Students' Corner

Temperature regulation and standardization practices of Clinical laboratories in Karachi

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Abstract

Objective: To examine the temperature regulation and standardization practices of clinical laboratories in Karachi.

Method: Forty five clinical laboratories in Karachi were examined for observing the standard protocols for running a lab with particular reference to temperature regulation. A questionnaire to the effect was filled.

Results: Among the 45 labs included, the mean complete blood count performed per day was 52 ± 47. Only 5 (11%) labs had a temperature reader. Thirty (66.7%) labs had an air-conditioner installed, of which only 24 were found in working condition. Maintenance of instruments was carried out every 67.5±.30.6 days. The mean number of haemolyzed samples was 2.3 ± 1.7. Control was available in 24(53.3%) labs, which was used daily in only 10 labs. Quantity of blood was the same in all the tubes in only 33(73.3%) labs.

Conclusion: Commercial laboratories should be properly registered and their quality standardized (JPMA 55:88;2005).

Introduction

Due to lack of registration and absence of checks for quality standardization, test results from laboratories could be under question. This might have further implications on the patients getting treatment as well as the doctors using those results for diagnosis or further management of patients. With an objective to determine the standardization of results, 45 busy laboratories in Karachi were included in the survey. Temperature control, frequency of equipment maintenance and presence or absence of standardized diagnostic techniques were noted.

Methods

The study was a cross sectional survey carried out between April and August 2002. Informed consent was obtained from the laboratory incharge. Forty five busy laboratories of Karachi were included, of these 26 were hospital based, 17 commercial and 2 charity laboratories.

Data was collected through a questionnaire. The laboratories were visited during working hours and practices were observed. Data was analyzed by SPSS Version 10.

Results

In the 45 labs observed, the mean number of complete blood counts performed daily was 52 ± 47. Only 5 (11%) labs had a temperature reader. Thirty (66.7%) labs had an air-conditioner installed. Out of these 30, only 24 were found to be in working condition. Maintenance of instruments was carried out every 67.5± 30.6 days. Number of haemolyzed samples was 2.3 ± 1.7. Control was available in 24(53.3%) labs, but this was used daily in only 10 labs. Quantity of blood was the same in all the tubes in only 33 (73.3%) labs.

Room temperature in these labs was 29.6±2.6^{o} centigrade, whereas the environmental temperature was 34.4±0.8^{o} centigrade. Alternative power supply such as USP or generator was available in 34 (85.6%) labs only.

Discussion

The purpose of this study was to examine the temperature regulation and standardization practices of clinical laboratories in Karachi. The study suggests that standard operating procedures were not being followed in the major clinical laboratories in Karachi. The most obvious fact being presence of temperature reader in only 5 (11%) labs. Alternative power supply was available in 34 (85.6%) labs which could greatly alter the composition of the chemicals and blood samples under analysis giving spurious results. Thirty (66.7%) labs had an air-conditioner installed, of which only 24 were found in working condition. Lack of temperature control could effect results of the tests, as also depicted by the number of haemolyzed samples seen during

Table. Statistics related to lab operation and practices (n=45).

	Mean±SD	Range
No. of CBC per day	52±47	5-200
Room temperature (centigrade)	29.6±2.6	24-34
Environment temperature (centigrade)	34.4±0.81	33.4
Maintenance of instruments (days)	67.5± 30.6	15-90
No. of haemolyzed samples	2.3± 1.7	1-8
Nature of lab		
	No.	**%**
Hospital lab	26	57.8
Commercial lab	17	37.8
Charitable lab	2	4.4
Temperature reader		
Yes	5	11.1
No	40	89.1
Airconditioner		
Yes	30	66.7
No	15	33.3
Aircondition functioning (out of 30)		
Yes	24	80
No	6	20
Test performed		
Manual	22	48.9
Automated instrument	23	51.1
Alternate power supply		
USP	10	22.2
Generator	24	53.3
None	11	24.4
Type of CBC bottle		
Commercially prepared	13	28.9
Prepared in lab	32	71.1
Domestic refrigerator		
Yes	43	95.6
No	2	4.4
Control available		
Yes	24	53.3
No	21	46.7
Control use (out of 24)		
Daily	10	41.7
When problem arises	14	58.3
Quantity of blood in CBC tubes		
Same in all tubes	33	73.3
Variable	12	26.7
Sample withdrawn in tubes		
With needle	2	4.4
Without needle	43	95.6
Co-operation of lab staff		
Freely allowed	31	68.9
Hesitant	12	26.7
Not allowed	2	4.4

depicted by the number of haemolyzed samples seen during the survey. Similarly, routine use of controls was only done in 41.7% labs.

Occupational safety standards of these labs have already been shown to be low.[1] Gloves were used in only 4.5% labs and needle cutter in 64% labs. Previous studies[2] have revealed that among infection control practices, hand washing before blood collection from the patient was the least popular ritual with workers from only one private sector labs practicing it.

Commercial laboratories should be properly registered and their quality standardized. The results of this study warrant tight regulatory mechanisms and frequent checks for proper running of these labs and checks for maintenance of the lab equipments. The results of these labs should be frequently checked and standardized with reference labs.

References

1. Mujeeb SA, Adil MM, Altaf A, et al. Infection control practices in clinical laboratories in Pakistan. Infec Contrl Hosp Epidemiol 2003;24:141-2.
2. Tarar MR, Hamid MF. A comparison of infection, control practices in pathology laboratories of Government teaching hospitals and private sector in Lahore. Ann King Edward Medcal Coll 2002;8:244-6.
8. Schwartz D. Use of short-term culture for identification of Mycobacterium