



# Achieving Efficiency and Effectiveness in a Referral Testing Lab Using DMAIC: Define, Measure, Analyze, Improve, Control

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## Abstract

Referral Testing departments are often challenged by increasing volume with limited resources and complex billing processes. These challenges cause inefficiencies, such as untimely filing, which increase the number of rejected claims. DMAIC was used to break down these complex processes into a sequence of disciplined project steps. These steps provided the department the ability to identify the reasons why the problems exist, constraints, and guidance to implementing solutions. This ultimately reduced untimely claims by 93% and improved efficiency and reduced write-offs.

## Introduction

Laboratory medicine is constantly evolving which increases the volume of new and esoteric testing. This places a high demand on manual process which increases inefficiencies. These manual processes require more labor until new tests are interfaced with send out laboratories. The manual processes include ordering, result and billing. Maintaining patient care so that these processes are timely and efficient is difficult. The Referral Testing department at TriCore Reference Laboratories sends out 120,000 tests annually accounting for approximately 1.5% of our total volume. Over 50% of TriCore's untimely filing rejections were due to difficulties in maintaining manual process requirements, calling for a change in processes.

## Methods

DMAIC problem solving was used to collect data and visualize the design to implement solutions. The solutions included cross-functional team work and prioritization of labor pool. Statistical analysis was used on the median values of the aging distribution of all pending transactions using Levine's test.



Figure 1. Tools used to achieve six sigma efficiency and effectiveness.



Figure 2. Ishikawa Diagram for root causation

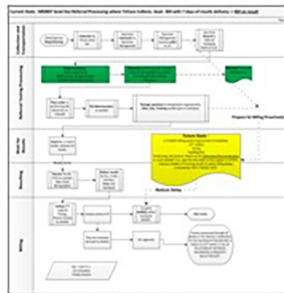
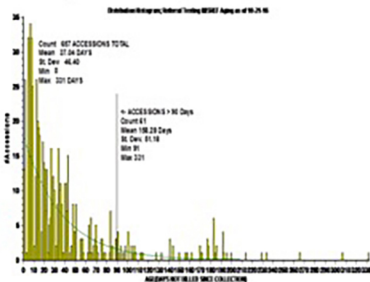


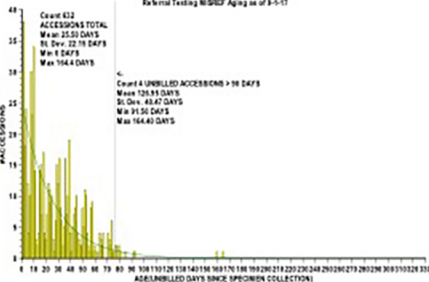
Figure 3. Swim Lane Process Map

## Results

As demonstrated by the aging charts below, the risk of untimely filings has been reduced; more than 10 days have been eliminated from the process. Using a 90 day billing limit, we were able to prioritize labor to improve efficiency and reduce write-offs.



Risk of untimely filings reduced  
 Results are significant with 95% Confidence Profitability Achieved  
 10+ days have been eliminated from the process average  
 Aging distribution means and quantities > 90 days are control charted



## Conclusion

Untimely claims were reduced by 93% by reducing TriCore's write-offs as well as improving cycle time by more than 10 days.

## Acknowledgments

TriCore Reference Laboratories  
 ♦ Referral Testing and Billing Departments