

Evaluation of the Efficiency of a Toxicology Laboratory

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Congresso de Controle da Qualidade Laboratorial
para Países de Língua Portuguesa

INTRODUCTION

Laboratory turnaround time (TAT) has been used as an indicator of efficiency. Prolonged TAT causes delay on treatment, increases patient waiting time on emergency department and the risk for patient safety. Short TAT is important in poisoning cases. To decrease the time of the clinical decision, report of critical values is also important.

OBJECTIVES

Avaliar o tempo de liberação dos resultados dos exames toxicológicos realizados pela Unidade de Laboratório de Análises Clínicas (ULAC) e o nível de satisfação dos colaboradores do CIATOX/SC do HU/UFSC em relação ao serviço oferecido pelo laboratório.

METHOD

To evaluate the laboratory efficiency a user satisfaction survey was applied and TAT data collected.

RESULTS

The observed TAT met the laboratory's own deadline but not the user's expectations and the one predicted by the UK guideline. Almost half of the users reported not being informed of the critical values. While everyone considered that communication is important, half of the users reported that it is not necessary. Although all users reported good satisfaction on laboratory results, opportunities for efficiency improvement were observed, such as reducing the test deadline, improving the test menu, and the communication of critical values.

CONCLUSION

In the users' perception, they are not being communicated of critical values. To achieve high efficiency, all laboratory processes must be considered and monitored, from requesting tests to releasing the results and the communication of the critical values. Technological tools must be incorporated into the laboratory system to record all steps, facilitating the routine and automatic monitoring of tests TAT, and the critical values communication.

REFERENCES

Balew MS, et al. Magnitude of delayed turnaround time of laboratory results in Amhara Public Health Institute, Bahir Dar, Ethiopia. BMC Health Serv Res. 2019 ; 42(19):19-24.

Thompson JP, et al. Guidelines for laboratory analyses for poisoned patients in the United Kingdom. The Assoc for Clin Biochem & Lab Med. 2014; 51(3):312-325.

Chart 1. Answers (number) to the satisfaction questionnaire applied to a Tox professional's users of the toxicology laboratory (Labtox).

Question 1 In your opinion, the elapsed time between toxicology test order and result release is:

Excellent	Good	Regular	Bad	Never used the service
(3)	(9)	(1)	(0)	(0)

Question 2 In your opinion, what would be the ideal deadline, in minutes, for result release of the test:

According Table 1

Question 3 In your opinion, which frequency the toxicology test results influence on clinical conduct?

Always	Most times	Few times	Never
(0)	(10)	(3)	(0)

Question 4 How often has toxicology test result release caused delays in patients therapy or discharge?

Always	Most times	Few times	Never
(0)	(3)	(10)	(0)

Question 5 Do you trust test results released by Labtox?

Yes	No. Why?
(13)	(0)

Question 6 What is your satisfaction degree with the laboratory workers courtesy, assists in samples screening?

Excellent	Good	Regular	Bad	Never used the service
(4)	(6)	(2)	(0)	(0)

One participant does not answer the question.

Question 7 What is your satisfaction degree with the courtesy of Labtox workers?

Excellent	Good	Regular	Bad	Never used the service
(7)	(5)	(0)	(0)	(0)

One participant did not answer the question.

Question 8 In your opinion, the menu of Labtox toxicology tests is enough?

Yes	No
(5)	(8)

If not, what new test should be implemented?

Question 9 Have you been notified of critical toxicology tests values by Labtox?

Yes	No
(7)	(6)

Question 10 Considering the definition above, is the notification of critical value important to CIATox?

Yes	No
(13)	(0)

Question 11 Currently, not all Toxicology Screen (TS) results are reported. Do you think this notification is important?

Yes, for all the TS results	Yes, only for TS positive results	No, it is not necessary. We use to consult the result on the schedule system.
(4)	(2)	(7)

Question 12 What is your overall satisfaction degree with the Labtox service?

Excellent	Good	On average	Below average	Bad
(3)	(10)	(0)	(0)	(0)

Question 13 In your opinion, what is the Labtox major problem?

- "Not offer all the tests 24 hours a day 7 days a week"
- "Delay to release reports" (1)
- "No problem" (1)

Two users did not answer this question.

Question 14 Do you have any suggestion for Labtox improvement?

- "Offer all the tests 24 hours a day 7 days a week"
- "Increase the number of workers in the laboratory" (2)
- "Increase the menu of tests available"
- "Greater agility to release the results" (1)
- "Improve the communication between Labtox and CIATox/SC" (1)
- "The service is great and doesn't need any improvement" (1)

Seven users did not answer this question.

(n). number of answers.

Table 1. Time considered acceptable by users and described in the UK guideline for releasing test results.

Laboratory test	Time for releasing test results (minutes)					UK guideline
	Acceptable by users (n)					
Acetylcholinesterase	30 (1)	40 (1)	60 (6)	90 (3)	180 (1)	360
Butyrylcholinesterase	30 (1)	40 (1)	60 (4)	90 (3)	120 (4)	180
Methaemoglobin	30 (2)	40 (2)	60 (3)	90 (3)	120 (3)	120
Paracetamol	30 (1)	40 (1)	45 (1)	60 (4)	90 (1)	120
Paraquat	15 (1)	30 (5)	40 (1)	60 (5)	120 (1)	120
Salicylate	30 (1)	40 (1)	60 (7)	90 (2)	120 (2)	120
Toxicology screen	15 (1)	30 (8)	40 (1)	60 (3)	-	-

n, number of professionals; not specified by UK guideline.

Table 2. LTAT, MTAT and deadline stipulated by laboratory to release the results.

Laboratory test (n)	Laboratory's deadline (days)	LTAT (minutes)	MTAT (minutes)
Acetylcholinesterase (88)	3	2557 (49081821)	3015 (44082021)
Butyrylcholinesterase (188)	2	55 (48033)	191 (62490)
Methaemoglobin (25)	3	195 (9762)	291 (1530279)
Paracetamol (498)	3	160 (142892)	517 (1434137)
Paraquat (161)	3	58 (114929)	721 (1358213)
Salicylate (13)	3	70 (20450)	142 (123388)
Toxicology screen (2515)	3	35 (21917)	185 (131629)

LTAT, laboratory turnaround time; MTA, therapeutic turnaround time; n, number of monitored tests. Results are expressed as median (minimum and maximum time).