

ORIGINAL RESEARCH

Pattern of completion of Laboratory Request Forms in a tertiary health facility

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Abstract

Background: Laboratory request form is an important means of interaction between clinicians and laboratory service providers. The omission of information on the request form may result in laboratory errors which may have a negative impact on patients' outcome.

Objective: To assess the pattern of completion of laboratory request forms in a tertiary facility.

Methods: Two thousand, two hundred and forty-one laboratory request forms sent to the laboratory over a period of two months were assessed for their level of completeness.

Results: Out of 2241 laboratory request forms, only 5 (0.2%) was fully completed. The most complete information on the forms included types of investigation required (98.9%), the gender of the patient (97.8%), the identity of consultant-in-charge of the patient (95.3%) and the referring physician's name and signature (93.8%). The least provided information was the time of collection of the specimen (0.7%).

Conclusion: This study shows that laboratory request forms are frequently incompletely and inadequately completed. Continuous medical education of clinicians on the need for adequate completion of request forms is required.

Keywords: *Clinical information, Diagnosis, Completion, Request form, Laboratory.*

Introduction

The success of modern medical practice is increasingly dependent on the reliability of clinical laboratory services. [1] It is known that laboratory results influence up to 70% of medical diagnoses. [2] Therefore, errors emanating from the laboratory can impact

negatively on the quality of care provided as well as the patients' outcome. [3] There are possibilities of error at all the stages of processing laboratory tests and these can be categorized as pre-analytical, analytical and post-analytical stages. With the advent of improved technology and quality management in the analytic phase, the majority (68.2%) of

errors have been noted to occur in the pre-analytical stage. [4-5]

The pre-analytical stage involves filling of appropriate laboratory request forms with complete clinical details, proper labeling of specimen bottles and collection of the specific specimen with an adequate volume of the sample without haemolysis or contamination in inappropriate sample bottles. [6] The analytical stage involves carrying out of the requested tests using standardized, reproducible steps with quality assurance. The post-analytical stage involves the recording of results in an appropriate unit in the test report form, interpretation of results/ clinical advice and guidance provided by the laboratory physician and dispatching of the results back to the requesting team. [7]

The inadequacy of information provided on laboratory request forms constitutes one of the major sources of pre-analytical errors which could lead to sub-standard results emanating from the laboratory. [8] The sub-standard laboratory results will ultimately have a negative impact on patients' outcome. The objective of this study was to assess the pattern of completion of laboratory request forms and provision of adequate information on laboratory request forms in a tertiary health facility, with a view to identifying the usual information most commonly overlooked and drawing the attention of clinicians to the import of such information.

Methods

This was a descriptive cross-sectional study. Consecutive laboratory request forms received at the Phlebotomy unit of the Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria from Out-Patient Clinics/

Departments over a two-month period, were assessed.

Ethical approval for the study was obtained from Olabisi Onabanjo University Teaching Hospital Health Research Ethics Committee.

As part of routine hospital practice, the clinicians made requests for laboratory investigations by completing laboratory request forms and these are sent to the phlebotomy unit for the tissue samples to be collected. The phlebotomy unit is situated within the medical/surgical outpatient clinics. The tissue samples collected at the phlebotomy unit were meant for clinical chemistry, haematological and medical microbiological studies. Histopathological requests and requests from In-patients (patients who were hospitalized on the wards and accident and emergency) were excluded in this study as they were usually not taken to the phlebotomy unit but transported directly to the laboratory. The entire laboratory request forms from the three departments that made use of the phlebotomy unit have the same number of information requirements.

The laboratory request forms were assessed for completeness of the various fields such as: patient's names (Surname, first name and other name), age, sex, Hospital number, name of clinic where request is coming from, nature of specimen, date and time of collection of specimen, investigation required, clinical details including drug and treatment history, name of the consultant-in-charge of the patient, referring physician's name and signature. A field was taken to be completely filled when the required information was adequately provided and incompletely filled when the field was left blank or when an inadequate response was provided. Examples of the latter included request forms without age in years/months, the specific type of sample such as 'urine' instead of 'midstream urine' or 'blood' instead of 'venous blood', etc.

The retrieved data were analyzed using the SPSS VERSION 21.0 (Chicago).

Results

A total of 2241 laboratory request forms were assessed, 2237 (99.8%) had one or more information missing. Investigation required, the gender of the patient, name of the consultant-in-charge, name of the clinic, doctor's name and signature and patient's name were the most complete information on the request forms with the following frequencies respectively: 98.9%, 97.8%, 95.3%, 95.1%, 93.8% and 92.5%.

Information on hospital number, clinical details, patient's age and nature of specimen were only provided in 78.8%, 55.6%, 42.1% and 36.1% respectively of the requests. The least provided information was time and date of specimen collection and patient's name in 0.7% and 3.6% of cases. (Table I).

The highest number of laboratory requests was meant for the Chemical Pathology laboratory (49%) while 32% and 19% were meant for Haematology and Medical Microbiology laboratories respectively.

Discussion

Since correct interpretation of test results which is central to patient's management depends largely on the quality of information provided on the request form, conscious efforts should be made for the provision of adequate information. However, several studies have shown deficiencies in the filling of laboratory request forms worldwide. [9-12] In this study, only 0.2% of laboratory requests were complete with the remaining having one or more parameters omitted. This is similar to the finding of 1.3% reported by Oyedeji *et al.* [13] but in contrast with the finding of 89.5% by Jegede *et al.* [13]

Table I: Frequency of provision of evaluated parameters on laboratory request forms

Parameters	Frequency (%)
Investigation required	2217 (98.9)
Gender	2192 (97.8)
Consultant-in-charge	2136 (95.3)
Clinic	2132 (95.1)
Doctor's Name and signature	2101 (93.8)
Patient's Name	2078 (92.5)
Hospital Number	1767 (78.8)
Clinical details	1247 (55.6)
Patient's Age	943 (42.1)
Nature of specimen	809 (36.1)
Date of collection	81 (3.6)
Time of collection	15 (0.7)

Patient's name had a 92.5% completion rate which is lower than the findings by Singh *et al.* [14] and Burton *et al.* [15] whom all reported a 100% completion for patient's names. The present observation was higher than the finding

by Klanl *et al.* [16] who found 41.5% completion rate. This might be due to the fact that patients' surnames were written along with initials in some cases. In instances where the name of a patient is not included on the laboratory request

form, such requests are re-routed back to the clinicians to do the needful. This will affect the prompt management of such patients as there will be a delay in the processing of the tissue sample.

The patient's age was provided in 42.1% of the request forms in the present study; this is higher than the finding of 9% by Klanl *et al.* [16] but lower than the report of 98.1% by Jegede *et al.* [13] This may be due to the fact that only the figure was written without including the years or months and 'Ad' being written for "adult" on some request forms. This may affect proper interpretations of results since several laboratory investigations reference ranges vary with age. [17] Gender was completed in 97.8% of the request forms in the present study; this observation is similar to the finding of Adegoke *et al.* [18] but higher than the report of 67.3% by Olayemi *et al.* [19] This may also hamper correct interpretation as there are gender variations for some laboratory parameters. [17]

The hospital numbers were provided in 78.8% of the request forms; This is lower than 95.6 % reported by Adegoke *et al.* [18] This might be due to the fact that some request forms were filled for patients who were yet to be registered in the hospital's database but whose documents were usually designated as 'NYR' meaning 'Not yet registered'. This might be in a bid to fast-track the process of making the diagnosis, particularly when the clinicians receive consults before registration formalities are completed. The clinics were specified in 95.1% of the requests, which is higher than the findings in some previous studies. [20] The biodata of patients plays a key role in specimen identification and result interpretation. Where patients have similar names, additional information such as age, gender, patient location (clinic) and hospital number are required for clarification and proper identification. Unfortunately, there is no column for the address of the patient in the laboratory forms used in OOUTH. The address of patients

may help in an epidemiological survey of a particular disease entity observed to be common in a certain locality.

The clinical details/ diagnosis were provided in 55.6% of cases; this is higher than the report from other studies. [14, 16] The provision of adequate clinical information is imperative for accurate interpretation of laboratory results and suggestion on other investigations to be done for proper management of the patient. Investigation required was specified in 98.9% of cases, similar to the finding of 98.5% reported by Oladeinde *et al.* [20] This was observed to be the most frequently provided information probably because of the high probability of tissue sample not being accepted by the phlebotomist should the requested investigation be omitted. Information on the nature of specimen meant to be tested was provided in 36.1% of the requests; this becomes important when particular conditions have an impact on the outcome of the results eg fasting blood samples for glucose and lipids and midstream urine for microbiological analysis. [21] The rate is lower than 99.7% obtained by Jegede *et al.* [13] The date and time of specimen collection were provided in 3.6% and 0.7% of cases respectively in contrast to 36.5% and 10.3% respectively earlier reported by Adegoke *et al.* [18] This may not be relevant to the examination or reporting but becomes necessary when turn-around time is being considered or complaints about delays in reporting arise. Time and date of sample collection may also become important when there is a diurnal or cyclical pattern of a particular analyte eg fasting blood samples and reproductive hormones. [22,23]

The name of the consultant-in-charge, name and signature of the referring doctor were provided in 95.3% and 93.8% of the requests higher than reports from other studies. [14, 19, 24] There is no column for the physician's phone number in OOUTH laboratory forms. Phone numbers will facilitate communicating with the clinicians to

discuss errors in requests and relay urgent results that require immediate action. It would have been worthwhile to relate the quality of requests (extent of completion of request forms) to the cadre of the physician (Intern, Resident or Consultant) making the requests as experience with clinical medicine may contribute to whatever patterns of requests were obtained. However, there is no provision for cadre categorization of the physician completing the laboratory request form. Comparison of the degree of completion of requests from clinics with those emanating from the wards and accident and emergency might be able to show variations considering time constraint that might be experienced in a busy clinic and accident and emergency.

Conclusion

This study shows that laboratory request forms were incompletely and inadequately filled in this facility. This will have negative effects on the rendering of quality service, interpretation of results and ultimately on the management of patients. There is a need to increase awareness among clinicians on the importance of adequate completion of laboratory request forms to patients' management. This can be achieved by continuous medical education programs where the importance of each parameter on the request forms is emphasized. Patient's tissue samples accompanied by inadequate and or incomplete request forms should be rejected in the laboratory. In addition, the implementation of electronic request forms with mandatory fields and barcode patient identification will drastically reduce the problems.

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substantial intellectual contributions to the final version of the manuscript.

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