ANESTHESIA INFORMATION MANAGEMENT SYSTEM RECORDS AND OPERATIVE NOTES: A COMPARISON OF ESTIMATED BLOOD LOSS

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Introduction: Documentation of estimated blood loss (EBL) from a surgical procedure is commonly thought to be recorded by both anesthesia and surgical teams. However, recent analysis of anesthesia information management system (AIMS) records\(^1\) revealed that EBL is missing in 62% of cases, and anecdotally we have observed that this estimate is not always found in operative notes. Additionally, we have observed the negotiation of an agreed-upon value for EBL at the end of some, but not all, procedures. This study seeks to quantify the frequency of EBL documentation by anesthesia and surgical teams, and analyze the discrepancy between these values when both were recorded for a given procedure.

Methods: Using AIMS data, anesthetic records from 106,283 adult inpatient surgeries were identified at Massachusetts General Hospital between 4/2007 and 5/2011. Using Partners HealthCare’s Research Patient Data Registry, operative notes were extracted for this entire cohort and matched to 99,214 specific AIMS records (patients with multiple procedures on the same day were not matched). Operative notes were loaded into Microsoft SQL Server and searched for phrases that referred to blood loss in any way (‘blood’, ‘bleed’). A separate search extracted ‘estimated blood loss’ and ‘EBL’ statements. A text parser was created using regular expressions in Microsoft Visual Basic 2010 to provide numeric estimates. ‘None’, ‘minimal’, ‘zero’, ‘negligible’, ‘not applicable’ and ‘nil’ were interpreted as an EBL of 1 cc. AIMS and operative note EBL data were compared.

Results: EBL was recorded in 55,933 of 106,283 AIMS records (52.6%). ‘Blood’ or ‘bleed’ was referred to in 57.5% of operative notes. Attempted extraction of estimated blood loss from free text proved to be difficult where ‘estimated blood loss’ or ‘EBL’ was not specifically mentioned. Of the 99,214 operative notes that were matched to specific AIMS records, 24,304 (24.5%) contained the phrase ‘estimated blood loss’ or ‘EBL’. Of those 24,304 procedures, AIMS records did not contain an EBL value in 6,516 cases (26.8%). Of those cases with missing AIMS EBL values, operative note EBL was 50mL or less in 79% of cases and 500mL or less in 96% of cases. Both operative note and AIMS EBL distributions were log-normal with peaks at round numbers. In the 16,901 cases with both operative note and AIMS EBL values, the mean difference between AIMS and operative note EBL was
81 (standard deviation 442) mL with a median difference of 0 (interquartile range 100) mL.

**Discussion:** Consistent with the previous report, EBL is frequently missing from AIMS records and most cases with missing EBL are not associated with significant blood loss. EBL is also frequently missing from surgical records. When EBL data are present in both records, the values are typically in close agreement.

**References:**