
Introduction
Most poor revenue performance confronted by radiologists and radiology business professionals originates from weaknesses in the overall base design of the billing system. So although much has been written on the micro aspects of radiology billing and reimbursement, this article takes a macro view. We’ll look at the design of the revenue-generating infrastructure of radiology practices. In this way, we’ll be able to show you about the basic system design requirements that should be incorporated into every radiology billing system.

The design process is organized in three steps: Process Design; Quality Control and Process Enhancement; and Performance Evaluation. Only when these three major functions are in place can we discuss the microelements of radiology billing and reimbursement. The three-part system design approach is organized to cover virtually every issue likely to confront anyone active in (or affected by) radiology revenue generation.

In this discussion, we will use the term billing system to refer to either in-house billing operations, or billing outsourced to a professional billing service. The fundamental principles presented can be used to initiate change in your in-house billing operations; or these principles can become a requirement for your outsourced billing service. One thing’s the same in every radiology billing system--every system has similar inputs (demographic and charge information) and outputs (the generation of revenue and management reporting). What separates the good from the bad is the unique management approach applied!

Phase I - Process Design and Management
During the first phase, Process Design, it is important to note that the difference between a remarkably successful billing system and a marginal one is not the software selected, but rather the system design and management philosophy applied to the billing process. The design process begins with the identification and documentation of the system operation segments that make up the billing process (see Exhibit 1). It is from these system operation segments (or components) that the framework will be built (from which the entire Design Process, Quality Control, and Process Enhancement phases will be developed).

Exhibit 1 includes all of the system operation segments that make up the billing process. These nine system operation segments will be assembled to make up the entire billing system. Think of them as similar to the separate systems that are put together to manufacture an automobile. During the automobile manufacturing process, the power-train system, air bag safety system,
electrical system, and many other systems are assembled to produce an automobile. If any one system is missing, the car doesn’t run! The same holds true for a radiology billing system; the nine system operation segments must be assembled properly to make the billing system work well.

Just as the air bag safety system is separately designed before it becomes part of the assembly of the entire automobile, each of the nine system operation segments must be designed as well. The design of each of the nine system operation segments entails what we refer to as *microelements* of the billing process. Development of these macro-elements will aid in documenting compliance with company policies, governmental compliance laws, and the regulations that we all face in the industry today. This level of detail is beyond the scope of this writing, but it is an essential step.

**Phase II - Process Monitoring, Feedback, and Quality Control**

Once the framework of the billing system is established, we need to determine how we will be able to monitor and control the quality of inputs and outputs as these elements move through the billing system. This control is accomplished during the design of the Quality Control and Process Enhancement steps. Controls and performance monitoring systems should be implemented at specific intervals in the flow of processing to ensure quality. These are management tools that will serve as an early warning system for potential issues; plus, these tools will provide feedback on where to enhance the process to make it more efficient. When the quality controls identify an area where there is an issue, the billing system should be modified to reduce the likelihood of reoccurrence. This modification can either be retraining for a staff member(s), or the redesign of one of the microelements in any one of the system operation segments so that the issue(s) can be monitored on a monthly or daily basis.

The billing process begins once the interpreting radiologist signs his or her interpretation. This time is when the management of the billing process takes over and where we must begin our critical review of the billing process for quality weaknesses. From here there is a finite number of courses the billing for any one or all exams. Evaluations of these alternatives identify inherent weaknesses in the system and indicate where to implement monitoring and quality control reporting.

Once an exam is completed, there are four possible outcomes in the system:

1. The exam could be lost and not billed.
2. The exam could be billed and denied by the carrier.
3. The exam could be billed and paid.
4. The exam could be billed and the insurance company never responds to your claim submission, and the balance sits in the accounts receivables.
If we design reliable automated systems to monitor and provide feedback on these four areas, then we have addressed the major risk areas in the billing system and have eliminated considerable financial exposure. By monitoring the reporting produced by these quality control reporting systems, we can be confident that claims are moving through the system and are being paid at anticipated amounts and time intervals. Because the quality control reporting system identifies any weaknesses, we can evaluate the design considerations used during the design of the system operation segment to eliminate or reduce reoccurrences of the same error.

Given that all radiology billing systems have common inputs and outputs, there are also common weaknesses in radiology billing systems. For this reason there are specific quality control reporting systems that should be incorporated into every radiology billing system. You may identify additional reporting needs, but the areas that we cover next should be mandatory. The first quality control is procedure count verification, and it should occur after steps 1-4 of Exhibit 1 have been completed. At this point we are still relatively early in the billing process and we must confirm that all of the radiologist’s charges have been captured for processing by the system. Procedure count verification is designed to verify that no exams are lost before they are billed. This quality control step does not determine that steps 1 through 4 are performed with 100% accuracy; it only confirms that all of the charges are accounted for.

The next recommended quality control step is called denial management. This step is designed to monitor steps 5 through 7 and also instances where the carrier denied the claim submitted. The denial management system provides crucial management data for the optimization of income. The system accomplishes this function by tracking, quantifying, and reporting on every claim billed for which any payer denied the service. The reporting should be comprehensive reporting on all denials, and not just selected denials. This type of reporting is necessary to understand the entire financial situation of the practice. Once identified, these accounts should be assigned to a specific staff member until resolved. The output will allow you to address areas of the billing process that may be causing problems and address the denial tactics used by carriers to slow cash flow. The system can pinpoint where refinement in the billing process may be needed.

The next quality control step is called fee compliance. This step is a required management tool specifically designed to monitor step 7. If the carrier did pay the claim, you need to determine whether the carrier paid the proper amount based on your contract. Almost every major health insurer has now settled class action lawsuits brought by physicians alleging improper payment for physician’s services. Your billing system should have the ability to systematically identify and report when a carrier has underpaid a claim. Because radiology billing deals with a large number of relatively small claims, it is crucial to develop management reports that summarize data concisely and clearly. The reporting tools need to identify the suspected managed care companies and the specific claims that are underpaid. The reporting should compare the contracted rate (the rate the payer told you they would pay), to the actual payment received from the payer, for every claim.
The last required quality control step is needed to combat an age-old tactic used by managed care and health insurance companies. The tactic is to habitually deny that they ever received your claim submission. So what happens is that the claim is billed to the insurance company and the insurance company never responds to your claim submission. This final quality management function is designed to specifically monitor step 8. The billing system has to consider this reality in the fundamental design of the system. Quality monitors need to be designed to systematically detect and report these unpaid claims. Dedicated staff must be assigned to review every unpaid claim, each month. Many of the billing system functions need to be automated to process large amounts of data. However, once this step has identified and reported the specific accounts that remain unpaid, there is no alternative to spending staff time communicating with payers to resolve the issues.

Phase III - Performance Evaluation

The last part in the design of the billing system is to establish a concise method to evaluate the performance of the billing process. This performance evaluation step will help reassure you that the system is functioning as intended. This step directs you to where there might be deficiencies in the system. There are two broad areas to performance evaluation:

1. regularly review management reporting, including monitoring the relevant modern financial ratios

2. quantify and compare performance, and review the output of the quality control systems discussed previously

Monthly management reporting should include a concise 5- or 6-page report that includes a running 13-month summary for each location. This regular reporting should include the number of procedures billed (by modality and payclass), the amount of charges billed (by modality and payclass), payments in total and by payclass, and the accounts receivable balance. The report should include charges, procedure count, payments, contractual adjustments, and RVU’s (by financial class and modality). The management reporting should also have a year-to-year comparison of this data. Further, it should include a calculation of relevant modern financial ratios, to evaluate the billing process. These ratios include items such as the average payment per procedure and the average charge per procedure (for each month and year-to-year); total days in accounts receivable; gross and adjusted collection percentages; contractual write off percentage; and bad debt percentage.

Conclusion

The practice infrastructure component used to generate all revenue for the practice frequently receives the least attention and is the least understood area of the practice. Many times this lack of understanding leads to poor revenue performance. A well-managed radiology practice can attest to the essential financial and compliance benefits of a well-thought-out and managed
billing infrastructure. The proper infrastructure will optimize revenue when everything is going well and alert you to problems when issues affecting revenue arise.

Quality controls and performance monitoring systems should be implemented to serve as an early warning system for potential issues. Such systems will provide feedback on where to enhance the process to make it more efficient. Performance evaluation will help reassure you that the system is functioning as intended and direct you to where there might be deficiencies in the system. A properly designed billing process will provide the proper foundation to build your billing infrastructure. This process is comprised of three phases: Process Design, Quality Control and Process Enhancement, and Performance Evaluation.