Evaluation of the most common rejection reasons in the pre-analytical process at our laboratory using six sigma analysis

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Six Sigma Analysis and Laboratory

- The main role of a clinical laboratory is to produce reliable, reproducible, accurate and timely test results to assist in clinical decision-making.

- Accurate test results are crucial for both the doctor and the patient

- The Six Sigma analysis which is based on statistical calculations is one of the most important guiding analyzes in the evaluation of laboratory performance.

Six Sigma

- Six Sigma is a quality management strategy that focuses on identifying and eliminating defects to improve the quality of businesses.

- Six Sigma consists of a 5-step process: Define, Measure, Analyze, Improve and Control.

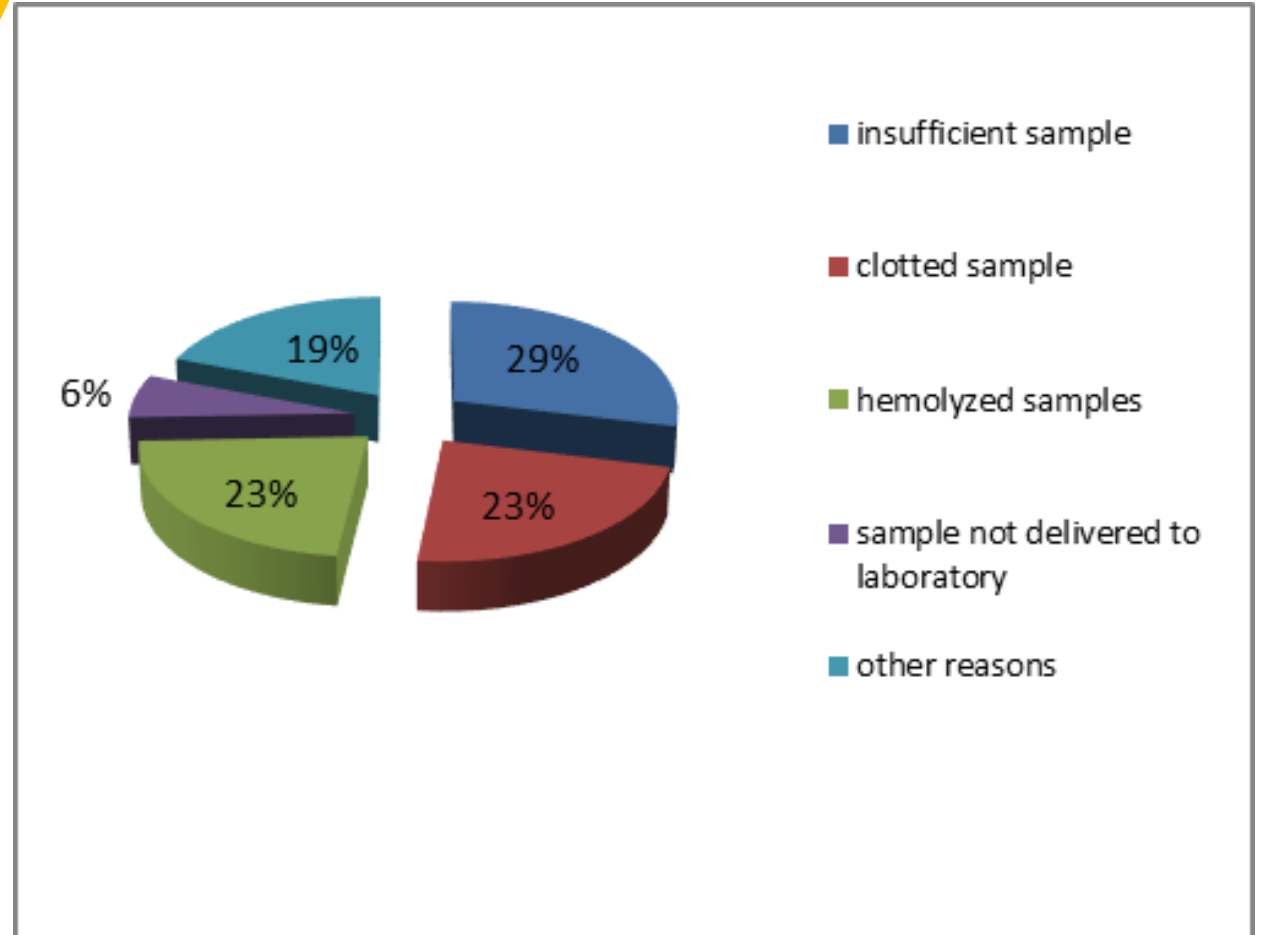Define → Measure → Analyze → Improve → Control

Six Sigma Process (DMAIC)

- **Define :** Define the problem and the objectives

- **Measure :** what do we need to improve ? can we measure this ?

- **Analyze :** The collected data are analyzed and the causes of the error are investigated.

- **Improve :** The process is developed by finding a permanent solution to the problem.

- **Control :** Assure that improvement will sustain

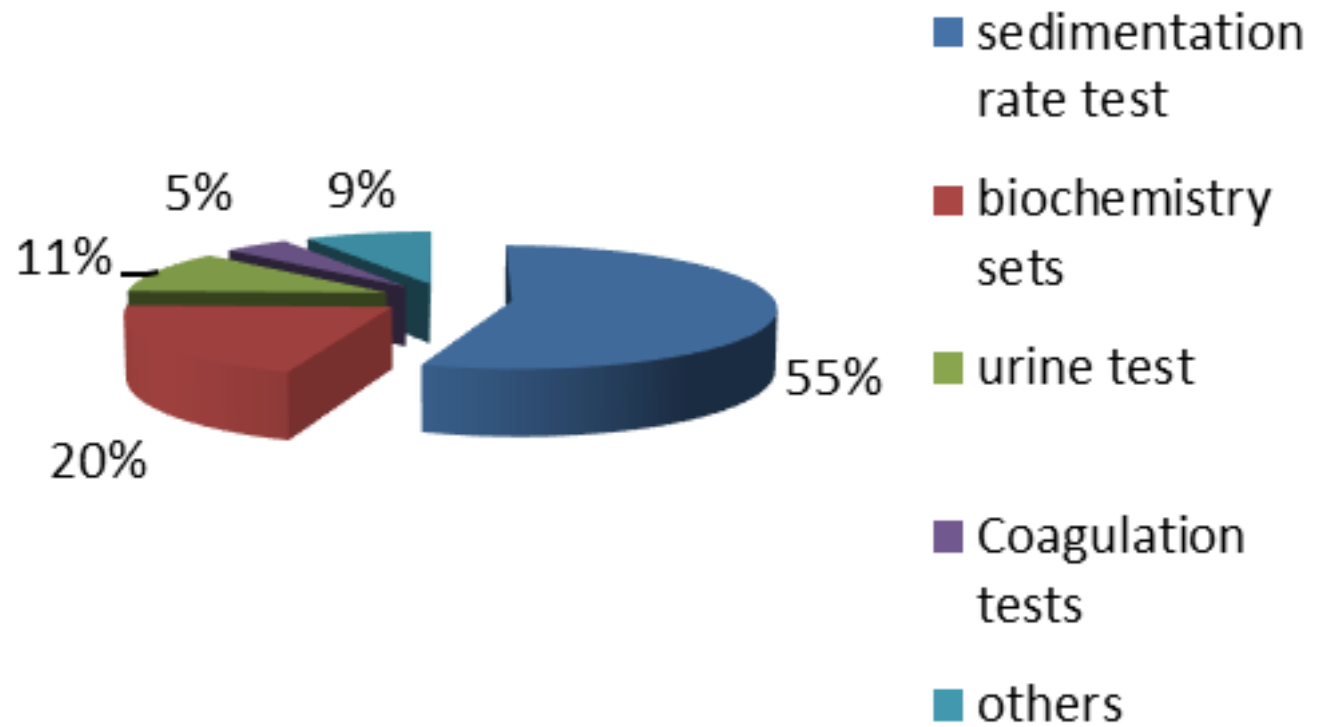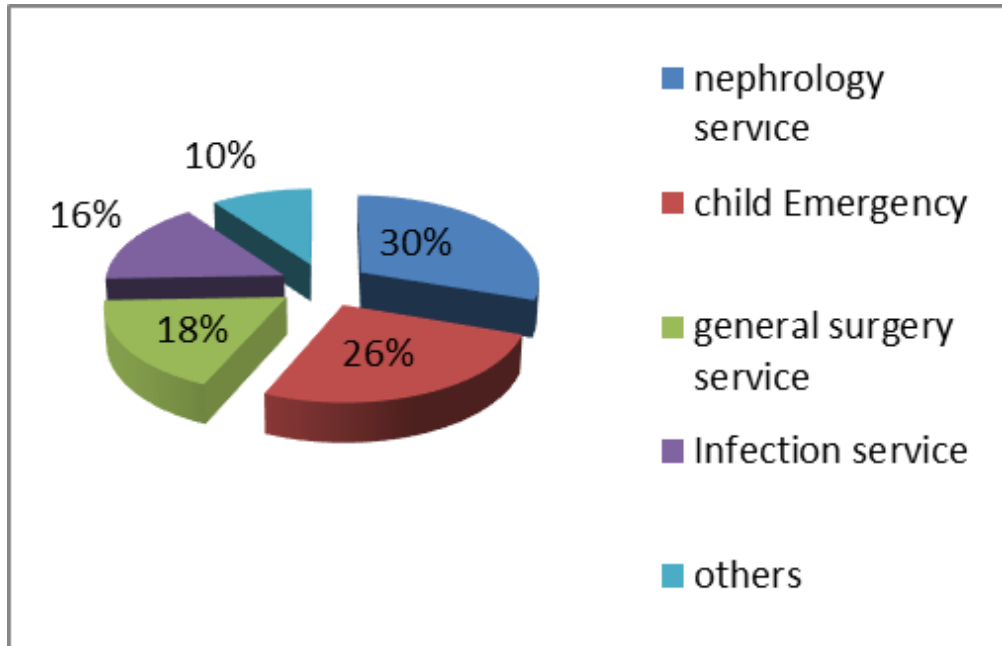Define   Measure   Analyze   Improve   Control

Purpose of our study

- In our study, we aimed to evaluate the effect of corrective and preventive actions to decrease this rate with six sigma levels by determining the most common rejection reason in pre-analytical period in our quality study in May 2019 in Gaziantep Şahinbey Research and Application Hospital, Biochemical Laboratory

Rejection rates were classified according to the preanalytical errors in May 2019

- insufficient sample
- clotted sample
- hemolyzed samples
- sample not delivered to laboratory
- other reasons

29%
23%
23%
6%
19%

İNSUFFİCİENT SAMPLE

- Insufficient sample in sedimentation rate test were calssified according to the departmant

- When the distribution of rejection causes was examined in our laboratory, it was found that the highest rate was caused by İnsufficient sampling with 29% . 55% of the insufficient samples were found in the ESR test.

- Firstly; Sampling training was organized for the personnel in the relevant units and intern doctors. And than responsible personnel were informed by written letters.

- The sigma values of one month before and after the training were calculated and the degree of recovery from insufficient sample in the sedimentation rate test was analyzed.

RESULT

https://www.westgard.com/six-sigma-calculators.htm

Conclusion

- Root cause analysis of the pre-analytical problems seen in the laboratory and the initiation of corrective and preventive activities according to the results increase the quality of the laboratory.

- As a result of increasing the frequency of training and monitoring the effects of the activities conducted over a longer period, we believe that a more significant improvement in sigma values will be achieved.

Thank you..