Improved Outreach Collections Through Lean Six Sigma

Kathleen A. Murphy, PhD

As an outreach program grows in size, billing and collection problems grow along with it, sometimes disproportionately to the size of the program due to the complexity of laboratory billing. We have recently seen two outreach programs write off more than $1 million in bad debt due to billing defects. To give you some perspective, this is more than the average contribution margin of most hospital outreach programs.

This article draws upon the case study of a hospital where Lean Six Sigma was used as a tool to reduce billing errors by over 50 percent in three months. The net result: increased cash collections, reduced write-offs (bad debt), and increased profitability of the outreach program. The secret to this kind of success is *measuring the effectiveness of the entire billing process and systematically reducing errors.*

Typically, we look at billing from a functional perspective (job functions and responsibilities) rather than a process perspective. It is usually the process errors that trip us up, though. As Figure 1 shows, the actual process starts when a patient arrives at a patient service center to have blood drawn and is completed when cash is collected and posted. There are more than a dozen steps in the process, and a breakdown in any one of them can result in lost collections, unhappy customers, or both. The key to improvement is to start at the first point of data management and systematically measure the number and source of errors throughout the process.

Figure 1: Billing Process
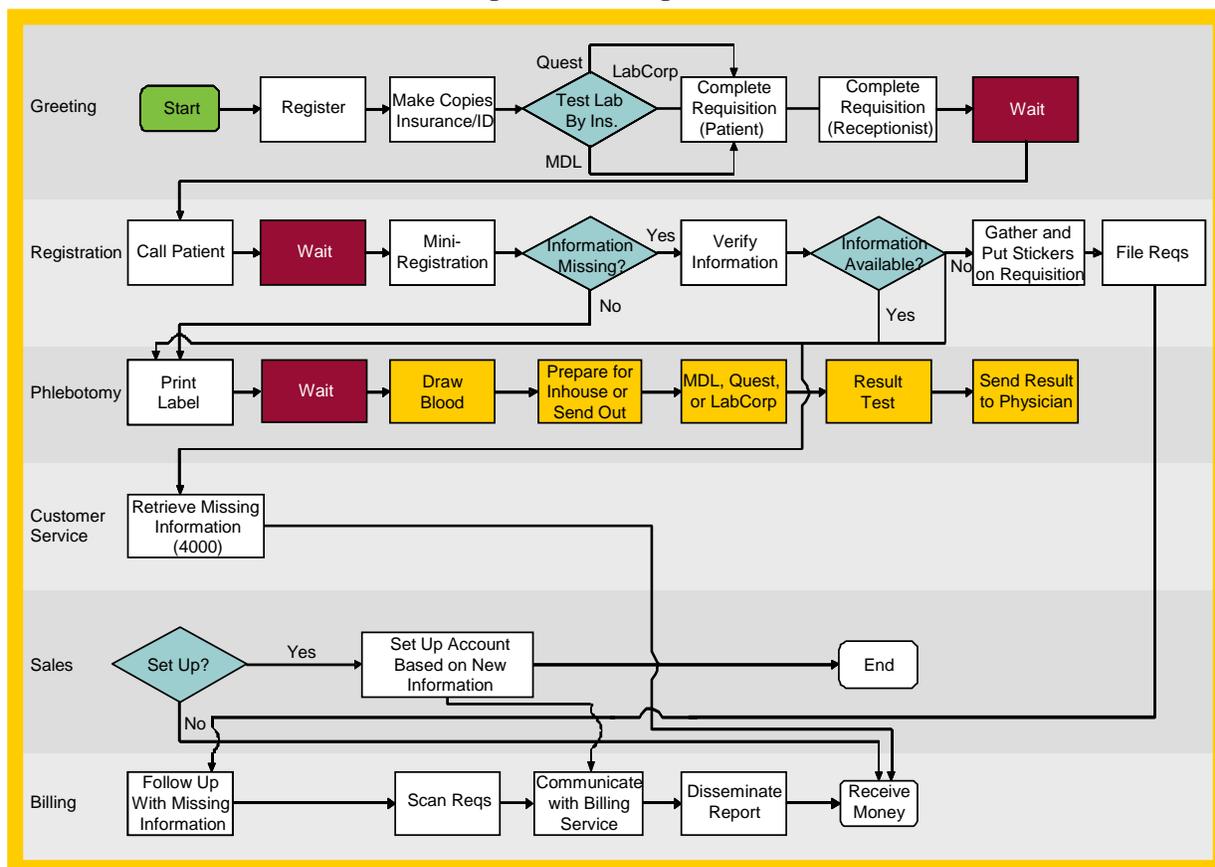
The complexity of the billing process is immediately evident when it is viewed as a process map. There are multiple hand-offs, bottlenecks, wasted time or non-value-added steps (i.e., waiting), and workarounds, as well as opportunities for data entry errors and missing or incorrect information. The sigma value of this process before intervention was 3.54, which translates to 20,543 defects per million requisitions or an overall defect rate of 2.05 percent. These results are typical for transactional processes such as billing, but they are very costly. Each of these defects results in decreased collections. Lower collections mean higher bad debt and write-offs. This can put your outreach program in jeopardy because your CFO does not believe that it is profitable.

How do you know where to start to reduce billing errors? We recommend that you use the standard Lean Six Sigma approach known as the DMAIC process (outlined in our October 2008 newsletter). DMAIC stands for Define, Measure, Analyze, Implement, and Control.

Figure 2: DMAIC
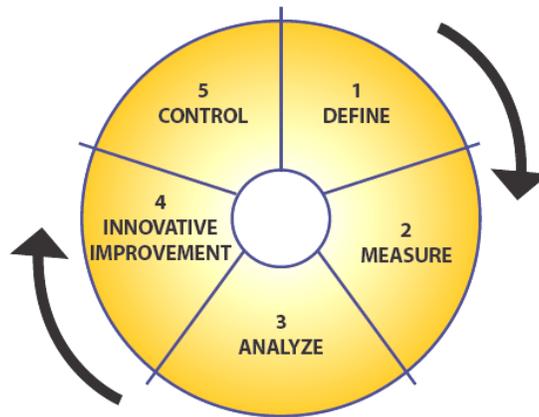
The purpose of this publication is to demonstrate a method to analyze errors and systematically implement corrections by order of priority. Proactively reducing billing errors on the front end is the key to maximizing collections. The process begins with an analysis of the errors using a tool called a Failure Modes and Effects Analysis (FMEA). It is not critical for you to know how to do this; your Lean Six Sigma resource can perform this analysis for you. The output of an FMEA is a list of the types of errors rated by severity, occurrence rate, and the ability to detect and eliminate the errors. As shown in Table 1 below, the errors identified through the FMEA are ranked by Risk Priority Number (RPN). The higher the RPN, the greater the impact on collections. Thus, the FMEA gives a detailed priority listing of which errors have the most effect on collections, offering a road map of how to get the most impact from your efforts (80/20 rule).

Table 1: FMEA Output

RPN	Process Steps or Product Functions	Potential Failure Mode
125	Mini-Registration	No Diagnosis Code
125	Mini-Registration	Wrong DOB
125	Mini-Registration	Incorrect Physician
125	Mini-Registration	No Physician
125	Mini-Registration	Incorrect Spelling
125	Mini-Registration	Missed Test
125	Mini-Registration	ABN Not Signed
125	Mini-Registration	ABN Not Signed
125	Gather and Put Labels on Req	Missing Stickers
64	Print Label	Out of Paper
50	Mini-Registration	Lost Requisition
30	Print Label	Incorrect Patient

The key to successful billing is to submit clean claims, meaning that there are systems in place to proactively ensure that claims have complete and accurate billing and demographic information in the original filing–that the bill is right the first time. The complexity of this process may not be understood by management. Employees, in turn, do not get the training to understand the repercussions of incomplete or inaccurate information downstream in the process.

The lesson learned in this case was that billing errors occurred on the front end. The majority of errors were from registration data entry or illegible photocopies of insurance cards: all preventable errors. After staff retraining, the process sigma level improved (4.10) and defects decreased (4,653 per million requisitions or 0.47 percent). The net impact was an overall decrease in billing errors by 50 percent which successively translated into a net gain of $270,000.

To ensure that the gains were sustained, control charts were developed and displayed in a prominent place in the laboratory. Through ongoing measurements and communication, performance improved dramatically. Figure 3 shows billing error rates pre- and post-intervention:

Figure 3: Billing Errors Pre- and Post-Intervention
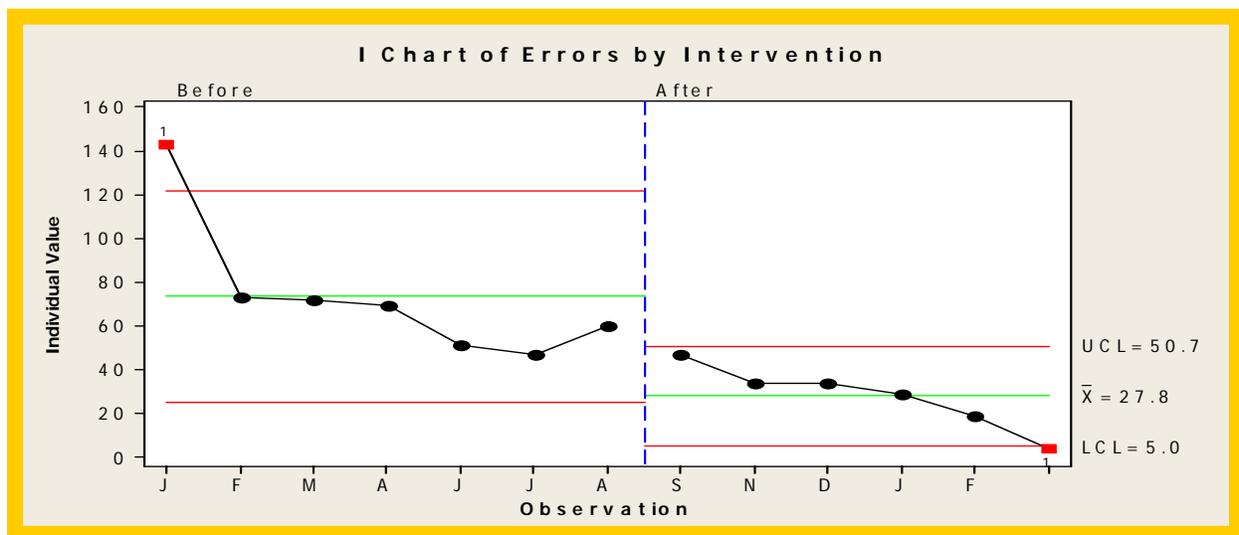
Control charts are familiar to all laboratorians; we use them routinely to ensure the quality of testing (i.e., Levey-Jennings charts). Applying the same concept to laboratory processes such as billing should be second nature. The same logic applies for Lean Six Sigma. Systematic error reduction is something that is performed in our laboratories every day to ensure that we produce quality results using hard data. Lean Six Sigma teaches us to apply that knowledge to other processes outside of testing.

For more information, please visit **www.chisolutionsinc.com**.