

Preprocedural Checklist for Magnetic Resonance Imaging Patients Undergoing General Anesthesia

A Process Improvement Plan to Enhance Reimbursement

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Thorough documentation is essential for hospital reimbursement from payors such as the Centers for Medicare & Medicaid Services. Inconsistencies and incomplete documentation can occur if workflow is not standardized especially in cases with interdisciplinary involvement. Documentation for patients undergoing magnetic resonance imaging (MRI) with anesthesia services was examined and revealed an opportunity for improvement to avoid financial losses. A preprocedure checklist to improve documentation and standardize workflow was implemented. We compared documentation from preintervention MRI to postintervention MRI with anesthesia services. Documentation that met the reimbursement requirements increased from 5% in the preintervention group to 90% in the postintervention group after the preprocedural checklist implementation. A cost estimate showed a reduction in potential revenue loss from preimplementation to postimplementation groups. The standardization of workflow with the aid of checklists helped meet the documentation requirements for adequate reimbursements and reduced the risk of potential reimbursement losses from payors. Key words: *checklists, compliance, MRI, quality improvement, reimbursement*

THE REIMBURSEMENT OF medical care costs in the United States is regulated by third-party payors such as the Centers for Medicare & Medicaid Services (CMS) as well as private insurers. Hospitals and other health care facilities are often faced with financial shortfalls due to the constraints of reimbursement regulations set forth by such entities. Accurate documentation

is crucial to receive optimal reimbursement from third-party payors.¹ According to CMS, medical claims with insufficient documentation will not support payments for reimbursement.² Items necessary for documentation may be overlooked or incomplete if the health care setting lacks an organized workflow process.³ Inadequate clinical documentation may also cause inaccuracies with administrative coding, which can further result in the denial of payments, as well as subject the hospital to audits and federal penalties.⁴

The expansion of nonoperating room anesthesia services allows for diagnostic tests and procedures to be performed safely for higher-acuity patients needing sedation beyond traditional moderate-sedation methods. Anesthesia services administered in these settings present a unique challenge for reimbursement. Magnetic resonance imaging (MRI) with anesthesia services

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The authors have no funding or conflicts of interest to disclose.

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DOI: 10.1097/HCM.0000000000000222

is ordered for complex patient populations. Magnetic resonance imaging procedures require patients to remain motionless from a few minutes to several hours while lying in a small, enclosed space, and to tolerate the testing conditions, some patients require anesthesia services.⁵ Required criteria to support reimbursement for the MRI procedure with anesthesia services include documentation of the patient's condition that warrants the need for anesthesia.⁶ Failure to complete documentation potentially results in the denial of claims and subjects the health care system to denial for reimbursement of services, producing a direct revenue loss from the denied services, or creates secondary revenue loss from the additional labor to resubmit claims.⁴ In order to maximize reimbursement for such procedures, it is essential for health care facilities to implement protocols that will ensure comprehensive documentation is completed prior to the initiation of diagnostic services such as the MRI with anesthesia.

Review of organizational workflow

Our academic teaching facility examined the workflow of MRI diagnostic examinations with anesthesia services to assess for the presence of the required elements for reimbursement. A potential shortfall for reimbursement was identified because of the lack of standardization in the documentation requirements. In order to minimize denials, a proactive approach through a workflow study to prevent potential losses was essential, and a protocol was developed to include the required elements for reimbursement. The elements necessary for reimbursement of an MRI with anesthesia services included documentation of the patient's history and diagnosis for the examination.⁷ In addition, if anesthesia services are requested, the patient's history must be reviewed by the radiologists, and the request for anesthesia services should be documented. Our examination of workflow concluded the radiology department used an alternative electronic medical record (EMR) platform (Radiant) rather than the EMR platform (EPIC) used hospital-wide. The Radiant platform provided a means to input MRI orders and read and interpret MRI

diagnostic scans and results. However, documentation from the Radiant platform did not communicate with the patient's EPIC EMR platform. Therefore, an additional step was necessary in order for the radiologist to complete the required documentation elements. This additional step proved cumbersome for the staff, and a quality improvement project was developed to improve the potential for insufficient reimbursement. Upon review of the MRI procedures with anesthesia services in 2014 and 2015, there were 395 adult MRI procedures and 383 pediatric MRI procedures with anesthesia services performed. Sufficient documentation was present in 15% of the MRI procedures. This observation and its potential for loss of revenue led to the creation of this process improvement project. The goal was to standardize radiology and anesthesia department workflow for MRI with anesthesia services through the implementation of a preprocedural checklist.

The aims of this project included the following: (1) to increase required documentation of a radiologist's (RAD) note confirming the review of the patient's history and need for anesthesia services, (2) to examine delays related to absence of the radiology note documentation, and (3) to evaluate potential loss of revenue for MRI with anesthesia services between preimplementation and postimplementation groups.

Setting for implementation

The setting for this process improvement initiative was a 924-bed, level I hospital in a large academic system. This facility provides care for a mixed patient population including underserved residents. The hospital has 104 radiologists on staff with its radiology department with 8 subclinical subspecialties. The hospital is 1 of 3 institutions that provides anesthesia for MRI in the tricounty area and accepts referrals from across the state.

Protocol development

Prior to this radiology protocol implementation, the same double verification process was used for all patients arriving in the preoperative area. The patient awaiting a procedure was given a red operating room bonnet until

all preprocedural documentation is verified. A member from the anesthesia team double verifies with the preoperative nurse that all necessary documentation is present in the patient's EMR EPIC platform. Upon completion of the double verification process, the patient receives a blue operating room bonnet to wear as a visual indicator that patient's documentation is adequate and signals the patient may proceed with the planned procedure.

An educational intervention was held with the anesthesia and radiology providers prior to when the protocol implementation was scheduled. The education included reviewing the necessary components of the protocol and the pertinent required documentation. The standardized workflow and preprocedural checklist was developed through a multidisciplinary effort (Figure 1). A modified checklist for MRI with anesthesia services was incorporated into the existing double verification process. The preprocedural checklist was available via the EPIC EMR and was accessed by all anesthesia providers prior to beginning a scheduled procedure. This checklist was to be completed for all adult MRI patients receiving anesthesia, and confirmation of this completed universal protocol was necessary prior to leaving the preoperative area. The checklist included verification of patient name and date of birth, presence of a documented history and physical, a preanesthesia evaluation, the anesthesia consent, and the presence of the RAD note, which documented the review of patient's history and the need for MRI with anesthesia services. To improve documentation of the RAD note, a standardized

radiology note was created for use by the radiology service in the EMR.

RESULTS

RAD note compliance

The preimplementation data were reviewed, and 39 patients were scheduled for outpatient MRI procedures with anesthesia services. Five percent of the cases scheduled for MRI with anesthesia services in the preimplementation group met sufficient documentation guidelines for reimbursement. The postimplementation data were reviewed and consisted of 40 patients scheduled for MRI procedures with anesthesia services. Ninety percent of the sample contained the required documentation (Figure 2). There were 4 procedures in the postimplementation group with inadequate documentation related to a RAD note deficiency, which resulted in delayed MRI. The procedure delays ranged from 5 to 26 minutes.

Potential loss-of-revenue analysis

An analysis of the potential revenue loss for the MRI with anesthesia services with inadequate documentation from the preimplementation period was conducted using national benchmarks for reimbursement of services. Magnetic resonance imaging procedures with anesthesia are typically allotted 7 base units with an additional unit for time for every 15-minute interval of the procedure. There were 39 MRI procedures with an average length of diagnostic service of 113 minutes. Each diagnostic service converted to approximately 8 anesthesia time

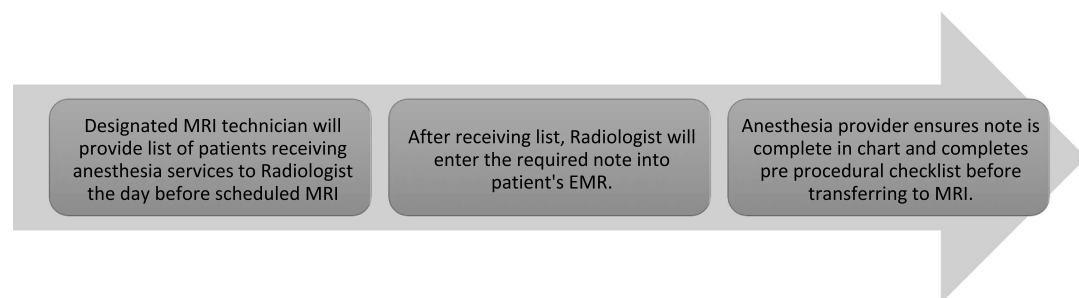


Figure 1. Radiology magnetic resonance imaging (MRI): standardization of workflow. Analysis of new proposed workflow among interdisciplinary departments. New proposed workflow pattern for anesthesia, radiology, and MRI departments presented in stepwise fashion. Workflow designed to help ensure completion of essential documentation.

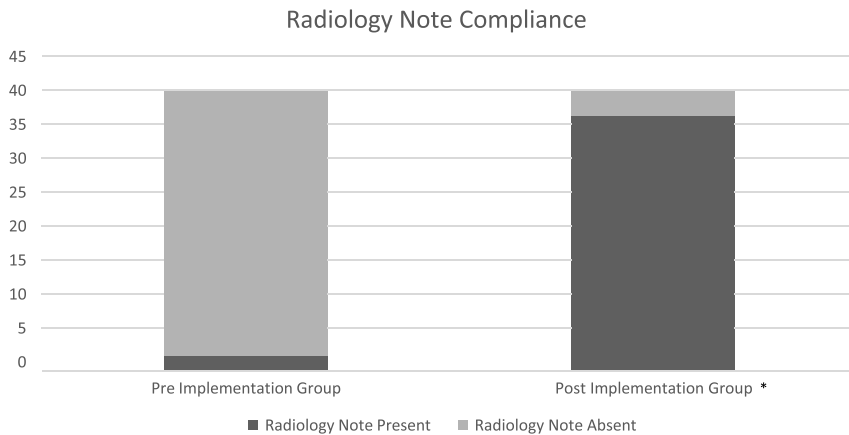


Figure 2. Radiology note documentation compliance. Analysis of radiology documentation in preimplementation and postimplementation groups. * $P < .05$.

units. The potential revenue for the MRI with anesthesia services was \$114 722. Adequate documentation for reimbursement was present in 5% of the reviewed procedures, leading to a potential loss of revenue of \$108 839.

In the postimplementation group, there were 40 MRI procedures with an average length of diagnostic service of 119 minutes. Each diagnostic service converted to approximately 8 anesthesia time units. The potential revenue for MRI with anesthesia services was \$117 664. Adequate documentation for reimbursement was present in 90% of the reviewed procedures, leading to a potential loss of revenue of \$11 767 (Figure 3).

DISCUSSION

The implementation of a specific preprocedural checklist positively standardized workflow, increased compliance with documentation, and reduced potential loss of reimbursement from payors such as CMS and other insurers. Studies have shown the benefits of checklists, which include improved guideline compliance and standardization of workflow.^{8,9} The implementation of checklists enhances team communication and encourages a team concept.¹⁰ Checklists provide sustainability as demonstrated by a study by Teixeira et al,¹¹ which showed the use of a checklist maintained high rates of compliance with quality measures 2 years after implementation. The MRI protocol development also demonstrated the benefits of

checklists in emerging settings such as remote locations such as those with multidisciplinary involvement such as anesthesia and radiology.

The Centers for Medicare & Medicaid Services funding is a major payor in the United States.¹² As CMS claims review becomes more stringent, a potential for loss is apparent. At our facility, CMS was a major payor for patients having MRI with anesthesia services.¹³ The Centers for Medicare & Medicaid Services establishes protocols for payments to hospitals and its providers. Information released from CMS and analyzed by *NERDWalletHealth* estimated the national average of an MRI to be \$2611.¹⁴ The national average of CMS reimbursed anesthesia units was \$22.04 per unit.¹⁵ The standardization of workflow with the emphasis on required elements for CMS reimbursements reflected a reduction in potential revenue loss from \$108 839 to \$11 767. This reflected a 90% decrease. This cost analysis not only confirms the importance of obtaining adequate documentation required for payors, but also represents potential revenue for hospital systems to allow for investments in capital expenditures and equipment, as well as to improve the delivery of care and patient safety.

According to CMS.gov,² if an organization is selected to be audited and in violation of regulations, the organization must submit a corrective action plan. The time for submission of the corrective plan may be as soon as 7 days after the final audit was issued. The design

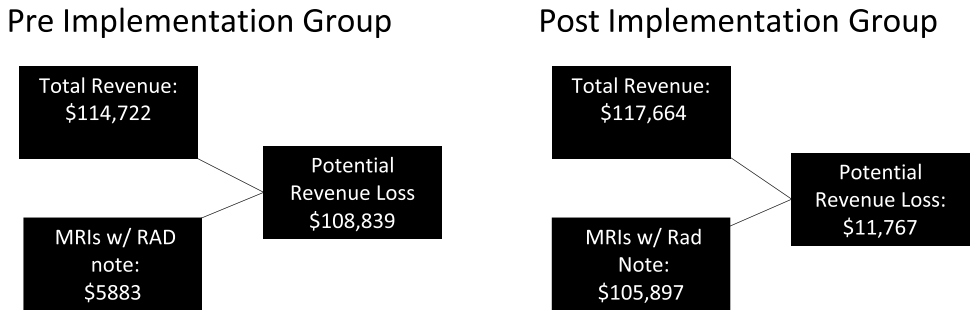


Figure 3. Magnetic resonance imaging with anesthesia services: estimation for revenue losses. Analysis for estimation of potential revenue losses.

and results of our study provide health care workers with an example of an effective corrective plan that can be implemented within their organizations.

Following the postimplementation period, sustainability of the preprocedural checklist for MRI with anesthesia services was evaluated, and the data revealed the RAD note compliance had decreased from 90% to 70%. This finding most likely stemmed from checklist fatigue. The overuse of checklists can result in decreased compliance, resulting in the loss of their efficacy.¹⁶ The negative effects of checklist fatigue can be minimized by periodic reevaluation and through regularly scheduled EMR audits. Such evaluations can target the need for reeducation for staff to reinforce behavior to prevent decays in good behavior and prevent the deterioration of compliance.¹⁷ Furthermore, a long-term solution includes the addition of a hard-stop within the EMR as a method of controlling the importance of compliance with the preprocedural checklist at the systems level.¹⁸ The implementation of a hard-stop will not allow the practitioner to continue charting in the patient's EMR unless all items of the checklist are addressed and therefore optimize both compliance and sustainability.

Limitations

The following limitations were noted in this quality improvement project. Because of the multidisciplinary nature of this issue, a similar intervention is necessary for all

involved departments to ensure uniformity. Also, the relative low frequency of procedures necessitates further analysis. Finally, because of limitations with our facility's technology department, we were unable to incorporate a computer "hard-stop" to be included as part of the checklist.

CONCLUSION

As third-party payors become more stringent on reimbursement criteria, the presence of the required criteria of documentation is imperative. Compliance with documentation benefits the patient as it improves the flow of services and timely care, as well as prevents increased patients costs if third-party payors do not reimburse the hospital for the procedure. The initiation of this quality improvement project concludes that checklists are essential to prevent deviations from protocol. Checklists create an avenue for a standardization of practice. Similar protocols that examine the issue and provide a description of workflow can be used for quality improvement in different health care settings to help ensure optimal adherence to documentation requirements.

ACKNOWLEDGMENTS

The authors thank Sharon Hawks, DNP, CRNA; Julie Thompson, PhD; Mustafa Bashir, MD; David Enterline, MD; and Judy Pool.

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