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# Understanding Sign Outs

## *Conversation Analysis Reveals ICU Handoff Content and Form*


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Transitions between shifts in the intensive care unit (ICU) create potential gaps in the continuity of care.[1] Clinicians manage transitions using verbal hand-offs, or sign outs, to coordinate clinical work, authority, and responsibility. The complexity of medical interventions and rapid changes in patient condition make effective sign outs both essential and difficult. This study analyzed signs outs to improve both clinician ability to perform them and the continuity of patient care.

We performed conversation analysis[2] on audio recordings of twelve ICU handoffs. We initially hypothesized that the greatest amount of attention (expressed in the length of time care providers spent discussing an individual's condition) would be paid to patients who required the greatest amount of care (those who were ventilator-dependent, required cardiac care, or required multiple intravenous medications). However, correlations between discussion time and care demand were not significant. Instead, further content analysis indicated that uncertainty about patient condition influences handoff content and form. Sign outs are primarily used to account for what is known and not known about a patient's condition, and how both are likely to play out through the oncoming shift. Clinicians use two forms of conversation to conduct this exchange: variations of soliloquy (monologue) and colloquy (dialogue). Both forms demonstrate the same variable, emotion-laden, dynamic, and complex traits as the work domain that they are used to manage.[3]

Hand-offs are complex and flexible in their structure, focus on what is uncertain, are necessarily variable in their content, and take multiple forms. This is because patient progress is not a direct course of improvement, is complex, and is unpredictable. Findings from this study and further analyses can be used to develop clinician training in the conduct of sign outs, which promises to benefit both care providers and patients alike.


1 Cook, Render, Woods: Gaps in the Continuity of Care, *BMJ* 2000
2 Drew P, Heritage J. *Talk at Work*. New York: Cambridge University Press. 1992.
3 Conant, R.C., and Ashby, W.R. "Every Good Regulator of a System Must Be Model of that System," *Int. J. Systems Science* 1:2, 89-97. 1970.


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## What This Means

The conventional view holds that hand-offs are data focused, simply structured, uniform in content, and follow a single form.

By contrast, our data show that hand-offs focus on what is uncertain, that they are complex and flexible in their structure, necessarily variable in their content, and take multiple forms. This is because patient progress is not a direct course of improvement, is complex, and is unpredictable.

## What We Did

Our research analyzed between-shift hand-offs that were conducted among five intensivist fellows over one month in a major urban hospital pediatric intensive care unit (PICU), starting with transcripts of nine enchanges.

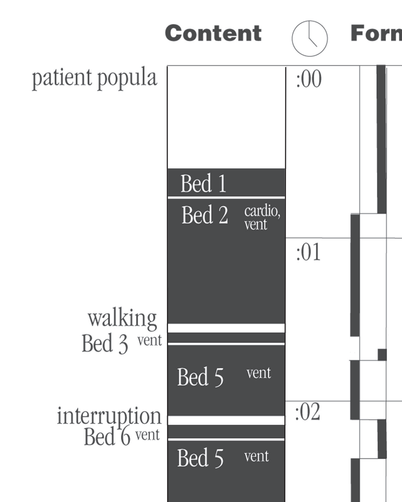
*H: first hour I was here she was having seizures every five to ten minutes And so we reloaded her with ten of Phenobarb again. Otherwise everything has been the same*
*R: Okay*
*H: And since that load*
*R: Did you have to go up on the Propofol*
*H: No*
*R: Okay*
*H: She didn't want to*

Conversation analysis software produced graphic representations that revealed duration, overlaps, and pauses.

Transcripts were then converted to reflect these features.

*H: first hour I was here she was having seizures every five (to ten) minutes And so we reloaded her with ten of Phenobarb again (1.0) Otherwise everything has been [the same]*
*R: [ Okay ]*
*H: [And since that load ]*
*R: [Did you have to go up o]n the Propofol*
*H: No*

Results of analyses were converted to time line diagrams, as shown here. Hand-offs were described by the *content* of what was discussed (including patients as well as six other topics) and by the *form* of the talk (shown by the series of narrower bars at right).




## What We Learned

***Content*** The proportion of time spent on patients compared to other content varies among the hand-offs. Some hand-offs are almost exclusively patient- related while others incorporate considerable amounts of other topics. The percentage of a hand-off spent on discussion of individual patients ranges from just over half of the sign-out (56%) to nearly all of it (97%). Our conversation analysis accounted for six additional types of content: introduction, walking, interruption, unit resources, patient population, and socializing.

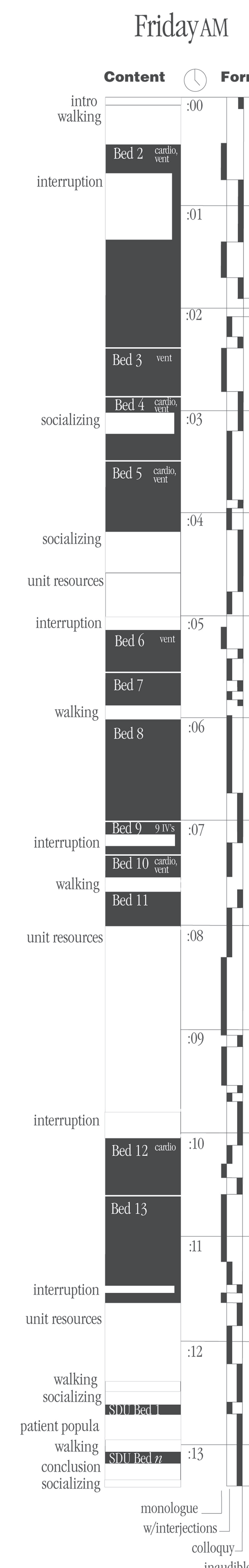
***Form*** Subjects employed three forms of talk. two types of soliloquies and one type of colloquy. In a *soliloquy,* one person does all of the speaking as in a monologue. A *colloquy* is a reciprocal transfer of information involving two or more persons, as in a dialogue. Colloquy includes question-answer series, testing-confirmation series, exchange of ideas, and problem-solving.

***Strategies and Patterns*** Three hand-offs demonstrate different strategies, content, and form that the intensivists employed to fit constraints such as available time

### Strategy Example 1

*Bed to bed, make sure all is said.*

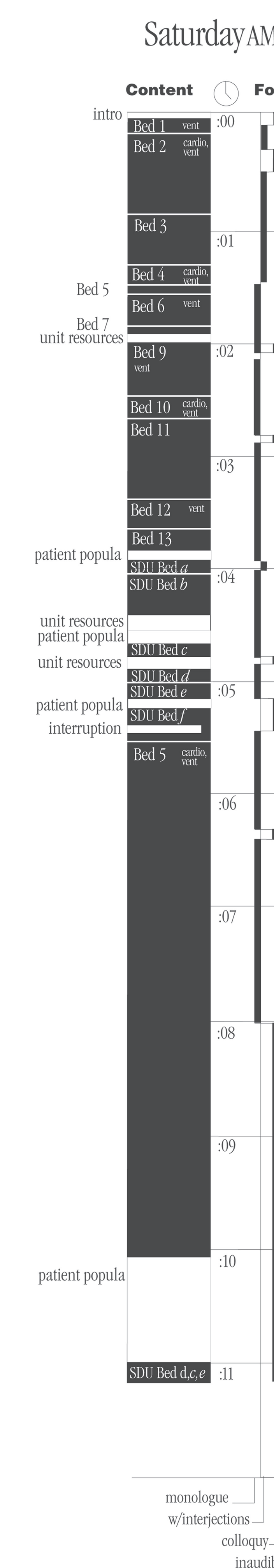
The presumed, or canonical, form of a hand-off is the geographic strategy in which the fellows begin their patient discussion at Bed One. They then proceed around the unit in a precise order, moving from bed to bed in a methodic manner. Each patient is discussed in turn as the fellows stand at the bedside of that patient. The fellows can see the next bed and anticipate what is to follow. The total progress can be assessed by their physical location in the unit. By knowing what has been completed and what lies ahead, the hand-off pace can be altered as needed. The key feature of this geographic hand-off strategy is a soft time constraint. Most hand-offs belong to this category.




### Strategy Example 2

*Save the sick, do the others quick.*

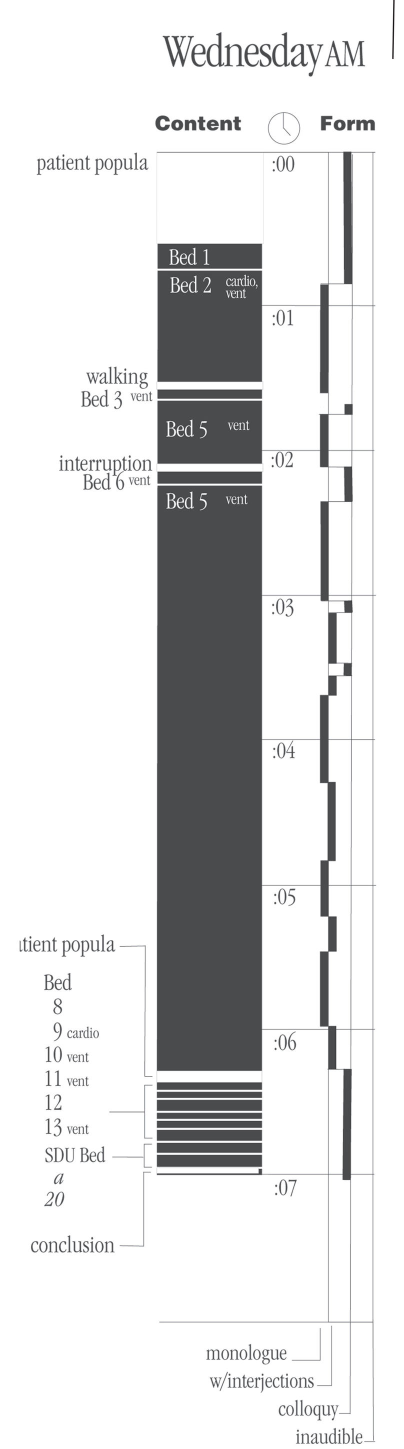
The imminent start of unit rounds are an example of a constraint that leads to selection of this "do the others quick" strategy. The fellows change shift at 7:30am. Daily, at 8:00am, the attendings, fellows, residents, surgeon and cardiologist, charge nurse, social worker, and nurse at the bedside of the patient gather to conduct rounds. These rounds involve a parade through the unit to each bedside where the resident presents the patient, the patient is evaluated, and the plan is identified. The fellows' sign out needs to be completed before rounds begin. This hand-off has a rigid time constraint of which the fellows are aware before the hand-off begins. Using this strategy, the fellows can focus on what they consider to be the most important issue(s) to discuss. Furthermore, they know that other events that are scheduled for the later in the day that will provide additional information beyond the sign out.




### Strategy Example 3

*New demand, change the plan.*

In the Wednesday AM hand-off, the fellows begin with the geographical strategy. They proceed from bed to bed until they reach the fifth patient. An obstacle arises that threatens to interrupt or truncate the hand-off and puts orderly completion of the task in jeopardy – unit rounds are beginning early. As the fellows talk, they also watch the crowd gathering across the room. The current hand-off strategy will no longer suffice. Both fellows are aware that the most critical information must be transmitted immediately and concisely. In this case, the most critical patient is in Bed Five so discussion continues until time nearly runs out. The remaining seconds are spent on concise statements about several other patients with one or two significant details.




## How This Affects Critical Care

Formulaic approaches to handling sign outs are a poor match to deal with the uncertainty and complexity of the critical care environment

Clinicians create hand-offs that are unique in content and form in order to manage PICU circumstances Attempts to improve continuity of care must reflect this.

Development of training programs for residents can improve their ability to perform this vital task.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