

Quality Improvement: Effect of Standardized Plastic Surgery Consultation Note Templates on Charge Capture

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Background: Effective medical record documentation is imperative for both patient care and reimbursement for care provided. The purpose of this study was to compare coding/billing patterns for plastic surgery consultations before and after implementation of a standardized documentation protocol.

Methods: Standardized hand, facial trauma, and general plastic surgery consult note templates were created. Following institutional approval, records were reviewed for all plastic surgery consultations from January to October 2019. Template notes were universally implemented in July 2019. Medical coding was performed by a certified professional coder using the 1995 Evaluation and Management Review Worksheet. Coding/billing patterns between groups were compared with and without standardized documentation using univariate analysis.

Results: Seventy-five consecutive preimplementation consult notes and 75 consecutive postimplementation consult notes were selected for review. Each group included 25 hand, 25 facial trauma, and 25 general plastic surgery consultation notes. The history and physical examination components of the visit code were more frequently coded as “comprehensive” postimplementation ($P = 0.000$). There was no significant difference in coding for medical decision making between the two groups ($P = 0.340$). The final visit code was significantly higher in the postimplementation group (45.3% 99254/99284 versus 2.7%, $P = 0.000$), and the charges were significantly higher post implementation—average charge per consult \$250 versus \$203 ($P = 0.000$) with a 22.8% increase in total charges generated.

Conclusion: Utilization of standardized consultation note templates increases the accuracy of coding and associated billing of inpatient and emergency department plastic surgery consultations through documentation and reflection of level of service provided. (*Plast Reconstr Surg Glob Open* 2021;9:e3726; doi: [10.1097/GOX.0000000000003726](https://doi.org/10.1097/GOX.0000000000003726); Published online 22 September 2021.)

INTRODUCTION

One of the primary goals of medical record documentation is to accurately reflect the level of care provided. Visit current procedural terminology (CPT) codes are assigned for each consultation encounter based on the evaluation and management (E/M) level of the visit. The visit CPT code corresponds to relative value units and

ultimately a reimbursement dollar amount. The E/M levels range from 1 to 5, with associated visit CPT codes varying based on the setting of consultation—inpatient versus emergency department services. The components of E/M level include completeness of the history of present illness, physical examination, and medical decision making (MDM).^{1,2} Incomplete documentation results in billing and coding that do not parallel the level of care provided.

The combination of complexities of coding, changes to the coding system, and limited formalized physician training on billing and coding contribute to documentation that lends itself to under-coding for individual patient encounters, and consequently under-billing.³⁻⁶ Electronic

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medical records provide an opportunity to generate note templates to facilitate inclusion of appropriate documentation for accurate coding. Note templates also provide consistent language and formatting that can easily be followed by medical coders, who have limited medical and clinical experience.

Previous studies in the trauma surgery and orthopedic surgery literature have shown that standardized template notes increase the accuracy of documentation, coding, and billing.^{7,8} In the plastic surgery literature, standardized facial trauma template notes were studied by Levesque et al and found to significantly increase E/M level.⁹ The purpose of this study was to compare coding and billing patterns for all plastic surgery consultations before and after implementation of standardized documentation.

MATERIALS AND METHODS

Standardized hand, facial trauma, and general plastic surgery consult notes were created through consultation with craniofacial and hand plastic surgery faculty and the plastic surgery billing and coding department. (See **appendices, Supplemental Digital Content 1**, which displays (a) facial trauma consultation note template, (b) general plastic surgery consultation note template, and (c) hand surgery consultation note template. <http://links.lww.com/PRSGO/B734>.)

Note templates were reviewed by the faculty attending physicians to ensure the templates included the minimum necessary components of the history and physical exam (PE) that should be performed with each consultation. Members of the billing and coding department confirmed necessary components for high level E/M coding were built into the template format and advised on formatting of the note to ease future coding. Before template note implementation, trainees were educated on all components of the respective PEs (hand, face, and general), standard language for collecting a complete review of systems, and ethical use of this tool.

The standardized note was designed to meet criteria required for appropriate billing. The history component of the note included the patient's chief complaint, history of present illness, medical history ("past medical," "past surgical," "social," and "family history"), and a complete review of systems. The PE component included prompts for evaluation of eight total organ systems—meeting criteria for a comprehensive PE. The MDM component of the standardized note included a section for reviewed "pertinent results," including laboratory and imaging results, and a prompt for "diagnosis" followed by free text for the physicians to describe their MDM process.

Following institutional approval, records were retrospectively reviewed for all inpatient and emergency department plastic surgery consultations from January 2019 to October 2019 at a single, academic level 1 trauma center. The template notes were universally implemented by all plastic surgery residents in July 2019. Medical coding was performed by a certified professional coder using the 1995 Evaluation and Management Review Worksheet. (See **table, Supplemental Digital Content 2**, which displays

1995 Evaluation & Management Review Worksheet for coding clinical encounters.¹⁰ <http://links.lww.com/PRSGO/B735>.)

Records were de-identified, and final E/M visit codes in addition to codes for history of present illness, PE, and MDM were collected for each consultation. Of note, procedures performed associated with consultations were documented and coded separately. Coding and billing patterns were compared for consultations performed with and without standardized documentation using univariate analysis in IBM SPSS Statistics for Mac, version 26 (IBM Corp., Armonk, N.Y.). Chi square analysis and Mann Whitney U tests were used to compare categorical data (coding level, encounter charge) between the two groups. Parametric analysis (Student *t* test) was used to analyze continuous data (note word count). A *P* value less than 0.05 was considered statistically significant.

A power analysis was performed to calculate the necessary sample size. A sample size of 56 notes per group would provide a power of 80% with a significance threshold of 0.05 to detect a 20% absolute difference between final E/M codes in pre and postimplementation groups. An estimated 75 consecutive consultation notes were included per group to evenly distribute the note types—25 hand, 25 face, and 25 general consultation notes.

RESULTS

In total, 150 consultation notes were included for review—75 preimplementation and 75 postimplementation of templated notes. Diagnoses associated with consultations were evaluated (**Table 1**). The most common diagnosis for a general plastic surgery consultation was wound evaluation (40%), followed by pressure ulcer (30%). Trauma was the most common diagnosis for hand and face consultations (38% and 54%, respectively).

The history component of the visit CPT code was more frequently coded as "comprehensive" following template implementation—17.3% preimplementation versus 72% postimplementation [**Fig. 1**, $\chi^2(1, N=150) = 45.3, P = 0.000$]. In 97% of consult notes post template implementation, the PE component was coded as compre-

Table 1. Consultation Diagnoses

	No. Notes (%)
General consultation	
Wound evaluation	20 (40)
Pressure ulcer	15 (30)
Reconstruction	7 (14)
Postoperative complaint	5 (10)
Infection	2 (4)
Soft tissue trauma	1 (2)
Hand consultation	
Trauma (bone ± soft tissue)	19 (38)
Infection	15 (30)
Isolated soft tissue trauma	10 (20)
Wound evaluation	4 (8)
Postoperative complaint	2 (4)
Face consultation	
Trauma (bone ± soft tissue)	27 (54)
Isolated soft tissue trauma	18 (36)
Wound evaluation	2 (4)
Congenital	2 (4)
Infection	1 (2)

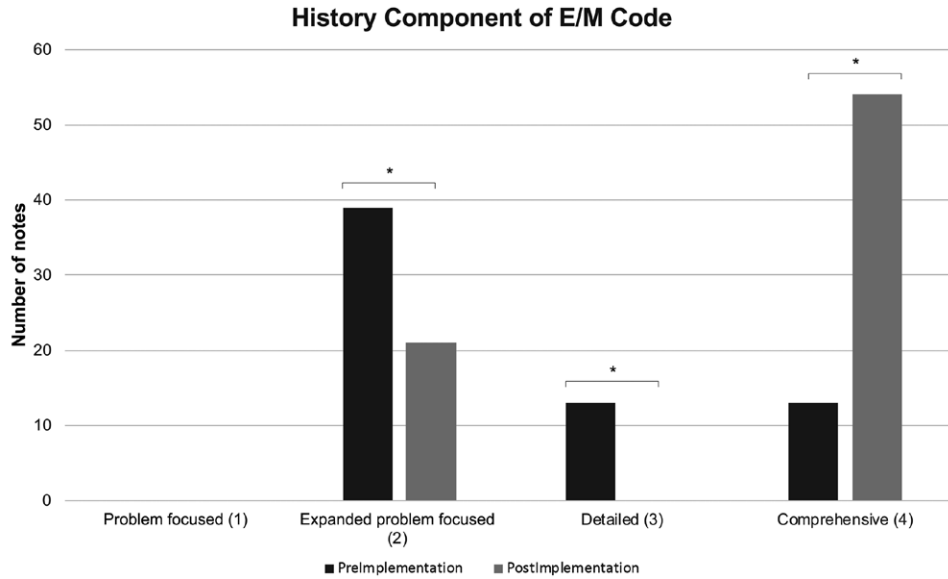


Fig. 1. Coding for the history component of final E/M visit code pre and postimplementation of standardized templates. *Statistically significant ($P < 0.05$).

hensive, compared with 1.3% preimplementation [Fig. 2, $\chi^2(1, N=150) = 138.3, P = 0.000$]. There was no significant difference in the code for MDM between the two groups [Fig. 3, $\chi^2(2, 150) = 2.6, P = 0.340$]. The final visit code was significantly higher in the postimplementation group (Fig. 4 $P < 0.05$)—average final E/M code 2.65 ± 0.53 preimplementation (median = 3, IQR 2), 3.13 ± 0.88 postimplementation (median = 3, IQR 1). No significant difference in word count was noted (mean 663 ± 288

versus 657 ± 255 words, $P = 0.900$). The associated visit charges were also significantly higher postimplementation—average charge per consult $\$250 \pm 108$ versus $\$203 \pm 85$ ($P < 0.05$) with a 22.8% increase in total billing charges.

Final E/M codes were compared between pre and postimplementation groups for each note type (general/hand/face). For all note types, there was a significant difference in final E/M code with template implementation [general note $\chi^2(2, N = 50) = 13.3, P = 0.001$; face notes

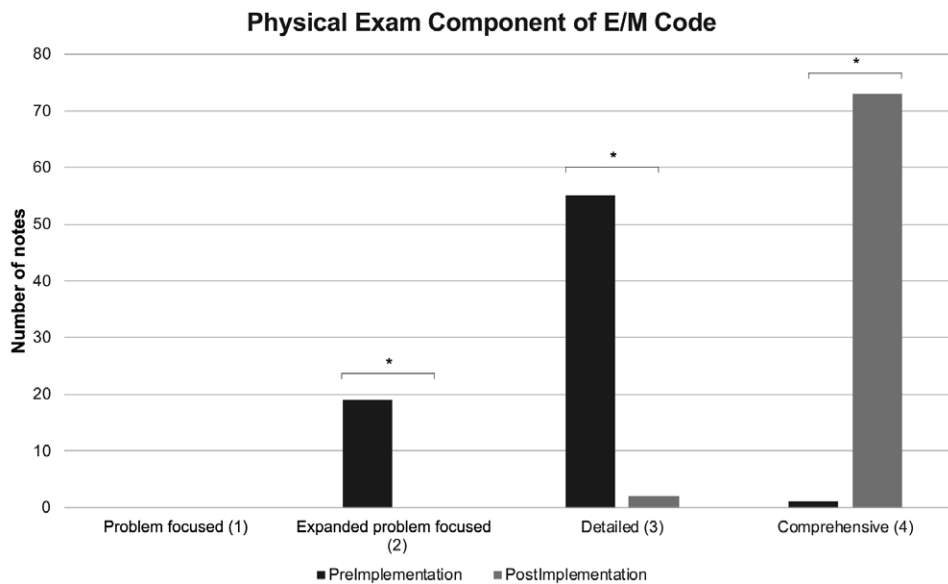


Fig. 2. Coding for the PE component of final E/M visit code pre and postimplementation of standardized templates. *Statistically significant ($P < 0.05$).

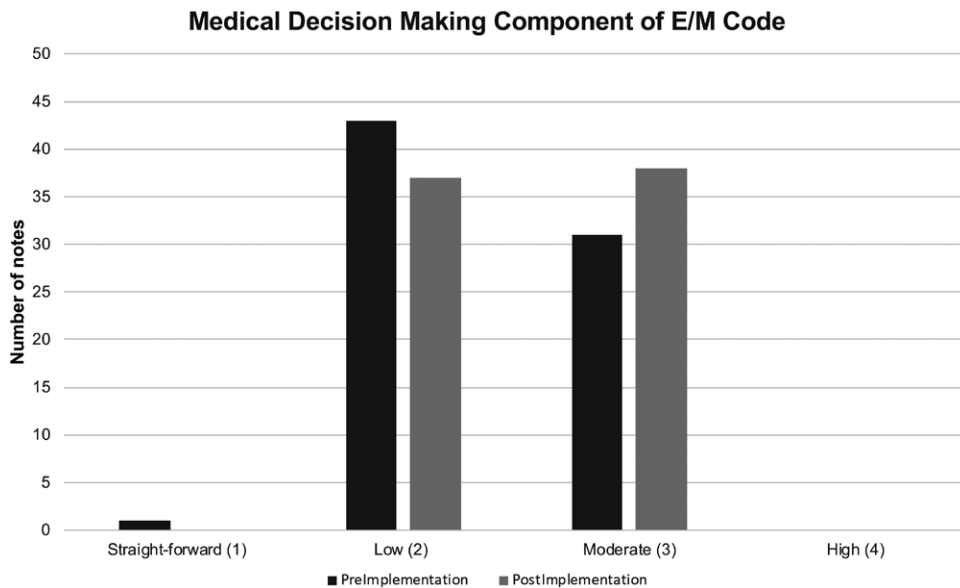


Fig. 3. Coding for the MDM component of final E/M visit code pre and postimplementation of standardized templates.

$\chi^2(2, N = 50) = 17.2, P = 0.000$; hand note $\chi^2(2, N = 50) = 16.6, P = 0.000$]. The median code was significantly higher in the postimplementation group for general template notes only (median 3 with IQR 1 for both groups).

DISCUSSION

Many residency programs across medical and surgical specialties report limited formalized training on billing

and coding.^{1,3-5} By using standardized consultation template notes approved by the billing and coding department, the essential components for high level E/M coding are provided for the resident. While it is the physician's responsibility to appropriately perform and complete the history and PE, the template format provides a framework that facilitates complete documentation of the care provided. This is demonstrated in our study with significantly more comprehensive history and PEs documented post

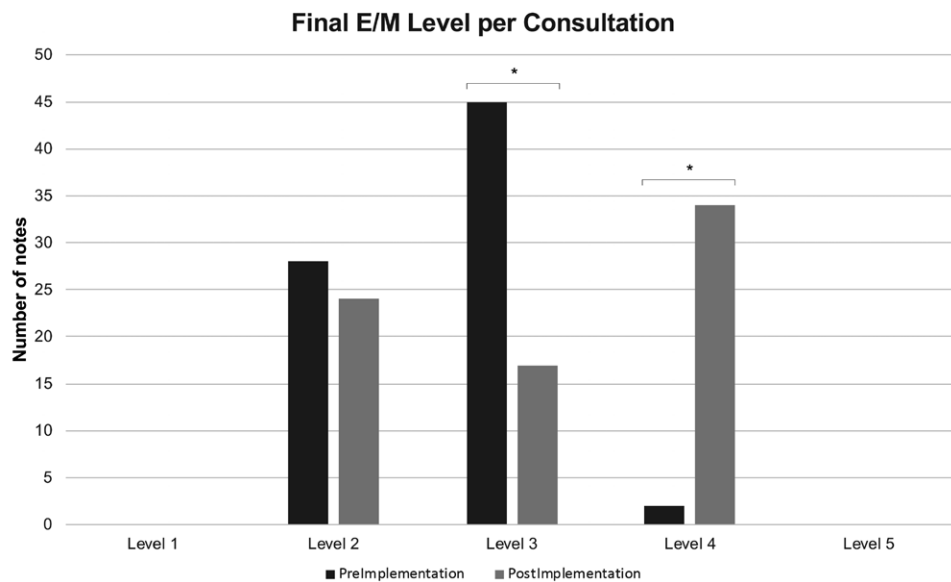


Fig. 4. Final evaluation & management (E/M) visit level pre and postimplementation of standardized templates. *Statistically significant ($P < 0.05$).

implementation. As expected, there was no change noted in the MDM component of the E/M visit code, as the use of standardized templates did not affect the management, complexity, or level of risk associated with each consultation. More comprehensive history and PE codes translated into an increase in level of final E/M code (from average level 2.65 ± 0.53 to an average level 3.13 ± 0.88).

Standardized template notes have been shown to increase billing and coding in the trauma surgery and facial trauma literature.^{8,9} Barnes et al implemented standardized daily trauma surgery progress notes, noting a subsequent 394% increase in revenue.⁸ However, the E/M coding for inpatient daily progress notes does not meet the same requirements as initial consultations.^{10,11} We showed a 22.8% increase in total billing charges, which is comparable to the 28% increase noted by Levesque et al in the facial trauma population.⁹ Of note, these data represent billing charge, not revenue collected. Revenue collection was not recorded, as these values vary significantly based on insurance status, insurance carrier, and insurance payment schedules.

Potential negative effects of standardized documentation include concerns regarding deterioration of note quality and the inclusion of nonessential information.^{12,13} Autopopulation within templated notes have been shown to contribute to note length and “note bloat” in the internal medicine literature.¹² The standardized notes used in the present study do not include smart phrases (used to pull autopopulated data from the chart into the note) in an effort to create succinct notes that contain only information relevant to clinical care and the billing of services rendered. To confirm standardized documentation did not result in excessively lengthy medical documentation, note length was compared between the pre and postimplementation notes using word count. No significant difference in word count was noted (663 versus 657 words, $P = 0.900$). Tools have been designed in attempts to objectively evaluate electronic note quality, including the Physician Documentation Quality Instrument (PDQI-9). This tool evaluates 9 attributes of the note—up-to-date, accurate, thorough, useful, organized, comprehensible, succinct, synthesized, internally consistent. PDQI-9 has been validated for internal medicine notes, however was found to be less applicable in the emergency department setting.^{13,14} Given the retrospective nature of the present study and inability to blind note graders (given postimplementation templated format), PDQI-9 evaluation was not performed. Future prospective studies, including PDQI-9 evaluation of note quality by the attending physician at the time of consultation note, would provide insight into objective measures of the electronic note quality for standardized documentation in plastic surgery consultation notes.

The present study has some limitations. The study was performed at a single academic center, and as such the results may not be generalizable to other academic medical centers or in the private-practice setting. Notes before implementation of the standardized note template were at the discretion of the provider, and were as such nonstandardized for either plastic surgery or specific disciplines within plastic surgery. The design of this study creates an

opportunity for bias, as residents were educated regarding template use following completion of data collection for the preimplementation group. However, resident education was limited to proper template use and avoiding documentation of services not provided—education on billing and coding of notes was not provided. There may be concern that a prepopulated note template may affect trainee documentation in a negative way—either documenting for services not provided or preventing them from developing an independent patient evaluation format. However, trainees were specifically educated on all components of the standardized documentation template—including all components of the hand, face, and general PEs and standard language to efficiently collect a complete review of systems. Competency in performing examinations outlined in the templated note was confirmed before template note implementation. Residents were also educated on ethical use of templates, including documentation of only work performed, and hard stops were included throughout the template note that required active decision making to include each piece of data. Another limitation of the present study is the failure to capture time required for completion of consultation note. These data would not only allow for capture of a potential learning curve for use of the standardized template note, but also document improved efficiency with continued use. Resident education before note implementation was performed, as above, in an attempt to mitigate increased time required to complete consultations attributed to use of a templated note. Future studies evaluating physician reported time to completion of consultation combined with collection of the time from note initiation to time of note completion could provide further insight into the potential increased efficiency associated with standardized documentation.

In the present study, the effect of standardized consultation notes was most notable for general plastic surgery consultations at a single academic institution, with trends toward significance for hand surgery consultations. However, the application of standardized documentation on billing and coding could be applied to the procedural notes performed in conjunction with inpatient and emergency department consultations, the outpatient setting, and in the private practice setting. Importantly, the applicability of templated consult notes may be even more profound in the private practice setting. Improved efficiency and proper reimbursement of services provided is paramount in this care setting, and unlike the academic setting, reimbursement for emergency department consultations are less dependent on insurance carrier.

CONCLUSIONS

Implementation of standardized consultation note templates increases the accuracy of coding and associated billing of inpatient and emergency department plastic surgery consultations through increased completeness of history and PE documentation to more accurately reflect the complexity of the services provided. This intervention is projected to increase departmental billing by 22.8%.

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