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True to Form: Copy-Paste Documentation of Lifestyle Counseling and Glycemic Control in Patients with Diabetes

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Electronic medical records (EMRs) can improve many aspects of patient care(1). Utilization of electronic medical records is increasing and is particularly encouraged by recent federal legislation(2).

However EMRs are not always used optimally. Concerns have been raised about inappropriate copying and pasting of information between provider notes(3, 4). Up to 50% of the content of progress notes may be copied from older documents(5, 6) and copying frequently leads to errors in documentation(6). However, whether copied text generally reflects the care delivered is not known.

Lifestyle counseling improves outcomes in patients with diabetes and is recommended by treatment guidelines(7). Narrative provider notes are the primary source of information on whether lifestyle counseling was provided. However, if copying and pasting of note fragments does not reflect treatment, the information contained in narrative electronic documents may not be reliable.

We therefore performed a retrospective study of over 5,000 patients with diabetes to determine the relationship between copied lifestyle counseling and glucose control.

METHODS

Adult patients with diabetes followed by primary care physicians affiliated with two academic hospitals for at least two years between 01/01/2000 and 08/31/2005 were studied. A single *hyperglycemic* period served as the unit of analysis. A hyperglycemic period starts at the first available A1c $\geq 7.0\%$ and ends at the first A1c $< 7.0\%$ or at the end of the study period if A1c never reached treatment target. *Duplicate lifestyle counseling* was defined as counseling documented using a sentence identical to the sentence used to document the

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same type of counseling in the previous note by the same provider; otherwise counseling was deemed to be *distinct*.

We utilized specially designed software to identify three types of lifestyle counseling in narrative EMR notes: diet counseling, exercise counseling, and weight loss counseling. The software was validated against 600 randomly selected notes manually reviewed by two reviewers.

A marginal Cox proportional-hazards model for clustered data was used to estimate the effect of monthly rates of distinct and duplicate lifestyle counseling on time to A1c control while adjusting for covariates and accounting for clustering within individual patients.

The institutional review board at Partners HealthCare System approved the study

RESULTS

The software sensitivity against the manual review consensus ranged from 91.4 to 97.4% and specificity from 88.2 to 94.7% for different categories of lifestyle counseling. We employed the software to process 62,934 provider notes of 5,914 patients with diabetes followed for the average of 3.7 years during the study period. Their hemoglobin A1c was above the recommended target for 67% of that time. Non-obese patients had 0.25 and obese patients 0.29 encounters per month with primary care providers during their hyperglycemic periods that documented lifestyle counseling. Overall, 5.0% of diet counseling, 5.1% of exercise counseling and 5.2% of weight loss counseling documentation was duplicate. On average a duplicate counseling documentation appeared 3.07 times in the notes of the same provider for the same patient, but only 0.099 times in the notes of the same provider for his / her other study patients ($p < 0.0001$), consistent with copy / paste rather than use of templates as the mechanism for generation of duplicate records.

In multivariable analysis adjusted for the patients' demographic characteristics, initial A1c, frequency of A1c measurement, treatment with insulin, frequency of medication intensification, frequency of encounters with primary care providers and clustering within individual patients and providers, an increase in 1 monthly episode of any distinct lifestyle counseling was associated with a hazard ratio of 4.35 ($p < 0.0001$) for reaching A1c target; the results were similar for individual counseling categories (Table). Duplicate counseling was not associated with faster A1c control.

COMMENT

In this large retrospective study of copied documentation of lifestyle counseling in patients with diabetes we have demonstrated that, unlike original records, copied documentation of lifestyle counseling was not associated with improvement in glucose control. In fact, its effect on A1c was undistinguishable from no counseling at all. These findings were consistent for all three types of lifestyle counseling we analyzed – diet, exercise and weight loss. These results lead us to question whether copied electronic documentation is a reliable representation of patient care. If it is not, it could be either an honest mistake or deliberate falsification. In the latter case copied documentation that does not reflect the actual events is a serious breach of medical ethics; in either case carries a significant financial and legal risk(8).

Efforts must therefore be made to decrease the incidence of inappropriately copied electronic documentation. These could include training and education of providers as well as technical solutions, such as software that automatically detects overly similar notes or their

components. In order for EMRs to benefit patients, we must make sure the information they contain is meaningful.

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TABLE

Effect of Lifestyle Counseling on Time to A1c Control

	Diet	Exercise	Weight Loss	Combined
Distinct	4.98 (3.67 – 6.76) P < 0.0001	3.50 (2.58 – 4.75) P < 0.0001	2.21 (1.37 – 3.55) P = 0.0011	4.35 (2.99 – 6.31) P < 0.0001
Duplicate	0.72 (0.31 – 1.64) P = 0.43	1.46 (0.71 – 3.0) P = 0.30	0.34 (0.045 – 2.53) P = 0.29	0.91 (0.33 – 2.53) P = 0.85
Absent	1.51 (0.65 – 3.53) P = 0.34	0.72 (0.35 – 1.50) P = 0.38	1.01 (0.70 – 1.46) P = 0.96	2.55 (0.74 – 8.72) P = 0.14

Values reported are hazard ratios for reaching A1 < 7.0% (95% confidence interval in parentheses) associated with an additional monthly episode of lifestyle counseling. Differences between effects of duplicate counseling and absence of documented counseling were not significant for any of the counseling categories.