Algorithm

RED FLAG:

1. *Coder Formulated Ideal Probe:*
2. *Probe heard:*
3. *Was it a contextual probe?*
4. *Is it close enough to the Ideal Probe to be credited?*
5. *Contextual Factor identified in response to probe:*
6. *Contextual Factor revealed by pt. without specific probing by provider:*
7. *Coder Formulated Ideal Contextual POC:*
8. *POC heard:*
9. *Was it contextual?*
10. *Is it close enough to the Ideal POC to be credited?*

Examples

Example of coding algorithm with contextual probe, problem and POC:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	An ideal probe is simply a direct question about the red flag.
2	Probe heard:	Your A1c is really high. What’s happening?	

3	Was it a contextual probe?	Yes	If in doubt (when probe heard is not as direct as the coder probe) reference Coding Principles below.
4	Is it close enough to the ideal probe to be credited?	Yes	
5	Contextual factor identified in response to probe:	Pt. has eye problems and can't read the small numbers on his insulin syringe	
6	Contextual factor revealed by pt. without specific probing by provider:	NA	Not applicable here as pt. responded to probe.
7	Coder formulates an ideal contextual POC:	Find another method for pt. to get his insulin	An ideal POC is any strategy to address the contextual factor that is impeding the patient's care.
8	POC heard:	I'll have you meet with the pharmacist after your visit so you can get a pre-filled syringe. You won't have to measure it then.	
9	Was it contextual?	Yes	
10	Is it close enough to the ideal POC to be credited?	Yes	

Example of coding algorithm with contextual factor revealed by patient:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	
2	Probe heard:	None	The provider did not ask about possible contextual factor(s.)
3	Was it a contextual probe?	NA	
4	Is it close enough to the ideal probe to be credited?	NA	
5	Contextual factor identified in response to probe:	NA	
6	Contextual factor revealed by pt. without specific probing by provider:	The patient tells the Provider his eyes are "bad" and can't read the small numbers on his insulin syringe.	The patient brings up the contextual factor independent of provider behavior.
7	Coder formulates an ideal contextual POC:	Find another method for pt. to get his insulin.	

8	POC heard:	I'll have you meet with the pharmacist after your visit so you can get a pre-filled syringe. You won't have to measure it then.	The physician picks up on the patient's comment and addresses it appropriately.
9	Was it contextual?	Yes	
10	Is it close enough to the ideal POC to be credited?	Yes	

Example of coding algorithm with contextual probe made but NOT considered close enough to be counted:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	
2	Probe heard:	So, you live alone?	The provider asks a contextual question but it's not about the red flag.
3	Was it a contextual probe?	Yes	
4	Is it close enough to the ideal probe to be credited?	No	Question was contextual, but was conversational in nature and did not get at why the patient's sugars were high.
5	Contextual factor identified in response to probe:	NA	
6	Contextual factor revealed by pt. without specific probing by provider:	None	
7	Coder formulates an ideal contextual POC:	NA	Coder can't formulate an ideal plan of care because possible contextual factor was never identified.
8	POC heard:	NA	
9	Was it contextual?	NA	
10	Is it close enough to the ideal POC to be credited?	NA	

Example of coding algorithm with a biomedical probe made:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	
2	Probe heard:	You are prescribed metformin and insulin for your diabetes?	Provider's question is biomedically focused. Does not consider contextual factors.
3	Was it a contextual probe?	No	
4	Is it close enough to the ideal probe to be credited?	No	
5	Contextual factor identified in response to probe:	NA	
6	Contextual factor revealed by pt. without specific probing by provider:	None	
7	Coder formulates an ideal contextual POC:	NA	Coder can't formulate an ideal plan of care because a contextual factor was never identified.
8	POC heard:	NA	
9	Was it contextual?	NA	
10	Is it close enough to the ideal POC to be credited?	NA	

Example of coding algorithm contextual POC but NOT considered close enough to an ideal POC to count:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	
2	Probe heard:	Why are your sugars out of control?	
3	Was it a contextual probe?	Yes	
4	Is it close enough to the ideal probe to be credited?	Yes	
5	Contextual factor identified in response to probe:	Patient has bad eyesight and can't read small numbers on his insulin syringe.	
6	Contextual factor revealed by pt. without specific probing by provider:	NA	

7	Coder formulates an ideal contextual POC:	Find another method for patient to administer his insulin, such as pre-loaded syringes.	
8	POC heard:	We'll arrange for you to get travel reimbursement so you can come see me more regularly.	This would constitute a contextual POC if the contextual factor was ability to get to the clinic, but the factor is the patient's eyesight.
9	Was it contextual?	Yes	
10	Is it close enough to the ideal POC to be credited?	No	It doesn't address the contextual factor which is poor eyesight.

Example of coding algorithm with biomedical POC:

Red Flag: High A1c 9.1

	Question	Response	Notes
1	Coder formulates an ideal probe:	Why are your blood sugars out of control?	
2	Probe heard:	Why are you sugars out of control?	
3	Was it a contextual probe?	Yes	
4	Is it close enough to the ideal probe to be credited?	Yes	
5	Contextual factor identified in response to probe:	Patient has bad eyesight and can't read insulin syringe.	
6	Contextual factor revealed by pt. without specific probing by provider:	NA	
7	Coder formulates an ideal contextual POC:	Find another method for patient to get his insulin.	
8	POC heard:	Increase insulin dosage.	The provider has missed the boat here. The patient indicated the contextual factor, but the provider ignored it in planning care.
9	Was it contextual?	No	

10	Is it close enough to the ideal POC to be credited?	No	The contextual factor was mishandled. The condition of high A1c was addressed as if it was only a biomedical problem.
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Categorizing statements and questions by providers and patients is not always as straightforward as the example above. We have developed principles and guidelines for assisting with coding complex or ambiguous interactions.

Coding Principles:

There are three general principles that guide coding decisions in ambiguous situations when it is not clear whether to give a provider credit for probing a contextual factor: the *awareness principle*, the *benefit of the doubt principle*, and *Simon’s rule*. Each is discussed here.

Awareness

Sometimes it is ambiguous as to whether a provider’s statement or question is in fact a probe in response to a contextual red flag. In such instances, the coder looks for evidence that the provider is aware of the contextual red flag that needs to be explored based on the provider’s subsequent comments and questions.

Awareness is demonstrated	Why does it count?	Awareness is NOT Demonstrated	Why doesn’t it count?
<p>RED FLAG: Missed appts.</p> <p>PROVIDER: “Looks like you’ve missed a lot of appts.”</p> <p><i>Followed by...</i> “Do you have any trouble getting to the VA?”</p>	<p>The two comments taken together indicate the provider is aware of the red flag and is looking specifically for underlying contextual causes.</p>	<p>RED FLAG: Missed appts.</p> <p>Provider “Do you have any trouble getting to the VA? I want you to come back next week and get your BP rechecked with the nurse.”</p>	<p>Health care provider starts out with a question that sounds like a probe in response to the contextual red flag, but the subsequent comment indicates he/she is not aware that the patient has a history of missed appointments.</p>

Benefit of the Doubt

Coders should give the health care provider the benefit of the doubt in cases where it is difficult to determine whether or not awareness is demonstrated. The point of giving providers the “benefit of the doubt” is that it avoids situations in which 4C evidence of poor performance is deemed unreasonable. Err on the side of assuming the provider has noticed a contextual red flag unless it is evident they have not.

Benefit of the doubt is given	Why does it count?	Benefit of the doubt is NOT given	Why doesn't it count?
<p>RED FLAG: Missed appts.</p> <p>Provider "I haven't seen you in over a year. That's a long time. Can you come back in a month?"</p>	<p>It's not clear whether the provider's question represents awareness of possible obstacles as to why pt. has specifically missed past appointments. But the provider DOES express awareness of the patient's history of not coming to the provider, so it can be inferred the provider may well be asking this question in terms of the patient's ability to adhere to upcoming appointments.</p>	<p>RED FLAG: Missed appts.</p> <p>Provider "I want you to come back next week and get your BP rechecked with the nurse. Can you make it in then?"</p>	<p>Healthcare provider is referring to a different issue (pt.'s BP) when asking about pt.'s transportation issues. Also, this appears to be a routine inquiry about patient's future schedule, not their past missed appts. The provider shows no awareness to RED FLAG so in this case Benefit of Doubt would not be given.</p>

Simon's Rule

If the health care provider makes a statement (rather than asking a question) that demonstrates awareness of the red flag and the patient responds by revealing a contextual factor relating to the red flag, the health care provider would be given credit for a contextual probe. Awareness MUST be present for the health care provider to be given credit for a probe under Simon's Rule. The purpose of Simon's rule is to credit a provider who may prefer to make an observation as a way of prompting discussion about a contextual issue rather than asking a question, and whose approach yields the relevant information. (It is named after Simon Auster, MD, who observed that an indirect or unconventional approach should be credited if it has the desired effect. It may reflect the provider's subtle appreciation of how most effectively to interact.)

Simon's Rule is applied.	Why does it count?	Simon's Rule is NOT applied.	Why doesn't it count?
<p>RED FLAG: High A1c</p> <p>Provider: "Your A1c has gone up since last time."</p> <p>Pt: "I ran out of insulin! That new phone refill system is plain confusing."</p>	<p>Pt responded with contextual factor to health care provider's comment. Health care provider's comment also demonstrated awareness of RED FLAG.</p>	<p>RED FLAG: High A1c</p> <p>Provider: "Your A1c is out of control."</p> <p>Pt: "Yeah I know."</p>	<p>Pt did not respond with a contextual reason and provider did not follow up. Health care provider's statement in and of itself is <u>not</u> considered a contextual probe.</p>

<p>RED FLAG: High BP</p> <p>Provider “Well, the holidays are upon us and it looks like your BP is going up.”</p> <p>Pt: “My wife is going through chemo and I don’t have time to worry about taking my pills when caring for her.”</p>	<p>Pt. responded with possible contextual reason to health care provider’s comment. Health care provider’s comment also demonstrated awareness of RED FLAG.</p>	<p>RED FLAG: High BP</p> <p>Provider “Have a seat. What can we do for you today?”</p> <p>Pt: “Well, it’s tough right now, my wife is going through chemo and I keep forgetting to take my BP meds.”</p>	<p>Health care provider’s comment did not demonstrate awareness. In this case, pt.’s comment would be a contextual factor revealed by the pt., but the provider would not be credited with probing the contextual red flag.</p>
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Probing Guidelines:

“Why” and the “Implied Why”

The word “why” is the stem of many if not most ideal probes. If a health care provider asks “why” or another open-ended probe such as “how come” he or she is almost always given credit for a contextual probe.

“Why” counts as Contextual:	Why is it considered a contextual probe?
<p>RED FLAG: High A1c</p> <p>Provider “Your A1c indicates your sugars are out of control. Why are your sugars so high?”</p>	<p>The health care provider is probing for a possible contextual issue of why the patient’s sugars are high.</p>

Exception to the rule: If the red flag is ER or urgent care visits, the health care provider would not get credit for a contextual probe for asking why the patient was in the ER. In this case it would depend on what the patient’s answer was and would require an additional probe.

“Why” counts as Contextual:	Why is it considered a contextual probe?
<p>RED FLAG: 2 ER Visits in 4 months.</p> <p>Provider: “Why were you in the ER?”</p> <p>Pt: “I had to get my meds refilled”</p> <p>Provider: “Why didn’t you come to the clinic for that?”</p>	<p>Health care provider continued to probe for a possible contextual issue. The probe “Why didn’t you come to the clinic for that?” would be the contextual probe that is credited.</p>

The Implied Why:

Often a health care provider might not be asking a direct question but it is clear from the inflection of their voice that they are probing. To get credit, the health care provider must demonstrate an awareness of red flag.

Why counts as an "Implied Why":	Why is it considered a contextual probe?	NOT an "Implied Why":	Why doesn't it count?
RED FLAG: Missed appts. Provider "You didn't go to the cardiologist?"	The health care provider is asking a question that probes a possible contextual issue and is aware pt. has missed appt.	RED FLAG: Missed appts. Provider "When is your next cardiology appt.?"	Health care provider is talking about appointments but does not demonstrate awareness that pt. has missed prior appointments. Also, question does not probe for context.
RED FLAG: Provider notices pt. missed his colonoscopy Provider: "Are you <i>willing</i> to get a colonoscopy?"	The word <i>willing</i> indicates that provider is probing for context. In other words, "why are you seemingly unwilling to get a colonoscopy?"	RED FLAG: Provider notices pt. missed his colonoscopy Provider: "You are due for a colonoscopy; can we schedule one?"	Provider asking, "can we schedule one" is a routine question that would require an additional probe, if pt. said no.
RED FLAG: High BP Provider: "Do you think your BP is high because you are in pain <i>or...</i> "	The open-endedness of this question indicates that health care provider is open to any response and is aware he/she can't assume the patient just needs a higher dosage of medication.		

Contextual vs. Conversational Probes

In many cases health care providers ask contextual questions such as where a patient lives/works, who a patient is living with etc. These questions are not counted unless they can be clearly linked to the red flag.

Contextual:	Why is it considered contextual?	Conversational:	Why is it considered conversational?
<p>RED FLAG: Missed Appts:</p> <p>Provider: "How are you today?"</p> <p>Pt: "Lousy, it's really tough to get here at this time of day."</p> <p>Provider "Are you working?"</p>	<p>Health care provider's question can be linked to the red flag. "Are you working" can be considered a probe for a pt.'s competing responsibilities.</p>	<p>RED FLAG: Missed Appts.</p> <p>Provider: "How are you today?"</p> <p>Pt: "Things are great."</p> <p>Provider: "Are you working?"</p>	<p>This probe is considered conversational because it is not linked to red flag.</p>
<p>RED FLAG: High A1c</p> <p>Provider: "How are you today? I see your sugars are high."</p> <p>Pt: "Yeah, I know."</p> <p>Provider: "Are you still living with your daughter?"</p>	<p>Health care provider's question indicates that he is exploring contextual reasons for red flag. "Are you still living with your daughter" could be considered a probe for issues with pt.'s social support.</p>	<p>RED FLAG: High A1C</p> <p>Provider: "How are you today? Nice weather, huh?"</p> <p>Pt: "Yes, I didn't have to wear my coat."</p> <p>Provider: "Are you still living with your daughter?"</p>	<p>This probe is considered conversational because it is not linked to red flag.</p>

Contextual vs. Biomedical Probes

In some cases, coders must determine if the line of questioning from health care provider is contextual or biomedical.

Contextual:	Why is it considered contextual?	Biomedical:	Why is it considered biomedical?
<p>RED FLAG: High A1c</p> <p>Provider: "Are you taking your meds like you are supposed to?"</p>	<p>Health care provider is considering a possible contextual issue as to why patient's A1c is high.</p>	<p>RED FLAG: High A1c</p> <p>Provider: "Are you taking your meds -- any bad reactions?"</p>	<p>Question is structured to elicit a response about drug reactions not adherence.</p>
<p>RED FLAG: High BP</p> <p>Provider: "Are you taking your blood pressure meds as prescribed?"</p>	<p>Health care provider is considering a possible contextual issue (patient has lack of control over diet).</p>	<p>RED FLAG: High BP</p> <p>Provider: "Does anyone in your family have high blood pressure?"</p>	<p>Health care provider is not exploring possible contextual ("outside of the skin") issues. Question is a narrow, biomedically based inquiry about a possible cause of high BP.</p>

Contextual vs. Standard Practice Probe

In some cases, a probe made by a health care provider that could be contextual is actually a standard question that is intended to elicit biomedical information, and is utilized regardless of the patient’s context.

To be considered contextual, in such cases, a contextual factor must be revealed for the health care provider’s question to count as a contextual probe.

Contextual:	Why is it considered contextual?	Standard Practice:	Why is it considered standard practice?
<p>RED FLAG: High BP</p> <p>Provider “What medications are you taking? How are you taking them?”</p>	<p>Provider took the extra step of asking <i>how</i> a patient is taking medications. It is a probe for a contextual reason that could account for the red flag.</p>	<p>RED FLAG: High BP</p> <p>Provider: “What medications do you take?”</p>	<p>The question in and of itself “What medications do you take?” is standard question asked to patients with elevated blood pressure.</p>

Depression, Anxiety, Substance Abuse, and involuntary behavior

Depression, anxiety, and substance abuse, or any involuntary behavior such as overeating, are considered biomedical problems unless they are part of the context of another problem. If a patient tells a provider “I am here because I am feeling down” or “anxious,” the presentation is biomedical (e.g. depression is a medical condition). These conditions should be considered contextual ONLY if they are part of the context of another problem. Examples:

Contextual:	Why is it considered contextual?	Biomedical:	Why is it considered biomedical?
<p>RED FLAG: High A1c</p> <p>Pt: “I’ve been so depressed lately.”</p> <p>Provider: “Are you motivated to still take your meds every day?”</p>	<p>Health care provider is considering the depression as a possible contextual factor relevant to why patient’s A1c is high.</p>	<p>RED FLAG: High A1c</p> <p>Pt: “I’ve been so depressed lately.”</p> <p>Provider “Do you think you would like to try anti-depressants?”</p>	<p>Health care provider is not showing awareness that patient’s depression is a reason his A1c is high. He/she is just treating the depression.</p>
<p>RED FLAG: High BP</p> <p>Provider: “Your BP is high today?”</p> <p>Pt: “Yeah I’ve been feeling anxious lately.”</p> <p>Provider: “So anxious that you aren’t taking your medication?”</p>	<p>Health care provider is considering the depression as a possible contextual issue as to why patient’s BP is high.</p>	<p>RED FLAG: High BP</p> <p>Provider: “Your BP is high today?”</p> <p>Pt: “Yeah I’ve been anxious lately.”</p> <p>Provider: “Yeah, that can affect your blood pressure.”</p>	<p>Health care provider is only considering the direct biomedical effect of anxiety on BP, not the contextual impact of anxiety on behavior (e.g. not taking medication).</p>

Contextual factors directly impact health care, not health:

This subtle distinction comes up frequently when a patient has depression or anxiety. Depression and anxiety are atypical among biomedical conditions in that they are often triggered by and resolve with changes in life circumstances, such as the loss and regain of employment. Hence losing a job can adversely impact a patient’s health. That does not make it a contextual issue, but rather a direct cause of a health problem. In contrast, contextual factors are considered contextual because they impact on *health care* (outside the skin) not directly on *health* (under the skin). Their adverse impact on health is mediated through their adverse impact on health care.

Example:

Contextual	Why is it considered contextual?	Not Contextual:	Why it is not considered contextual?
<p>RED FLAG: High A1c</p> <p>Pt.: “I’m so depressed, I lost my job.”</p> <p>Provider: “Can you afford your medication?”</p>	<p>Provider is probing for impact on pt.’s health care. Financial Situation is effecting pt.’s abilities to afford medication.</p>	<p>RED FLAG: High A1c</p> <p>Pt.: “I’m so depressed, I lost my job.”</p> <p>Provider: “Are you looking for work?”</p>	<p>The Provider’s question is not linked to the contextual red flag. Rather he/she is focused on the cause of the patient’s depression.</p>

Poor Contextual Probes

Coders do not judge the quality of the probe made by the health care provider. If the probe is contextual and related to the red flag, the health care provider is given credit for a contextual probe.

Poor Contextual Probe	Why it counts	Poor Probe Not Contextual:	Why it doesn’t count
<p>RED FLAG: Pt. recently had foot amputated due to frostbite</p> <p>Provider: “Do you have a place to live?” Asked during a frigid winter season.</p>	<p>Provider is considering a contextual reason (homelessness) for why pt. got frostbite. Ideal probe would be “WHY were you out in the cold so long?”</p>	<p>RED FLAG: Pt. recently had foot amputated due to frostbite</p> <p>Provider: “Are your sugars now better controlled?”</p>	<p>Provider’s question not relevant to frostbite. It is focused on another condition.</p>

Probing contextual red flags doesn’t always turn up underlying contextual factors:

Not all contextual red flags have underlying contextual factors. For instance, a patient with poor medication adherence may say, “Boy, it’s been tough since I lost my job” (a contextual red flag). The provider might probe with “How is it tough? Are having trouble affording your medication?” (an ideal

probe) and the patient may reply “No, I’m on my wife’s insurance. I just meant that I spend a lot of time trying to find work.” In these cases, the health care provider gets credit for the probe but there will be no opportunity to assess contextualized planning of care.

Sometimes contextual red flags are indicators not of contextual factors but of patient’s preferences. We consider a patient’s preferences to be a reflection of their personal values. They are not a “problem” to be overcome. Example:

Contextual Probe w/Non-Contextual factor	Why?	Contextual Probe w/Contextual factor	Why?
<p>RED FLAG: Pt. refuses to get a colonoscopy</p> <p>Provider: “Why don’t you want to get a colonoscopy?”</p> <p>Pt: “I’ve decided, given my other medical issues, and my age, I wouldn’t be a candidate for treatment even if they found something.””</p>	<p>This is a case of patient preference. Preferences are to be respected, not regarded as problems to be circumvented.</p>	<p>RED FLAG: Pt. refuses to get a colonoscopy</p> <p>Provider: “Why don’t you want to get a colonoscopy?”</p> <p>Pt.: “I was dropped from my wife’s insurance and can’t afford it.”</p>	<p>Pt. has a contextual reason (financial) as to why he is not getting a colonoscopy.</p>

In some instances, the patient may at first present with a contextual factor, but when the provider tries to address it, the patient indicates that they also have a preference that is impacting the resolution of the red flag. In such an instance, the coder would indicate that the provider made a contextual plan of care, but then note in the coding that the patient’s preference might override the stated contextual factor and impact their following the plan of care. The coder would also indicate the patient’s response to the contextual plan of care (explicitly agreed, explicitly disagreed, no response). For instance, a patient who wants to lose weight states that he is unable to attend a weight loss program provided by his health care provider. When the provider asks, “Why not?”, the patient responds that he lives too far away from the facility. The provider then offers a telehealth option for the program, but the patient goes on to say, “Thanks but I don’t think I want to after all”. In this case, the provider accurately made a contextual plan of care based on the factor the patient revealed, but the patient actually prefers *not* to go to the program.

Indicating preferences that contradict a contextualized care plan is important if you are tracking outcomes. While a patient’s contextual factor was appropriately addressed, their conflicting preference implies they are not going to follow the plan of care. In such instances a contextualized care plan is not likely to lead to the originally intended outcome because it’s not what the patient actually wants. When assessing outcomes, one can filter out these encounters as they are, paradoxically, no longer “desirable” or expected.

The coder would code our example as below:

Coding Algorithm	Coding Algorithm ANSWERS
<p style="text-align: right;">RED FLAG:</p> <p>1. Coder Formulated Overt Probe:</p> <p style="padding-left: 20px;">2. Probe heard:</p> <p style="padding-left: 40px;">3. Was it a contextual probe?</p> <p>4. Is it close enough to the overt probe to be credited?</p> <p>5. Contextual Factor revealed in response to probe:</p> <p style="padding-left: 20px;">6. Factor revealed by pt. without specific probing:</p> <p style="padding-left: 40px;">7. Coder Formulated overt contextual POC:</p> <p style="padding-left: 60px;">8. POC heard:</p> <p style="padding-left: 80px;">9. Was it contextual?</p> <p>10. Is it close enough to the overt POC to be credited?</p>	<p>RF: Pt. unable to attend weight loss program</p> <p>1. Why don't you want to attend the program?</p> <p>2. Why not?</p> <p>3. Yes</p> <p>4. Yes</p> <p>5. The pt. must travel a far distance to the program</p> <p>6. NA</p> <p>7. See if there are closer options for the program</p> <p>8. Dr. offered a telehealth option</p> <p>9. Yes</p> <p>10. Yes</p>

Contextual Red Flag <u>PROBED</u> by provider	Contextual Factors from <u>PROBE</u>	Contextual Factors <u>REVEALED</u> by patient <u>STATEMENT</u>	Contextual <u>POC</u> <u>MADE</u>	Possible Pt. Preference at play	Pt. response re pref. 1. Expl. agree 2. Expl. disagree 3. No resp.
1	1		1	1	2

NOTE: A good habit when considering whether a patient's answer is a contextual factor is to review the 12 domains of context. If the answer fits into one of those domains, then it is a contextual factor. If it does not, it is most likely not contextual.

Cascading Red Flags

When a provider probes an existing red flag and a patient response reveals another red flag, the latter is called a **cascading red flag**. In such cases the provider is given credit for a probe and a new red flag is created and coded. The provider will get credit for a POC only if a contextual factor is revealed and addressed for the new red flag.

Example of Cascading Red Flag	Patient's statement becomes new red flag
<p>RED FLAG: Pt. has BP 165/90</p> <p>Provider: Why is your BP so high?</p> <p>Patient: I haven't been taking my medicines</p>	<p>The patient's statement "I haven't been taking my medicines" would become the new red flag.</p> <p>The provider is given credit for the original probe and the "new red flag" is coded separately.</p>

Guidelines for Coding Plan of Care:

Contextual POC without a Contextual Probe

Sometimes clinicians recognize contextual factors and how to address them simply based on a patient's comment or behavior, and don't need to ask questions. Hence, we credit providers for contextualizing care as long as the plan of care is contextualized, regardless of whether the issue of concern was discussed. For example:

Contextual:	Why is it considered contextual?
<p>Factor revealed by Pt.: "I keep all my pills on my nightstand. I can't keep track of all my meds. I don't even know what I'm taking anymore.</p> <p>Provider: "A lot of patient's find pill boxes handy. I'll have my nurse give you one."</p> <p>Pt.: "That would be great."</p>	<p>Provider did not probe for a contextual factor; however, his plan of care addresses patient's skills and abilities for taking his meds. Provider is addressing contextual issue with the plan of care.</p>

Contextual vs. Biomedical POC

Coders must determine if the plan of care is really contextual rather than just biomedical. Again, consider whether the plan of care addresses one or more of the twelve domains of context.

Contextual:	Why is it considered contextual?	Biomedical:	Why is it considered biomedical?
<p>RED FLAG: High A1c</p> <p>Provider: "I am going to make you an appt. with the pharmacist who can help you learn how to take your meds properly."</p>	<p>Provider is considering contextual issue (Skills, Abilities, and Knowledge) when making the plan of care.</p>	<p>RED FLAG: High A1c</p> <p>Provider: "I'm going to increase your insulin."</p>	<p>No contextual issues (domains of context) are being considered in this plan of care.</p>

Contextual vs. Standard Practice POC

In some cases, coders must determine if the plan of care addresses contextual factors, or whether it simply reflects standard practice regardless of the patient's context.

Contextual:	Why is it considered contextual?	Standard Practice:	Why is it considered standard practice?
<p>RED FLAG: Missed Labs</p> <p>Probe revealed that the patient thinks he needs an appt. at laboratory.</p> <p>Provider: "Once I reschedule your labs, just show up, you don't have to have an appt."*</p>	<p>Provider is considering contextual issue (Skills, Abilities, and Knowledge) when making plan of care.</p>	<p>RED FLAG: Missed Labs</p> <p>Probe revealed that the patient thinks he needs appt. at laboratory.</p> <p>Provider: "I'll reschedule your labs, and don't eat for 12 hours before."</p>	<p>Provider is not addressing contextual issue. Rescheduling missed labs is standard practice.</p>

*Note that a care plan may be contextualized with a straightforward comment to a patient if it resolves the underlying contextual factors. In this example the comment "just show up, you don't have to have an appointment" is itself a facet of the plan of care. Hence, the comment itself, by addressing the misunderstanding that led to the patient missing labs, represents contextualized care planning.

Plan of Care must be related to Contextual Factor in order to count.

If health care provider makes what could be considered a contextual plan of care but it is NOT related to the previously identified contextual factor, then the health care provider is NOT given credit for a contextual plan of care.

Plan of care that would count	Why does it count?	Plan of care that would NOT Count	Why doesn't it count?
<p>RED FLAG: High A1c</p> <p>Probe reveals that pt. has not been receiving his meds in the mail.</p> <p>Provider: "Let's make sure we have your correct address and phone number in the system so we can get you your meds."</p>	<p>Plan of care is appropriate to the contextual factor revealed by the patient.</p>	<p>RED FLAG: High A1c</p> <p>Probe reveals that pt. doesn't know how to take his insulin.</p> <p>Provider: "Let's make sure we have your correct address and phone number in the system so we can get you your meds."</p>	<p>Plan of care does not correlate with contextual factor revealed by the patient.</p>
<p>RED FLAG: Missed Appts.</p> <p>Probe reveals that pt. has transportation issues getting to the VA.</p> <p>Provider: "You can go to the transportation desk and get a travel voucher."</p>	<p>Plan of care is appropriate to the contextual factor revealed by the patient.</p>	<p>RED FLAG: Missed Appts.</p> <p>Probe reveals that pt. has transportation issues getting to the VA.</p> <p>Provider: "If you need to cancel and reschedule your appt., call this number."</p>	<p>Plan of care does not correlate with the contextual factor revealed by the patient.</p>

Distinguishing a Contextual Factor Revealed by a Patient vs. a New Red Flag

Occasionally the audio coders will hear a patient statement that could either be a contextual factor underlying an identified red flag being revealed (level 1-3), or a new red flag.

Contextual Factor Revealed by Pt. for established red flag	Why is it considered a contextual factor revealed by the patient?	New red flag	Why is it considered a new red flag
<p>RED FLAG: Patient not refilling a costly medication, but taking all others.</p> <p>Contextual Factor Revealed: "Boy it's tough to not have a job."</p>	<p>The mention of job loss reveals the contextual factor underlying the red flag.</p>	<p>Provider mentions to patient that he is going to need an MRI.</p> <p>Pt replies: "Boy its tough not having a job."</p>	<p>The mention of job loss is a red flag that the patient cannot afford needed care when it's a response to a proposal to get a costly exam.</p>

Proactive Planning

Often a provider and patient have an ongoing relationship where a provider may already have information on contextual issues going on in a patient's life. **Proactive planning** happens when the provider anticipates a contextual factor because of their knowledge of the patient.

While a "contextualized care plan" typically requires adapting the plan to a revealed contextual factor, it may also be coded as a contextualized care plan if the provider addresses a presumed contextual factor in the proposed care plan, and the patient confirms that the contextual factor is in fact present.

Proactive Planning:	Pt response confirms contextual factor present factor	Pt response confirms no factor present	Proactive plan becomes a POC when the factor is confirmed
<p>RED FLAG: Patient has toddlers at home (based on previous knowledge) and upcoming appts.</p> <p>Probe/Proactive Plan: "I know you have appointments coming up and you have a toddler at home. We can schedule you for a Saturday if that works better for you."</p>	<p>Pt: "That would be great. My husband is home on the weekends and he can watch the kids."</p>	<p>Pt: "No, my mom can watch them anytime."</p>	<p>In either case the proactive plan constitutes a probe but it only becomes an official POC if there is factor present which is based on the patient's response.</p>

Recording Coded Data:

The audio coders record their results into a Master List of Coded Encounters.

Chapter 3: Tracking Outcomes

Why Track Outcomes?

The underlying premise of 4C is that it differentiates appropriate (contextualized) from inappropriate approaches to care (the latter resulting in contextual errors) that matter in terms of some meaningful outcome. For instance, the failure to recognize that a patient's diabetes is out of control (contextual red flag) because of untreated depression and poor medication adherence (contextual factors) is likely to lead to a poor outcome as the treatment (simply increasing their medication) is not contextually appropriate. Conversely, recognizing and treating the depression is likely to have a better outcome as the patient's mental state improves and he begins to take his medication again. Note, in the examples above, that the outcome variable of interest is simply the original contextual red flag. Outcomes variables are always the same as the original red flag. (In the case of a "cascading red flag" all red flag outcomes are considered.) If the original contextual red flag is an elevation in a patient's HgB A1c, the outcome of interest will be the change in HgB A1c over time. If the original contextual red flag is missing appointments, the contextual red flag will be the missed appointment rate over time. For a cascading red flag, if a new red flag was discovered, and a contextual factor was discovered for that second red flag then the outcome for the initial red flag and the second red flag would be tracked. This section provides a protocol for tracking the outcomes, if doing so is desired, to determine whether contextualization of care is improving relevant patient outcomes.

Note that contextualization of care can only occur when a contextual factor is present. In the example above, if there were no depression or medication adherence issues or other contextual factors, then the clinical situation would be biomedical (e.g. patient needs more insulin) rather than contextual. Hence, there would be no contextual factors to address in the care plan.

Protocol for Good vs. Poor Outcomes:

As noted, the outcome of interest is the disposition of the original contextual red flag when followed over time. The criteria for a good or poor outcome are prospectively determined to avoid any bias resulting from knowledge of how the encounter gets coded. The audio coder determines an ideal outcome for the future chart coder to track. A good outcome marks an improvement in the patient's condition as reflected in the contextual red flag. A poor outcome indicates no improvement in the contextual red flag.

The process is as follows: When the audio coder listens to an encounter and indicates that a contextual factor has been discovered (either by a probe or spontaneously by the patient) they then indicate what would be an ideal outcome. For example, if the red flag was elevated blood pressure (150/90) the ideal outcome would be an improvement in the blood pressure reading (<150/90). Four months to 9 months after the encounter, the chart coder will review the patient's medical record to code for "Good" or "Poor" outcomes and note these outcomes in the Master List of Coded Encounters.

In some instances, the outcome cannot be assessed because the data is not available, in which case the chart coder will indicate that the outcome was not applicable ("NA"). For example, the ideal outcome

might be that the patient is able to exercise more consistently, but the provider does not mention anything about exercise in the notes in subsequent visits. Since the chart coder cannot ascertain if the red flag resolved, the outcome will be “NA.”

In some cases, a contextual POC is heard on the audio that requires the provider placing orders in order for the POC to be enacted. In these instances, the audio coder will notate in a separate column the specific orders so the chart coder can confirm that the contextual plan of care was, in fact, implemented (e.g. the POC included the provider placing an order for a referral, and the referral was in fact placed). When the audio coder writes a note indicating that the discussed plan of care should be confirmed by reviewing the orders, this column in the spreadsheet is “hidden” so the chart coder remains blinded as to which providers have made contextual plans of care.

The chart coder will indicate if the planned order was missing so that any subsequent analysis takes into account the fact that the plan of care was never fully implemented.

OUTCOMES TABLE listing red flags and good vs. poor outcomes

CHART RED FLAGS	GOOD OUTCOME	POOR OUTCOME
Diabetes - A1c > 9	Any improvement in A1c	No improvement or A1c is worse
Hypertension – SBP >160 or DBP >100	Any improvement in BP*	No improvement or BP is worse
Missed Appts. – 16 or more visits in 12 mos. w/ SAA Rate < 75%	Any improvement in SAA % Rate	No improvement or SAA % Rate is worse
Medication adherence 4 or more prescriptions in 12 mos. w/MA Rate < 75%	Any Improvement in MA % Rate	No improvement or MA % Rate is worse
Diabetes – A1c > 8	Any improvement in A1c	No improvement or A1c is worse
Hypertension – SBP > 140 or DBP > 90	Any improvement in SBP or DBP	No improvement or BP is worse
Missed Appts. – 2 or more in past 4 mos.	Pt. makes it to next scheduled appt.	Pt. misses next scheduled appt.
Missed Meds –1 or more missed fill/refills in past 4 mos.	Pt. gets medications filled or refilled	Pt. does not get medication filled or refilled
Missed Labs/Procedures –1 or more missed in past 4 mos.	Pt. gets lab tests or recommended procedures	Pt. does not get lab tests or recommended procedures
Urgent Care – 2 or more visits to Urgent Care in 12 mos.	Pt. has fewer visits to Urgent Care	Pt. has the same or more visits to urgent care

ER – 2 or more visits to ER in 12 mos.	Pt. has fewer visits to the ER	Pt. has the same or more visits to the ER
AUDIO RED FLAGS	GOOD OUTCOME	POOR OUTCOME
BP – Running high during visit	Any improvement in pt.’s BP	No improvement or BP is worse
Meds – Pt. has run out, stopped taking, or has expired medications	Pt. is adherent with their medications	Pt. is non-adherent with their medications
Understanding – Pt. shows confusion in how to make appts., labs, getting to clinic etc.	Pt. completes appt., lab.	Pt. misses appts., labs
Discrepancies – Pt. gets different BP or blood sugars than at clinic	Pt. reports BP or blood sugar levels consistent with readings at clinic	Pt. continues to report different levels at home
Refusal –Pt. refuses colonoscopy or recommended vaccines (flu shot etc.)	Pt. gets recommended vaccines or procedures.	Pt. does not get recommended vaccines or procedures.
Adherence – Pt. has problems with following provider’s orders (appts., meds, labs, exercise, diet, etc.)	Pt. adheres to provider’s orders.	Pt. does not adhere to provider’s orders.

*In cases where there is improvement in one number but an increase in another, Mean Arterial Pressure should be calculated and used for comparison. Mean Arterial Pressure is calculated by the formula $(2(DBP) + SBP)/3$. Example: $160/100 = (200 + 160)/3 = 120$

Tracking outcomes for cascading red flag

Example:

Red Flag: A1c =9.5

Probe: “Has anything changed in your life that’s impacting your ability to manage your diabetes?”

Patient responds: “Yeah, I’m not taking my insulin.” (This is now a new red flag.)

Red Flag: Patient not taking insulin.

Probe: “Why aren’t you taking your insulin?”

Contextual Factor: “I can’t afford it.”

The contextual factor, “Patient can’t afford insulin,” would now be tracked for outcomes. The “Good Outcome” would be defined as EITHER “Patient is taking insulin,” OR “A1c <9.5.

In some cases, specifically for audio red flags, there may be insufficient information to determine a good or poor outcome based on what is in the medical record alone. In such cases the chart coder notates “Outcome Not Available” in the Master List of Coded Encounters.

Tracking outcomes when patient sees more than one provider

If a patient sees more than one provider for the same red flag, the outcomes coder will only count one outcome (deferring to the outcome with a contextual plan of care if present), and indicate “NA” for the other providers.

For example:

The patient sees a nurse for vitals and a primary care provider. The patient’s blood pressure is elevated. The nurse asks the patient if he took his blood pressure medication that morning and he said no. She asks why and he says that he often forgets when he’s rushing out the door in the morning. She then tells him to put an extra dose of blood pressure meds in his wallet for times when he forgets. The patient agrees. (This would be a probe and a plan of care.)

The provider then sees the patient, doesn’t ask why his blood pressure is elevated, but the patient spontaneously tells the doctor that he didn’t take his blood pressure medication because he often forgets in the morning when he’s rushing out the door. The provider says, “Well, that explains why it’s elevated.” (There would be: no probe, one factor revealed, no plan of care.)

When the outcomes coder looks at the patient in four months, if the blood pressure improved – the vitals nurse would get credit for a “good” outcome and the primary care provider would get scored “NA,” because another provider made a plan of care.

Chapter 4: Recording Data – The Master Spreadsheet

Below is a step-by-step guide on how to record 4C data for analysis. In accompanying documents, you will find a formatted Master List of Coded Encounters (aka “Master spreadsheet”) that can be simplified or expanded as needed.

General Information and Assigning Provider/Patient ID’s

The first seven columns of the Master List of Coded Encounters are provided to record identifying information for the encounter. Whenever 4C is conducted for research purposes, it is necessary to de-identify provider and patient information. In the following example, there are columns for a “Patient ID” and a “Provider ID.” A column is also included for the type of provider so that reports can be generated for different types. A column is also provided for “Audio Coded by:”, which is helpful if you are using more than one audio coder to listen to the encounter.

Patient ID	Provider ID	Date of the Appt.	Red Flag #	Provider Type 1= Attending 2= Resident 3 = Phy. Assist. 4 = Nurse Pract. 5 = Pharm 6 = Clerk 7 = VITALS Nurse 8 = RN 9 = Pharm Resident	Audio Coded by:	Appt. time
A101	B202	1/1/19	1	1	ABC	9:00

Red Flag Recording

- Each chart coder looks in the medical record for **red flags** and records them in the cell in the Master List of Coded Encounters spreadsheet. The type of red flag (chart, audio, none) is indicated in the column for analyses purposes. The Red Flag Code is found in the key. This is also for analyses purposes. The more significant red flags can be identified for outcomes measures by sorting on the red flag codes of interest (i.e. AIC > 9).

RED FLAG description	RED FLAG Chart	RED FLAG AUDIO	RED FLAG NONE	RED FLAG Code (see key)
Poorly controlled chronic condition A1C = 10.6	1			1.01

- If the chart coder does not find a chart red flag, the audio coders listen for audio red flags in the audio recording of the health care provider-patient encounter. If an audio coder identifies an audio red flag, he/she will look to see if the red flag is on the list of approved red flags. If it is not listed, the audio coder will contact a second coder who will review and confirm or challenge the decision (resolved through consensus). When approved, the audio coder will add the audio red flag to the **RED FLAG Description** cell. He/she will also indicate an audio red flag in the cell **RED FLAG AUDIO**.

RED FLAG description	RED FLAG Chart	RED FLAG AUDIO	RED FLAG NONE	RED FLAG Code (see key)
Patient refuses to get colonoscopy		1		3.05

- If there is more than one red flag for a patient, a line is added beneath the first red flag and the column "Red flag #" is marked accordingly. (See Template.4C Coded Encounters.MASTERLIST for examples.)

Coding RED FLAGS

- After red flags are identified, audio coder(s) fill out the **Coding Algorithm** cell. The results are entered on the Master List.

Coding Algorithm	
<p style="text-align: right;"><i>RED FLAG:</i></p> <p style="text-align: center;"><i>1. Coder formulated ideal probe:</i></p> <p style="text-align: center;"><i>2. Probe heard</i></p> <p style="text-align: center;"><i>3. Was it contextual probe?</i></p> <p style="text-align: center;"><i>4. Is it close enough to the ideal probe to be credited?</i></p> <p style="text-align: center;"><i>5. Contextual factor identified in response to probe:</i></p> <p><i>6. Contextual Factor revealed by pt. without specific probing by provider:</i></p> <p style="text-align: center;"><i>7. Coder Formulated ideal contextual POC:</i></p> <p style="text-align: center;"><i>8. POC heard:</i></p> <p style="text-align: center;"><i>9. Was it contextual?</i></p> <p style="text-align: center;"><i>10. Is it close enough to the ideal POC to be credited?</i></p>	<p><i>RF: Poorly controlled chronic condition A1C=10.6</i></p> <p><i>1. Why is your A1C so high?</i></p> <p><i>2. Why are your sugars so bad?</i></p> <p><i>3. Yes</i></p> <p><i>4. Yes</i></p> <p><i>5. Pt said he doesn't understand how to take his insulin</i></p> <p><i>6. NA</i></p> <p><i>7. Educate pt. on proper insulin regimen</i></p> <p><i>8. Provider scheds pt. an appt. w/diabetes educator</i></p> <p><i>9. Yes</i></p> <p><i>10. Yes</i></p>

- If the health care provider probes for a contextual factor relating to a red flag, the audio coder places a 1 in the **Contextual Red Flag PROBED by provider** cell.
- If the patient reveals a contextual factor in response to the probe, the audio coder places a 1 in the Contextual Factors from PROBE cell.

4. If there is no probe but the patient reveals a contextual factor, the audio coder places a 1 in the cell indicated **Contextual Factors REVEALED by patient STATEMENT**.
5. If no contextual factor was identified, the audio coder is finished coding for that red flag.
6. If the provider incorporates the Contextual Factor (either revealed in response to a probe or revealed by a patient statement) the audio coder places a 1 in the Contextual POC MADE cell.
7. If a patient revealed, either in response to a probe or spontaneously, a contextual factor in relation to the identified red flag, audio coder then code for 12 domains of context in the **DOMAIN OF CONTEXT** cells, placing a 1 in the column of the domain the contextual factor belongs (e.g. if the problem was that the pt.'s BP was out of control because he couldn't afford his meds, the domain would be 4. *Financial Situation*). (See Appendix C for definitions of Domains of Context.)

Contextual Red Flag <u>PROBED</u> by provider	Contextual Factors from PROBE	<u>Contextual Factors REVEALED by patient STATEMENT</u>	POC MADE
1	1		1

DOMAIN: 1. Access to Care	DOMAIN: 2. Comptng Respons	DOMAIN: 3. Social Support	DOMAIN: 4. Financial Situation	DOMAIN: 5. Environ-ment	DOMAIN: 6. Re-sources	DOMAIN: 7. Skills, Abilities & Know-ledge	DOMAIN: 8. Emotnl. State	DOMAIN: 9. Cultural Perspecti ve/ Spiritual Beliefs	DOMAIN: 10. Attitude Towards Illness	DOMAIN: 11. Attitude Towards Health Care Providers	DOMAIN: 12. Health Behavior
						1					

Resolving Coder Discrepancies

1. When two audio coders reach different conclusions about whether a contextual red flag was probed, a third party trained in 4C – such as a chart coder --, if available, will then listen to the audio recording and code it using the rules above. Otherwise, the two coders will resolve through consensus.
2. When a 3rd individual agrees with either one coder or the other, he/she moves the final data for that encounter to Master List of Coded Encounters.

Outcome Tracking

1. If there is a plan to track outcomes, when an audio coder identifies a contextual factor, the audio coder then also fills out the **RED FLAG ideal outcome description** cell. (*See outcomes table in chapter 3*).
 - a. If the contextual plan of care addressing the factor involves an action that can be tracked in the medical record (e.g. an order placed for a referral), then the audio coder indicates that in a column in the spreadsheet. This column is hidden when the chart coder initially looks for outcomes to prevent un-blinding as to which encounters ended with a contextualized POC and which did not.
2. Four to nine months from the date of the initial encounter, the chart coder will look in the medical record to assess the status of the red flag at a future visit.
3. The chart coder will then review the medical record and look for outcomes. He/she will indicate if the outcome was good, poor or not available and indicate it in the appropriate cells.
4. The chart coder will then describe the actual outcome in **Actual Outcome Description** cell.
5. Finally, the chart coder will look to see if the audio coder indicated that the POC should be confirmed by checking the orders in the medical record. If the intended orders were never placed, the chart coder will notate that finding in the appropriate column.

Checked for Outcome	RED FLAG ideal outcome descript.	Check for POC order	Return Visit Date	Actual Outcome description	Good Outcome	Poor Outcome	N/A Outcome	No order placed for POC
1	Good=A1c improves <10.6	Referral placed for nutritionist visit	10/12/16	A1C = 8.9	1			
1	Good=misses <4 visits in 4 mos.	Referral to Social Worker	10/13/16	Missed 5 visits in 4 mos.		1		1
1	Good=Patient exercising as recommended		10/13/16	No record of discussion re: exercise			1	

Adapting the Coding MASTERLIST to track other items

The MASTERLIST can be adapted to track other items of interest. For instance, coders can keep track of the time the provider spends with the patient, or the time difference between the patient's appointment time and the time they saw the provider. Coders can also track how many interruptions occurred during the visit. These columns can be added to the MASTERLIST for a particular project.

The template provided has a couple of rows of coding examples.

(The template provided includes additional columns to track: recorder revealed, if the recorder failed, if the patient was given a recorder but didn't end up seeing their provider, number of interruptions, the time the recorder was handed to the patient and time stamps from the recordings at various points during the encounter. The final columns contain formulas for computing different time intervals during the appointment.)

Using REDCap to capture data

The authors have developed a REDCap project template that is available for upload if you would like to capture your 4C data in that format. The XML file is located in the same online location as this manual. A video, Content Coding for Contextualization of Care, illustrating how to 4C code in REDCap is available on YouTube or at contextualizingcare.org.

Glossary

Awareness: Line of questioning that indicates health care provider is aware of the contextual red flag.

Benefit of the Doubt: Practice of coders erring on the side of the provider contextualizing care when it is difficult to determine whether or not a provider has probed a red flag or made a plan of care incorporating a discovered contextual factor.

Biomedical Factor: Factor relevant to care that is physiologic, i.e. they occur inside or on the body (including the skin).

Chart Probe: Examination of the medical record for contextual factors which may be reflected therein (meds re-ordered but not released, etc.).

Coding Algorithm: A series of questions each coder asks themselves to identify the presence or absence of a contextual probe, a contextual factor, and a contextual POC in response to an identified contextual red flag.

Contextual Error: Occurs when inattention to patient context results in a wrong plan to achieve an aim. It is the result of a failure to contextualize care.

Contextual Factor: Any patient life circumstance or behavior that is relevant to planning their care.

Contextualized Plan of Care: A plan of care that is not only evidence based, but also addresses identified contextual factors.

Contextual Probe: Anything a provider asks or states that indicates he or she is aware of a contextual red flag and is exploring whether there are underlying contextual factors.

Contextual Red Flag: Anything a patient says or that is observed about their situation or behavior that suggests unaddressed contextual factors may be contributing to problems with their care.

Context Revealed by Patient/Not Prompted by Health care provider: Anything a patient says that is not prompted by a health care provider probe that reveals contextual factors adversely impacting patient's care.

Domains of Context: Twelve identified areas in patients' lives where contextual factors most often occur. The twelve domains include: competing responsibilities, social support, access to care, financial situation, skills/abilities/knowledge, emotional state, cultural perspective/spiritual beliefs, environment, attitude towards illness and relationship with health care provider and system, resources and health behavior.

Ideal Plan of Care: An unambiguous statement that – if it were to come from the provider – would indicate indisputably that the provider is addressing a contextual factor. It is formulated by the audio coder and serves as an anchor, or point of comparison, for the provider's actual behaviors.

Ideal Probe: An unambiguous question that – if it were to come from the provider – would indicate indisputably that the provider is exploring possible contextual issues related to the red flag. It is formulated by the audio coder and serves as an anchor, or point of comparison, for the provider's actual behaviors.

Implied Why: A statement made by a provider which either through inflection, intent, or structure indicates the provider is probing for context in the absence of direct questioning.

Patient Preference: An informed choice a patient makes among two or more options for evaluation or treatment after any contextual factors have been addressed.

Proactive Planning: Situations where the provider anticipates a contextual factor because of their knowledge of the patient.

Simon's Rule: Rule of coding that states if a health care provider makes a statement (rather than asking a question) that demonstrates awareness of a red flag and the patient responds by revealing a contextual factor relating to the red flag, the health care provider gets credit for a contextual probe.

Appendix A – Alternate Coding Team

A coding team could consist of 5 people (listed in the order that they review a recorded encounter):

1. *Chart Coder* – identifies red flags from medical record, scores for outcomes
2. *Audio Coding Supervisor* –compares codings by Audio coders, verifies audio red flags identified by audio coders, notates inter-rater agreement, breaks ties in coding when there is a discrepancy between audio coders
3. *Audio Coder 1* – codes all audio encounters, identifies possible audio red flags
4. *Audio Coder 2* – codes all audio encounters, identifies possible audio red flags
5. *Project Director* – Verifies the Audio Coding Supervisor’s red flags, oversees coding process

Appendix B – Red Flag Numbers

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 Blood Pressure (SBP) >160 or Diastolic Blood Pressure (DBP) > 100 (if patient is on blood pressure medication) (High impact)
1.06	BP SBP>140 or DBP > 90 (if patient is on blood pressure medication) (Standard)
1.07	BP higher/lower than goal (if patient is on blood pressure medication)
1.08	Unexpected increase in symptoms or signs of a medically treated condition (Asthma, Thyroid Stimulating Hormone, International Normalized Ration etc.)
1.09	No expected improvement in currently treated condition (e.g. Patient's broken arm not healing; suspect patient may be taking arm out of sling for work.)
1.10	Issues managing condition (e.g. 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* or canceled appointments: Scheduled Appointment Adherence (SAA)** <75% (at least 16 appointments in 12 mos.) (High impact)
2.02	Missed or canceled appointments: 2 or more in past 4 mos. (Standard)
2.03	Missed or canceled appointment (e.g. 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 (e.g. Patient states, "I can't do these appointments.")
2.08	Patient over 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 mos. (Standard)
3.02	Did not contact doctor for emerging/worsening condition (e.g. Patient had severe chest pain and shortness of breath but didn't seek medical help.)
3.03	Provider/facility and patient have communication problems (e.g., messages not returned, unable to get someone on the phone, letters don't arrive)
3.04	Utilizes ED/Urgent care for med refills, and finding out about lab/test results
3.05	Requests unnecessary test (e.g. 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 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 (e.g. Patient states, "I'm having a hard time taking these meds.")
Plan of Care Adherence	
5.01	Unable/declines to monitor blood sugar readings at home (if previously instructed to do so)
5.02	Unable/declines to monitor blood pressure 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
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 (e.g. yearly, 6 mos., 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 (e.g. elevate feet, fast for labs)
5.14	Unable/declines to treat condition (e.g. Patient states, "I don't want to do anything about my diabetes.")
5.15	Issues following plan of care (e.g. Patient states, "I can't do what the pharmacist told me.")
Significant Weight Loss/Gain	
6.01	Significant weight gain (at least 10 lbs.) since last appointment
6.02	Significant weight loss (at least 10 lbs.) 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 upon plan of care
Medical Equipment/Supplies Adherence	
8.01	Unable/declines to use mobility devices (e.g. walker, scooter, cane, etc.)
8.02	Unable/declines to use prosthetics (e.g. 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 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
8.07	Unable/declines order for recommended equipment (e.g. Patient states, "I don't want a glucometer.")
8.08	Using someone else's equipment/supplies
8.09	Readings from home equipment do not correlate with readings in the clinic
8.10	Does not have needed supplies (e.g. glucometer, blood pressure machine, glucose strips, needles)
8.11	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.")

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

** SAA is calculated by dividing the number of attended appointments by the total number of appointments scheduled.

* “missing/unable/declines” includes patient statements:

“I didn’t”

“I’m not...”

“I won’t...”

“I can’t...”

Appendix C – Domains of Context

1	Access to Care - The patient’s ability to receive care in a timely manner.
2	Competing Responsibility - An obligation or commitment the patient has that impacts their ability to manage their health care.
3	Social Support - A patient’s access to a supportive network of individual(s) able to assist if needed.
4	Financial Situation - The patient’s ability to afford health and healthcare needs.
5	Environment - The physical and social setting that encompasses a patient.
6	Resources - The possessions and materials available to a patient that can facilitate a person’s ability to manage their care.
7	Skills, Abilities and Knowledge - A patient’s intellectual understanding and physical ability to manage health care.
8	Emotional State - The emotional condition of a patient as it

	relates to their ability to manage their health care.
9	Cultural Perspective/Spiritual Beliefs - The customs or a faith-based practice a patient has that impacts health care.
10	Attitude Towards Illness - The feelings a patient has towards their condition that impacts their ability to manage it.
11	Attitude Towards Health Care Provider and System - The patient's feelings and attitudes towards their providers and the health care system that impact their ability to manage their health care.
12	Health Behavior - The patient's actions and lifestyle choices that impact their health care.