Coordinating Flexible Performance During Everyday Work: An Ethnomethodological Study of Handoff Routines

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Our paper examines the challenge of coordinating flexible performance during everyday work. We draw on routine dynamics and ethnomethodology to examine how intensive care unit (ICU) physicians coordinate their actions—flexibly yet intelligibly—as they handoff patients at change of shift. Through our analysis of interview and video data, we demonstrate how physicians use the sequential features of the handoff routine—i.e., the expected moves and their expected sequence—to adapt each performance of the routine to the unique needs of each patient. We show the need for ongoing coordinating despite a strongly shared ostensive pattern and we illustrate how participants use the sequential nature of the ostensive pattern of the routine as a resource for flexible performance, to manage sequential variation and the sufficiency of moves at transitions. Our findings contribute to the routine dynamics and coordination literatures by providing a more nuanced understanding of how mutual intelligibility is achieved through coordinating, whereby participants create the conditions to move forward with a common project.

Keywords: organizational routines; coordinating; ethnomethodology

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Introduction
People working together in organizations often need to tailor their performance of a shared task to the situation at hand. As work becomes increasingly complex and dynamic (D’Aveni 1994, Eisenhardt 1989, Weick et al. 1999), everyday tasks are frequently adapted to the particular circumstances that exist at the moment of enactment. However, adapting the way that a task is usually performed can pose a coordination challenge for everyone involved. On the one hand, the collective performance of the task must be flexible enough to accommodate the necessary variety of the situation. On the other hand, since people are improvising to some degree, they must also coordinate their actions so that their performance remains mutually intelligible—that is, to move forward with a shared task, they need to be able to make sense of what others are saying and doing. Okhuysen and Bechky (2009) highlight the importance of shared understanding for coordinating. Research on coordinating has provided significant insight into how the shared understanding that people bring into performance influences coordinated action. However, we know much less about how shared understanding is created and maintained during flexible performance (Dionysiou and Tsoukas 2013, Okhuysen and Bechky 2009). In addition, although previous research has identified the need for repair during flexible performance (Turner and Rindova 2012, Zbaracki and Bergen 2010), many questions remain about how this repair takes place. Our paper tackles the issue of how people create, maintain, and repair mutual intelligibility during flexible performance.

To study the challenge of coordinating flexible performance, we draw upon two complementary research traditions: routine dynamics and ethnomethodology. When shared tasks occur as part of everyday work, we can think of these tasks as routines, defined as “repetitive, recognizable patterns of interdependent actions, carried out by multiple actors” (Feldman and Pentland 2003, p. 95). As people collectively perform a routine, interdependent action unfolds sequentially (Feldman and Pentland 2003, Pentland and Rueter 1994). The routine dynamics literature is centrally concerned with how the “same” routine can be flexibly performed—from this perspective, routines are not an invariant set of actions, but instead are constructed by participants from a repertoire of possible actions (Birnholtz et al. 2007, Cohen 2007, Feldman 2000, Feldman and Pentland 2003, Howard-Grenville 2005, Pentland et al. 2011, Pentland and Rueter 1994,
Turner and Rindova 2012). The routine dynamics literature provides theoretical handholds for understanding flexible performance by differentiating between the ostensive aspects—the general and abstract patterns of the routine—and the performative aspects of routines—the specific actions taken by specific people at specific places and times (Feldman and Pentland 2003). By examining the relationship between the ostensive and performative aspects of the routine, we gain insight into how mutual intelligibility is created, maintained, and repaired during flexible performance.

Additionally, we employ an approach to studying coordinating—ethnomethodology—that foregrounds the role of action in creating shared understanding. We argue that to study coordinating flexible performance, we must take seriously the obstacles that participants encounter during performance. Not being able to read each other’s minds, people do not have a way of knowing what other people are thinking, except through the actions that they make available to each other during performance—that is, what they say and what they do. An ethnomethodological approach (Garfinkel 1967, Heritage 1984, Rawls 2008) provides a way of observing and documenting the methods that people use to create, maintain, and repair mutual intelligibility. From an ethnomethodological perspective, mutual intelligibility is not something that people have (in the sense of shared cognition), rather it is something that people enact—for example, they display understanding to each other by marking prior actions as sufficient or insufficient for moving forward with a common project. Because mutual intelligibility is something that people show to each other during performance, the emergence of this displayed understanding during flexible performance becomes accessible to researchers.

We study flexible performance at a moment when coordinating is especially important: handoffs at shift change, as people transfer information about and responsibility for a shared task. During handoffs, outgoing personnel have a limited amount of time to transfer the necessary information to the incoming personnel. At the same time, it is essential that the incoming personnel understand the handoff so that they can take over the work. Handoffs occur in a wide variety of dynamic and consequential settings, such as hospitals, nuclear power plants, air traffic control, railroad dispatch, and shuttle missions (Mumaw et al. 2000, Patterson et al. 2004). Our study examines handoffs between intensive care unit (ICU) physicians at change of shift—a setting in which both flexible performance and mutual intelligibility are vitally important. Since each patient in the ICU has a unique constellation of medical issues, no two handoffs can be performed in exactly the same way; yet, breakdowns in mutual intelligibility during the performance of handoffs can have lethal consequences (Sutcliffe et al. 2004).

By interviewing ICU physicians, we found that they had strongly shared expectations about how handoff routines should be enacted, including particular moves in a particular sequence. By video recording and analyzing the same physicians conducting handoffs, we saw how they used these expectations to create, maintain, and repair the mutual intelligibility of their flexible performance. We develop a process model to summarize the theory that emerged from our findings. Our study makes at least two contributions to research on the flexible performance of routines. First, in contrast to prior research that suggests that coordinating results from increasingly shared understanding of a routine (Dionysiou and Tsoukas 2013), we show how coordinating during flexible performance is ongoing, even when participants have strongly shared expectations about the moves and sequence of their routine. Second, building on prior research that shows that the ostensive aspect of the routine is a resource for performance (Feldman and Pentland 2003, Howard-Grenville 2005, Turner and Rindova 2012, Zbaracki and Bergen 2010), we show how the sequential features of the routine are a resource for flexible performance. We found that sequential variation of handoffs (e.g., rearranging and/or skipping moves) was mutually intelligible, largely through its relationship to the physicians’ expectations about moves and sequence. We also found that physicians’ shared expectations about sequence help them to negotiate moves at transitions in sequence. Taken together, our findings contribute to a more nuanced understanding of how mutual intelligibility is achieved during flexible performance of everyday work.

Coordinating During the Flexible Performance of Routines

Okhuysen and Bechky (2009) argue that routines facilitate coordinating by establishing how interdependent tasks are transferred from one person to another, by providing a template to structure and sequence tasks, and by creating a shared understanding of the task at hand. In keeping with past research that emphasizes the dynamic nature of coordinating (Faraj and Xiao 2006, Jarzabkowski et al. 2012), we also focus on the “collective performance aspect of coordination and emphasize the temporal unfolding and situated nature of coordinative action” (Faraj and Xiao 2006, p. 1155). To explore issues related to coordinating during the flexible performance of routines, we turn first to a discussion of routine dynamics and then ethnomethodology.

Routine Dynamics

Drawing on Feldman and Pentland’s (2003) distinction between the ostensive and performative aspects of the routine helps us understand how the “same” routine can be flexibly performed. Even though specific performances vary, any given performance of the routine takes place against a “background of rules and expectations” (Feldman and Pentland 2003, p. 102). Although not fully specifying performance, the ostensive aspects of the routine enable people to guide, account for, and refer to
specific performances of a routine (Feldman and Pentland 2003). Relatedly, the performative aspect of the routine creates, maintains, and modifies the ostensive aspects of the routine (Feldman and Pentland 2003). As a result, the ostensive and performative aspects of the routine mutually constitute each other. Rerup and Feldman (2011) highlight that, over repeated performances, performative actions generate ostensive patterns, which are instantiated in future performances. Feldman and Pentland (2003) emphasize that the ostensive is not a “single, unified object,” but instead “incorporates the subjective understandings of diverse participants” (Feldman and Pentland 2003, p. 101). When people understand the routine in different ways, this makes coordinating more complicated.

Previous research has examined how people develop shared understanding about the ostensive pattern of the routine. For instance, Feldman and Rafaeli (2002) found that the repeated performances of routines built connections between people that enabled them to develop shared understandings about what to do in a particular instance and why some actions were appropriate (or not). More recently, Turner and Rindova (2012) showed how waste collection crews drew on artifacts and connections to develop shared understanding that facilitated both consistent and flexible performances. These studies provide evidence that participants’ already established shared understanding about the routine can be a resource for performance.

Dionysiou and Tsoukas (2013) highlight that there is still much to be learned about how shared understanding emerges during flexible performance—specifically, around how people develop “joint situated understanding” and “align their actions.” Adopting a symbolic interactionist approach, they draw on Mead’s (1934) concept of role-taking to develop theory about how this process takes place. They argue that, through repeated performances of a routine, participants develop increasingly shared schemata about the ostensive aspect of the routine. They write,

During interaction (performative aspect, Figure 1, [P]), participants engage in role taking—that is, they take into account fellow participants’ roles (their actual and potential understandings, ideas, opinions, and actions) with respect to the joint activity in order to develop a joint, situated understanding of the concrete situation at hand; identify appropriate actions; and align their individual lines of action accordingly (Figure 1, arrow d; Blumer 1969, 2004; Weick 1995). (Dionysiou and Tsoukas 2013, p. 191)

They go on to argue that developing increasingly shared schemata about one’s role is beneficial because participants “can then organize their conduct in accordance with mutually consistent behavioral expectations (Blumer 1969, Joas 1997, Miller 1973)” (Dionysiou and Tsoukas 2013, p. 192).

Dionysiou and Tsoukas (2013, p. 197) recognize that participants’ “mutually established expectations” can be misaligned, or that a particular performance of a routine may need to be “nonprototypical,” and suggest that these circumstances can lead to “a more ‘intelligent’ engagement with the joint activity (Mead 1934, 1938; Weick 1979).” Yet how this “more intelligent engagement” is accomplished remains under specified. What is missing from their theory is an account of how participants align their actions and develop joint situated understandings as they engage in real-time adjustment and repair of the routine, to ensure that the performance remains mutually intelligible despite being flexibly performed.

Early research on routine dynamics reminds us of the importance of real-time adjustment and repair in the service of mutual intelligibility during flexible performance. Feldman and Rafaeli (2002) likened the mutual adjustment that is required during flexible performance to a dance, where participants adapt and align their actions to fit with their partner’s actions. Similarly, Pentland and colleagues (Pentland 1992, Pentland and Rueter 1994) talked about “moves” as a “unitary act of the routine” made meaningful through interaction. Drawing on work by Goffman (1981) and Schegloff (1982), Pentland (1992, p. 530) writes that, “the accomplishment of a particular move generally depends on its ratification (implicitly or explicitly) by others.” Pentland (1992, p. 530) further argues that “moves cannot be isolated from the situational particulars of the context and the sequence of interaction in which they occur.” Both metaphors (“dance” and “move”) point to the reciprocal nature of real-time adjustment in which actions are simultaneously both a response and a stimulus during unfolding interaction. Although a few studies have identified the need for repair during performance—for instance, when the truce holding together a routine collapses (Zbaracki and Bergen 2010) or when the expected sequence of the routine is disrupted (Turner and Rindova 2012)—how repair takes place during flexible performance is a largely unanswered question.

Our study takes on this question of how participants coordinate their actions to create, maintain, and repair mutual intelligibility during flexible performance. In contrast to Dionysiou and Tsoukas’ (2013) role-taking perspective on coordinated action, we take an ethnomethodological approach that remains agnostic about the degree of shared understanding people actually have (i.e., shared cognition). Our focus is on the shared understandings that they display.

Ethnomethodology
Ethnomethodology is a useful complement to routine dynamics for studying flexible performance because this approach gives additional insight into how people coordinate and make sense of their actions in the moment that they perform them. Garfinkel (1967, p. 1) introduced the notion of ethnomethods to describe the methods that people use to “produce and manage settings of organized
everyday affairs.” Ethnomethodology takes seriously the knowledge and skills that people bring to their interactions, and it aims to uncover the practices that they use to create and maintain a shared social world—for instance, a classic ethnomethod is the accounting practice, whereby people create narratives that account for the facts as presented. Garfinkel argued that we gain insight into how people “construct a mutually intelligible world” (Rawls 2006, p. 7) through a detailed study of the practices they use: both their situated actions—what they say and do in a particular situation—and the sequence of those situated actions. So one way to answer our research question—how do participants coordinate their actions in a mutually intelligible manner during flexible performance?—is to conduct an ethnomethodological study of people who are doing just that.

Ethnomethodology emphasizes that people use a machinery of expectations as they choose and coordinate their actions (David and Sutton 2011, Sacks 1992, Silverman 1998). Ethnomethodology is concerned with how participants construct the meaning of actions and events, not only when actions are consistent with prevailing norms or rules, but also when they deviate from them. Interdependent action, Garfinkel argued, takes place against a background of expectations that shape how participants coordinate and make sense of their everyday interactions. He described these expectations as the “seen but unnoticed, expected, background features of everyday scenes” (Garfinkel 1967, p. 36). Garfinkel was interested not only in how background expectations were used by participants to create and maintain a “world in common,” but also in how participants repaired breaches and violations of those expectations. Ethnomethodology is famous for Garfinkel’s (1967) “breaching experiments” in which field researchers violate—and thereby bring to the surface—the taken-for-granted expectations of participants. Garfinkel highlighted that breaches frequently occur as part of everyday activities but are difficult to sustain because people are so skilled at repairing them.

An ethnomethodological approach also highlights how participants make sense of sequences of action. Garfinkel observed that actions acquire their meaning in relationship to prior and subsequent actions. On this point, Rawls (2008, p. 712) writes about ethnomethodology that, “each next thing done or said is taken in relation to the last (reflects back on the last), and this reflexive sequential chain constitutes a basic order of sensemaking.” The notion of sequence that is central to ethnomethodology has influenced allied approaches, such as conversation analysis (Heritage 1984, Sacks 1992, Silverman 2013). By applying an ethnomethodological approach to the study of coordinating flexible performance, we can both identify moves and their sequence, and also examine how the sequential unfolding of actions is meaningfully understood and displayed by participants.

Methods

Research Site

Community Hospital (CH) is the flagship institution of a healthcare system that includes 24 satellite sites, serving about 500,000 people. CH provides a full range of standard and specialty services, making it a destination for patients who have complex and uncertain conditions that cannot be treated elsewhere. Our research was conducted in this hospital’s ICU, which receives patients with a wide variety of problems (medical, surgical, trauma, and so forth). The ICU has 21 beds, a dozen attending physicians, and a full complement of nurses and hospital staff. Prior to our study, we obtained ethics approval and informed consent from the 10 attending physicians that we recorded during handoffs and interviews.

Our specific focus is ICU handoffs that occur at the shift changes of attending physicians. Within the context of healthcare, handoffs occur frequently: by conservative estimate, there are half a billion handoffs every year in U.S. inpatient hospital settings (Cohen et al. 2012). Handoffs are an important and consequential routine in which misunderstandings could harm patients (Sutcliffe et al. 2004). At the CH ICU, attending physicians are on call for a week at a time. Handoffs occur once each week when pairs of outgoing and incoming physicians enter a small meeting room and sit down to discuss each patient in their particular group. These attending physicians are peers who have worked together for years, with a median of 10 years of experience. Although there are growing calls to establish industry standards for handoffs, there is not yet a universally accepted or official form that handoffs must take within the context of an ICU. Rather, the practice of handoffs is locally managed, left to the discretion of the health professionals involved in the routine, with physicians able to tailor the routine to each patient’s situation (Cohen and Hilligoss 2010, Hilligoss and Cohen 2011, Solet et al. 2005).

Research Design and Methods

Our research project began with a general interest in organizational routines and physician handoffs as a highly consequential activity in healthcare. We did not begin with a specific research question, but rather with data collection and analysis (see section “Data Analysis”), until a research question eventually emerged and enabled our theoretical contribution (Sacks 1992). We closely examined what people actually did, against a backdrop of what they expected (ten Have 2004).

On one hand, our approach was conversation analytic (Atkinson and Heritage 1984). We recorded and analyzed the conduct of physicians doing handoffs, for the purpose of locating the actions that they performed and explicating the sequential packaging of those actions (Pomerantz and Fehr 1997). In this view, talk is a form of social action (Austin 1962) as words are a way of doing things, not just meaning things, and sometimes the work that routines
Data Collection

Video recordings. Video recordings capture emergent action processes as they unfold in time and space, through orchestrations of discourse, bodies, and things (Streeck et al. 2011). Video recordings allow researchers to repeatedly observe the empirical details of select events and activities within organizations. Analysts can continually compare their emerging theories to their original data, thereby extending and refining their coding as they go. We tried to record naturally occurring interaction—i.e., behavior that would have occurred whether or not a camera was in the room—so we always conformed our data collection efforts to the practices of the physicians. We recorded only when the physicians were ready to handoff, without changing their schedule. We placed our camera in their handoff room, in a corner and out of the way, trying to not disrupt their activity. We also left the room during handoffs, so that only our camera remained. If something surprising happened, we adapted as the participants improvised; for example, once the handoff room was occupied, so physicians stood at the nursing station, which is where we placed our camera. Of course the physicians knew that we were recording, which may have influenced their behavior, but our disruption was probably minimal. Researchers who use video cameras have found that their “presence does not continue to pervade the action,” that “within a short time, the camera is ‘made at home,’” and that “participants have a job or work to do, and have to accomplish their various responsibilities in routine and recognizable ways” (Heath et al. 2010, pp. 48–49). We continued to collect video data until we had captured all 10 of our attending physicians participating in the roles of both outgoing and incoming physician, for a total of 262 handoffs within 27 handoff sessions.

Interviews. After concluding our recording of handoffs, we conducted semistructured interviews with 8 of the 10 physicians that we recorded (one physician had retired and one was unavailable). The interviews were approximately one hour long, conducted by telephone, recorded with the participants’ permission, and then transcribed. Our questions invited the physicians to talk about handoffs, including objectives, preparations, enactments, etc., moving gradually from general inquiries to more probing questions (see interview protocol, Appendix A). Some of the physicians followed up with us subsequently and informally, offering additional observations and comments.

Informants. Throughout our process of data collection, a couple of the ICU physicians also acted as ongoing informants. In addition to explaining medical concepts and terminology, they answered our questions about the research context, such as the variety of patients and problems, and the training and tenure of physicians. Occasionally, these informants also corroborated or corrected our interpretations of handoff interaction, helping us to understand the sometimes nuanced performance of the physicians.

Data Analysis

In an effort to identify, articulate, and then answer our research question, we analyzed recordings of both the handoffs and the interviews. Our data analysis had three phases: (1) an initial coding of action patterns and packaging during handoffs; (2) an analysis of themes in our interview recordings; and (3) further analysis of our handoff recordings, using the interviews as a backdrop for comparison and contrast.

Phase one: Coding patterns and packaging of action in handoffs. Our data analysis began with watching the video recordings of handoffs, carefully and repeatedly. Our aim was to identify recurring patterns of action in the sequential organization of talk-in-interaction (Boden 1994, Drew and Heritage 1992), and begin to explicate the packaging of those actions. Occasionally a moment “jumped out” as obviously noteworthy, but usually the
significance of the physicians’ performance emerged slowly as our examination deepened. We made note of recurring action patterns and packaging, which we used to create a set of codes; it was not our aim to create an exhaustive list of codes, but rather to capture recurring features that seemed most prevalent and important during the interactive accomplishment of the handoff routine.

Phase two: Analyzing themes of interviews. Conducting interviews with the physicians gave us additional and valuable information about what they thought they were doing in handoffs. We asked physicians to tell us about different aspects of their routine, including their purpose, preparation, performance, and post-performance assessment (see Appendix A). Sooner than later, we saw that the physicians had strongly shared expectations about what steps should be taken in handoffs and in what order—none of which was mandated by an official or standard template for conducting handoffs. In seeking theoretical handholds for our analysis, we turned to work on routines as recurrent patterns of action, comprised of “moves” in a sequence (Pentland 1992, Pentland and Rueter 1994). Notions of moves and sequences from this routine-dynamics perspective acted as sensitizing concepts (Blumer 1954) for our analysis. When we analyzed our interview data to identify recurring themes, and then to organize our findings as collections of individual statements grouped by theme, we were conscious of moves and sequence. We saw that the work of the handoff routine was largely accomplished through talk. As we read through the transcripts of our interviews, we saw that the physicians had identified a similar set of topics that handoffs needed to cover, and that they listed those topics in a particular order. The physicians regarded topics as steps in their process. Thus, to address one of the required topics was, in their description, to move in the direction of accomplishing a handoff.

Phase three: Analyzing handoffs as sequential patterns of action. Following our analysis of interviews, we returned to our video recordings of handoffs, continuing to use notions of moves and sequence as sensitizing concepts (Blumer 1954) in our analysis of the video data. As recommended by conversation analysts (Atkinson and Heritage 1984), we transcribed select moments of our video data to highlight audible and visible details, small ways of talking and moving that are not especially meaningful in isolation but become meaningful through their relationship to other behaviors within sequences of action. We observed that physicians were doing much more than they had described in interviews. They were not merely talking about specified topics in a sequence—they were continually managing the doing of that. Whether or not a move in a sequence had been accomplished was something that the participants had to manage and negotiate. We saw that participants in handoffs were coordinating their progression from one move to the next, through audible and visible displays that a move had been accomplished and that they were ready to move on. This observation helped focus our analysis of video excerpts to learn more about how participants were using sequential features of the handoff to coordinate their actions.

Thus, our data analysis proceeded incrementally. Our initial analysis and coding of the handoff recordings informed our subsequent interviewing, and then our interviewing enabled further analysis of the handoff recordings. This three-phase process enabled our findings about coordinating flexible performance. At each phase of our data analysis we engaged in member-checking, a process where we tested our observations with participants to validate our emergent findings (Lincoln and Guba 1985). We worked to ensure that our findings were representative of the phenomenon of interest (Lee 1999). And we were able to triangulate our data (Jick 1979) by using video recordings, interviews, and informant conversations.

Findings
Our findings demonstrate that the outgoing and incoming physicians tailored each handoff to the patient’s unique constellation of issues. Within the ICU, issues varied widely from patient to patient; for example, the treatment of a young but otherwise healthy patient following trauma in a car accident differed significantly from the treatment of an elderly patient suffering from a heart attack and multisystem organ failure. Because outgoing physicians could not possibly share everything they knew about each patient, they tried to handoff the information that was most important, in a way that was mutually intelligible. Our physicians had a lot of autonomy in conducting handoffs, deciding what to say, when to say it, and how. Although many aspects of ICU care are officially standardized, handoffs are usually not. Most hospitals have no set protocol for handoffs and their conduct is left to the discretion of physicians.

Although our physicians had no official protocol for conducting handoffs, they did have consistent expectations about how handoffs should be done. They were experts, not only about their patients’ medical care, but also about their ways of working together. Over a period of years, the same 12 physicians had conducted thousands of handoffs with each other: usually meeting as dyads, at approximately the same time each week, in the same little room, always talking about the particular set of patients at hand. The history of their handoffs was not lost to them. When two physicians sat down for yet another handoff session, they brought expectations about the table—expectations about what to do and how to do it—including the prospect that physicians would deviate from expectations in the service of a better handoff. Deviations from expectations were useful, not detrimental, as long as the physicians were coordinating their performance to be mutually intelligible.

We present our findings in two parts. In part one, we consider the expectations that physicians brought to their
handoffs, as reported by them during interviews. Our interviews showed that physicians shared three interrelated expectations about their routine: (1) that handoffs would include particular moves; (2) that these moves would occur in a particular sequence; and (3) that the moves and sequence of handoffs would be flexibly performed or tailored to the particular needs of patients.

In part two of our findings, we examine the flexible performance and real-time coordinating of physicians in handoffs, as captured in video recordings. Although the physicians did not explicitly talk about coordinating during our interviews, the video shows that there was ongoing coordinating between outgoing and incoming physicians. Coordinating included displays of sufficiency—such as agreeing, nodding, continuing writing—which audibly or visibly showed that the handoff was mutually intelligible and that the participants were ready to continue. Coordinating also included displays of insufficiency—such as questioning, repairing, stopping writing—which showed that something was wrong and needed to be changed before the handoff could go on. Moreover, coordinating was made especially salient during deviations from expected moves and sequence, as well as during transitions between moves in sequence. Thus, the expectations that physicians brought to the table provided a backdrop for the mutual intelligibility of their flexible performance.

Our presentation of findings proceeds in a tell-show-tell fashion (Golden-Biddle and Locke 2007): we explain a core idea to be depicted in the data that follow; then we show those data; and finally we tell more abstractly what the data show in relation to our ethnomethodological approach and organizational routines in general.

**What Physicians Expected About Moves and Sequence in the Flexible Performance of Handoffs**

Through interviews with ICU attending physicians (the same physicians in our video recordings) we discovered the nature of their expectations about handoffs. Even though we interviewed each physician separately, their descriptions of handoffs and how they should be performed were generally the same. Their shared expectations were not officially mandated or standardized, but were rather rooted in past experiences, such as their shared history of coordinating while flexibly performing handoffs. We begin by reporting the physicians’ expectations about what their routine included and how it should be conducted.

*The moves in the routine.* The physicians identified five key moves that they expected in handoffs: patient identification, past events, current issues, future plans, and family matters. Although they sometimes used different terminology, all five moves were identified by all of the physicians.

*The sequence of moves.* The physicians expected that the moves of handoffs would be conducted in a particular sequence. Consistently, the physicians said that they would start by identifying the patient, then tell the patient’s medical story (past events, current issues, future plans), and end with considerations of the patient’s family. The three moves at the core of handoffs—past events, current issues, future plans—have an obvious chronological relationship or progression. Physicians emphasized that this chronological sequence helped them to recognize what was happening during a handoff. For example, Physician C explained, “[I] extract, out of the head space of the guy that’s handing over to me, everything he or she knows about that patient in terms of past history, past events and current happenings, particularly if I’m going to show up the next day and manage that patient.” Physician C then told about one handoff he found especially confusing because the outgoing physician was not following the sequence of moves. He said, “What’s the flow of what had been going on? There’s no temporal relations, no story being told here, [no] chronological flow of what’s been happening. It has to be conveyed as…where we were, where we are, where we’re going.” Overall, handoffs were mutually intelligible to physicians, largely through the chronological sequence at the heart of their routine.

The flexible performance of moves in sequence. Although the physicians expected five moves in a particular sequence, they also expected that handoffs would be tailored to fit the patient’s situation. During our interviews, physicians said that their patients came in wide variety—both “demographic” and “pathological” (Physician B). Even though some patients recovered quickly, some were “not expected to survive” (Physician F), and others had already “been in the ICU for months” (Physician A). One minute, a physician might be caring for a young man who had “gone into pulmonary edema, and [was] now on dialysis” (Physician H); and the next minute she might be treating “an 86-year-old woman who came in with a COPD exacerbation, triggered by an infection” (Physician F). Because of the wide variety of patients, the physicians had to be flexible in their performance of handoffs to match each patient’s situation.

Another reason for flexible performance in handoffs was that physicians could not possibly say everything. They needed “enough information to do a good job” (Physician E), but they wanted the outgoing physician to “act as a filter…because you can’t give all the information” (Physician A). Because of the complexity and uniqueness of each patient’s issues, physicians were constantly dealing with a figure-ground problem, the difficulty of seeing the forest for the trees, the risk of getting lost in details that were “[not] really important and they’re obscuring the picture” (Physician D). On one hand, physicians wanted to see the trees: to “know the main clinical and social issues” (Physician B). On the other hand, they wanted to see the forest: a “sense of the big picture of what’s going on with a patient” (Physician F), “the broader issue of what are the overall goals of care” (Physician C), without getting “bogged down with micro details” (Physician G). One physician summarized this way: “I just want to
know the pertinent pieces of information. I don’t want to know every piece of information because the important things get lost in the mix” (Physician E). Thus, too much information was as problematic as too little.

Physicians expected that their performance of handoffs would be flexible, that each move would be enacted in a different way, according to the needs of particular patients, and that the sequence of moves in a handoff might also vary. By deviating from the first two expectations (i.e., the particular moves and/or their sequence), physicians could better achieve the third (i.e., tailor routines to the patient’s situation). For example, physicians might omit information by skipping one or more of the moves that physicians said they expected. If a patient “doesn’t have very complex or complicated problems…then it’s okay to omit some stuff that is not really crucial” (Physician C). Or as Physician E explained.

Sometimes the way to start [a handoff] is, “When were you here last?” Because we do pretty asymmetrical shifts, so sometimes you’re in the ICU fairly frequently, sometimes you haven’t been there for a while. When you’re there frequently, and the patients have been there for a while, you may know people very well. And then you could tailor it to just bring them up to speed on what’s happened since [they] were there last.

In this way, physicians recognized that handoffs could be flexibly performed by changing the makeup of the moves that they expected and/or the sequence of those moves.

In summary, physicians expected a particular pattern but also flexibility in handoffs. On one hand, they expected certain moves and in a particular sequence, which functioned like a backbone for handoffs to stay the “same.” On the other hand, physicians insisted on flexibility: that handoffs be tailored according to the patient’s situation. For example, information about patients might be omitted, depending on the patient. So our interviews revealed a tension in what the physicians expected, with handoffs being both varied and the “same.” We now turn our attention to enacted patterns of flexible performance captured on video—what the physicians actually did rather than what they said they did.

How Physicians Managed Sequence and Negotiated Moves in the Flexible Performance of Handoffs

Despite the physicians’ similar expectations about handoffs, which suggested a strongly shared ostensive pattern of their routine, their flexible performance relied on various forms of real-time coordinating. Our video analysis focuses on nine excerpts (transcribed and annotated) that show the physicians coordinating about both the moves and the sequence of those moves in their routine.

First, we show how coordinating during handoffs was ongoing. At virtually every turn, the physicians signalled to each other regarding the sufficiency or insufficiency of their unfolding routine. Coordinating was sometimes explicit, as when an incoming physician explicitly asked for more identification of a patient before moving on to that patient’s medical history. By explicitly moderating the advancement of a handoff, the physicians indicated that their performance was insufficient and needed to be improved before they were ready to move on. Coordinating was sometimes implicit, as when an incoming physician remained silent and continued writing while the outgoing transitioned from one move of their handoff (e.g., identification) to the next (e.g., past events). By silently proceeding with a handoff, physicians implicitly showed to each other that the prior performance was sufficient and that they were ready to move on.

Researchers with roots in ethnomethodology often examine the openings of social and organizational activities, because openings are usually rich with information about the participants and their ways of working together. When we examine the openings of our ICU handoffs, we see physicians doing patient identification—an initial move that was made mutually intelligible through ongoing coordinating. To illustrate, consider the opening of a handoff that was conducted under rather chaotic conditions. When the physicians went to their handoff room, they discovered that it was already occupied, so they decided to huddle at the nursing station (see Figure 1). They were standing instead of sitting, using counter space instead of a table, and talking over the noise of their surroundings. Despite the chaos, the opening identification of their patient went smoothly:

Excerpt 1 (#1.002–0:00)
1 Out: Okay, so umm bed number 2 mister Jack Jones, 2 umm 78 years old guy, has been in the hospital 3 for about a week now, came in most likely with 4 [pneumonia]… 5 (Figure 1: outgoing watched incoming write))

This opening sequence is a textbook example of patient identification: identifiers included the patient’s bed number (Line 1), name (Line 1), age (Line 2), gender (Line 2), and a differentiating fact about his admission to the hospital (Lines 2 and 3). What is less obvious—but something that we emphasize—is the ongoing coordinating of this sequence. While the outgoing physician was talking, the incoming was writing it down, and the outgoing was watching what the incoming was writing (see Figure 1).
Within their chaotic environment, the physicians could have positioned themselves in a wide variety of ways, but they adopted an embodied formation that enabled ongoing coordinating, with the outgoing looking over the shoulder of the incoming physician to see what he was writing. The outgoing’s sequence of identifiers was not privately and mentally received by the incoming, but rather publically and materially registered through his writing. With each identifier, the outgoing spoke and the incoming wrote, thereby coordinating and coauthoring each part of their unfolding sequence. Notice their seamless transition from patient identification to the next move of the handoff: i.e., the patient’s past events (“[pneumonia]” Line 4). By jointly advancing to the next move, the physicians showed to each other—and to analysts who later watched the video—that the opening move (identification) was accomplished or sufficient, at least good enough to move on. Although they made it look easy, the physicians were actively coordinating at every turn: they positioned their bodies spatially so that they faced each other; they attended to visible as well as verbal behavior; and the incoming physician did not object when the outgoing transitioned to the next move in the sequence.

Sometimes coordinating was more pronounced. Sometimes physicians spoke explicitly about the sufficiency or insufficiency of their unfolding routine—in contrast to the incoming physician’s silent endorsements in Excerpt 1. For example, in the following excerpt the incoming physician explicitly signaled that the opening move (patient identification) was not sufficient:

Excerpt 2 (#3.015—7:26)
1 Out: Next one is Tracy Adams ((Figure 2A: incoming looks down and takes notes)) she’s a woman who had a history of uh previous multiple MVCs [motor vehicle collisions] and so has a bit of a fusion and uh…
2 In: ((Figure 2B: incoming stops writing and looks up))
3 What bed is that?
4 Out: Oh sorry, thirteen
5 ((Figure 2C: incoming looks down and writes))
6 In: How old is she?
7 Out: Thirty nine

At first, patient identification was going well. The incoming was looking down and taking notes (see Figure 2A) while the outgoing identified the patient: her name (Line 1), gender (Line 2), and a differentiating fact about her motor vehicle collisions (Line 3). But then the outgoing physician seemed to cross a line: he started talking about the patient’s fused vertebrae (Line 4), which is more like past events than identification. Immediately, the incoming physician stopped writing and looked up (see Figure 2B), suspending the handoff activity and marking the moment as problematic. Then the incoming explicitly asked about the patient’s bed number (Line 6) and age (Line 8), which had not yet been identified. In this way, the incoming physician showed that the opening sequence was insufficient, that more identification was needed. The outgoing physician apologized (Line 7), acknowledging his mistake, and then answered the incoming’s questions (Lines 7 and 10). By returning to his writing (see Figure 2C), the incoming physician treated the outgoing’s response as sufficient and showed that he was ready to move on.

Thus, the opening move in ICU handoffs (patient identification) enabled the physicians to immediately “get on the same page” about both their patient and their process. On one hand, patient identification provided information. The physicians clarified what patient they were talking about before delving into that patient’s story; and because some identifiers were medically relevant, the physicians transferred important medical information, such as age and gender, in the very act of identifying the patients. On the other hand, the move of patient identification primed the physicians’ coordinating. Physicians had to immediately show whether they were ready to proceed with a handoff through their participation in the opening move. Identification unfolded sequentially (bed, name, gender, age, differentiating comment), which gave the participants a series of opportunities to signal their involvement and readiness to move on (or not).

Second, we show how sequence was a resource for physicians in the flexible performance of their routine. Within a context of shared expectations, the physicians sometimes changed the sequence of moves in handoffs, in the service of a particular patient’s needs. Sometimes moves were rearranged to foreground or emphasize crucial information; sometimes moves were entirely skipped to avoid redundant or superfluous information. We analyze
video excerpts that demonstrate sequential variation, and we highlight the coordinating work that made sequential variation mutually intelligible. Through explicit or implicit reference to their shared expectations, physicians both deviated from and at the same time instantiated the ostensive pattern of their routine. Thus, sequence was an ongoing resource because the difference between sequence expected and sequence enacted was made meaningful in the moment of performance, giving physicians a better purchase on their patients’ situations.

To illustrate how the sequence of moves was meaningfully rearranged, consider the case of Mark Johnson, who was slowly dying. Mark was a 71-year-old man who had been admitted to the ICU on four different occasions within the past month, and his care was complicated by pre-existing dementia that prevented him from communicating with his doctors and making good decisions. In his stead, decisions were being made by his wife, a deeply religious person who was literally hoping for a miracle and was refusing to “let go” of her dying husband. Increasingly, the wife was angry about her husband and unhappy with his doctors. So when it came time to handoff this particular patient, the outgoing physician decided to foreground “family matters” as his primary concern. The interaction unfolded as follows:

Excerpt 3 (#3.013–5:25)

Out: Next, in bed five is Mister Johnson.

In: Male, how old is he?

Out: He’s seventy one.

In: Oh

Out: And it’s really unfortunate, it’s uh ((Figure 3A: outgoing closes eyes, pinches nose))

and maybe starting from the end ((Figure 3B: incoming stops writing and looks up))

the wife, who’s the substitute decision maker for him ((Figure 3C: incoming looks down and resumes writing))

is extremely angry . . .

The opening sequence was familiar as the physicians interactively identified the patient by bed number (Line 1), gender (Line 1), name (Line 1), and age (Line 3). But then the outgoing physician did something unexpected: he relocated talk about the family from the end of the routine, where it usually occurred, to the beginning of the handoff, where it was foregrounded and emphasized. By rearranging the sequence of their handoff, the physicians demonstrated both the flexibility and sameness of their routine. On one hand, they were able to tailor their performance—in short order—to accommodate a difficult situation. They shifted their focus from the patient to the wife, who became a primary concern rather than an afterthought. On the other hand, the physicians sustained the usual sequence of their routine in the course of deviating from it. With the words “starting from the end” (Line 7), the outgoing physician explicitly explained that and how the handoff sequence was being rearranged, which acknowledged and thereby instantiated the expectations that they shared.

By coordinating their performance, the physicians managed to move on with their handoff despite the rearranging of moves. First, the outgoing physician marked the moment as unusual: rather than look across the table or down at his notes as usual, the outgoing physician momentarily closed his eyes and pinched his nose, like someone concentrating or having a headache (see Figure 3A). His preface “it’s really unfortunate” (Line 5) also put the incoming physician on notice that something unusual was afoot. Second, the incoming physician showed that he was willing to play along. When the outgoing said “starting from the end” (Line 7), the incoming momentarily suspended his writing and looked up (see Figure 3B), not immediately willing or able to continue. But soon he looked back down and resumed his writing (see Figure 3C), showing that he was ready to go on. Thus, sequence was a resource for the flexible performance of routines: whether physicians adhered to or deviated from their shared expectations about handoffs, each performance was mutually intelligible through its relationship to those shared expectations including sequence—explicitly or implicitly referenced and thereby instantiated through coordinating.

In addition to rearranging moves in a sequence to emphasize information, the physicians also skipped moves to avoid unnecessary information. By coordinating their skipping, physicians made their flexible performance mutually intelligible: they both attended to the needs of particular patients and sustained their shared expectations...
about (moves and sequence) in the course of deviating from them. To illustrate, consider the case of Gilbert Frank, a patient that the physicians knew well because he had been in the ICU for almost a month. When it came time for Frank’s handoff, his long and complicated history was entirely skipped by the outgoing physician—but only after the incoming physician recognized the patient. With the past events skipped, the handoff became efficient (only 40 seconds), unfolding as follows:

Excerpt 4 (#3.001–7:45)

1 Out: Okay so Gilbert Frank, he’s in bed 9, um, he’s  
2 been here almost a month ((Figure 4: incoming  
3 starts nodding)) and uh  
4 In: I know him, yeah  
5 Out: Okay so major issue with him is weaning, and  
6 actually he’s making great progress in weaning  
7 In: Okay  
8 Out: Uh today he was going to…

In the opening sequence, the outgoing physician identified Frank by bed number (Line 1), name (Line 1), gender (Line 1), and the differentiating fact that he had been in the ICU for almost a month (Line 2). At precisely this point—i.e., the transition point from identification to past events—the incoming physician showed that he recognized the patient. His coordinating was first visible as he nodded in recognition (see Figure 4), and then audible as he explicitly stated “I know him” (Line 4). By then skipping past events and going straight to current issues (“so major issue…” Line 5), the outgoing physician treated the past as unnecessary and the current as sufficient. By eventually talking about future plans (“today he was going to” Line 8), the outgoing preserved the overall chronology of the handoff, both deviating from and instantiating the participants’ shared expectations about their routine. Thus, their flexible performance of handoffs included skipping a move (e.g., past events), which enabled physicians to focus on what they really needed to know, in the service of a better handoff. Through coordinating, such deviations were made mutually intelligible in relation to the participants’ shared expectations about moves and sequence. Again, sequence was a resource for flexible performance of their routine.

In the next excerpt, flexibility is even more pronounced as the physicians skip two moves of their routine in tailoring to the needs of a particular patient. Jane Stewart was recovering quickly and would soon be discharged from the ICU and transferred to a hospital ward, no longer in the care of ICU physicians. Under these circumstances, the physicians skipped both her past events and current issues, going straight from patient identification to future plans. It was unnecessary for the physicians to talk about Stewart’s past and present, because she would no longer require ICU care and would soon be someone else’s responsibility. The handoff unfolded as follows:

Excerpt 5 (#5.011–14:42)

1 Out: Next door is Miss Jane Stewart  
2 ((Figure 5A: physicians on task, looking down))  
3 Do you remember her?  
4 In: I remember her  
5 Out: She’s up for transfer, she’s-  
6 In: Yes! ((Figure 5B: arms raised in celebration))

At the start of the handoff, both physicians looked down at their papers, with one of them reading and the other one writing, visibly on task (see Figure 5A). Their opening identification sequence included bed number (Line 1), gender (Line 1), and name (Line 1), but then the outgoing physician asked directly whether the incoming recognized the patient: “Do you remember her?” (Line 3). As soon as the incoming confirmed recognition—i.e., precisely at the transition point between identification and past events—the outgoing physician skipped to future plans and the patient’s imminent discharge from the ICU (“She’s up for transfer…” Line 5). By skipping the
patient’s past events and current issues, the physicians showed that these were now unnecessary, no longer their concern. Instead of looking down at their papers, both physicians looked up at each other and raised their arms (see Figure 5B) in joint celebration about the patient’s recovery. Although their handoff was unusually brief and focused (less than 30 seconds), it was sufficient for their purposes in this particular situation. The symmetry of their visible actions was a strong display of coordination—i.e., both looking down and then up at each other, both hands on papers and then up in the air. Thus, the sequential variation of routines can be extreme (e.g., skipping two moves), as long as the participants are coordinating in relation to their shared expectations about moves and sequence. We now turn to instances of repair, when one physician deviates from shared expectations and the other treats it as a breach.

Third, we show how the sufficiency of moves was negotiated in the flexible performance of handoffs. When things go well, coordinating enables physicians to tailor their routine to the needs of particular patients while also making their performance mutually intelligible. But sometimes the flexible performance of routines miscarries. Sometimes physicians, in the course of conducting a handoff, signal that a move is insufficient and needs more work, or that a move is unexpected and needs to be changed. Coordinating became especially salient during transitions from one move to the next, because one move was deemed sufficient as soon as the physicians moved on to the next. As long as a particular move was underway, its sufficiency was pending: incoming physicians sometimes withheld questions or complaints, giving the outgoing physician an opportunity to fill gaps and fix errors; but as soon as outgoing physicians signaled that a transition to the next move was imminent, incoming physicians responded with a flurry of questions or repairs. Our analysis shows how the sufficiency of moves was accomplished through coordinating.

Consider the case of Dale Elwin, a patient who had been in the ICU for more than a month after a motor vehicle accident (MVA). The patient’s problems were serious and extensive, including a head injury (with intracranial bleeding), pulmonary effusion (fluid in the lungs), renal failure, and more. However, none of these problems were mentioned by the outgoing physician—at least not initially. Rather, the outgoing physician skipped the patient’s past events to talk about current issues (possible bacterial infection). Visibly confused, the incoming physician interrupted and asked about the patient’s past, thereby repairing the sequence by returning to the move that was skipped. The interaction unfolded as follows:

Excerpt 6 (#1.005–0:00)

1 Out: First patient is Dale Elwin, and he’s a MVA accident, (Figure 6A: incoming looks down and takes notes)
2 uh, he was admitted on December 3, uh, he has, uh, been, this week the issues with him have been that
3 ((Figure 6B: incoming looks up, stops taking notes))
4 he has an ongoing infection and he’s being treated
5 with Vancomycin, Clox...
6 In: Okay just before we go any further, uh, can you just... just tell me his injuries? I think I was around when he came in but, uh, I don’t recall him

Skipping the patient’s past events may be okay, as long as the incoming physician recognizes the patient (e.g., see Excerpt 4). But that didn’t happen in this case. While the outgoing physician was identifying the patient (Lines 1 and 3), the incoming was taking notes (see Figure 6A)—showing his participation in the handoff but not his recognition of the patient. When the outgoing physician skipped from patient identification to current issues (“this week the issues…” Line 4), the incoming stopped writing (see Figure 6B) and eventually suspended the handoff (“before we go any further...” Line 8) by requesting the information that was skipped (“tell me his injuries...” Line 9). In this way, the sequence with skipping failed and had to be repaired. In this way, skipping the patient’s past events was treated as a breach of expectations: with the words, “I don’t recall him” (Line 10) the incoming physician indicated that the handoff was not intelligible and that he needed the information that was skipped.

As noted above, transitions from one move in a sequence to the next were an opportunity for physicians to signal the sufficiency or insufficiency of their unfolding handoff. Coordinating is especially germane at transitions between moves, because displays of sufficiency are both backward and forward looking in unfolding
sequences of moves. Moves are sufficient once they have been accomplished—at their end, not their middle—with participants ready to move on. To illustrate, consider the handoff of Cindy Nelson, who was recovering well from surgery despite losing a lot of blood: the outgoing physician reported that she was awake, moving around, and quite comfortable. As soon as the outgoing turned to talk about the future—i.e., precisely at the transition point between current issues and future plans—the incoming physician interjected with a question about the patient’s bleeding. The interaction unfolded as follows:

Excerpt 7 (#1.011–0:25)

1 Out: Blood pressure continues to be a problem even
2 with her blood transfusions during surgery...
3 ((45 seconds omitted: talk about infection))
4 Out: She’s actually awake and moving around and, you
5 know, she’s quite comfortable I think she’ll be
6 ((Figure 7A: outgoing starts to turn the page))
7 In: Why did she bleed so much?
8 Out: Uh
9 In: Was she on Coumadin or something?
10 Out: Uh yes I’m sorry I forgot to tell you that
11 ((Figure 7B: outgoing stops turning the page))

When the outgoing physician identified blood pressure as one of the patient’s current issues (lines 1 and 2), he did not account for her excessive bleeding. So when he started to talk about future plans (“I think she’ll be…” Line 5) and when he began to literally turn the page on this patient (see Figure 7A), the incoming physician interrupted and tried to repair the prior move. Through her questions about bleeding (Lines 7 and 9), the incoming physician showed that the prior move (current issues) was insufficient and that she was not ready to move on. Immediately, the outgoing physician apologized (“I’m sorry…” Line 10), acknowledged his mistake (“I forgot…” Line 10), and released the page that he was turning (see Figure 7B). Eventually, the questions related to bleeding were answered, the move (current issues) was treated as sufficient, and both physicians moved on to the next move in the sequence (future plans).

Researchers with roots in ethnomethodology often examine the closings of social and organizational activities because coordinating is especially conspicuous during such transitions. When we examine the closings of ICU handoffs, we see that the physicians didn’t just stop talking. Rather, they incrementally marked their handoffs as sufficient through nuanced utterances such as “alright” or “okay” and through small gestures or shifts in body orientation. Sometimes closings appeared easy, as when both physicians showed that the handoff was sufficient and that they were ready to move on. Other closings involved more work, as when one physician made a bid to close while the other resisted and pursued some other line of action, such as more information.

To illustrate, consider the handoff of Tyron Dickson, who was dying. After a lengthy discussion of his past events and current issues, the patient’s future prospects seemed bleak: key indicators showed that Dickson’s organs were failing and the physicians admitted that they were running out of options. Under these circumstances, closing the handoff was a delicate matter because the patient’s medical problems remained unresolved. Practically, closing the handoff closed off further discussion of options. Their closing was coordinated and incrementally accomplished through both audible and visible displays, with each turn by one physician creating an opportunity for the other to resist closing and pursue some new line of action or medical care. Eventually, the physicians interactively showed that their handoff was sufficient and that they were ready to move on to the next patient. The moment unfolded as follows:

Excerpt 8 (#1.017–3:40)

1 Out: His kidney function is declining
2 In: His lactate is up?
3 Out: Yeah …it’s seven and a half [so] it’s up
4 ((Figure 8A: outgoing looks down at patient list))
5 In: Yeah
6 Out: Yeah
7 ((Figure 8B: incoming looks down at patient list))
8 Out: That’s about it
9 In: Okay
10 Out: Okay
11 ((Figure 8C: outgoing points at next patient listed))
12 Out: Next is Carl Simmons, he’s in bed 4…

Having already talked about family matters, which was the last move of their expected sequence, the physicians revisited a couple of critical topics in closing (Lines 1 and 3). Notice the symmetry of actions that both accomplished and signaled the physicians’ coordinating about closing. They symmetrically agreed that their patient was
failing, both saying “Yeah” in quick succession (Lines 5 and 6). They visibly coordinated their attention to a patient list: first the outgoing physician looked down (see Figure 8A) and then the incoming (see Figure 8B). By looking toward their list, the physicians collaborated in a silent bid to close; the list is where they always looked before starting a new handoff because that’s where they found the next patient’s name. Their bid for closing became more pronounced when the outgoing physician said “That’s about it” (Line 8). His words were a claim of sufficiency, an assertion that their activity was nearly complete, which made closing their handoff immediately relevant. Symmetry in action was also demonstrated by the final utterances of this handoff: their “Okay” sequence (Lines 9 and 10) was information poor but coordination rich, a joint display that the handoff was sufficient and that the physicians were ready to move on. Immediately, the outgoing physician leaned forward and put his pen on the list and the next patient’s name (see Figure 8C), “Carl Simmons” (Line 12).

In our final excerpt, we highlight the challenge of achieving sufficiency at the closing of some handoffs, especially when handoffs are performed in succession. The patient was Mr. Bronson who had been in a serious car accident: his injuries included fractured ribs, which made it difficult for him to breathe, leading to pneumonia and then septic shock. After a long conversation about Bronson’s past events, current issues, and future plans, the physicians began to close the handoff without talking about family matters, which is the last move in their expected sequence. When the outgoing physician moved on and started talking about the next patient, the incoming raised a question about Bronson’s family, which created temporary confusion as the physicians were talking about two patients at the same time. Their coordinating and displays of sufficiency involved visible behaviors such as page turns, transcribed as follows:

Excerpt 9 (#2:007–38:00)

1 In: Feeding okay?
2 Out: Yep fine
3 In: Good
4 Out: Next is Mary Johnson
5 In: And the family? Oh Mary is still here
6 Out: For Mister Bronson?
7 In: Yeah
8 Out: Yeah I haven’t seen a lot of his family to be honest with you
9 In: So Mary is still here
10 Out: Yeah so Mary is the next patient in bed 8

The closing of Bronson’s handoff is somewhat bungled. After asking about his “feeding” (Line 1), the incoming physician turned a page—she literally turned her attention to the next patient (see Figure 9A). In a symmetry of action, the outgoing physician answered the question about feeding (Line 3) and then he also turned his page to the next patient (see Figure 9B). Following these strong displays of sufficiency, with coordinating both audible and visible, the outgoing physician moved on to the next patient, “Mary Johnson” (Line 6). The trouble started:
the incoming physician asked about Bronson’s family (“And the family?” Line 7), within an utterance that also acknowledged the new patient (“Mary” Line 7). Thus, the physicians were simultaneously talking about two different patients, while performing two different moves—i.e., family matters and patient identification. The confusion was interactively resolved as the physicians clarified which patient they were talking about (“Bronson?” Line 8), and then they addressed his family matters (Line 10) before jointly proceeding to the next patient (“Mary” Lines 11 and 12). Thus, coordinating was especially salient at the closing of handoffs because to negotiate the sufficiency of the final move was to also negotiate the sufficiency of the entire sequence. And when routines are performed in succession, participants must coordinate to avoid an overlap of closings and openings.

In summary, part two of our research findings expands our ethnomethodological approach as we employ conversation analytic methods to examine coordinating in the flexible performance of routines captured in video recordings. Our data show that flexible performance unfolds within a context of ongoing coordination. We examine both audible and visible forms of coordinating that become especially salient when participants vary the sequence of moves within their routine, and when they make transitions between moves of their sequence. In our presentation and analysis of data, we have deliberately preserved the meaningful entanglement of the participants’ behaviors, especially the displays of sufficiency or insufficiency that enable participants to get on with their shared project of caring for patients. When a breach of the participants’ shared expectations occurs, a variety of visible and audible behaviors may be used to signal that something is problematic. In the course of conducting handoffs, physicians may signal that a move is insufficient and needs more work, or that a sequence is insufficient and needs to be changed.

**Process Summary**

Our findings, which are graphically represented in Figure 10, show that the flexible performance of handoff routines involves a confluence of expectations and circumstances. Participants come to the routine with overlapping expectations about the moves and sequence that will constitute their performance, and their performance is tailored to the particular circumstances that exist at the moment of enactment. Through ongoing coordinating, the participants reconcile the difference between what they expect and what they enact.

We have identified three forms of ongoing coordinating in the flexible performance of routines. First, participants project future action, indicating when they will conform or deviate from expectations. This enables the other participant to distinguish between deviations as mistakes needing to be repaired, and intentional deviations in service of the situation at hand. Second, participants display to each other the sufficiency or insufficiency of the unfolding performance. When one participant deviates from expectations, the other can signal whether or not that deviation is mutually intelligible, through various audible and visible displays. Third, when one participant signals that something is wrong, showing that a deviation from expectations is not mutually intelligible, then the other participant can either account for the prior action or repair it as a breach of expectations.

Within this context of ongoing coordinating, participants further manage the flexible performance of their routine.

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**Figure 10** (Color online) Coordinating During the Flexible Performance of Routines

![Diagram of coordinating during flexible performance of routines](image-url)
in two distinct ways. First, they alter the sequence of their routine by rearranging or skipping select moves. Sequential variation enables participants to manage the relative importance of moves, according to their particular situation: by bringing a move forward, the participants may emphasize its importance; and by skipping a move altogether, participants may show that it’s irrelevant or superfluous. In this way, sequence is a resource for action: whether the participants deviate from expectations or not, the sequence enacted is meaningful through its relationship to the sequence expected.

Second, the participants alter the constitution of moves as they negotiate their sufficiency at points of transition. While a move is underway or in the process of being performed, a participant may withhold questions and suspend repair because answers and fixes may be forthcoming. But as soon as one participant indicates that a transition is imminent, the other participant may resist or protest that the present move is not yet sufficient. Coordinating is especially salient during transitions between moves, because a particular move is made “sufficient” when the participants move on to the next.

Thus, moves and sequence have a reflexive relationship during the flexible performance of routines. Although each move of the handoff makes the next move relevant, the sequential unfolding of the routine makes those moves sufficient. To signal that a particular move was sufficient, participants move on to the next; and by moving on to the next move, participants show that the prior move is sufficient. The participants’ explicit and implicit coordinating provided ongoing answers to the questions: Is our performance sufficient (or not)? Is our unfolding routine mutually intelligible (or not)? Are we ready to move on (or not)?

Discussion
Our study examines how participants coordinate their actions—flexibly yet intelligibly—during the performance of routines (see Figure 10 for summary). Drawing on routine dynamics and ethnomethodology to analyze interview and video data, we uncover both the expectations that participants bring with them to the performance of the routine and how participants use those expectations during performance. Specifically, we show how ICU physicians use the sequential features of the handoff routine—the expected moves of the routine and the expected sequence in which those moves occur—as they adapt their performance of the routine to address the particular circumstances of each patient. Our analysis reveals the ongoing work of coordinating that is required to adjust the performance of the routine to maintain mutual intelligibility, especially as the participants manage sequential variation in the routine and negotiate moves at points of transition. Our findings make two important contributions to the literature: (1) they identify the need for ongoing coordinating despite a strongly shared ostensive pattern and (2) they illustrate how participants use the sequential nature of the ostensive pattern of the routine as a resource for flexible performance. We elaborate these contributions below.

Ongoing Coordinating in Flexible Performance
Our study complements and extends work by Dionysiou and Tsoukas (2013), who theorized that a role-taking perspective and repeated performances of a routine should lead participants to develop increasingly shared schemata, which, in turn, should lead to a reduced need for coordination during performance. In our context, both of these factors—repeated performance and role-taking—were present. On average, the ICU physicians in our study worked at the CH ICU for 10 years, and, in that time, they performed thousands of handoffs. Both participants in the handoff routine were ICU physicians, which facilitated taking the perspective of the other participant. Moreover, they literally took on each other’s roles: the incoming physician for one handoff was the outgoing physician for the next handoff. Our interview data demonstrated that ICU physicians had largely shared expectations about the handoff, both in terms of what the routine involved (the expected moves in the routine and the expected sequence of those moves) and how the routine would be conducted (tailored to the need of each patient). Yet, despite this strongly shared ostensive pattern, we found that the ICU physicians engaged in significant ongoing work of coordinating to develop the “joint situated understandings” and “aligned actions” described by Dionysiou and Tsoukas (2013). Our study reveals that whatever shared schemata were in play, they did not preclude the need for ongoing coordinating during flexible performance.

Our finding that ongoing coordinating occurred even when participants had a strongly shared ostensive also raises questions about the relationship between cognition and action in the broader coordination literature. Much of the coordination literature related to interdependent work, not just in the performance of routines but also in the teams and group performance literature, highlights the importance of shared understanding (Okhuysen and Bechky 2009). For many coordination researchers, the underlying assumption is that if people who are engaged in interdependent work understand a situation in a shared enough way, then coordinated action follows. This is particularly true in the teams and group literature, where there is a large body of research linking shared cognition in teams (for instance, shared schema, shared mental models, team mental models, and team situation models) and more effective team performance (Cannon-Bowers and Salas 2001, DeChurch and Mesmer-Magnus 2010, Marks et al. 2000, Mathieu et al. 2000, Mohammed et al. 2010, Rico et al. 2008). However, our study illustrates that shared understanding by itself was insufficient, and redirects attention to the role of action for coordinating interdependent work.
With respect to action, Dionysiou and Tsoukas (2013) highlight the need for further examination of how participants interrelate their individual lines of action during the collective performance of routines. Our study shows how participants calibrated their performance to create, maintain, and repair mutual intelligibility during the flexible performance of routines. Our ethnomethodological lens focuses attention on the emergent, situated, and embodied nature of ongoing coordinating. We show how ongoing coordinating was made audible and visible through multimodal displays, such as when participants physically co-oriented toward each other, engaged with physical artifacts, and used talk, gaze, and gesture to calibrate their performance. At first glance, the performative actions that our ethnomethodological approach identifies—for instance, stopping writing, looking up, asking a question, or turning a page—may seem inconsequential, but our findings illustrate that the way in which participants coordinate just these types of actions is what enabled the accomplishment of mutual intelligibility during flexible performance.

By unpacking the ways in which ongoing coordinating was accomplished, we contribute to a more nuanced understanding of the relationship between repair and the flexible performance of routines. Previous studies have shown that people engage in repair during the performance of routines when truces collapse (Zbaracki and Bergen 2010) or when the expected sequence of the routine is disrupted (Turner and Rindova 2012). Our study goes further and illustrates that breaches and repairs are part of the ongoing coordinating that occurs in the everyday performance of routines. In contrast to Turner and Rindova (2012), we found that repair was sometimes required even when the sequence of the routine was unfolding as expected (for instance, the problematic transition from patient ID to past events in Excerpt 2, or the problematic transition from past events to current issues in Excerpt 6). Conversely, we showed other examples where no repair was necessary, even when the enacted sequence of the routine varied significantly from the expected sequence (for instance, skipping from patient ID to future plans without discussing past events and current issues in Excerpt 5). Thus, we demonstrate that lapses in mutual intelligibility (not necessarily deviations from expected sequence) are occasions for repair.

In contrast to previous research about repair when the performance of the routine breaks down completely (Zbaracki and Bergen 2010), our findings show how participants are able to engage in ongoing repair as part of flexible performance. When the mutual intelligibility of handoffs decreased, physicians gave indications to each other that something was wrong, and each indication was an opportunity to make adjustments while still moving forward. An early and subtle indication that something was wrong was when incoming physicians stopped writing and looked up (e.g., Excerpts 2, 3, and 6). Because such behavior was silent, it did not stop people from talking and continuing with the performance of their routine, but it did signal that the performance had become less intelligible and legible. A more pronounced cue for repair was to ask a question (e.g., Excerpts 2, 3, 5, 6, 7, 8, and 9), which explicitly signaled that something was wrong or that more information was needed. Some questions were especially constructive, a form of scaffolding for the completion of a move underway. For example, consider the incoming physician’s performance during patient identification in Excerpt 2: he stopped writing and looked up before asking a couple of questions (“What bed is that?” and “How old is she?”) that told the outgoing precisely what to say and when, in this way pushing their performance forward. Some questions were relatively interruptive, such as the incoming physician’s behavior in Excerpt 6: he stopped writing and looked up before asking the outgoing to suspend forward progress (“before we go any further”) and repair a previous move (“Can you just tell me his injuries?”), which was a step backward but, at the same time, enabled the performance to continue. Thus, we show that ongoing coordinating provides for ongoing repair, which is unfolding and even escalating, in the service of moving forward with a common project.

Sequence as a Resource in Flexible Performance

Our findings show that the physicians’ shared expectations about handoffs were a resource for their enactment of the routine. Consider sequence specifically: the sequential features of their routine’s ostensive pattern—i.e., expected moves in an expected sequence—enabled the mutual intelligibility of their flexible performance. The most obvious demonstration of sequence as a resource was when the physicians enacted exactly what they expected. In Excerpt 1, for example, the physicians accomplished the first move of their routine (patient identification) before making a transition to the next move (past events). This sequence was consistent with participants’ expectations and the handoff proceeded without a hitch, illustrating that a sequential performance may be especially intelligible when it unfolds as expected. However, sequence is a resource even when participants deviate from expectations. In Excerpt 6, the outgoing physician tried to skip a move in the handoff sequence, going from patient identification to current issues rather than past events. Instead of just going along, the incoming physician protested and asked the outgoing physician to talk about past events—a request that was mutually intelligible in relation to the physicians’ shared expectations about sequence. A striking example is Excerpt 3, when the outgoing physician began the handoff by explicitly “starting from the end” of their expected sequence, which both deviated from and instantiated the routine’s ostensive pattern. Thus, we found that the expected sequence was important not only when it was enacted but also when it was not. Feldman and Pentland (2003) explain that the ostensive aspects of
the routine helps participants to guide, account for, and refer to the performative aspect, which, in turn, helps to create, maintain, and modify the ostensive aspects. Our performance data reveal that when participants deviated from the expected sequence, they also instantiated it, either explicitly or implicitly.

Sequence is also a resource for negotiating moves in the flexible performance of routines. Our findings show how participants’ strongly shared expectations about the sequence of their routine helped them to negotiate the sufficiency of moves at point of transition. In our setting, participants expected that routines would unfold in a linear fashion as participants completed one move before going onto the next: handoffs were the story of the patient, progressing from past events to current issues to future plans. Displays of sufficiency and insufficiency, as well as bids for repair, became especially salient at moments of transition between moves, as participants signaled their readiness to move on (or not). Displays of sufficiency were often in the form of silent assent, but also included audible displays. For instance, in Excerpt 4, the outgoing physician was able to transition from patient ID to past events to current issues without interruption, as the incoming nodded, acknowledged (“I know him, yeah”), and responded with the word “okay.” Displays of insufficiency indicated that more work was needed or that something had to be repaired before the handoff could advance to the next move. In Excerpt 7, the incoming physician did not ask her question—“Why did she bleed so much?”—until the moment of transition, when it became clear that the outgoing physician was moving from past events to current issues without explaining the bleeding mentioned earlier. Thus, the participants’ shared expectations about the sequence of their routine helped them to know whether and when a move was sufficient or needed to be repaired. Our findings complement Pentland’s (1992) notion of moves by showing how participants negotiate the accomplishment of moves in relation to their unfolding sequence. By foregrounding the transitions between moves in flexible performance, we show how the “building blocks” of routines may be contested by the participants. Put another way, a move in a routine is not done until the participants jointly display that it is done.

In summary, our ethnomethodological approach emphasizes the participants’ ongoing role in managing the sufficiency of moves, their sequential variation, and repair during the flexible performance of routines. Regarding mutual intelligibility as something that participants perform and display helps to deepen our appreciation of routines as effortful accomplishments: participants not only assemble a sequence of moves from a repertoire of possible moves (Pentland and Rueter 1994), but they also engage in real-time adjustment to make the enactment of those moves mutually intelligible. Ethnomethodology also allows us to observe how the participants are making the sequence of the routine (ostensive pattern) relevant to each other during performance (Becker 2005, Pentland et al. 2010). Moreover, our attention to the sufficiency of moves within handoffs is part of a larger conversation about the sufficiency of action within social activity. Sufficiency of action, presented here as an ethnomethodological phenomenon, enriches how we think about coordinating, not just in the context of routines. It is important to highlight that sufficiency of action is an emic concept; that is, sufficiency of action is not something for the researcher to determine, but is something that participants display to each other in the moment of enactment. By foregrounding issues of sufficiency, we gain insight into another way of coordinating—not through shared cognition but through interrelated actions, whereby participants create the conditions to move forward with a common project.

Boundary Conditions
Although we found that our participants engaged in significant work of coordinating as they performed the handoff, other contexts may require even more coordinating. The handoff routine was fairly straightforward: there were only two participants, collocated, engaged in performance that lasted for minutes. In contrast to other routines, which may be distributed across multiple actors in multiple locations, both of our participants performed in the entire routine. In addition, the ICU physicians usually conducted handoffs face-to-face, which gave them access to both visible and audible behaviors. Our physicians were expert practitioners and, since both were ICU physicians, some of the issues related to coordination across occupational boundaries are not likely to apply in our study (Becky 2003). Also, our physicians were highly motivated to work together in advancing their common project of patient care, whereas participants in other routines may have different or even conflicting motivations (Zbaracki and Bergen 2010), which could complicate coordination.

Conclusion
Our ethnomethodological approach to the study of organizational routines brings coordinating to the foreground. Through coordinating, routines can be both flexibly performed and mutually intelligible: against a backdrop of shared expectations about how their routine is enacted, participants tailor the moves and sequence of their performance to fit the situation at hand. Our study makes two interrelated contributions to research on the flexible performance of routines. First, we show how coordinating is ongoing, even when the participants have a strongly shared ostensive pattern. Continually, the participants display the sufficiency or insufficiency of their unfolding routine, through various audible and visible behaviors that either move their common project forward or suspend its progress if something needs to change. Second, we show how sequence is a resource in the flexible performance of routines. The participants’ shared expectations about the
sequence of moves enables their performance to be mutually intelligible: whether they enact shared expectations or deviate from them, they perform with regard to their shared expectations and thereby instantiate their shared ostensive pattern with each performance. Moreover, shared expectations about sequence help participants to recognize when transitions are underway, which creates opportunities to signal the sufficiency or insufficiency of moves, through especially salient forms of coordinating such as questions and repair. Thus, moves and sequence have a reflexive relationship during the flexible performance of routines. Each move makes relevant the next in the sequence, and the sequence enacted renders each move sufficient.

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Appendix A. Semistructured Interview Protocol
1. When you participate in an ICU handoff, what are your objectives?
   Are your objectives different if you are the incoming versus the outgoing participant?
2. How do you get ready to do a handoff?
   What materials do you bring into the handoff room?
   When you are the outgoing physician, do you use any documents or notes?
   When you are the incoming physician, do you use any documents or notes?
3. Could you please walk us through a typical handoff?
4. Handoffs are often complicated with a lot of variety, so what happens in a handoff when it goes well?
   Can you think of a recent example of a handoff that went well?
5. What happens in a handoff when it doesn’t go as well?
   Can you think of a recent example of a handoff that didn’t go so well?
6. How do you organize information during a handoff?

Endnotes
1 We use pseudonyms for patient names in all the excerpts.

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