Dropping the Ball: An Analysis of Sign-out Practices Among Residents

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**Background:** Resident work hour regulations have provided clear benefits but have also increased discontinuity in care. Residents now routinely transfer the care of hospital patients several times per day via sign-out. This process has been linked to medical error in case reports, yet national surveys show it is often haphazardly conducted and data on best practices is limited. The Joint Commission Patient Safety Goals now require every hospital to implement a “standardized approach to hand-off communications, including an opportunity to ask and respond to questions.” In addition, ACGME now also includes interpersonal skills and “effective information exchange” as one of 6 core competencies. Thus while improving sign-out quality is a matter of patient safety and the subject of new national mandates it also appears to be an area of deficiency in medical training.

**Specific Aim:** To analyze current practices of sign-out among internal medicine house staff, determine the association with patient outcomes and develop a list of “best practices”.

**Hypothesis:** We hypothesize that oral sign-out is frequently vague, disorganized and lacks critical information which can lead to negative patient outcomes.

**Methods:** Prospective observational single-center study. We collected 12 days of sign-out among 8 internal medicine house staff teams at an academic institution in the spring of 2006. Participating on-call interns were given a cassette recorder in the morning and asked to turn it on each time they received a sign-out. Copies of the written sign-outs were also collected. Sign-out recipients were interviewed on the post-call morning using a brief, semi-structured questionnaire that was recorded. Sign-outs and interviews were transcribed and the transcripts redacted of identifying information. Using both quantitative and qualitative analytic techniques each of these transcrips were reviewed initially by at least 2 investigators and then in groups. Interview reports of inadequate sign-out were verified by comparison with sign-out transcripts.

**Results:** Eighty eight sign-out sessions containing 503 patient sign-outs were recorded and we collected as least a portion of the written sign-out for 79/88 (89.8%) of the sign-out sessions. We interviewed recipients of 84/88 sign-out sessions (94.5%). Median duration of patient sign-out was 35 seconds. Key content of sign-out included elements such as clinical condition, recent or scheduled events, tasks to complete, anticipatory guidance, and a specific plan of action and rationale for assigned tasks. However, current clinical condition was only included in 249/503 (50%) of oral sign-outs and 116/299 (39%) of written sign-outs. Language ranged from vague and open-ended to concrete and closed-loop. In the majority of sign-outs sessions the recipient did not ask any questions (median 0, IQR 0-1). In transfers of care occurring more than once in a single day, involving sequential sign-outs during which the primary team was not present, there was an association with high rates of omissions or mischaracterizations (22%). Post call interviews identified 24 verifiable sign-out related problems ranging from delays in diagnosis or treatment to provider inefficiencies and redundancies. One patient required ICU transfer.

**Conclusions:** Sign-out language is often vague, open-ended and unstructured and is associated with problems in patient care. To improve sign-out, key content should be standardized, sign-outs that do not involve the primary team should be eliminated when possible and the impact of sign-out on patient safety should be emphasized. Based on these findings it is important that clinician educators actively incorporate sign-out practices into medical training.