Use of a Computerized Arthroplasty Registry to Generate Operative Notes Decreases Transcription Errors

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Introduction: The accuracy of an operative record is vitally important as it is the primary document that relays all of the pertinent details of an operative procedure. It is especially relevant in joint replacement surgery as operative notes are frequently utilized in follow-up patient evaluation as well as planning for revision procedures. Inaccurate data provided in an operative note could potentially lead to difficulty in assessing steps that took place during an operative procedure or improper planning for revision surgery. We proposed that a computer registry generated operative note would be more accurate than a traditionally dictated operative note or a note generated from a templated dictation.

Methods: We prospectively evaluated three groups of operative notes in a single-subspecialty high volume arthroplasty practice. The first group was a consecutive series of 100 standardly dictated and transcribed operative notes performed by 2 surgeons. The second and third group of 100 operative notes were from 3 other members of our arthroplasty practice. The comparison group had 2 notes per procedure- one generated from a template dictation system and the second generated from a computerized arthroplasty registry database. All notes were reviewed for errors and the errors were classified as either major or minor. Major errors included wrong patient identification (name or ID number), incorrect surgical location or site, missing data (i.e. assistant name or anesthetic technique), incorrect or missing implant information or misinformation that could adversely affect patient care (i.e. incorrect blood loss). Minor errors included typographical mistakes of non-critical words, non-critical missing data (i.e. adjective deletion), grammatical or punctuation errors. Both major and minor errors were totaled for each of the operative note groups. Statistical analysis of the data was performed utilizing the Student T Test and One Way Anova.

Results: There was a significantly higher rate of total errors in the dictation group compared to both the computer registry generated operative note (p=5.5 x 10^{-12}) and the templated note (p=7.5 x 10^{-13}). The rate of major errors was significantly reduced in the computer generated notes compared to the template notes (p= 5.3 x 10^{-9}) and also compared to the dictation (p=8 x 10^{-12}). There were significantly more minor errors in the dictation group compared to the templated notes (p=4.6 x 10^{-12}) and to the computer generated notes (p=5.7 x 10^{-12}).
Discussion: The operative record is a critical document, both in the short-term and long-term follow-up, in the care of the surgical patient. This is particularly true in patients undergoing joint arthroplasty as these patients require periodic orthopedic visits throughout their life and an increasing number of them will ultimately require revision surgery. Often times the follow-up evaluation and/or revision surgical care is provided by a surgeon other than the index orthopedic surgeon. This occurs frequently due to patient relocation, surgeon relocation or retirement, patients ‘lost to follow-up’ and other circumstances. The ability of a surgeon to provide appropriate assessment of a joint arthroplasty patient with inaccurate surgical data can be hampered significantly. For example, intra-operative findings or decisions made in a previous surgery may not be clearly conveyed due to errors in the operative record. Moreover, planning for revision arthroplasty surgery can most certainly be adversely affected by an inaccurate operative note, especially if critical implant or technique information is either misrepresented or missing. The current prospective, single-institution study demonstrates a significant advantage of computer registry data base generated operative records over template dictation or standard dictation generated notes in joint arthroplasty surgery. These findings further demonstrate the importance of registries in patient management in joint replacement surgery. Other potential advantages of computer-registry generated operative notes that were not evaluated in this study are lower institutional costs, due to lack of transcription needs, and greater time efficiency for the surgeon. Certainly there may be variations in the accuracy and cost efficiencies from one registry based note system to another.

Significance: With rising healthcare costs, every effort should be made by physicians and hospital systems to contain costs and assure accuracy of information transmission. The operative record, especially in joint arthroplasty, is a critical document which is often used in planning revision surgery and must be as accurate as possible to minimize risk for inappropriate treatment for the patient going forward.

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