

Evaluation of Compliance of Adequate Filling of Radiology Request Forms in Nnamdi Azikiwe Teaching Hospital, Nnewi, Anambra State, Nigeria

¹J.C., Eze, ¹D.C. Ugwuanyi, ¹E.E. Ezugwu, ²L.C. Abonyi, ²C.U. Eze and ¹V.C. Ahumaraeze

¹Department of Radiography and Radiological Sciences,
Nnamdi Azikiwe University, Nnewi Campus, Nigeria
²Department of Radiography, University of Lagos, Nigeria

Abstract: Radiology request form is a communication tool between the referring clinicians and the radiology department. Adequate completion of this form will help in correct investigation and diagnosis of a patient's health condition. The objective of this study was to evaluate the compliance of adequate completion of the fields in the radiology request form by referring clinicians in Nnamdi Azikiwe University teaching hospital, Nnewi, Anambra state. The study was retrospective and descriptive. It involved 700 radiology request forms that were collected from the archives of the department. The forms were diligently studied for adequate completion of the various fields provided. All requests made on prescription sheets and other non radiology request forms were excluded. Data was analyzed descriptively using SPSS version 20 and presented in percentages. The results showed that only 174 (24.8%) of the forms were adequately completed. The most completed field was patient's name while the least completed was the ambulant nature of the patient. Most of the request forms came from outpatient department. Conclusion: The referring clinicians did not adequately complete the fields in the request forms hence there is low level of compliance among referring clinicians in completing the request forms in the studied hospital.

Key words: Evaluation • Adequate • Compliance • Radiology • Request • Forms

INTRODUCTION

The radiology department is a referral point where patients come to obtain diagnostic information concerning their health conditions. This information may be through diagnostic x-ray, ultrasonography, computed tomography or magnetic resonance imaging. These patients are usually seen by physicians in other departments of the hospital and the radiology request form acts as a means of communication between the referring clinician and the radiology department. Adequate and correct information will help the patient to obtain the necessary treatment needed to make him well. The radiology request forms are essential communication tools used by hospitals and doctors referring patients to radiology department, however the importance is highly underestimated [1, 2]. A referrer to radiology is defined as a registered health professional who is accredited by the

legislation to refer individuals for medical exposure to a practitioner in radiology [3]. These referrers are responsible for supplying accurate and complete information regarding the condition of the patient when making a radiology request. To comply with this expectation the referrer must be fully informed about the clinical history related to the current condition, the presenting complaint and previous radiological examinations related to the current condition [4]. A referral for radiology is generally regarded as a request for a special opinion on the potential clinical diagnosis [5]. For this reason it is therefore important that the exact anatomical area to be imaged is accurately specified without ambiguity [6].

It is important to note that choosing the appropriate investigation at the right time and providing correct biographic and clinical information of patient is the responsibility of the clinician requesting for the

radiological investigation [7, 8, 9]. Proper completion of the request forms ensure reduction in the number of unnecessary radiographic examination performed and also helps to obtain concise radiological diagnosis. It also indirectly helps to reduce the investigation time, improve quality offered to the patient [10] and also in justification to radiation exposure to reduce radiation dose to the patient [11, 12].

There is no standard format for radiology request forms and different organisations use their own personalised version [13]. However, there are common and frequent information that exist in most radiology request forms no matter the organisation or institution. The minimum standard from literature shows that all request forms should contain the patient's name, age, address, telephone number, ward, clinical history, the specific question to be answered, the name and signature of the referring clinician and the name of the consultant responsible for the care. The aim of this study was to evaluate the compliance rate of adequate filling of radiology request forms by referring clinicians in Nnamdi Azikiwe University teaching hospital Nnewi, Anambra state, Nigeria.

MATERIALS AND METHODS

This was a retrospective and descriptive study. It involved the assessment of some radiology request forms of Nnamdi Azikiwe university teaching hospital, Nnewi to check how the various fields in the request forms were filled by the referring clinicians. Seven hundred (700) request forms were collected and the

information provided by the referring clinicians was assessed for completion during the period of this study. These forms came from the various departments and wards in the hospital. The request forms of patients who came from outside the hospital and badly mutilated request forms were excluded from this study. Requests that were made on plain sheets and prescription papers were also excluded. Data was collected by observing or reading through the request forms to check information that were filled on the forms. The fields were regarded as completed when the accurate information was entered legibly in the specified field. The request form used in this hospital contains 20 items and is regarded to have met minimum standard for radiological request form. The data was arranged and entered using SPSS version 20. Data was analyzed descriptively and results were presented in tables and percentages.

RESULTS

Seven hundred (700) request forms were analyzed. Result showed that only 174 (24.8%) of the forms were adequately completed. Table 1 shows that the most completed field was the name (100%) while the least completed was the ambulant nature of the patient (1.4%). The age was adequately filled in 92.4% while clinical information was adequately filled in 71.3% of the request forms. Previous diagnosis was adequately completed in 92.9% of the forms.

Table 2 reveals that majority of the requests came from outpatient department (40.7%), while the least came from accident and emergency department (4.5%).

Table 1: Completion of the various fields in the request forms

S/n Form field	Adequately filled	Inadequately filled	Total
1 Name	700 (100%)	0 (0%)	700 (100%)
2 Age	647 (92.4%)	53 (7.6%)	700 (100%)
3 Sex	684 (97.7%)	16 (2.3%)	700 (100%)
4 Ward	680 (97%)	20 (3%)	700 (100%)
5 Date	638 (91.1%)	62 (8.9%)	700 (100%)
6 Address	203 (29.0%)	497 (71.0%)	700 (100%)
7 Diagnosis	650 (92.9%)	50 (7.1%)	700 (100%)
8 Body part	696 (99.4%)	4 (0.6%)	700 (100%)
9 Clinical information	499 (71.3%)	201 (28.7%)	700 (100%)
10 Previous Examination	151 (21.6%)	549 (78.4%)	700 (100%)
11 Last Menstrual Period	129 (18.4%)	571 (81.6%)	700 (100%)
12 Ambulance	10 (1.4%)	690 (98.6%)	700 (100%)
13 Previous Operation	295(42.2%)	405 (57.8%)	700 (100%)
15 X-ray Number	140 (20%)	560 (80%)	700 (100%)
16 Name of Medical Officer	650 (92.9%)	50 (7.1%)	700 (100%)
17 Name of Consultant	475 (67.9%)	225 (32.1%)	700 (100%)
18 Signature	621 (88.7%)	79 (11.3%)	700 (100%)
19 Cassette	310 (44.3%)	390 (55.7%)	700 (100%)
20 Name of Radiographer	430 (61.4%)	270 (38.6%)	700 (100%)

Table 2: Completion of the forms according to Departments

Departments	Frequency	Adequately filled	Inadequately filled
Outpatient	285 (40.7%)	80 (28.1%)	205 (71.9%)
Accident and Emergency	34 (4.5%)	10 (29.4%)	24 (70.6%)
Wards	246 (35.1%)	50 (20.3%)	196 (79.7%)
Others	135 (19.2%)	34(25.2%)	101(74.8%)

DISCUSSION

In this study, 24.8% of the forms were adequately filled. This can be said to be low but is however higher than that of Depasquale and Crockford [8] who recorded only 4%. The present study shows that the patient's names were completely filled in all the request forms evaluated. This result is in agreement with the work done by Afolabi *et al.* [14] and Irurhe *et al.* [15] Individuals are usually first identified by their names and if this information about a person is missing in any record it becomes difficult to say who the individual is and in relation to radiology investigation the patient cannot even be examined. This may be the reason why all the forms evaluated had the patient's name adequately completed. The age was completely filled in 92.4% of the radiology request forms. Even though the percentage in our study can be said to be high, it is lower than the findings of Afolabi *et al.* [14] who recorded 98% and that of Irurhe [15] who recorded 94%. It is however higher than those of Akintunde *et al.* [16] (83.4%) and Adebayo *et al.* [17] (79.2%). Age is important information about any patient because most diseases are age related and this would help the radiologist in making a proper diagnosis. It also helps the radiographer to choose the appropriate technique and also determine how to care for the patient. Date was completely filled in (91.1%). The date an investigation was done may not have any clinical relevance but it is very vital in record keeping and some medico legal issues. The address was completely filled in only 29% of the forms. This is comparable with the finding of Afolabi *et al.* [14] who noted that less than 30% of the request forms they studied had complete and adequate information about the address. The address of a patient is very important because sometimes after an investigation has been carried out, there may be an emergency that will require that the patient should be reached. There may also be misplacement of information or incidental finding from the investigation necessitating that a patient should come back to the department for further investigation. In this situation, the patient's address plays a major role in locating him. Some disease conditions are also related to the area where patients are living and this would help the radiologist to make a definite diagnosis. The field of sex

was completed in 97.7% of the forms. Sex is an important aspect of information concerning a patient. Some clinical conditions are gender related and because of this having information about this field will also help in making appropriate diagnosis. Clinical information was completed in 71.3% of the forms. This finding is in tandem with that of Cohen *et al.* [18] who reported 71% in their study. Our finding can be said to be poor and lower than that of Akintunde *et al.* [16] Clinical information helps the radiographer to determine the exact radiographic technique to be used to display the required anatomy. In situations where this information is not provided this could lead to a repeat of an investigation and subsequent unnecessary irradiation to the patient. To the radiologist this will direct him in making his diagnosis. The regulations of the department UK requires that the referrer provide sufficient medical data and relevant diagnosis to the medical exposure requested to enable the radiation practitioner to decide whether the exposure can be justified [19]. Previous studies have shown that inadequate clinical information is associated with increased level of inaccurate result, however if it is adequate and accurate the radiologist reports are better which indirectly affects positively patient's management, Duncan *et al.* [20] and the need to answer specific questions and provide clinical details to aid radiological diagnosis. Body part was completely filled in 99.4%. This is very high compared to another study [14] which recorded that 31.2% did not have body parts filled. A referral for radiology is generally regarded as a request for a special opinion on the potential clinical diagnosis [5]. For this reason it is therefore important that the exact anatomical area to be imaged is accurately specified without ambiguity [6].

In this study, previous examination was adequately completed in 21.6% of the request forms. Our finding is higher than that observed by Akintunde *et al.* [16] who recorded 0.35%. This field is very relevant because sometimes this will help the radiographer to determine the area of the anatomy that he is supposed to focus on by looking at the patient's old radiograph. The provisional diagnosis was adequately filled in 92.4% of the request forms. The provisional diagnosis suggests what the referring clinician thinks about the health condition of the

patient. The radiologist who makes the diagnosis do not come in contact with most of the patients that come to the department therefore the provisional diagnosis will also help him to make appropriate diagnosis. The last menstrual period (LMP) was adequately filled in 18.4% and is higher than that of Akintunde *et al.* [16] (11.5%), Akintomide and Ikpeme [21] (1%) but much lower than that of Rajanikanth [22] who reported 100% completion. In radiography practice it is necessary that the LMP of females within the child bearing age be provided so as to avoid irradiating a possible foetus. This also helps in booking patients for investigations like hysterosalpingography for cases have been seen where even in requesting for this procedure the referring clinician did not complete this field. The mobility status (walking/wheel chair) was completed in only 1.4%. The mobility of a patient most of the times determines the appropriate radiographic positioning to be adopted for that patient and being aware of this condition will help the radiographer to prepare his mind on the appropriate technique to be used. The consultant's name was completely filled in 67.9%. This is lower than those of other studies (88.7, 97.2, 92.0 and 99.7%).[2, 11, 15, 17]. The name of the consultant is necessary because the patient is under his care and he must take responsibility of anything concerning the patient. It is also necessary that if need be he can easily be contacted. The signature was completed in 88.7% of the forms. This field is necessary because the appendage of a signature in any document authenticates the document. The cassette size used was completed in 44.3% of the forms. The cassette size may not be of any clinical significance but it is necessary in terms of accountability to determine the number of films used for any investigation. In present study the radiographer's name was adequately completed in 61.4% of the request forms. Just like the consultant's name, the radiographer needs to fill his name so that he can be traced if need be and should also take responsibility for his work. Previous operation and previous examination was completely filled in 42.2% and 21.6% respectively. While previous examination will guide the radiographer in knowing the exact position of interest, previous operation will also give a guide on the anatomy to be expected within the operation site and what the present condition will look like.

This study revealed that majority of the requests came from the outpatient department while the least was from accident and emergency department. This is contrary to the study by Irurhe *et al.* [15] who recorded that more

requests came from the accident and emergency department. This may be as a result of record keeping in the institution studied. It is possible that there may be loss or misfiling of the request forms used in this hospital or that there is actually low cases of accident victims seen.

The low number of forms that were completely filled shows that radiology request forms were not adequately completed by the referring clinicians in the studied hospital. It is necessary that clinicians complete the request forms appropriately so that the radiographer and the radiologist will be properly guided while the patients obtain adequate diagnosis and treatment that will help ameliorate their conditions.

CONCLUSIONS

There is low level of compliance among referring clinicians in completing the request forms in the studied hospital because the fields were not completely and adequately filled.

Recommendation: We are of the opinion that the following information should be provided in the request forms;

- Hospital number
- The telephone numbers of the patient, consultant and the radiographer. This will help in making easy contact when the need arises.

Regular workshops and seminars should be organised to educate referring clinicians on the relevance of adequate completion of information provided on the request forms.

Conflict of Interest: There is no conflict of interest.

REFERENCES

1. Akinola, R., M. Akinkunmi, K. Wright and O. Orogbemi, 2010. Radiological request forms: are they adequately filled by clinicians? The Internet Journal of Radiology, 12(1): 1-5.
2. Oswal, D., D. Sapherson and A. Rehman, 2009. A study of adequacy of completion of radiology request forms. Radiography, 15: 209-13.
3. Royal college of Radiologists, 2000. A guide to justification for clinical radiologists. RCR. [Http://www.rcr.ac.uk/publications.aspx?pageID=30](http://www.rcr.ac.uk/publications.aspx?pageID=30).

4. International Commission on Radiological Protection, 2007. Recommendations of the International Commission on Radiological Protection. ICRP Publication 103. Annals of the ICRP., 37: 1-332.
5. International Atomic Energy Agency, 2008. Justification of diagnostic medical exposure, some practical issues. Report of an International Atomic Energy Agency (IAEA) consultation; Vienna.
6. European Commission on Radiation Protection, 2008. Referral guidelines for imaging: Up date Mars. European commission directorate general for energy and transport.
7. The Royal College of Radiologists, 2007. Making the best use of clinical radiology services; Referral guidelines. 6th ed. London, pp: 3-9.
8. Depasquale, R. and M.P. Crocford, 2005. Are radiology request forms adequately filled in? An audit assessing local practice. Malta Medical Journal, 17: 1-5.
9. Scullion, D., 2010. Risk Management in Radiology: Radiology requesting and reporting policy, NHS Foundation Trust, First Edition. United Kingdom, pp: 1-11
10. Dhingasa, R., B.L. Finlay, G.D. Robinson and A.J. Liddicoat, 2002. Assessment of agreement of general practitioners and radiologists as to whether a radiation exposure is justified. British Journal of Radiology, 75: 136-139.
11. Triantopoulou, C.H., I. Tsalafoutasi, P. Maniatis, D. Papavolis, G. Raios, I. Sifas, S. Velonakis, E. Koulentianos, *et al.*, 2005. Analysis of Radiological Examination request forms in conjunction with justification of x-ray exposure. Eur. J. Radiol., 53: 306-11 [Pub Med].
12. Walker, A. and J.S. Tuck, 2001. Ionising radiation (medical exposure) regulations: Impact on clinical radiology. British Journal of Radiology, 74: 571-574.
13. Agwu, K.K. and I.J. Okoye, 2005. Audit of radiological requests at the University of Nigeria Teaching Hospital, Enugu. Nigerian Quarterly Journal of Medicine, 15: 67-71.
14. Afolabi, O., J. Fadare and E. Essien, 2013. Audit of completion of radiology request form in a Nigerian Specialist Hospital. Annals of Ibadan Postgraduate Medicine, 10(2): 48-52.
15. Iruhre, N.K., F.A. Sulaymon, O.A. Olowoyeye and A.A. Adeyomoye, 2012. Compliance rate of adequate filling of radiology request forms in a Lagos University teaching hospital. World J. Med. Sci., 7: 10-12.
16. Akintunde, J.F., A. Akintomide, A.I. Anthonia, I.N. Effiong, E.A. Nchiwe and T.U. Appoline, 2015. An audit of the completion of radiology request forms and the request practice. J Family Med Pri Care, 4(3): 328-330.
17. Adebayo, S.B., G.B. Awosanya, P.D. Balogun and A. Osibogun, 2009. Multicentre assessment of radiology request completion in south west Nigeria. Nigerian Hospital Practice Journal, 3: 12-3.
18. Cohen, M.D., S. Curtin and R. Lee, 2006. Evaluation of quality of radiology requisitions for intensive care unit patients. Academic Radiology, 13(2): 236-240.
19. Cohen, M.D., S. Curtin and R. Lee, 2006. Evaluation of quality of radiology requisitions for intensive care unit patients. Academic Radiology, 13(2): 236-240.
20. Duncan, K. and S. Barter, 2008. Clinical information from A & E. Adequacy of clinical information from accident and emergency (A&E) department. The Royal College of Radiologists, Audit and Research.
21. Akintomide, A.O. and A.A. Ikpeme, 2014. Radiation safety of women of reproductive age: Evaluation of the role of the referring physicians. J. Family Med. Pri Care, 3: 243-6 [PMC free article] [Pub Med].
22. Rajanikanth, R.V., 2014. Audit of Radiology Request Forms. Are they adequately filled? Indian Journal of Medical and Scientific Research, 2(1): 41-44.