

Medical Records and Quality of Care in Acute Coronary Syndromes

Results From CRUSADE

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Background: Patient medical records are important means of communication among health care providers. Limited evaluation has been performed of the quality of the medical records or its association with health care processes or outcomes.

Methods: We performed an empirical evaluation of the completeness of medical records from 607 randomly selected patients admitted with non-ST-segment elevation acute coronary syndromes (NSTEMI) to 219 US hospitals in the CRUSADE National Quality Improvement Initiative. Composite medical records scores were summated and compared by hospital academic status and physician specialty. Correlations between medical records scores, use of evidence-based medicine (EBM), and in-hospital mortality were assessed.

Results: Medical records were frequently missing key elements, including cardiac history (23.6%), performance status (64.6%), differential diagnosis (57.8%), and planned use of EBM (44.0%). Evidence-based medicine was more often discussed in medical records from aca-

demical medical centers vs nonacademic medical centers (69.7% vs 51.7%) ($P < .001$) and from cardiologists vs noncardiologists (60.5% vs 48.1%, $P = .003$). Higher medical records quality scores were associated with greater use of EBM among the medical records quality cohort ($P = .006$), and a similar trend was observed in CRUSADE overall: adjusted odds ratio, 1.26 (95% confidence interval, 0.92-1.72) for high vs low medical records quality. Higher medical records quality scores were associated with lower in-hospital mortality: adjusted odds ratio, 0.79 (95% confidence interval, 0.65-0.97).

Conclusions: Medical records for patients with NSTEMI often lack key elements of the history and physical examination. Patients treated at hospitals with better medical records quality have significantly lower mortality and may receive more EBM. The relationship between better medical charting and better medical care could lead to new ways to monitor and improve the quality of medical care.

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THE AMERICAN COLLEGE OF Cardiology (ACC)/American Heart Association (AHA) practice guidelines¹ summarize evidence-based medicine (EBM) approaches for patients with non-ST-segment elevation acute coronary syndromes (NSTEMI), and closer adherence to these guidelines and recommended treatment practices in ACS has been associated with decreased mortality.^{2,3} Despite these findings, gaps in the use of EBM for patients with NSTEMI ACS remain.⁴⁻⁶

Analysis of medical records has been a method by which these gaps in EBM have been discovered.⁷ Medical records are also an important means of communication among health care providers during a patient's hospitalization with ACS. Despite the significant role of medical records in determining the health care process, few

studies have directly described medical record documentation⁸⁻¹¹ or the association between medical records and health care delivery across practices.¹²

Therefore, we have evaluated the association between medical records and quality of medical care and outcomes by systematically reviewing medical records from US sites participating in the Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines (CRUSADE) National Quality Improvement Initiative.¹³ Specifically, we sought to (1) assess the quality of the admission history and physical examination (H&P); (2) determine variations in completeness based on hospital and provider type; and (3) establish correlation between medical records quality, use of EBM, and in-hospital mortality for patients with NSTEMI ACS.

THE CRUSADE NATIONAL QUALITY IMPROVEMENT INITIATIVE

The CRUSADE National Quality Improvement Initiative¹³ is an ongoing effort of data collection to a single database from high-risk patients with NSTEMI ACS admitted to US hospitals since November 2001. Eligibility for CRUSADE requires ischemic symptoms lasting 10 minutes or longer combined with positive findings for cardiac markers (troponin or creatine kinase MB) or ischemic ST-segment electrocardiograph changes (ST-segment depression or transient ST-segment elevation) within 24 hours of hospital admission. Participating CRUSADE hospitals are diverse in size, teaching status, capacity, and region. They collect data through retrospective medical records review using standardized data collection tools.¹⁴ Data elements include baseline patient demographics, clinical presentation, comorbidities, use of medications within the first 24 hours of hospitalization, use and timing of invasive cardiac procedures, laboratory results, physician and hospital characteristics, interventions, and in-hospital outcomes. The institutional review board of each hospital reviews and approves its organization's participation in CRUSADE. Individual informed consent is not required because data are collected anonymously without unique patient identifiers.

MEDICAL RECORDS QUALITY COHORT

The CRUSADE coordinating center routinely audits the database for validation and quality assurance of data. Components of the medical record used for data entry are requested for audit by the Duke Clinical Research Institute. Each active CRUSADE site submitting more than 40 medical records per year is included in the audit process. A randomization algorithm generates a list of medical records to be requested from sites, based on the medical records received during a given time window (for the present study, January 1, 2004, to June 10, 2005). For this project, each site was asked to submit deidentified copies of the medical records for the ACS submission for three patients included in the CRUSADE initiative from their center.

MEDICAL RECORDS ABSTRACTION

The admission H&P findings were abstracted by 1 of 3 physician reviewers using predetermined criteria on a standardized data collection instrument designed specifically for this study. A selection of medical records was abstracted by a second reviewer. The abstracted data from the deidentified medical records were linked by site and patient number to CRUSADE data.

MEDICAL RECORDS QUALITY SCORES

Medical records quality scores were based on the inclusion and level of detail of key elements. In the absence of existing evaluative tools, criteria and weighting for the scores were developed through consensus of the authors. Scoring components included history of present illness (8 points), medical history including medications (2 points), results from physical examination of key systems (4 points), laboratory data (2 points), and medical decision making (4 points), for a total of 20 possible points. Partial credit was possible for each presenting illness element based on the thoroughness of the documentation (*basic vs thorough*). Scoring for medical decision making was based on the documentation of a problem list, differential diagnosis, discussion of comorbid disease (eg, diabetes and hy-

per-tension), and use of EBM-based treatments (eg, aspirin, β -blockers, glycoprotein IIb and IIIa inhibitors, or heparin).¹ A medical records quality score was calculated for each H&P.

CHARTING CHARACTERISTICS

In addition to the medical records quality score, data on the type of documentation used (handwritten, dictated and/or typed, or preprinted and/or checkbox) and type of health care provider completing the record, if known (physician holding either an MD or DO degree, a medical student, or a nurse), were also collected.

CRUSADE POPULATION

All CRUSADE patients admitted to participating centers during the audit window (January 1, 2004, to June 10, 2005) were included in a secondary analysis. These patients were grouped by their center's average medical records quality score derived from the medical records quality cohort.

STATISTICAL ANALYSIS

In **Table 1**, the baseline characteristics are summarized for the medical records quality cohort, the overall CRUSADE population, and for the populations at centers with low, intermediate, and high medical records quality scores. Continuous variables are reported as median (interquartile range), and categorical variables are reported as percentages. The medical records quality was also compared by medical center academic status and by treating physician specialty. Significance of observed differences was tested using Wilcoxon rank sum tests for continuous variables and χ^2 tests for categorical variables.

In the medical records quality cohort and the CRUSADE population, the early use (within 24 hours) of 4 therapies recommended in the ACC/AHA class I guidelines (antiplatelet therapy, β -blocker, heparin, and glycoprotein IIb and IIIa inhibitor)¹ in eligible patients was assessed as a function of medical records quality. Use of EBM therapies was calculated as a percentage of number of therapies received for which a patient was eligible, resulting in a composite EBM score for each patient. Medical records quality scores were then stratified into tertiles based on a maximum score of 20 (0 to 10, >10 to 15, and >15 to 20). The in-hospital mortality was also reported for each medical records quality score tertile in the overall CRUSADE population.

The significance of the association between medical records quality and use of EBM was tested using the Cochran-Mantel-Haenszel correlation statistic, and the significance of the association between medical records quality and mortality was tested using the Cochran-Mantel-Haenszel Row Mean Scores statistic. In addition, a regression analysis using a generalized estimating equations approach¹⁵ was performed to examine the association between centers' medical records quality and EBM use and account for within-hospital clustering. In this analysis, each medication for which a patient was eligible (called *opportunity*) contributed an observation, and the outcome was a dichotomized variable with value 1 (positive) or 0 (negative) indicating whether the opportunity was fulfilled. For example, if a patient was eligible for 3 medications and received 2 of them, this patient would have 3 observations in the analysis data set, 2 of which would be reported as positive and the other would be reported as negative.

The independent variable in the analysis was a variable indicating the sites' medical records quality level: high, medium, or low. The association of centers' continuous medical records quality score with mortality was also analyzed at the patient level by a multivariable regression using a generalized

Table 1. Baseline Patient Characteristics^a

Patient Characteristic	Study Cohort (n=607)	CRUSADE Cohort (n=44 204)	Medical Records Quality Scores		
			Low (n=2798)	Intermediate (n=35 753)	High (n=5653)
Age, median (interquartile range), y	65 (55-76)	68 (56-79)	69 (57-79)	68 (56-78)	68 (57-79)
Men	62.8	60.2	57.9	60.8	58.4
White	77.4	80.2	78.9	80.6	78.8
Diabetes mellitus	32.8	33.2	32.8	33.3	32.2
Hypertension	70.7	70.7	66.8	71.3	70.7
Prior HF	13.5	17.3	18.1	17.3	15.9
Current or recent smoker	30.6	27.0	23.1	27.6	26.8
Prior MI	28.0	28.8	26.9	29.0	29.5
Prior PCI	19.4	20.7	19.0	20.7	23.7
Positive cardiac markers	89.6	90.7	93.8	89.9	94.3
Cardiac catheterization	78.5	82.0	78.1	82.2	87.3
Treated in academic medical center	23.9	29.7	37.1	27.6	41.1
Treated by cardiologist	59.6	58.0	56.3	57.7	65.6

Abbreviations: ACC, American College of Cardiology; AHA, American Heart Association; CRUSADE, Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines National Quality Improvement Initiative¹³; HF, heart failure; MI, myocardial infarction; PCI, percutaneous coronary intervention.

^aUnless otherwise noted, all data are reported as percentage of patients.

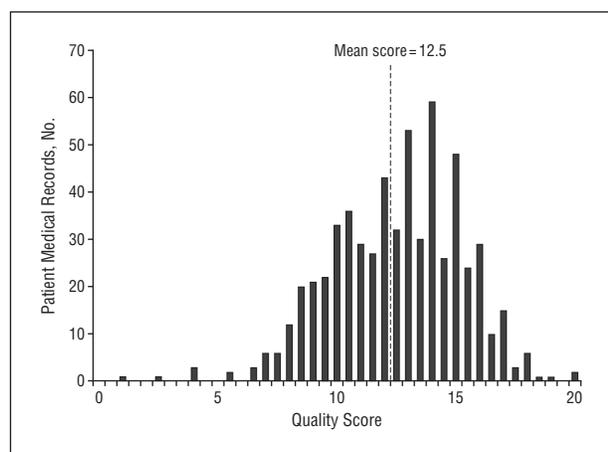


Figure 1. Medical records quality scores (maximum score, 20) were calculated for each eligible patient (n=607); score distribution is shown.

estimating equations approach¹⁵ to account for patient baseline differences and within-hospital clustering. Model variables included age, sex, renal insufficiency (creatinine level, >2.0 mg/dL; creatinine clearance, <30 mL/min/1.73 m²; or need for renal dialysis), diabetes mellitus, nonwhite race (vs white), prior congestive heart failure (CHF), positive findings for cardiac markers, weight, insurance category (Medicare and/or Medicaid, self and/or none, and health maintenance organization and/or private insurance), total hospital beds, hospital region, cardiologists (vs noncardiologists), and academic (vs nonacademic) hospitals. To convert creatinine level to micromoles per liter, multiply by 88.4; to convert creatinine clearance to milliliters per second per square meter, multiply by 0.0167.

The composite EBM score was included in a secondary model to explore whether the association between medical records quality and mortality was independent of short-term EBM use. Since most centers submitted findings from at least 3 H&Ps, a sensitivity analysis was performed limited to those centers with 3 H&P findings abstracted, and the main outcomes remained unchanged. Therefore, all centers with findings from an H&P abstracted were included in the final analysis.

A P value less than .05 was used as the level of significance for all tests. All analyses were performed using SAS software version 8.2 (SAS Institute, Cary, North Carolina).

RESULTS

The medical records quality cohort included 652 patient medical records from 219 CRUSADE sites: 53 academic sites and 166 nonacademic medical sites. It included medical records from patients treated by cardiologists and those treated by noncardiologists. Of the 652 patient medical records, 607 unique admission H&P documents were available for abstraction (45 missing). Twenty-four medical records were abstracted by a second reviewer with good interobserver agreement (96%). All CRUSADE patients admitted to the 219 participating centers in the audit window (n=44 204) were included in the secondary analysis. The baseline characteristics of the population are summarized in Table 1.

The H&P findings were typed or dictated 79.7% of the time (n=484), handwritten 18.3% of the time (n=111), and documented using preprinted check boxes 1.5% of the time (n=9). The H&P was completed by physician holding an MD or DO degree 88% of the time (n=535), a medical student 0.8% of the time (n=5), and a nurse on only 1 occasion.

Medical records quality scores were normally distributed across a range from 1 to 20. The mean (SD) score was 12.5 (2.7) (**Figure 1**). Many important elements of the medical record were frequently absent (**Table 2**). A large number of medical records were missing cardiac risk factors and cardiac history (22.9% and 23.6%, respectively), and more than half did not address the patient's functional status or cognition at the time of admission. Up to one-quarter of medical records did not review current medications or indicate medication allergies. A problem list and differential diagnosis were not present in 25.9% and 57.8% of medical records, respectively. Nearly

Table 2. Elements Missing From Medical Records Overall and by Type of Medical Care Provider and Medical Center^a

Missing Element	Overall (n=607)	Medical Care Provider		Medical Center	
		Cardiologist (n=362)	Noncardiologist (n=245)	Academic (n=145)	Nonacademic (n=462)
Context of present illness					
Presenting symptoms	1.8	1.7	1.7	2.8	1.5
CAD risk factors	22.9	19.1	28.9 ^b	22.8	22.9
Cardiac history	23.6	21.3	26.8	26.9	22.5
Performance status/cognition	64.6	66.6	61.3	67.6	63.6
Medical history	4.3	5.3	3.0	3.5	4.6
Family and/or social history	7.6	6.9	8.1	7.6	7.6
Medication allergies	25.5	26.5	23.4	21.4	26.8
Home medication list	17.3	17.4	16.6	15.9	17.8
Physical examination findings					
Vital signs	9.7	11.1	7.2	8.3	10.2
Cardiac examination	2.6	3.6	0.9	3.5	2.4
Pulmonary examination	4.6	6.1	2.1 ^b	5.5	4.3
Peripheral vascular examination	23.7	21.6	27.2	23.5	23.8
Laboratory data					
Cardiac enzymes	27.5	27.4	27.7	17.9	30.5 ^c
Hemoglobin and hematocrit	37.9	40.6	33.2	25.5	41.8 ^d
Creatinine level and clearance	39.0	40.6	36.6	22.1	44.4 ^d
Lipids, glucose, and hemoglobin A _{1c}	49.4	54.1	41.7 ^c	36.6	53.5 ^d
Medical decision making					
Problem list	25.9	26.2	24.3	24.1	26.4
Differential diagnosis	57.8	59.7	55.7	51.7	59.7
EBM therapy use	44.0	39.5	51.9 ^c	30.3	48.3 ^d
Treatment of comorbid disease	65.6	70.4	57.5 ^c	59.3	67.5

Abbreviations: CAD, coronary artery disease; EBM, evidence-based medicine.

^aAll data are reported as percentage of patient medical records.

^b $P < .05$ compared with cardiologist.

^c $P < .01$ compared with other type of medical care provider or medical center, as relevant.

^d $P < .001$ compared with academic medical center.

two-thirds of patient medical records did not discuss comorbid disease (eg, diabetes mellitus, hypertension, or tobacco abuse) despite the prevalence of these conditions in the treated population, and nearly half of the medical records had no mention of a plan to use EBM therapy (44.0%).

COMPARISONS BY MEDICAL SPECIALTY AND ACADEMIC STATUS

Medical records quality differences for patients treated by cardiology vs noncardiology services are summarized in Table 2. Cardiologists more consistently documented coronary artery disease risk factors (80.9% vs 71.1%) ($P = .02$) and cardiac history (78.7% vs 73.2%) ($P = .05$) and more often discussed EBM (60.5% vs 48.1%) ($P = .003$). However, noncardiologists more consistently documented pertinent laboratory values (lipid and glucose and/or hemoglobin A_{1c} levels) (58.3% vs 45.9%) ($P = .003$) and discussed treatment of comorbid disease (42.5% vs 29.6%) ($P = .001$).

Differences were also noted based on academic status of the medical center (Table 2). Academic medical center medical records more reliably documented pertinent laboratory data and discussed EBM use (69.7% vs 51.7%) ($P < .001$). The medical records at academic medical centers were more likely than those at nonacademic medical centers to be handwritten (42.8% vs 10.6%). Fi-

nally, although the differences were not significant, academic center medical records tended to demonstrate better documentation of treatment for comorbid disease (40.7% vs 32.5%) ($P = .07$) and differential diagnosis (48.3% vs 40.3%) ($P = .09$).

MEDICAL RECORDS QUALITY TERTILES AND USE OF EBM: MEDICAL RECORDS QUALITY COHORT

Early EBM use was examined for medical records quality tertiles (score ranges, 0 to 10, >10 to 15, and >15 to 20) among the CRUSADE medical records quality cohort population (n=607) (**Figure 2**). Higher medical records quality scores were associated with better EBM use overall ($P = .006$) and for the individual EBM most commonly used (treatment with antiplatelet medications [$P = .02$] and β -blockers [$P = .01$]). We did not attempt to associate medical records quality score tertiles with in-hospital mortality in the smaller cohort because these events were rare (n=19 deaths).

MEDICAL RECORDS QUALITY TERTILES, USE OF EBM, AND OUTCOMES: OVERALL CRUSADE POPULATION

Patients treated at centers with higher medical records quality scores (>10 to 15 and >15 to 20) received, on

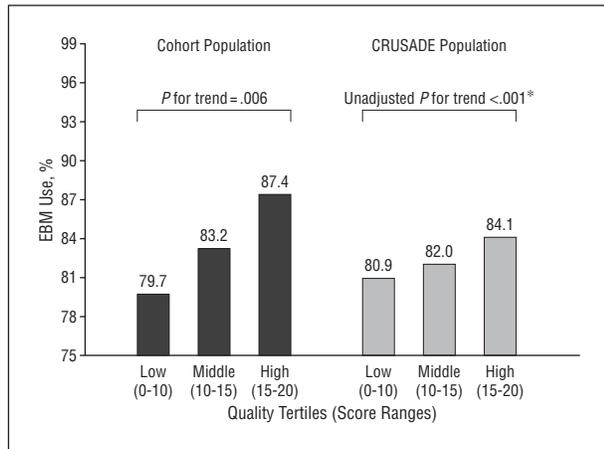


Figure 2. Association between medical records quality score and use of evidence-based medicine (EBM) treatments. Medical records quality scores were stratified into tertiles and examined for correlation with short-term EBM therapy use. Results revealed that higher medical records quality scores were associated with increased use of EBM therapies in the cohort population ($n=607$) and in the overall CRUSADE population ($n=44\,204$). CRUSADE indicates the Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines National Quality Improvement Initiative¹³; ACC, American College of Cardiology; and AHA, American Heart Association.*After adjustment for in-hospital clustering of EBM use, associations were attenuated in the CRUSADE population.

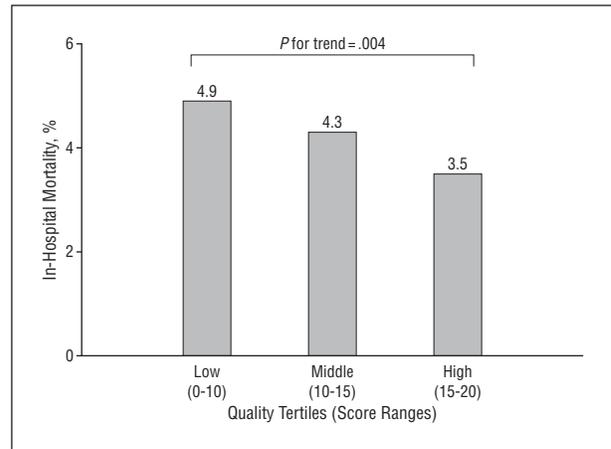


Figure 3. Association between medical records quality score and mortality. Medical records quality scores were stratified into tertiles and examined for correlation with in-hospital mortality in the overall CRUSADE population ($n=44\,204$) but not in the cohort population. (Overall deaths were too few in the cohort population [$n=19$] for analysis to be performed.) Results revealed that higher medical records quality scores were associated with decreased in-hospital mortality. CRUSADE indicates the Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines National Quality Improvement Initiative¹³; ACC, American College of Cardiology; and AHA, American Heart Association.

average, a modestly higher amount of EBM treatment ($P < .001$, unadjusted) (Figure 2), and this association held for each of the 4 individual EBM therapies ($P < .05$ for all). After adjustment for in-hospital clustering, patients treated at centers with high and intermediate medical records quality scores tended to receive more indicated EBM treatment: adjusted odds ratios (ORs), 1.26 (95% confidence interval [CI], 0.92-1.72) and 1.07 (95% CI, 0.84-1.36), respectively; the low medical records quality group served as the referent. Higher medical records quality scores were associated with lower mortality in this population ($P = .004$ for the trend, unadjusted) (Figure 3). After adjustment and consideration for in-hospital clustering, patients treated at institutions with higher medical records quality scores had lower mortality (OR, 0.79 [95% CI, 0.65-0.97] per 5-point increase in score). This finding is consistent with a 21% reduction in odds of in-hospital death for every 5-point increase in medical records quality score.

To examine whether the decrease in mortality observed with higher medical records quality was attributable to differences in EBM use, the model was further adjusted for EBM. The relationship was minimally attenuated, and higher medical records quality scores remained associated with decreased mortality independent of EBM use (OR, 0.82 [95% CI, 0.68-0.99] per 5-point increase in score). This suggests that the mortality difference observed based on medical records quality score is only partially accounted for by differences in EBM.

COMMENT

Medical records documentation has long been recognized as a central component of patient medical care. Since Lawrence Weed¹⁶⁻¹⁸ introduced the SOAP note (subjective, objective, assessment, and plan) and pioneered the concept of linking medical knowledge with clinical decision making, health care providers have been taught to document their thought processes in the medical record. Advances in medical charting have focused on transition to the electronic medical record^{19,20} to improve the ease and accessibility of documentation. Yet no quantitative assessment of medical record completeness has been performed, even though this completeness is essential to provide a reliable baseline from which to assess quality improvement.

Our data provide 2 key observations on the medical charting process. First, the completeness and quality of the medical record in this population was suboptimal. Key elements of the cardiovascular H&P were routinely omitted, including cardiac history and home medications. In addition, information integral to patient-centered care, such as performance status and medical decision making, were frequently absent. Second, we demonstrated a connection between the quality of the medical records, the use of EBM, and patient outcomes. Patients cared for at hospitals that had better medical record keeping experienced lower in-hospital mortality. Therefore, the medical record appears to be a valid marker of quality of care.

Previous studies have demonstrated that patients with myocardial infarction who are treated by cardiologists receive more EBM²¹ and have lower mortality.²² Our data reveal that cardiologists better document cardiac history and more often discuss EBM use than do noncardiologists. Similarly, previous studies have demonstrated that patients treated at academic medical centers receive more EBM^{23,24} and have lower in-hospital mortality.²⁴ Our data also reveal that academic medical centers scored better in medical records documentation of laboratory data, medical decision making, and the discus-

sion of EBM. These differences in medical records documentation may be a marker for other differences that ultimately contribute to the in-hospital benefit of having a cardiologist provider or receiving treatment at an academic medical center.

The use of EBM is a marker for quality of care for ACS. Our data reveal that the quality of the medical records is associated with differences in mortality and may be associated with better use of EBM. In fact, on average, patients cared for at centers with a 5-point higher medical records quality score demonstrated a 21% lower odds of in-hospital death compared with centers with lower scores. Recent data has shown that the difference in mortality rates between hospitals cannot be entirely explained by differences in use of EBM and adherence to guidelines.²⁵ Our data suggest that the mortality differences observed based on medical records quality are not entirely accounted for by differences in EBM use. The relationship between process of care and mortality across hospitals is multifaceted, and these data support the role of medical records quality in this process.

One possible explanation for the association between medical records documentation quality and use of EBM therapies and mortality is that medical charting is an integral component in the health care process. It is plausible that the practice of documenting the history and plan of care for each hospitalized patient in a thorough manner leads to more reliable use of appropriate EBM therapies and a more thorough plan of care resulting in better outcomes. A second explanation is that the quality of medical records documentation is a reflection of the process of care present at an individual institution and that more thorough documentation is a reflection of a more organized medical care delivery system. These data demonstrate for the first time that the medical records do reflect care processes that are important in determining outcomes. They also suggest that complete medical charting, including documentation of thought processes on plan of care, are a vital component in providing quality patient care. Further studies are warranted to examine whether this relationship between medical charting and quality of care represents a method of identifying or improving care and outcomes.

Our study has several limitations. First, we were limited to a relatively small sample size for medical records abstraction owing to the intensive nature of our medical records assessment and data collection. However, a large number of CRUSADE centers (219 of 242) were represented in the medical records cohort population, allowing us to use these patient medical records as a sample indicative of overall hospital medical records quality for each center. Although we recognize there is a strong potential to misclassify a center's medical records quality based on just 3 patient medical records, our results indicate a strong association with health care processes and outcomes based on a limited sample.

Second, to our knowledge, prior to this study, no tools were available to assess medical records quality, so we developed a novel tool for our study. The medical records quality scoring system that we developed provided a normal distribution of scores. While this provides a first look at medical records variation, validation will be needed

before this tool should be applied more broadly. Third, document availability was not universal, but we did receive a high percentage of requested H&P findings for evaluation (93.1%; 607 of 652).

Finally, the discussion of EBM in the medical records was not the same variable used by medical records abstractors for the CRUSADE database. Documentation of actual medication use and dose from the medication reporting system was required for the CRUSADE data collection form.

To our knowledge, this is the first quantitative assessment that links medical records quality to EBM use and patient outcomes in the treatment of a common disease. Patients treated at medical centers with better medical records quality had lower in-hospital mortality and tended to receive more EBM. This study demonstrates that medical records quality is a novel marker of quality of care in patients hospitalized with NSTEMI-ACS. Further study is warranted to determine whether medical records quality also represents an area for intervention to improve outcomes.

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Author Contributions: Drs Dunlay, Alexander, Liang, and Peterson had full access to all of the data in the study and take responsibility for the integrity of the data and accuracy of the data analysis. *Study concept and design:* Dunlay, Alexander, Melloni, Kraschnewski, Gibler, Roe, and Peterson. *Acquisition of data:* Dunlay, Alexander, Melloni, Kraschnewski, Roe, and Peterson. *Analysis and interpretation of data:* Dunlay, Alexander, Kraschnewski, Liang, Ohman, and Peterson. *Drafting of the manuscript:* Dunlay, Alexander, and Peterson. *Critical revision of the manuscript for important intellectual content:* Dunlay, Alexander, Melloni, Kraschnewski, Liang, Gibler, Roe, Ohman, and Peterson. *Statistical analysis:* Dunlay, Liang, and Peterson. *Obtained funding:* Gibler, Roe, Ohman, and Peterson. *Administrative, technical, and material support:* Dunlay, Alexander, Gibler, and Roe. *Study supervision:* Alexander, Melloni, and Peterson.

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