

Original Research Article

Evaluation of laboratory request forms submitted to clinical pathology department in tertiary health care hospital

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ABSTRACT

Background: Laboratory diagnostics is the fast-growing field which contributes 70% of clinical diagnosis. Laboratory information has a profound impact on patient diagnosis. Research has demonstrated most of the laboratory errors occur in the pre-analytical phase. Incorrect and incomplete filling of information on the laboratory request forms can significantly impact the quality of laboratory results, and it affects patient outcome and resources. We, therefore, evaluated the extent of incomplete laboratory forms in our center.

Methods: The study was a retrospective study conducted on all request forms received over 1 month from June 15, 2018, to July 15, 2018, in the Clinical Pathology Department of ESI hospital, Coimbatore, during working hours were analyzed for the frequency of incomplete data.

Results: Only the patient's name appeared in all the forms. Consultant in charge of requesting laboratory tests (99%) was the most omitted parameter. No clinical details or location/ward details of the patient was provided in 90.7% and 7% of the cases. Age and gender did not appear in 21.9% and 22%, respectively. Date of request, doctor's signature, and hospital number were missing on 8.4%, 27.6%, and 4.4%, respectively.

Conclusions: The study has demonstrated the level completion of laboratory request forms was suboptimal. This may be responsible for many pre-analytical errors. There should be closer interaction between clinicians and laboratory physician to improve the quality of laboratory services and resource management.

Keywords: Diagnosis, Quality, Pre-analytical errors, Request forms

INTRODUCTION

Reliable laboratory services are the backbone of the modern health care system.¹ Laboratory results contribute up to 70% of medical diagnoses.² Laboratory testing is a highly multifarious process, and the total testing process has three phases, the pre-analytical, analytical, and post-analytical phases.

Laboratory errors has a significant impact on patient health care system. Laboratory errors during the analytical phase accounts for less than 10%, it has been brought down significantly, because of the introduction of automation and quality control (QC) program.⁵ But the

process analysis revealed pre-analytical phase is responsible for 68% of laboratory errors.¹ Errors in this phase leads to misdiagnosis and mismanagement of the patient. This phase includes procedures which are not under the influence of laboratory personal and are mostly performed outside the laboratory.⁴ It is mainly as a result of the lack of standardized protocols to define the pre-analytical variables.⁵

Very few studies are available on laboratory errors, especially in the pre-analytical phase. Incomplete and inadequate information in the laboratory request forms is an important aspect of error in the pre-analytical phase, and it leads to time and resource wastage. Therefore,

providing complete clinical information of the patient, may reduce the pre-analytical error and improve patient health care in the hospital. And there should be closer interaction between clinicians and pathologist to improve the quality of services. The errors in the health care system can be prevented if we understand the human factors causing them.⁶ This study, therefore, sets out to analyse the compliance of laboratory request forms which received in clinical pathology department.

METHODS

This study is conducted at laboratory of government medical college and ESI hospital, Coimbatore, Tamilnadu, India, which is a tertiary level hospital.

All the request forms received in the clinical pathology laboratory for a period of one month (May 15, 2018, to June 15, 2018) except laboratory request forms which was received for urine analysis.

There were 1210 request forms which were advised by consultants from OPD and IPD were observed for the study. 1000 request forms were taken for analysis. Rest 210 request forms were excluded from study as it's for urine examination.

Inclusion criteria

Hard copies of both inpatient and outpatient laboratory request forms received for routine laboratory investigations in clinical pathology were reviewed and evaluated for the purposes of this study.

Exclusion criteria

Laboratory request forms sent for urine examination.

Methodology

This is a retrospective study conducted on all request forms submitted to the Department of clinical pathology of government medical college and ESI hospital, Coimbatore over a period of 1 month, from May 15, 2018, to June 15, 2018. The Clinical Pathology laboratory receives specimens from both inpatient and outpatient sections of the hospital.

The laboratory operates 24hour services every day with routine work taking place between 8 am and 4 pm of working days while technician on-call duty covers the remaining hours. Samples from wards are collected by staff nurses, while outpatients come to the clinical pathology department for sample collection. Samples are processed at the reception and passed for analysis by the medical laboratory technicians using automated analyzer. Interpretation of results and clinical correlation are done by the consultant pathologist.

Results are then collected by patients, or their representatives at a collection center in the laboratory. Critical results were communicated to the people responsible.

Screening of the laboratory request forms was done through some prefixed criteria (Table 1) The forms were scrutinized and information provided on each request form was recorded in a spreadsheet and analyzed.

Table 1: Prefixed criteria examined on lab request forms.

Name of the patient
Age
Gender
Ward
Requesting consultant name
Requesting consultant signature
Consultant telephone number
Clinical/diagnostic information
Patient Identification number
Date of sample collection
Illegible handwriting

The patient data provided on each request form were recorded on excel worksheets as yes or no for the presence or absence of the particular information. Patient's confidentiality was maintained using study number only. The request forms from all clinical departments were analyzed using frequency. The proportion of forms with missing demographic and clinical information was analyzed using percentages.

RESULTS

Total 1210 laboratory request forms were observed. 1000(82.6%) laboratory forms were taken for analysis. Rest 210 forms (17.4 %) were excluded. Figure 1 and Table 2 demonstrates the numbers and percentage of laboratory request forms included in this study.

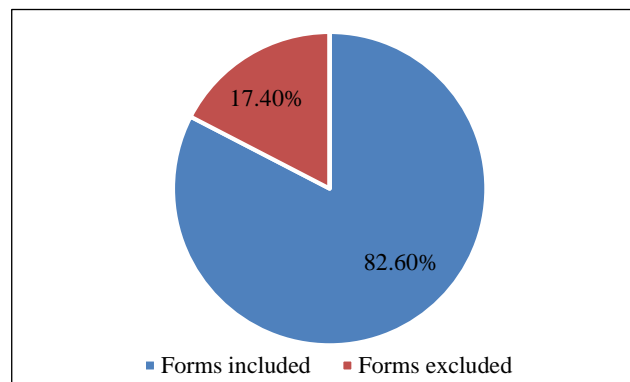


Figure 1: Demonstrates the percentage of laboratory request forms included in this study.

Table 2: Demonstrates the number of laboratory request forms included in this study.

Request forms	No. of samples	% of samples
Forms included	1000	82.6
Forms excluded	210	17.4
Total	1210	100

Out of 1000 laboratory request forms, only one form (0.1%) had all the required information.

Table 3: one-month analysis of laboratory request forms for the frequency of omission of the needed demographic and clinical data.

Item	Percentage of omission
Name	0
Age	21.9
Sex	22
Ward	7
Clinical details	90.7
Date	8.4
Hospital number	4.4
Doctors signature	27.6
Consultant in charge	99.9
Consultant telephone number	99.9
Legible handwriting	20.1

Table 3 shows the information required on laboratory request forms and the percentage of laboratory forms that lacks the required information.

Patient information

Patient’s name was the only parameter that appeared in 100% of the forms., whereas their age was not mentioned in 21.9%, gender of the patients was not mentioned in 22% and the patient identification number was missing in 4.4% of the patients. The details pertaining to location (ward/OPD) of the patient was missing in 7% of the forms.

Consultant’s information

The clinician’s name were missing in 99.9% of the forms and these were not signed by them in nearly 27.6% of forms. Requesting consultant contact number was missing in 99.9% of forms.

Clinical information

Clinical details were not mentioned in 90.7% of request forms and details were difficult to decipher in 20.1% of the lab request forms. Date of collection of the sample was missing in 8.4 %. Percentage of date omission also shown in Figure 2.

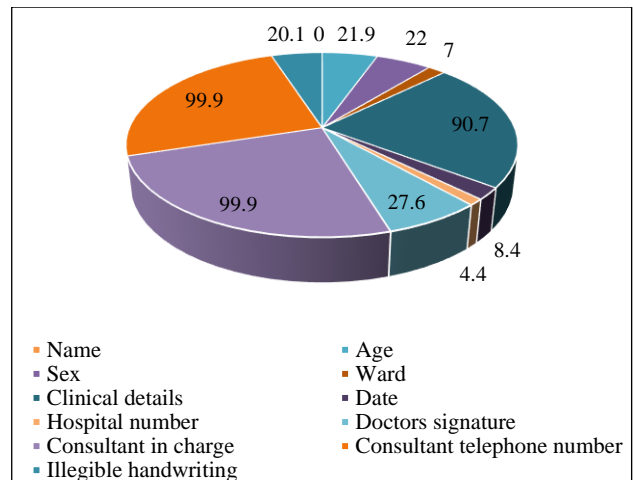


Figure 2: Demonstrates the percentage of data omission in the requested laboratory forms.

DISCUSSION

Clinical diagnosis increasingly dependent on laboratory investigations. The term “laboratory error” is defined in ISO 22367 as “failure of planned action to be completed as intended, or use a wrong plan to achieve an aim, occurring at any part of the laboratory cycle, from ordering investigations to reporting results and appropriately interpreting and reacting to them.”⁷ Up to 70% of laboratory errors occur in the pre-analytical phase.² The findings in this study where only 0.1 % of request forms had all the essential information and the patient’s name were the only parameter that appeared in all of the laboratory request forms, and this too may be due to refusal of request forms at the reception that has no name. This is similar to the findings of other studies.^{8,9} Apart from the name of the patient, patient identification number was the most available parameter that appeared in 95.6% of the forms. Information regarding the location of the patient (ward, and hospital number which is necessary for locating the patient who may need a repeat of sample collection or report of critical results was missing in 7%, and 4.4%, respectively. This information helps to avoid unnecessary duplication of effort and investigations and resources. Various studies found values ranging from those that are higher and those that are lower than the findings of this study. The age and gender were not stated on 21.9% and 22% of laboratory request forms respectively. This is higher than figures of 5.8% and 14% respectively obtained from a study in Pakistan.¹⁰ The benefits of writing age on the request forms, helps for patient identification, interpretation of the results, error detection and so on. The clinical details which are important in results interpretation and may serve as a pointer to an error in the laboratory was not present in about 90.7% of cases, which is similar to other studies.^{9,11} Inadequate clinical information may cause difficult in interpretation of results and its lead to misleading comments.¹² Most clinicians (72.4%) signed the laboratory request forms presented to the laboratory.

The major pre-analytical errors of concern noticed in our study were that the treating clinician's names and contact number were missing in 99.9% of the laboratory request forms, in this study, 0.1% of clinicians provided their contact information compared to almost 40% in the South African study.¹¹ Urgent results can be rapidly conveyed back to the requesting consultant, if the contact number is present on the request forms.¹⁰

CONCLUSION

The study has demonstrated that high frequency of incompletely filled patient information found on the laboratory request forms. Processing of incomplete filled laboratory request forms may lead to the misinterpretation of results and have a serious impact on patient healthcare. Enhanced communication between the clinicians and lab physician would definitely enhance the reliability, quality, and accuracy of the laboratory tests. We also recommend that house surgeons should take orientation in the laboratory at the beginning of their internship and medical students should get more laboratory exposure to get to know about pre analytical variables. And Electronic laboratory information system may reduce pre-analytical errors and improve quality of laboratory services.

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