Evaluation of Computerized Free Text Sign-Out Notes

Baseline Understanding and Recommendations

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Keywords

Evaluation, continuity of patient care, hospital information systems, patient care team, qualitative research

Summary

Background: Standardization of sign-out, the transfer of patient information and responsibility between inpatient providers at shift change, is a Joint Commission National Patient Safety Goal intended to improve communication and reduce risk of error. Computerized systems with free text data entry and limited structure allow clinicians to generate sign-out notes in a variety of ways.

Objective: The literature lacks a systematic exploration of the range of content generated by users of computerized sign-out systems. The goal of this study was to determine if and how clinicians record standardized sign-out information using a system with free text data entry and limited structure.

Methods: Using qualitative methods, we reviewed free text sign-out notes for 730 patient cases across 39 hospital units at an academic medical center.

Results: Two categories of information expression emerged from analysis: patient treatment—comprised of patient summaries, awareness items, and action items—and care team coordination—consisting of discharge information, contact information, and social concerns. A third category describing the format of sign-out note content, presentation of information, also emerged. Location and structure of information varied, but sign-out note content for some hospital units exhibited specific characteristics and was relatively standardized.

Conclusion: Findings provide a baseline understanding of computerized free text sign-out note content. Sign-out notes contained a synthesis of data from disparate sources. We recommend formalizing existing unit-specific content standardization and system use patterns to reduce sign-out note variability and improve communication.

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Appl Clin Inf 2010; 1: 304–317
doi: 10.4338/ACI-2010-04-RA-0023
received: April 20, 2010
accepted: August 04, 2010
published: September 08, 2010

Citation: T.R. Campion Jr TR et al.: Evaluation of computerized free text sign-out notes – baseline understanding and recommendations. Appl Clin Inf 2010; 1: 304–317
http://dx.doi.org/10.4338/ACI-2010-04-RA-0023

1. Introduction

Ineffective communication threatens all phases of care, but the transfer of patient care responsibility and information between inpatient care providers at shift change, called sign-out [1, 2], is particularly prone to communication failure [1]. Each transfer of a patient's care is an opportunity for information to "fall through the cracks" and cause harm [3]. As resident physicians' work hours have been reduced to prevent sleeplessness and improve safety [4], the number of sign-outs has increased by 40% in some institutions [5, 6]. Researchers and policymakers have identified standardization of sign-out through clinical information systems as a means to improve provider communication and patient safety.

Sign-out communication failures occur when providers omit necessary information including active medical problems, medications, and pending treatments; do not meet face-to-face to perform handoffs; and exchange illegible notes [1]. Variability of sign-out training and procedures exists in and across hospital residency programs in the United States [7] and calls for a systems-based approach to patient safety. Since 2006 the Joint Commission has recognized transfer of care variability as a source of preventable error and made standardization of sign-out procedures a National Patient Safety Goal [8]. To improve patient safety and comply with Joint Commission requirements, researchers advocate standardizing the *content* of sign-out as part of a larger effort to standardize the sign-out *process* for individual hospital units and services [2, 5, 9, 10]. Housestaff use of computerized sign-out systems has been associated with a reduction in preventable adverse events [11] as well as improved workflow, sign-out quality, and continuity of care [9, 12-14]. To facilitate standardized sign-out, multiple institutions have developed and implemented sign-out software systems that enable providers to generate free text notes and retrieve patient data from clinical data repositories [11, 13-21].

Clinicians recording sign-out note content in an uncoordinated, haphazard fashion using systems with free text data entry and limited structure [22, 23] may undermine the goals of standardized sign-out content:

1. ensuring transfer of correct information and
2. teaching new staff about information to exchange [5].

Sign-out notes should provide an easy-to-understand snapshot of a patient's needs to facilitate cross cover decision making [18, 20]. Researchers have investigated computerized sign-out note content for a limited number of hospital units and services [24-26] and demonstrated that free text notes often lack "a standard format" [25] and can be inadequate for patient care transfer [19]. In classifying sign-out note content, these studies [24-26] used a rationalist [27], objectivist [28] orientation with *a priori* assumptions. Researchers have emphasized the need for diverse evaluation methods in informatics research [29], and in this investigation we used qualitative methods to perform a descriptive study [28] of free text sign-out note content generated by users of sign-out software across multiple hospital units at an academic medical center.

2. Objectives

The literature lacks a systematic exploration of the range of content generated by users of computerized sign-out systems. The goal of this study was to determine if and how clinicians record standardized sign-out information using a system with free text data entry and limited structure.

3. Methods

Since 1998 resident physicians at the 847-bed Vanderbilt University Hospital and 222-bed Monroe Carell Jr. Children's Hospital at Vanderbilt, part of the urban tertiary care Vanderbilt University Medical Center in Nashville, Tennessee, have used a locally developed computerized sign-out system. Accessible from all inpatient workstations, the system allows users to view, modify, and print

sign-out notes for any user-defined list of patients or unit census (▶Fig. 1). The application stores data separate from the electronic medical record (EMR) in keeping with the custom of sign-out notes being off-the-record, informal communications between physicians [30-32]. In a previous study, we identified varying levels of sign-out system usage – some hospital units generated a note for every patient while others seldom used the system – as well as unanticipated use by non-providers [21]. Resident physicians generated 70% and nurse practitioners 11% of all sign-out notes; medical students, nurses, and allied health professionals also frequently accessed the system [21].

Each sign-out note consists of four sections: demographics, current information, a "case summary" section, and a "to check" section. Demographics and current information are automatically retrieved from the order entry system when a user accesses a patient's record using the sign-out application. Current information identifies a patient's attending physician, care team, diagnosis, condition, drug allergies, weight, antibiotics, and medications. The "case summary" textbox is slightly larger than the "to check" textbox (seven lines versus four lines) and both textboxes have scroll bars to permit additional length. Users routinely print sign-out notes for use away from computer terminals. Users edit and save the free text "case summary" and "to check" sections from session to session, overwriting previous changes. The sign-out system was modified to store notes for subsequent analysis [21].

3.1 Data collection and analysis

Sign-out notes were collected from September 1, 2006 to December 31, 2006 [21]. Of the 22,718 unique patients admitted during the study period, 13,519 (59%) patients had at least one sign-out note generated ("unique sign-out cases"). Including patient transfers between units, 18,683 patients had sign-out notes generated ("total sign-out cases"). Reviewing all notes for all cases was infeasible. Therefore we randomly selected all notes for 730 (5.4%) unique sign-out cases based on each unit's percentage of total sign-out cases (▶Table 1).

We used a grounded theory approach [27] to allow themes to emerge from the data concerning patterns of sign-out note content. An inductive approach, grounded theory uses the constant comparative method for simultaneous collection and analysis of data: individual observations are broken down and categorized, categories are linked together forming concepts, and low-level concepts are related to create high-level concepts [27]. Observations, categories, and concepts are repeatedly abstracted, scrutinized, and revised to form an understanding of the phenomenon of interest [27].

For each sign-out case in each unit, one reviewer (TRC), a non-clinician trained in biomedical informatics with qualitative research experience, examined all notes in chronological order. The reviewer examined notes line-by-line and "coded" notes (e.g. observations, categories, comments, relationships) in a separate document [27] that did not contain any patient identifiers. We compared sign-out notes to patients' electronic medical records as necessary to confirm observations (e.g. did a user copy and paste data from the EMR into a sign-out note?). The reviewer iteratively reexamined codes, and the process enabled concepts grounded in sign-out note data to emerge.

We used standard techniques – peer debriefing, member checking, and prolonged engagement – to strengthen the internal validity [33] of sign-out note content analysis. The reviewer conducted peer debriefing sessions [33] throughout the course of the study with a team of informatics experts to evaluate emerging ideas, identify further areas of investigation, and refine theory. As part of informatics support activities at the institution, three of the authors (TRC, STW, LRW) met weekly with resident physicians and regularly discussed sign-out findings, a process called member checking [33]. Because we performed member checking after completion of note collection, the process did not affect the content of sign-out notes generated for the study. Prolonged engagement [33] with the task of analysis and theory refinement ensured that the research team thoroughly studied the data. The Vanderbilt University Institutional Review Board approved this study.

4. Results

Two categories emerged concerning the expression of information in free text "case summary" and "to check" sections: *patient treatment* – comprised of *patient summaries*, *awareness items*, and *action items* dimensions – and *care team coordination* – consisting of *discharge information*, *contact information*, and *social concerns* dimensions. Users expressed information dimensions in both "case summary" and "to check" sections of notes with varying degrees of consistency (▶Table 2). A third category describing the format of sign-out note content, *presentation of information*, also emerged. Location and structure of information varied, but sign-out note content for some hospital units exhibited specific characteristics and was relatively standardized. We present the categories and their dimensions below.

4.1 Patient treatment

Patient treatment information consisted of facts, history, plans, and conditions pertaining to a patient's current hospitalization. Users recorded patient treatment information in three forms: patient summaries, awareness items, and action items.

4.1.1 Patient summaries

Patient summaries typically included any combination of a patient's admission reason, past medical history, assessment and plan, pertinent test results, and recent procedures. The format of patient summaries included terse, code-like statements known as "notational text" [34], brief narrative summaries, lengthy narrative summaries, organ system-based lists, and assorted combinations. ▶Table 3 shows examples of patient summary formats. Patient summary sections ranged in length from one to seven lines with the exception of organ system-based lists, which were ten lines minimum. Specific note styles emerged for the different clinical services aligned with hospital units. Obstetrics notes were terse and code-like; all pediatric services used the organ-system based list; adult medicine and cardiology, and all services at some point, generated brief to lengthy narratives; and adult surgery generated narratives of two lines maximum. Additional observation confirmed that most extended entries were copied and pasted from the patient's progress note in the electronic medical record. Patient summaries were almost always located in the "case summary" section of sign-out notes.

4.1.2 Awareness items

Whereas patient summaries consisted of multiple facts joined together, awareness items expressed single facts relevant to a patient's current hospitalization (▶Table 4). Awareness items were usually located on separate lines in the "to check" section but occasionally also in "case summary" sections. Awareness items were frequently accompanied with an indication that there was "nothing to do" for a patient. The tendency for users to record awareness items separate from "case summary" body text on either a separate line or in the "to check" section may suggest that users intended to emphasize the content of the awareness item. Users created awareness items independent of hospital unit.

4.1.3 Action items

Action items consisted of clinical tasks for providers to perform (▶Table 5). Conditional logic and timing information frequently defined these tasks. Designating a task to "follow-up" was also a common practice. Users generally recorded these on separate lines in "to check" sections but also occasionally in "case summary" sections. Users created action items independent of hospital unit.

4.2 Care team coordination

Care team coordination information consisted of administrative data and professional judgments related to teamwork and communication. This included discharge information, contact information, and social concerns.

4.2.1 Discharge information

Note content frequently contained discharge planning information such as date, insurance, and post-hospital transportation. Users recorded discharge information in "case summary" and "to check" sections. However, trauma intensive care unit (ICU) notes usually contained disposition information in a particular format: "DC plan," "Residence," and "Insurance" on three separate successive lines in "case summary" sections. "To check" sections were nearly always blank for patients in trauma. Unlike most units where resident physicians generated the majority notes, case managers and registered nurses authored sign-out notes for more than 90% of cases in trauma ICU. Resident physicians were responsible for the 10% of notes not started by case managers or nurses, and these notes were usually lengthy and copied and pasted from various parts of the electronic medical record.

4.2.2 Contact information

Notes frequently contained name and pager number of a covering or attending physician. Notes for cardiology and cardiac catheterization lab patients also often contained contact information for fellows. Occasionally users recorded phone numbers of patients and/or patients' family members. Contact information appeared in both "case summary" and "to check" sections. The presence of additional phone numbers suggests that this data is either not available or not well maintained in other clinical information systems.

4.2.3 Social concerns

"Case summary" and "to check" sections occasionally included personal commentary from users about patients, patients' family members, and other providers. Examples include "65 year-old woman is very pleasant to talk to," "patient's mother is not very understanding," and "[patient has] an aspiration pna now from too much ativan from cross-cover – don't be that guy." Providers may express social concerns in a candid fashion so that covering providers can discern quickly the demands of a situation. Users recorded social concerns independent of hospital unit.

4.3 Presentation of information

Across hospital units users expressed a variety of types of sign-out information using acronyms and particular characters. The first author largely determined the format of notes.

4.3.1 Acronyms and symbols

As demonstrated in another study [34], acronyms and symbols were prevalent across all disciplines' sign-out notes. Common acronyms included "NTD" (nothing to do), "OTD" (out the door, pertaining to discharge), "f/u" (follow up), and "D/C" (discharge or discontinue depending on context). In addition to acronyms, users commonly utilized numbered or bulleted lists to arrange items in "to check" sections, and placed brackets ("[]") before particular action items as if to provide a check box on a print out.

4.3.2 Influence of first note author

The format of notes was relatively consistent starting from the first note generated. For example, if the first "case summary" entry for a patient case was a brief narrative, generally all following notes were brief narratives. Also, if an uncharacteristic "case summary" style was used in a unit (e.g. system-based instead of narrative), usually all following notes maintained the uncharacteristic style. Changes to "case summary" sections were usually appended to the end of existing content rather than incorporated with existing text.

5. Discussion

This study provides a baseline understanding of standardized sign-out note content generated by clinicians across multiple hospital units – medical and surgical specialties in adult and pediatric settings – using a computerized system with free text data entry and limited structure [22, 23]. Two loosely defined text areas provided a convenient place for clinicians to synthesize data from dispa-

rate sources – including laboratory studies, physician notes, staff directories, personal opinions, and patient families – into six information dimensions. Providers' sign-out note writing strategies appear to reflect the documentation norms of each hospital unit as well as broader on-the-job socialization that clinicians experience in their discipline-specific training and practice [26].

While nearly all units' notes contained similarly constructed awareness and action items, some units created sign-out notes with distinctive patient summary formats (▶Table 3). However, the location and structure of patient summary information varied occasionally due to a first note author using an unorthodox style that continued throughout a patient's hospitalization. Note content exhibited a degree of unit-specificity, but variability of presentation persisted for all information dimensions. By expressing information in unfamiliar formats and locations, a clinician could potentially fail to convey important sign-out information to members of the patient care team. Further standardization of sign-out note content may reduce this risk.

Future software can "pave the cowpaths" [35] of sign-out by formalizing existing patterns of individual units' note content standardization and multidisciplinary communication. Findings of this study show a tendency toward unit-specific sign-out note content standardization, and our previous work identified unanticipated use of the sign-out system by non-providers as well as a "producers and consumers" dynamic in which providers generated nearly all sign-out note content used by non-providers [21]. Enhanced data entry techniques tailored to unit needs can foster note content standardization, and consideration of multidisciplinary needs can improve care team communication through sign-out. The following recommendations are informed by actual system use whereas previous research reported sign-out software design based on paper-based approaches [6, 11, 15, 17].

5.1 Recommendation: foster content standardization through enhanced data entry techniques

Four data entry techniques appear useful for fostering unit-specific sign-out note content standardization: *templates, automatic import, structured data capture,* and *free text*. To illustrate techniques, some of the following examples overlap. Units with patient summaries exhibiting structure, such as terse, code-like and organ system-based list examples in ▶Table 3, may benefit from *templates* [22] that reinforce consistent recording of information and prevent unorthodox formatting. For some units, *automatic import* of extensive patient summaries, such as ▶Table 3's lengthy narrative and organ system-based list originating in EMR progress notes, can save users time, prevent copy-paste errors, ensure content is recent, and present data consistently [22]. Automatic import can also include discrete data from the EMR [11, 15-18, 21, 36] for those units that regularly record specific values in sign-out notes. For example, contact information (▶Table 2) or basic metabolic panel results stored in the EMR and regularly copy-pasted to a "case summary" can be automatically imported to "current information" as in ▶Figure 1. Additionally, useful starting points for units lacking standardized sign-out include a template based on the six dimensions identified in ▶Table 2 and automatic import of unit-specific EMR data.

Awareness and action items were recorded with both specific and relative timing details (▶Table 5) and accompanied by brackets ("[]"), and *structured data capture* in sign-out could yield more complete descriptions of activities for clinicians to perform and decision support systems to process. For example, a physician could record the action item "check CXR at 3pm" (▶Table 5) in discrete fields for action ("check CXR") and time ("3:00 pm April 22"). Additionally, instead of entering "f/u K+ this evening" (▶Table 5), an interface could encourage a user to select a specific time (e.g. "f/u K+ by 11:00 pm April 22"). Potential provider benefits include the ability to

1. sort a list patients or items by item times to facilitate planning,
2. remove expired (e.g. "patient to undergo appendectomy tomorrow" in ▶Table 4) and ambiguous or misleading items (e.g. "NTD") from a patient's to-do list in a timely fashion, and
3. receive automated time-based clinical reminders to complete tasks.

Discrete event-time structures could also be shared with other clinical information systems. Information that appears in sign-out but may not be well-maintained in other systems, such as contact information and discharge information in this study, could also be captured in a structured manner

for reuse [37, 38]. Finally, *free text* is useful for providing context where other data entry techniques are limited.

5.2 Recommendation: transform sign-out for multidisciplinary communication

Sign-out notes are an artifact of a once-per-day hospital process, but computerization presents an opportunity to transform these notes into part of an around-the-clock understanding of patient needs for the entire patient care team. In this study we observed trauma ICU case managers and nurses use sign-out software specifically for discharge planning. Researchers previously noted the overlap of sign-out and rounding information [18, 20], and our previous investigation and the work of others showed unanticipated use by non-providers [21] and 24-hour usage [21, 32] of sign-out software. Together these results indicate clinicians have adapted current sign-out systems for information and communication purposes beyond end-of-shift physician handoff. Consideration of nurse and allied health needs may also be important for sign-out standardization efforts. A multidisciplinary patient management tool, perhaps in the form of an inpatient whiteboard [39, 40], could incorporate a variety of clinical content, including sign-out notes and the structured items proposed in the previous section, to improve care team communication and collective awareness.

The informal, unofficial status of sign-out notes [30-32] may need to be rethought as computer-based tools make information captured at sign-out more standardized and accessible to members of the care team. However, an official designation may also limit providers' candidness of expression, and this may affect clinicians' ability to succinctly communicate transition of care needs to other members of the care team. Additionally, a sign-out note represents a distillation of the volumes of data contained in the patient chart, and researchers and practitioners should consider the value of brevity and threat of information overload in computerized sign-out [19, 20, 25]. Future research can address these emerging information and communication needs.

5.3 Study limitations

Findings show evidence of relatively standardized sign-out note content generated by users of a minimally structured system across many units at one academic medical center. While other methods of sign-out note content analysis [26] may be less prone to subjective value judgments, the purpose of this study was to illuminate unknown aspects of sign-out note content and generate future research questions, not test existing hypotheses. Sign-out notes were examined by one reviewer, a potential source of bias that investigators mitigated via ongoing review of findings with each other and system users. Qualitative studies performed by single researchers have contributed to informatics knowledge [41-43], and results of this investigation inform our understanding of sign-out note content created using free text. Future research can investigate the feasibility and effect of more structured systems tailored to individual unit sign-out needs.

This study systematically explored multiple hospital units' sign-out note *content* without formal consideration of each unit's sign-out *process*. By itself sign-out content standardization is insufficient to improve patient safety and meet Joint Commission goals, as standardization of content is a component of a broader organizational change to standardize process [5]. Elements of process – physical setting, organizational and political hierarchy, level of training, face-to-face interaction, paper forms, other computer systems, and existing communication strategies [2, 9] – may have affected or been affected by sign-out note content. For example, during the study period surgeons at the institution did not use electronic documentation tools as frequently as other specialties, and nurse practitioners in the cardiovascular ICU used a separate computer system for sign-out. Additionally, note content generated by interns may have differed from that produced by senior residents. Based on this and our previous work [21], we recognize the value in considering non-provider information needs in sign-out standardization. Implementing enhanced sign-out data acquisition will require attention to individual unit process and information needs.

6. Conclusion

This study provides an understanding of computerized free text sign-out note content generated in several hospital units at an academic medical center. Sign-out notes contained information for patient treatment and care team coordination purposes. Notes exhibited some degree of standardization, especially within specialties, but variation was noticeable particularly due to the influence of first author. Based on evidence of note content standardization and system use by non-providers, we offer recommendations for future sign-out software to foster note content standardization for individual units and improve care team communication.

Clinical relevance

This systematic exploration of computerized free text sign-out notes from multiple hospital units shows variability and common features across and within inpatient settings. Findings have implications for software development to support the Joint Commission patient safety goal for standardized handoffs and facilitate care team communication.

Acknowledgements

Mr. Campion received support from National Library of Medicine Training Grant NLM T15 007450-07.

Conflict of interest

The authors have no conflicts of interest to report.

Human subject research

The Vanderbilt University Institutional Review Board approved this study. This study meets the ethical standards of the World Medical Association Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Subjects.

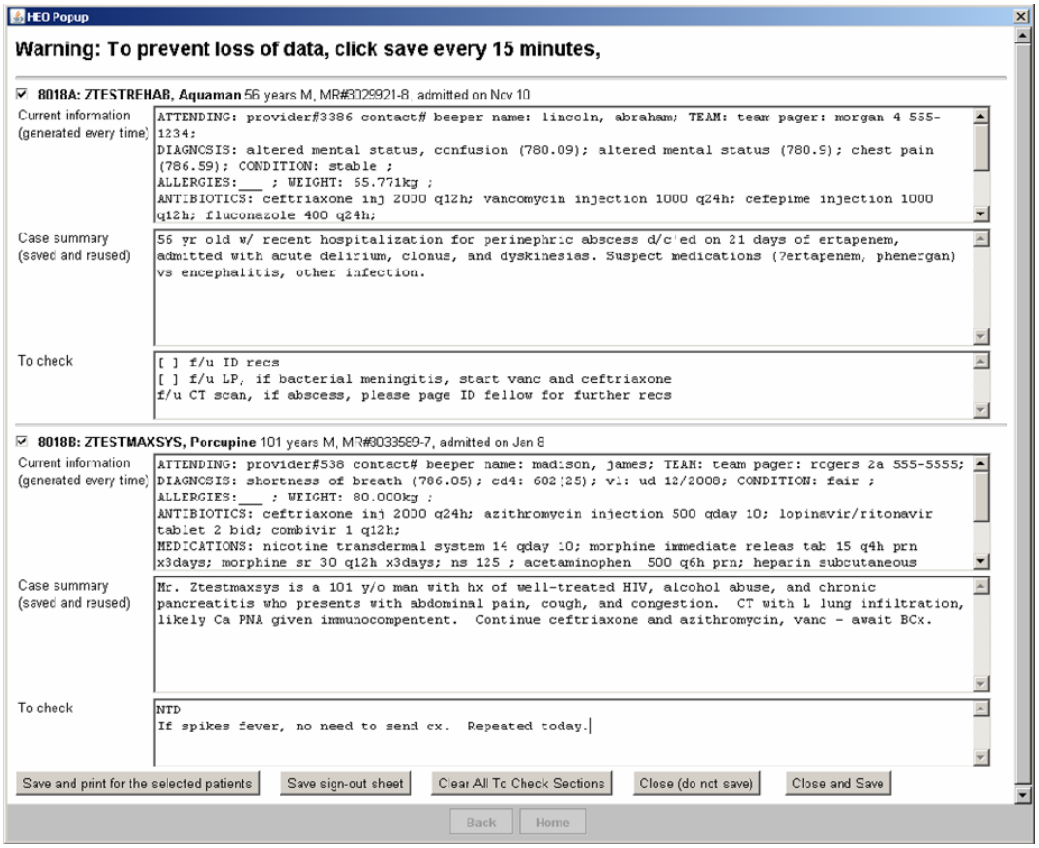

Fig. 1 Sign-out software interface using free text data capture and limited structure

Table 1 Sign-out software usage and sampling statistics. The number of cases to review was determined by multiplying each unit's percentage of total sign-out cases by 676, or 5% of unique cases. Requiring 10 cases minimum per unit increased the total number reviewed to 730.

Unit	No. total sign-out cases (%) n = 18,683	No. sign-out cases reviewed n = 730
Adult cardiology	1,596 (8.5%)	58
Adult medicine	1,485 (7.9%)	54
Pediatric medicine	1,366 (7.3%)	49
Post partum	1,254 (6.7%)	45
Adult neurology	921 (4.9%)	33
Trauma ICU	787 (4.2%)	28
Children's hospital nursery	735 (3.9%)	27
Adult emergency department	733 (3.9%)	27
Neonatal ICU	651 (3.5%)	24
Pediatric critical care	650 (3.5%)	24
Cardiac catheterization lab	581 (3.1%)	21
Labor & delivery	580 (3.1%)	21
Medical ICU	557 (3.0%)	20
Renal	536 (2.9%)	19
Neurological ICU	463 (2.5%)	17
Orthopedics	453 (2.4%)	16
Adult operating room	453 (2.4%)	16
Adolescent medicine	339 (1.8%)	12
Pediatric operating room	336 (1.8%)	12
Pediatric hematology/oncology	323 (1.7%)	12
Adult myelosuppression	322 (1.7%)	12
Women's surgery	318 (1.7%)	12
Pediatric cardiology	316 (1.7%)	11
Cardiac ICU	264 (1.4%)	10
Neurosurgery	244 (1.3%)	10
Adolescent surgery	236 (1.3%)	10
Pediatric neurology	223 (1.2%)	10
Pediatric surgery	216 (1.2%)	10
Adult surgical stepdown	196 (1.0%)	10
Pediatric emergency	196 (1.0%)	10
Geriatrics	178 (1.0%)	10
Pediatric myelosuppression	175 (0.9%)	10
Adult observation	175 (0.9%)	10
Adult general surgery	172 (0.9%)	10
Pediatric observation	156 (0.8%)	10
Adult medicine subacute	154 (0.8%)	10

Unit	No. total sign-out cases (%) n = 18,683	No. sign-out cases reviewed n = 730
Surgical ICU	123 (0.7%)	10
Adult hospital nursery	121 (0.6%)	10
Dialysis	99 (0.5%)	10

Table 2 Location and approximate relative frequency of information expression. While patient summaries appeared almost exclusively in "case summary" sections and rarely in "to check" sections, contact information appeared about equally between "case summary" and "to check" sections.

Information category	Dimension	"Case summary"	"To check"
Patient treatment	Patient summaries	95%	5%
	Awareness items	20%	80%
	Action items	20%	80%
Care team coordination	Discharge information	50%	50%
	*Trauma ICU discharge	95%	5%
	Contact information	50%	50%
	Social concerns	50%	50%

Table 3 Patient summary formats

Terse, code-like	BD: 8/30 0314, SVD, 38-2 wga, G3P2now3 26 y/o Mom; mat labs neg; Apgars 7,9 BW: 7lb 1oz; bottle B+
Brief narrative	56 year old male with CAD, HTN, DM, hyperlipidemia who presented 11/14 with STEMI. Cath with stent to RCA then 3d later cath with stent to RCA, LAD. Now w CAP on IV ABX. Weaning off O2.
Lengthy narrative	Mr. Smith is a 75 year old male with a PMH significant for severe Crohn's disease treated with immunosuppressants Remicaide and mercaptopurine, s/p multiple abdominal surgeries with short gut syndrome, s/p right upper extremity DVT on Coumadin who presented to the Vanderbilt ED this morning complaining of shortness of breath, chest tightness/discomfort, and left shoulder pain at the site where a Hickman catheter was placed on 11/12/06 for TPN. In MICU s/p extubation 12/6, now on 3L NC with good saturations.
Organ system-based list	3 yo F S/p laryngotracheoplasty with cartilage graft dehiscence and MRSA infection of graft 1 CV: HDS 2 Resp: s/p brochoscopy with laser of anterior cartilage graft dehiscence – initially intubated and currently weaned to room air sating 97-100%; continues to have UAN but no stridor – Decadron currently 1.5 mg IV Q8H (from 3.0mg Q8hours this am) – will continue to wean 3 FEN/GI: currently tolerating regular diet with no need for IVF 4 ID: MRSA on culture of graft dehiscence, currently D#3 of Vancomycin and will start Rifampin for synergy – will need to discuss with team/ID length of treatment 5 Neuro: currently Methadone 0.15 mg po Q12hours for 2 days, d/c\'ed 9/29 6 Access: patient had PICC placed on 9/28, CXR shows good placement

Table 4 Awareness item format examples

Code status	DNR/DNI
Past	was cultured today
Future	patient to undergo appendectomy tomorrow
External	ENT draining abscess this afternoon
Phone call	may get call from endo
Process delay	awaiting recs

Table 5 Action item format examples

Conditions	if <2 cc/kg/hr in 8 hour period, please bolus with 10 cc/kg NS
Times	check CXR at 3pm
Followup	f/u…
Laboratory	K+ this evening
Consultant	neuro recs
Imaging result	head CT
Appointment	with Dr. Jones again in three weeks
Other	pain control

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