Laboratory quality indicators and patient's safety

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BACKGROUND

- This study was to cover all the three phases of laboratory performance (Pre–analytical phase, Analytical phase, Post–analytical phase)

Pre analytical	Analytical	Post analytical
Right Vaccutainer	Qualified professionals	Report
Right Labelling	Equipment	TAT
Right Collection	Reagents	STAT
Right Specimen	Documentation	Interpretation
Right quantity	SOP	Critical alert
Right transport	Safety	Report to correct patients

AIM

- To evalaute the errors occuring in phases of total testing process (TTP).

OBJECTIVE

- To track ,identify and analyse the errors occuring in Pre-analytical, Analytical and Post - Analytical phases of the laboratory.

METHOD

- The study was done at Sree Balaji Medical College and Hospital in Chennai from over a period of one year.

- The study included an evaluation of different quality indicators collected from the biochemistry laboratory, a total of 3,95,927 samples were processed per year.

- The quality indicators were tracked in all the three categories : pre–analytical phase, analytical phase, post–analytical phase.

- Every month the quality indicators for the processes in the laboratory were collected and analysed using departmental quality indicators matrix. Deviations were subjected to root cause analysis and CAPA maintained.

RESULT

PRE-ANALYTICAL		
SAMPLE REJECTION	**PERCENTAGE**	**REMARK**
Clotted sample	2.1 %	This shows One year of sample rejection analysis with an acceptable performance. Advice to continue with scheduled training program on sample collection
Hemolysed samples	12.3%	
Inadequate samples	2.5%	
Mislabeled tubes	0.16%	
Expired tubes	0%	
Others	3%	
SAMPLE REWORK	10.5%	Target <1 % / month as per NABL 112. Acceptable performance.
ANALYTICAL		
In the laboratory, all analytes had CV % of less than 10% . Acceptable performance as per NABL 112.		
POST-ANALYTICAL		
OBSERVATION	**PERCENTAGE**	**REMARK**
Report Correlation	7%	Target > 500 test/ month – 15% .
Reporting Errors	0%	Critical alert values & TAT must be 0 % if more than one, lag in the area to be identified & training should be scheduled for the technicians.
Critical value reporting delay	0.4%	
TAT	18.5%	

DISCUSSION

- In our study result most error prone area is pre-analytical in one year of observation, thus the finding of our study is in accordance with Ranjna chawla, et al, they found that was the most commonly observed in the pre-analytical phase and In the study of Carmen Ricos et al.

- In 2012 Mario Plebani, said that pre-analytical errors accounts for up to 70 % of all mistake made in the laboratory.

- In 2019 Sharma, et al analysed that, from India, 61% of the errors are associated with pre –analytical phase out of all the clinical laboratory, 33% in test request forms, 18% in sample collection, and 3% in sample processing.

- In this study analytical phase was found to be well coordinated, without any CV% outliers. In the study of Nada Majkic-Singh analysed no errors in quality control, and (7-13%) in broken equipment, mixed samples.

- In the study critical value reporting delay (0.4%), our study is supported by M.Jesus, et al their results shows that critical value reporting is about (0.5%) and TAT is about (8.7%).

CONCLUSION

- The major error prone are is pre-analytical phase because of the manual handling from patient preparation, sample collection, transport, and specimen handling.

- This area need more improvement. Periodic competency assessment of the technicians and Montly training on all areas of performance are mandatory for error free laboratory functioning.

- This study gives an insight into the lab perfomance depending on the quality indicator analysis. This helps in timely correction of unsatisfactory performance in all three phases. This pre-analytical quality indicator analysis is very important for high quality laboratory functioning as this corrects error at the early phase.

THANK YOU...