Section: Pathology

Original Research Article

INFLUENCE OF CLINICIAN AWARENESS INTERVENTIONS ON THE INFORMATION SUBMITTED IN THE LABORATORY REQUEST FORMS

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Received : 12/10/2025
Received in revised form : 08/12/2025
Accepted : 24/12/2025

Keywords:
Laboratory request forms; awareness intervention; medical education; medical errors; digitalisation.

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DOI: 10.47009/jamp.2026.8.3.90

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (3); 497-500

ABSTRACT

Background: Accurate and complete laboratory request forms are essential for appropriate test processing, interpretation, and communication between clinicians and laboratory personnel. Our previous audit in 2018 revealed high omission rates in several key fields, indicating a need for improved awareness among healthcare providers. This study evaluates the influence of structured awareness interventions on the completeness of information submitted in laboratory request forms. **Materials and Methods:** A comparative observational study was conducted by analyzing omission rates across 11 documentation criteria in laboratory request forms. Data from the previous audit (2018) were compared with the current post-intervention audit. The awareness intervention included educational sessions, departmental reminders, and sensitization programs aimed at improving compliance with form completion standards. **Result:** There was a notable reduction in omissions across all parameters following the intervention. The most substantial improvements were observed in the fields of requesting consultant name (99.9% to 33%), consultant telephone number (99.9% to 60%), and clinical information (90.7% to 52%). Moderate improvements were noted in patient demographic fields such as age and gender, while administrative details like ward/OP number and date of sample collection showed smaller declines in omissions. Legible handwriting showed only minimal improvement. **Conclusion:** The awareness interventions significantly enhanced the completeness of laboratory request forms, particularly in areas with previously high omission rates. Despite these improvements, persistent gaps in fields such as clinical information and consultant contact details highlight the need for ongoing reinforcement and potential adoption of electronic request systems. Continued education and periodic audits are recommended to sustain and further improve documentation practices.

INTRODUCTION

Incomplete information on the laboratory request forms sent is a common problem, and its influence is often underscored.[1] However, it is well recognized that incomplete and inadequate information in the laboratory request forms can sometimes lead to serious errors and more often to time and resource wastage.[1-4]

Our earlier study of evaluation of laboratory request forms submitted to clinical pathology department in tertiary health care hospital revealed concerning findings with incomplete information present in 99.9% of the forms.[1] This was quite concerning, and we planned a series of awareness and educational programs for the target population i.e. interns, post-graduates and junior staff members who were more likely to fill such forms. They were counselled about the importance of filling all the patient information and emphasized that the limited information provided could negatively influence the outcome they desire from the investigations. Ten such sessions were conducted over a period of two months, and the similar study was conducted to assess the effect of our intervention on the filling of the information in the laboratory requisition forms.

MATERIALS AND METHODS

All the laboratories requestion forms submitted to the pathology department during the month of May 2023 were included in the study. A total of 1527 forms were submitted in this time and were a combination of the in-patient and out-patient forms of various departments. 322/1527 form related to urine analysis

ISSN (O): 2687-5365; ISSN (P): 2753-6556

were excluded which resulted in a total of 1205 forms.

Inclusion criteria:

All the laboratory requisition form submitted to the pathology department for the outpatient and in-patient investigations were included in the study. These were analyzed for eleven criteria (Table-1). These are the same criteria which were analyzed during our previous index study to maintain a uniformity and comparability.[1]

Exclusion criteria:

Laboratory request forms which were received for urine analysis were excluded from this study to maintain the similarity with our previous study.

Methodology: This is a retrospective study involving the laboratory investigation forms submitted to the department of Pathology, ESIC Medical College, Coimbatore, during the month of May 2023. All the clinical pathology requests including the in- and out-patients were included in the study, but the forms related to urine analysis were excluded. The forms included both the elective and emergency cases and all the departments irrespective of the time they were received in the laboratory. All the forms were analyzed for eleven criteria which are detailed in table-1. These are the same criteria which were used in our index study in 2018. This allowed us to directly compare the response of our intervention to increase the awareness about providing the complete clinical details in the requisition forms to various doctors in different departments.

Patients' confidentiality was maintained by avoiding their names in study and having only the serial number of the study as their identifier. All the forms were analyzed for the above 11 criteria and were recorded on excel worksheet as 'yes' or 'no' for the presence or absence of each information of the preset criteria. The data was then analyzed for the frequency of missing each of the requisition form parameter and the results were tabulated in form of percentage. This data was then compared with our previous study to derive the influence of our intervention regarding raising the awareness of the doctors about the importance of providing the complete information in the laboratory requisition forms.

RESULTS

We noted a dramatic improvement in the amount of information provided in the laboratory forms as compared to our previous study, however, there was still a scope of betterment.

Patient information: Patient name again was present in all the forms, but the age and gender were missing in 12% of the forms independently. The ward details, patient identification number and date of sample collection were missing in only 4%, 2% and 6% of cases respectively. These values are substantially better than our previous study [Table 2] [Figure 1]. The clinical information was still missing in a significant number of forms (52%) but it was better by 38.7% as compared to our previous study.

Requesting doctor related information: There were still a substantial number of forms which had missing information about the referring consultant especially their phone number (60%). The name was still missing in 33% and signature in 13% of cases. These values are still better than what we observed in our index study, especially the name of the consultant along with the signature was most improved [Table 2 & Figure 1]. The phone number mentioning still remained lesser.

The least change of all the parameters was seen in the legible handwriting criteria (1.1%) and still 19% of the hand writings were not comprehendible.

Table 1: The criteria used for analyzing the clinical laboratory forms.

S. No.	Criteria for analyzing the clinical laboratory forms
1.	Name of the patient
2.	Age of the patient
3.	Gender of the patient
4.	Ward / out-patient number
5.	Requesting consultant name
6.	Requesting consultant signature
7.	Consultant telephone number
8.	Clinical / diagnostic information
9.	Patient identification number
10.	Date of sample collection
11.	Illegible handwriting

Table 2: The values of omission in the clinical forms observed during the present study and our previous study and the percentage of change.

S. No.	Criteria for analyzing the clinical laboratory forms	Percentage of omissions in our previous study (2018) in %	Percentage of omissions in our present study in %	Percentage of change in %
1.	Name of the patient	0	0	0
2.	Age of the patient	21.9	12	9.9
3.	Gender of the patient	22	12	10
4.	Ward / out-patient number	7	4	3
5.	Requesting consultant name	99.9	33	66.9
6.	Requesting consultant signature	27.6	13	14.6
7.	Consultant telephone number	99.9	60	33.9

ISSN (O): 2687-5365; ISSN (P): 2753-6556

8.	Clinical information	90.7	52	38.7
9.	Patient identification number	4.4	2	2.4
10.	Date of sample collection	8.4	6	2.4
11.	Legible handwriting	20.1	19	1.1

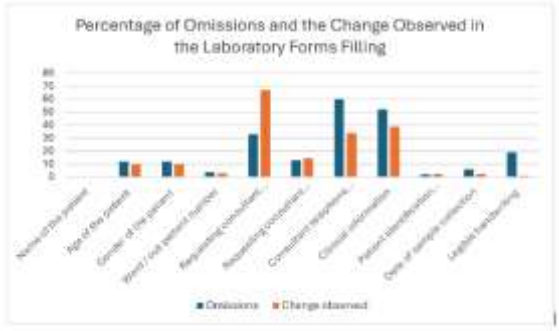

Figure 1: A graphical representation of the omissions in the clinical laboratory forms in the present study and the corresponding improvement as compared to our previous study.

DISCUSSION

Our study further strengthens the belief in repeated and periodical awareness programs for the medical professionals. It demonstrates that a structured awareness intervention significantly improves the completeness of information submitted in laboratory request forms. Across all 11 evaluated criteria, omission rates decreased — indicating that clinician sensitization and periodic audit can meaningfully enhance preanalytical documentation quality.

The completeness of laboratory requisition forms (LRFs) is critical because the pre-analytical phase accounts for a majority of laboratory errors.[1-4] According to prior literature, up to 50%–70% of laboratory errors arise before actual sample analysis, often due to inadequate or incorrect information on request forms, which may compromise result interpretation and patient safety.[1-4]

Incomplete forms may lead to misidentification of patients, miscommunication about tests, delayed communication of critical results, and increased risk of sample rejection or repeat testing.[1-4]

Our findings are in line with previous studies that demonstrated clinician education significantly reduces omission rates. A quasi-experimental study at a tertiary hospital in Nigeria showed that after a six-week educational program, omissions in age, hospital number, clinician name, ward/clinic, and clinical diagnosis decreased significantly.[5]

Similarly, audits of histopathology request forms using structured quality improvement approaches (including clinician engagement, standardized forms, and re-audits) showed marked improvements in completeness of clinical history, physical findings, and specimen data.[6]

Consultant name omissions decreased drastically from 99.9% to 33%, reflecting the largest absolute improvement (66.9%). Consultant telephone number omissions also reduced significantly (from 99.9% to 60%). Consultant signature omissions decreased from 27.6% to 13%. These fields showed the greatest improvement, likely because awareness efforts specifically targeted clinician accountability, traceability, and communication with the lab in case of critical values. This underscores that clinician-oriented awareness measures are effective, particularly when baseline compliance is poor. This mirrors trends observed in previous audits where physician identification and clinical details were among the most neglected fields.[4-7]

Despite substantial progress, certain omissions remain — most notably in the "clinical information" field, which still lacked in ~52 % of forms in the present study. This indicates that clinicians may still undervalue this field or face time constraints. This is concerning, because absence of clinical details can limit the laboratory's ability to interpret results or give meaningful comments, and may lead to diagnostic delays or misinterpretation. Similar concerns were raised in a recent cytopathology-lab audit, where incomplete forms led the authors to recommend redesigning the laboratory requisition forms and reinforcing feedback to requesting physicians.[8] Ongoing education and system prompts may be required to further reduce these omissions.

Patient demographic and administrative fields (age, gender, ward/OP number, date of sample collection)- these fields already had low omission rates as the forms are often not accepted if these information as observed by the technician receiving the forms. The filling of these fields showed modest but meaningful improvement but still need continuous reinforcement. While these are basic data, their accurate completion is essential for patient identification, result labelling, and timely sample processing.

Notably, legible handwriting showed minimal improvement, decreasing only from 20.1% to 19%. This suggests that handwriting quality is relatively resistant to awareness-based interventions. Illegible handwriting remains a recognized impediment to laboratory service quality, and many authors suggest adoption of electronic request systems to obviate this problem.[6,9]

Based on our findings and evidence from the literature, we recommend:

- Continued periodic audits — regular review of LRFs to monitor compliance. Audits, combined with feedback, help maintain awareness and accountability.
- Targeted education/training sessions — especially for consultants and junior doctors emphasizing the importance of each field, particularly clinical information and contact details.
- Redesigning request forms — using user-friendly, standardized forms that clearly highlight

ISSN (O): 2687-5365; ISSN (P): 2753-6556

mandatory fields and potentially make fields compulsory.
- Transition to electronic request systems — e-ordering eliminates problems of illegible handwriting, missing data, and improves completeness, readability, and traceability.[9]
- Closer communication between clinicians and laboratory personnel — reinforcing that accurate documentation directly influences diagnostic accuracy, turnaround time, critical result reporting, and ultimately patient care.

Strengths and limitations of the study

A major strength of our study is the direct comparison of data from a baseline audit (2018) to a post-intervention audit — which demonstrates sustained improvement rather than a cross-sectional snapshot.[1] Moreover, by assessing a broad set of 11 parameters including patient demographics, clinician details, and clinical information, our audit provides a comprehensive view of documentation quality.

Nevertheless, there are limitations:

- The study was limited to paper-based laboratory request forms. The impact of electronic systems was not evaluated directly.
- We did not assess the clinical impact of improved documentation (e.g., reduction in sample rejections, laboratory turnaround time, error rates).
- The "awareness intervention" was multifaceted — educational sessions, reminders, sensitization — but we did not evaluate which component was most effective.

Future studies could address these limitations by implementing a digital ordering system, measuring downstream effects on laboratory error rates or patient outcomes, and assessing which elements of intervention yield maximal benefit.

CONCLUSION

Our audit confirms that structured awareness interventions significantly improve completeness of laboratory request forms — particularly in clinician identification and clinical information fields. However, persistent gaps remain, especially regarding legibility and clinical details. To ensure sustained quality and patient safety, we recommend institutionalizing periodic audits, clinician education, standardized forms, and a shift toward electronic request systems.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556