

Summer training at Medanta Hospital, Ranchi

A project on

Ascertaining the TAT in the pathology lab of
Medanta hospital, Ranchi

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Established in 1996

Became Medanta Abdur Razzaque Ansari memorial weavers' hospital in 2015

43+ Experienced Doctors

200 Beds Facility

12 Super Specialties

Mission statement:

“Medanta is established with the sole mission to deliver world-class, holistic and affordable healthcare and to build a dynamic institution that focuses on the development of people & new knowledge.”

Organizational learning

- Overview of the hospital, process flow and safety measures of Quality, HR, and infection control
- Process flow of pathology lab, observation of departmental sections,
- Data collection at laboratory, other departments visit
- Data analysis, process flow of dispatch counter and emergency area
- Process flow and patient management, maintenance of files of OT, IPD, Front office, HR

Ascertaining the TAT in the pathology lab of Medanta hospital, Ranchi

Turn Around Time is a parameter for measurement of performance of laboratory services.

Laboratories often use TAT and other indicators to determine the accuracy and precision of their tests to showcase the service quality.

Clinicians seek faster TAT of the tests which helps them in diagnosing, treating, and discharging patients faster. On the other hand, a slow TAT can lead to increase in the requests which can cause duplication of the tests. This may in turn increase the cost burden of healthcare. ^[1]

For this project, the testing was divided into different processes like **pre-test** (collection time, in-time, register entry time, water bath/centrifugation time), **test** and **post-test** (verification time, LIS to HIMS time, report generation time).

For haematology (CBC, Hb, Platelet) & biochemistry (creatinine, blood sugar, SGPT, HS CRP, PT/INR, PTT, LFT, HbA1C, Na, K, Ca, Urea, Uric acid, Albumin, Lipid profile, Lipase, Cardiac marker, Serum calcium, Alkaline phosphate, Cardiac enzyme) were taken in this study.





Objectives

- 1) To study the process flow for a pathology test.
- 2) To calculate the TAT for biochemistry and hematology sections.
- 3) To identify the facilitating and hindering factors in TAT.

Methodology

- **Study area:** Haematology and biochemistry section of the pathology laboratory.
- **Study design:** time-motion study.
- **Sample size:** 700 samples were collected from the point of collection to the point of final reporting for the duration of eight hours per day from 9am to 4:30pm.
- **Data collection method:** checklist, process mapping and literature review

- **Data quality measures:** Each entry is cross-checked for errors with the respective registers so that accuracy in names, tests, and Unique Hospital ID are maintained.
- **Data Analysis:** The data was compiled on MS Excel spreadsheet and arranged. The TAT derived from the samples was compared with the standard TAT for a laboratory. The formula for deriving TAT is:

$$\text{TAT} = \text{Exit time} - \text{Entry time}$$

Apart from this, percentages and frequency have been used.

Review of literature				
Title	Author/s	Date/year	Objectives	Key findings
Mapping Turnaround Times (TAT) to a Generic Timeline: A Systematic Review of TAT Definitions in Clinical Domains. ^[2]	Breil, B., Fritz, F., Thiemann, V. <i>et al</i>	2011	The objectives of the researchers were to collect relevant literature pertaining to this kind of process times in hospitals. They then analysed the existing definitions of TAT (turnaround time) and summarised them in a suitable format.	• The paper talked about mapping TAT and defining it in various settings apart from laboratory like drug TAT, medication TAT & total TAT. • It focused less on calculation of TAT as compared to seeking the perfect definition for it.
A Study on Turnaround Time (TAT) As an Indicator to Improve Laboratory Efficiency ^[1]	Dr Mekala Jaya Krishna	2017	The study was done to determine the turnaround time of OPD, IPD & ER samples that came in Osmania General Hospital to evaluate whether the pre and post analytical phases take up more time than the analytical phases in the total TAT and to determine the number of samples that are being reported outside the standard turnaround time.	1. Shortage of nursing staff, trained technical personnel and other staff at various stages of the investigation process. 2. Increased workload per personnel. 3. Increased workload & frequent breakdown of machines. 4. Lack of automated facilities like Lab Information System (LIS). 5. Time consumption at the sample collection area.

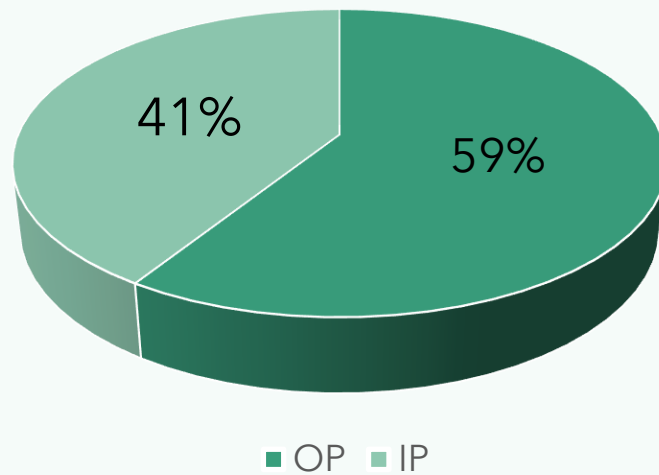


Title	Author/s	Date/year	Objectives	Key findings
Laboratory Information Systems and Analytical Turnaround Time. Global Journal of Research and Review ^[3]	Zawawi, Rahad & Justinia, Taghreed	2017	The aim of this study is to answer the question: Has the implementation of the new LIS improved the Analytical TAT of the Haematology section at KAMC Laboratory Department in Jeddah?	• Health care providers need to get the results of the ordered Lab tests in a short turnaround time in order to diagnose & treat patients properly. • The laboratory department needs to improve its performance, and Laboratory Information System can play an important role in achieving it.

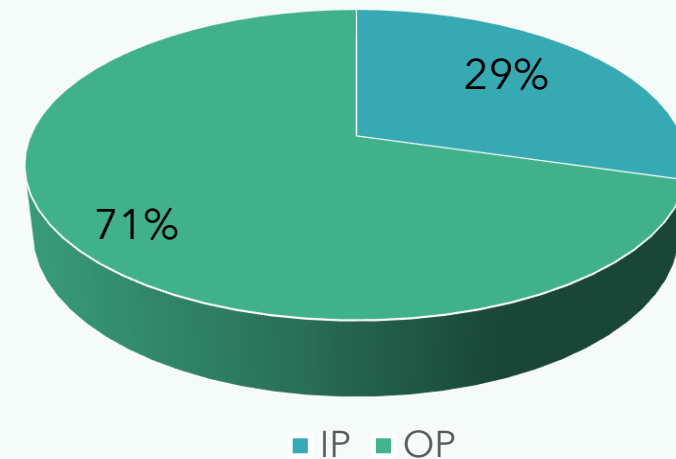



Results:

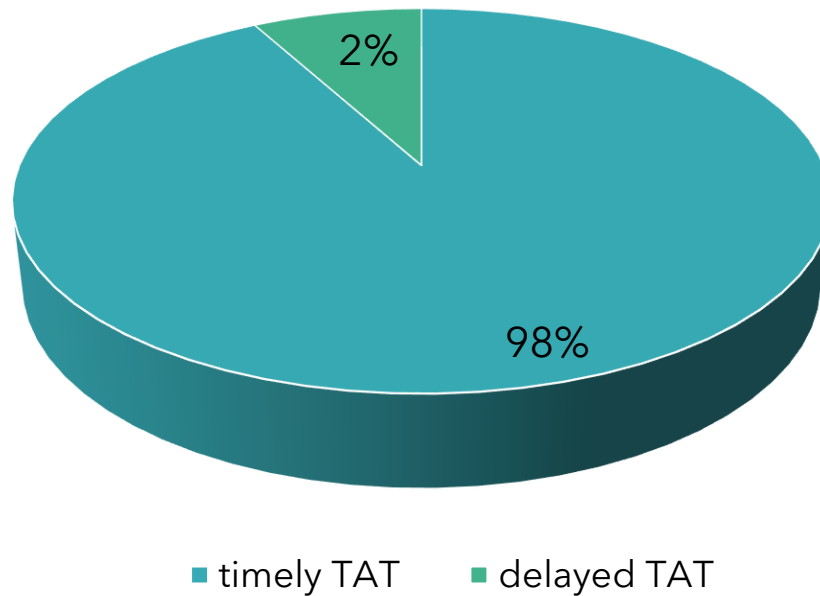
Percentage of Inpatients and Outpatients (Haematology)



Percentage of Outpatients & Inpatients (Biochemistry)



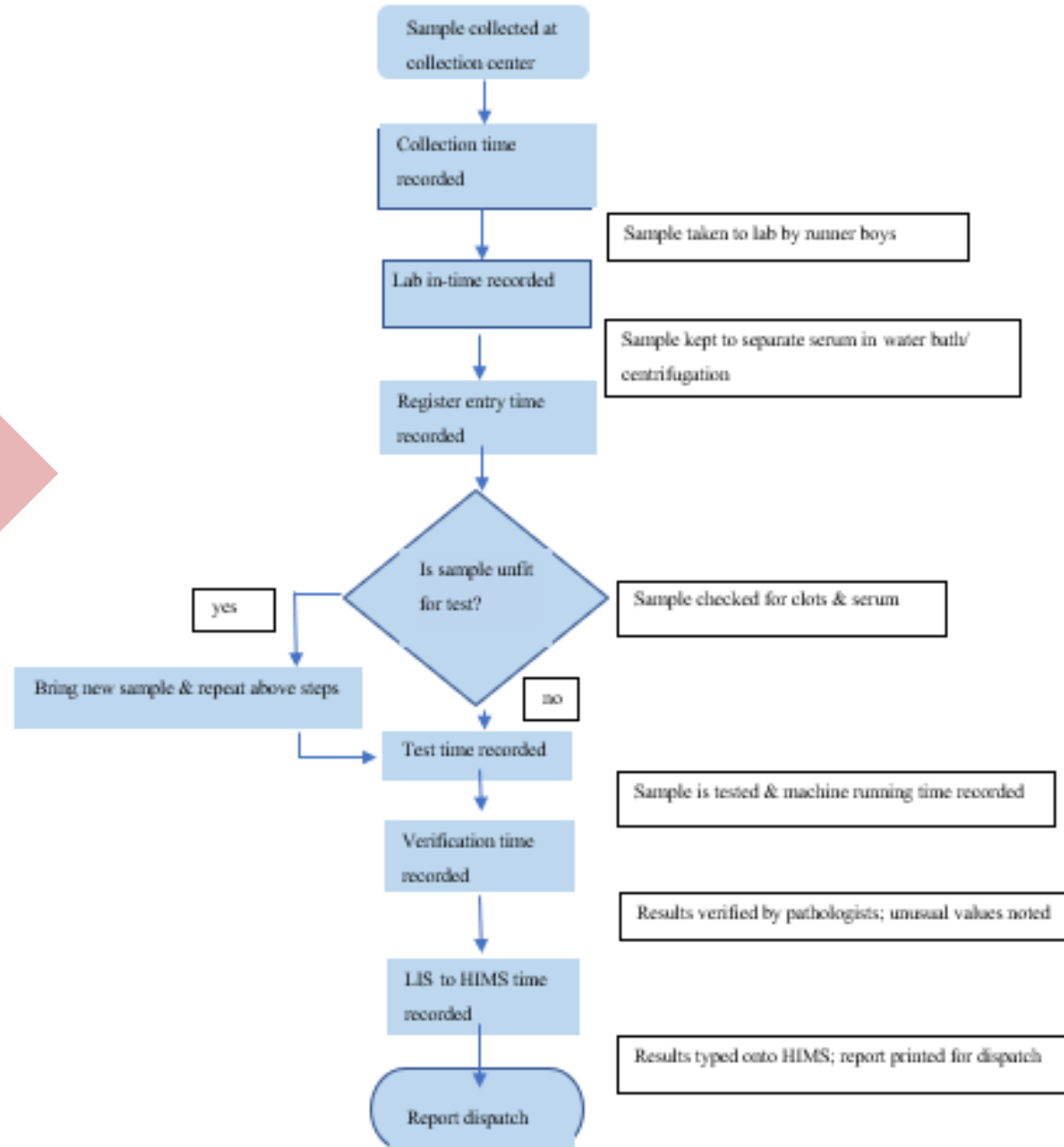
Percentage of timely TATs and delayed TATs (Haematology)



The TAT percentage for hematology is 98% while the TAT for biochemistry is 100%.

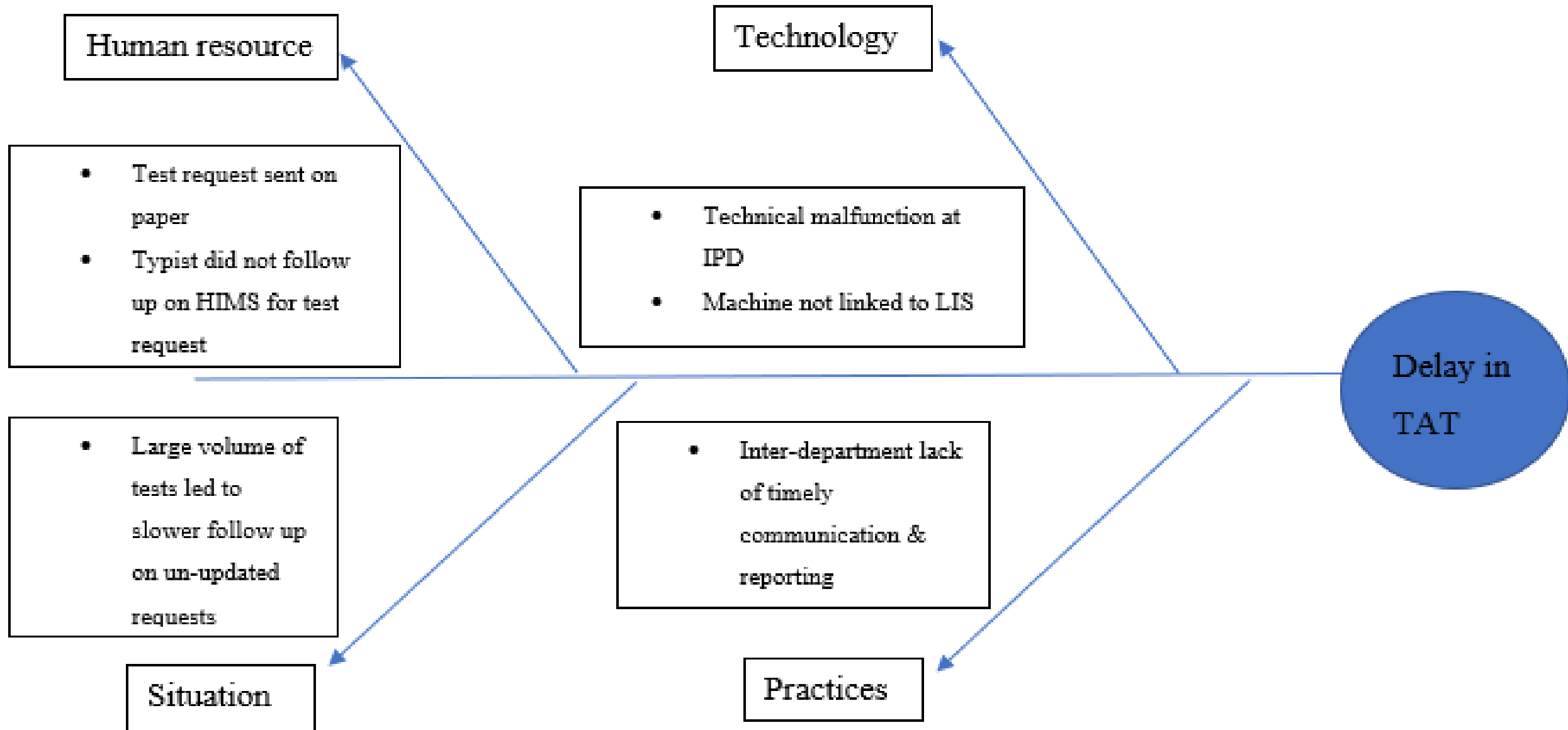
Fig 1 Process flow diagram of a pathology test

Data collection process flow



	Haemat. n= 59	Out Patient	Bioche. n= 426		Haemat. n= 42	In Patient	Bioche. n= 174
	<	standard	>		<	standard	>
Haematology n= 100	97%	3%	0%		90%	5%	5%
Biochemistry n=600	100%	0%	0%		99%	1%	0%

Cause and effect analysis





Conclusion

- The TAT percent for the project duration as a whole was 99.71%. TAT for OPD was found to be 100%, while the TAT for IPD was found to be 95.21% with two cases of delayed TAT contributing to it.
- The total percentage of OPD patients was 69.57% while the total percentage of IPD patients was 31.43% and the tests with the highest frequency of request were CBC (86%) & Hb (13%) in Haematology and Creatinine (49.3%) & LFT (13.3%) in Biochemistry.
- Root cause analysis showed that the two samples which exceeded the optimum turnaround time were indeed within the time frame but due to miscommunication between the IPD and laboratory staff and technical difficulties, the report was updated on the server at a later time which reflected a delayed TAT on the systems.
- Most facilitating factor was sample collection time and most hindering factor was reporting time.

Reference:

[1] Dr Mekala Jaya Krishna. "A Study on Turnaround Time (TAT) As an Indicator to Improve Laboratory Efficiency." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.12 (2017): 05-08

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[2] Breil, B., Fritz, F., Thiemann, V. *et al.* Mapping Turnaround Times (TAT) to a Generic Timeline: A Systematic Review of TAT Definitions in Clinical Domains. *BMC Med Inform Decis Mak* 11, 34 (2011).

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[3] Zawawi, Rahad & Justinia, Taghreed. (2017). Laboratory Information Systems and Analytical Turnaround Time. *Global Journal of Research and Review*. 4. 1-12. 10.21767/2393-8854.10005.

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