

RESEARCH LETTERS

HEALTH CARE REFORM

Copy/Paste Documentation of Lifestyle Counseling and Glycemic Control in Patients With Diabetes: True to Form?

Electronic medical records (EMRs) can improve many aspects of patient care.¹ Utilization of EMRs 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 health care 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 notes by health care providers 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 performed a retrospective study of more than 5000 patients with diabetes to determine the relationship between copied lifestyle counseling documentation and glucose control.

Methods. Adult patients with diabetes followed by primary care physicians affiliated with 2 academic hospitals for at least 2 years between January 1, 2000, and August 31, 2005, were studied. A single "hyperglycemic" period served as the unit of analysis. A hyperglycemic period starts at the first available hemoglobin A_{1c} (HbA_{1c}) measurement of 7.0% or greater and ends at the first HbA_{1c} measurement lower than 7.0% or at the end of the study period if HbA_{1c} never reached treatment target. "Duplicate lifestyle counseling" was defined as counseling documented using a sentence identical to the sentence used to document the same type of counseling in the previ-

ous note by the same health care provider; otherwise counseling was deemed to be "distinct."

We used specially designed software to identify 3 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 2 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 HbA_{1c} control while adjusting for covariates and accounting for clustering within individual patients.

The institutional review board at Partners Health-Care 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 used the software to process 62 934 primary provider notes of 5914 patients with diabetes followed for a mean of 3.7 years during the study period. Their HbA_{1c} level was above the recommended target for 67% of that time. Nonobese 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 health care provider for the same patient, but only 0.099 times in the notes of the same health care provider for his or her other study patients ($P < .001$), consistent with copy and paste rather than use of templates as the mechanism for the generation of duplicate records.

In multivariable analysis adjusted for the patients' demographic characteristics, initial HbA_{1c} measurement, frequency of HbA_{1c} measurement, treatment with insulin, frequency of medication intensification, frequency of encounters with primary care providers and clustering within individual patients and primary care providers, an increase in 1 monthly episode of any distinct lifestyle counseling was associated with a hazard ratio of 4.35 ($P < .001$)

Table. Effect of Lifestyle Counseling on Time to Hemoglobin A_{1c} Control^a

Counseling Category	Diet	P Value	Exercise	P Value	Weight Loss	P Value	Combined	P Value
Distinct	4.98 (3.67-6.76)	<.001	3.50 (2.58-4.75)	<.001	2.21 (1.37-3.55)	.001	4.35 (2.99-6.31)	<.001
Duplicate	0.72 (0.31-1.64)	.43	1.46 (0.71-3.00)	.30	0.34 (0.045-2.53)	.29	0.91 (0.33-2.53)	.85
Absent	1.51 (0.65-3.53)	.34	0.72 (0.35-1.50)	.38	1.01 (0.70-1.46)	.96	2.55 (0.74-8.72)	.14

^aValues are reported as hazard ratios (95% confidence intervals) for reaching a hemoglobin A_{1c} value lower than 7.0% that were 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.

for reaching HbA_{1c} target; the results were similar for individual counseling categories (**Table**). Duplicate counseling was not associated with faster HbA_{1c} 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 HbA_{1c} was undistinguishable from no counseling at all. These findings were consistent for all 3 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, it 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 health care 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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1. DesRoches CM, Campbell EG, Rao SR, et al. Electronic health records in ambulatory care—a national survey of physicians. *N Engl J Med*. 2008;359(1):50-60.
2. Blumenthal D, Tavenner M. The “meaningful use” regulation for electronic health records. *N Engl J Med*. 2010;363(6):501-504.
3. Hartzband P, Groopman J. Off the record—avoiding the pitfalls of going electronic. *N Engl J Med*. 2008;358(16):1656-1658.
4. Hirschtick RE. A piece of my mind: copy-and-paste. *JAMA*. 2006;295(20):2335-2336.
5. Wrenn JO, Stein DM, Bakken S, Stetson PD. Quantifying clinical narrative redundancy in an electronic health record. *J Am Med Inform Assoc*. 2010;17(1):49-53.
6. Weir CR, Hurdle JF, Felgar MA, Hoffman JM, Roth B, Nebeker JR. Direct text entry in electronic progress notes: an evaluation of input errors. *Methods Inf Med*. 2003;42(1):61-67.
7. American Diabetes Association. Standards of medical care in diabetes—2010. *Diabetes Care*. 2010;33(suppl 1):S11-S61.
8. Hoffman S, Podgurski A. E-Health hazards: provider liability and electronic health record systems. *Berkeley Technol Law J*. 2009;24(4):1524.

LESS IS MORE

Utility of Clinical Examination in the Diagnosis of Emergency Department Patients Admitted to the Department of Medicine of an Academic Hospital

The claim that high-quality history and physical examination are diagnostic for most patients is based on old studies and ambulatory patients.^{1,2} We examined in a prospective study the utility of basic clinical information available on admission for the diagnosis of adult patients admitted to the department of medicine.

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Methods. All consecutive patients newly admitted from the emergency department (ED) to 1 academic department of medicine over 53 days were prospectively included in the study. Planned admissions or readmissions were excluded. A senior resident (SR) with 4 years' training (L.P.) examined all patients within 24 hours of admission, including a full history taking, physical examination, and review of ancillary test findings done at the ED (basic hematology and chemistry tests, urinalysis, electrocardiography [ECG], and chest radiography [CXR]). Additional tests (troponin, C-reactive protein, and international normalized ratio) and computed tomography or ultrasonography (when preformed), medical charts from previous admissions, and all medications and vital signs were also reviewed. The SR then determined her main diagnosis at the highest degree of resolution possible (eg, syncope due to orthostatic hypotension) and identified the modalities that were most helpful in making the diagnosis (eg, history + ECG). Once determined, the diagnosis was sealed and unknown to others. A hospital physician (HP) then repeated the same procedure, with no other data, and did not communicate the results. Participating HPs were active hospital-