

Evaluation of the Adequacy of Completion of Radiology Request Forms in a Tertiary Hospital, Northeast, Nigeria.

Mathew G. Abubakar¹; Chigozie Nwobi Ivor¹; Aisha Waziri¹; Dlama Zira Joseph²; Geoffrey Luntsi¹, Abasiama Obotiba¹, and Esther Mathew¹

Department of Medical Radiography, University of Maiduguri, Maiduguri, Borno State, Nigeria.
Department of Radiology, Abubakar Tafawa Balewa Teaching University, Bauchi, Nigeria.

E-mail: mattosky1212@yahoo.com
aishawaziri45@gmail.com
geostuffy@yahoo.com

Telephone: 08066740058*

ABSTRACT

The objectives of this study is to evaluate the adequacy of radiology request forms and to identify the column of information that is mostly omitted. This was a retrospective cross-sectional study. Three hundred and thirty nine request forms from conventional X-ray were retrieved for a period of January to December, 2014 by a convenient sampling. The information provided on each request form was recorded in a spread sheet and analyzed. Each slot is considered complete when there is information related to it. A blank slot was considered 0 (zero) while a completed slot was considered 1 (one). Data was analyzed using SPSS, frequency and percentages were obtained.

Of the 339 forms reviewed with a total of fifteen items, none were adequately filled holistically. The parts mostly filled are name, surname and sex with 100%, 99%, and 97%, respectively. The information frequently omitted is LMP, ambulant/non-ambulant (trolley) and Patients address with 2%, 12%, and 54%, respectively. The evaluated request forms revealed name and surname to be the most adequate slot while the last menstrual period has the most omitted field.

(Keywords: radiology, request forms, evaluation, adequacy)

INTRODUCTION

Radiology began shortly after X-ray was discovered by Conrad Rontgen in 1895. This gives medicine one of its most powerful and indispensable diagnostic tools. Mogumba (2011) estimated that about 30-50% medical decisions

are based on x-rays examinations. Today, radiology comprises different imaging modalities with both ionizing and non-ionizing radiations. Radiology request forms are essential communication tools used by hospitals and doctors referring patient for radiological investigations. (Akinola, *et.al.*, 2010 and Iruhe, *et. al.*, 2012).

Before any radiological examinations, a request is made by referring physician. This request is through the use of a properly designed form known as radiology request form. This form in addition to anatomical part needed also contains other essential details which must be provided to aid diagnosis of the patient. Although the number of performed radiological examination is on the rise, the majority of these examinations do not yield results that will alter or influence the course of clinical management (Mongomba, 2011). This could be due to different factors but according to Akinola *et al.*, (2010), there is evidence that adequate clinical information is more likely to assist the radiologist in constructing a report which will in turn help the referring doctor with management of the patient.

All studies reviewed shows that this is a global problem. It is on this basis that the researcher sought to find out the adequacy of completion of radiology request forms at University of Maiduguri Teaching Hospital, Borno State. A well designed radiological request form will provide more information, increase compliance of clinicians and enable better assessment of pretest probability necessary for the provision and reliable radiological services (Agwu and Okeye, 2005).

However, their importance is highly underestimated. The Royal College of Radiologists has periodically issued guidelines regarding the completion of radiology request forms, one of which states; Requests should be completed accurately and legibly to avoid any misinterpretation.

The Clinician is required to state the reason for referral as this helps radiologists to better understand the patient's clinical condition so that the required expertise maybe utilized to proffer the necessary information to aid appropriate patient management (Iruhe *et al.*, 2012). A well designed radiological request form will provide more information, increase compliance of clinicians, and enable better assessment of pretest probability necessary for the provision of good and reliable radiological services (Agwu and Okeye, 2005). However, no standardized format for radiological request forms is exhaustive.

Different organizations adopt personalized versions. The standard is that all radiology request forms received should contain the patient's name, age, sex, address, telephone number, ward, clinical background, the specific question to be answered, the name of the consultant responsible for the patient's care (Mohammed *et al.*, 2011).

The absence of patient's demographic data, contact details and incorrect information may cause serious errors even in identifying the patient. This may sometimes warrant a recall of the patient. The same may also apply when referring clinician cannot be contacted for further discussions about patient (Akinola *et al.*, 2010).

The role of radiographers in medical team is to help in making a diagnosis that will aid effective and concise management of the patient. This can only be achieved if the referring physician gives a detailed clinical history through a properly filled request form. Most often, radiology request forms are inadequately filled (Akinola, *et.al.*, 2010). The referring doctor is required to state the clinical information/indication of the patient as this helps radiographers to better understand the patient's condition and justifies the procedure. It is only by correct, accurate and comprehensive completion of request forms that patients will be provided with a better service (nursing times.com, 2009).

Therefore, the aim of this study is to audit the adequacy of completion of radiology request

forms received at different diagnostic center and to compare between the applied and the standard request form.

MATERIALS AND METHOD

This was a retrospective cross-sectional study. Three hundred and thirty nine request forms from conventional X-ray were retrieved by a convenient sampling from the archive unit of the radiology department, University of Maiduguri Teaching Hospital. The information provided on each request form was recorded in a spread sheet and analyzed. Each slot is considered complete when there is information related to it. A blank slot was considered 0 (zero) while a completed slot was considered 1 (one).

Data was analyzed using SPSS, frequency and percentages were obtained and result presented in Tables and Figure. Data was collected using a data capture sheet with column for radiology number, surname, name, sex, age, address, Last menstrual period (LMP), hospital number, ward/clinic, consultant-in-charge, clinical information, specific examination requested, mobility status, physician's signature, and consultant radiologist signature.

Ethical clearance was obtained from the ethical clearance committee of University of Maiduguri Teaching Hospital (UMTH).

LAYOUT OF DATA CAPTURE SHEET

The data capture sheet consisted of a heading showing the address of the University and the Department. The x-ray request forms contain the following fields.

- 1) Ward/ clinic
- 2) Consultant
- 3) Surname
- 4) Other names
- 5) Age
- 6) Address
- 7) Hospital no.
- 8) A/E or ANC No.
- 9) Sex
- 10) Last Menstrual Period (LMP)
- 11) Radiology no.
- 12) Walking, trolley, chair (Ambulant/non-ambulant)
- 13) Clinical information

- 14) Physician's signature, date
- 15) X-ray room no. type of films, size of films, no of films used and factors used.
- 16) Radiographers remark
- 17) Specific examination requested
- 18) Previous operations
- 19) Consultant Radiologist signature, date.

RESULTS

Of the 339 forms reviewed with a total of fifteen items, none were adequately filled holistically. The parts mostly filled are name, surname and sex with 100%, 99%, and 97%, respectively. The information frequently omitted is LMP, ambulant/non-ambulant (trolley) and patients address with 2%, 12%, and 54%, respectively.

Table 1: Adequacy of Completion of the Various Fields on the X-Ray Request Form.

S/N	FIELD	ADEQUATELY FILLED	INADEQUATELY FILLED
1	Radiology no.	257(75.8%)	82(24.2%)
2	Surname	338(99.7%)	1(0.3%)
3	Name	339(100%)	0(0%)
4	Sex	325(95.9%)	14(4.1%)
5	Age	315(92.9%)	24(7.1%)
6	Address	185(54.6%)	154(45.4%)
7	LMP	7(2.1%)	332(97.9%)
8	Hospital no.	242(71.4%)	97(28.6%)
9	Ward /clinic	262(77.3%)	77(22.7%)
10	Consultant in charge	248(73.2%)	91(26.8%)
11	Clinical information	329(97.1%)	9(2.7%)
12	Specific examination requested	334(98.5%)	5(1.5%)
13	Walking chair	42(12.4%)	295(87.0%)
14	Drs sign	320(94.4%)	19(5.6%)
15	Consultant radiologist sign	201(59.3%)	138(40.7%)

Table 2: Age Distribution for Patients Undergoing X-Ray Examination.

AGE GROUP	FRQUENCY	PERCENTAGE
0-9	24	7.1%
10-19	82	24.2%
20-29	77	22.7%
30-39	97	28.6%
40-49	14	4.1%
50-59	19	5.6%
60-69	5	1.5%
70 and above	7	2.1%
Not filled	24	7.1%

Table 3: Distribution of Various Examination Requested on X-Ray Request Form.

Examination Requested	Frequency/ Percentage
Elbow	2(2.5%)
Chest x-ray	28(35%)
Skull x-ray	7(8.75%)
Abdomen	10(12.5%)
Pelvis	7(8.75%)
Mandible	5(6.25%)
Forearm	3(3.75%)
Lumbosacral	1(1.25%)
Humerus	2(2.25%)
Cervical	2(2.25%)
Foot	1(1.25%)
Shoulder	1(1.25%)
Hip	2(2.25%)
Ankle	1(1.25%)
Femur	1(1.25%)
Knee	2(2.25%)

DISCUSSION

The radiology request forms are usually the only means of communication between a clinician and the radiologist, since there is little opportunity to discuss clinical cases and their management by both parties. However, additional information can be obtained by the radiologist or radiographer directly from the patient or by contacting the clinician. The best possible service provided to the patient only if a multi-disciplinary management approach is adopted by various teams involved in the management. It must be stated that inadequate request filling is a worldwide problem.

This study revealed a relatively high number of uncompleted fields in the radiology request forms. None of the cards analyzed was completely filled. The study is similar with that of the findings of Jumah, Gordon and Agahowa, (1995); Oswal, Sapherson and Rehman (2009), Akinola et al., (2010) and Irurhe et al., (2012) at Lagos University Teaching Hospital which all stated that none of the radiology request forms evaluated was completely filled.

These studies were slightly different from that of Despaquale and Crockford (2005) which revealed that 4% of the forms were completed in full. This researchers adopted different research method from this study and this could account for the differences in the result.

The most adequately filled slot in this study was patient's name in 100.0%. This is in line with

Irurhe et al., (2012) and Akinola et al., (2010) were name was completely filled in their studies in 100% respectively.

The commonest blank slots was Last menstrual period (LMP) with 97.9% which is in line with the study of Mohammed et.al. (2011) at the College of Medical Radiologic Sciences in Khartoum, Sudan where LMP is ignored on the request form in five governmental hospitals and one private center with 21.42%, 0%, 0%, 0%, 24%, 0%, and 4.3%, respectively. This may be due to negligence (not minding the consequences) in the part of the referring clinician and also because Radiologist and radiographers have not insisted on an adequately filled request form before proceeding with the examination. The above studies are contrary to the study of Rajanikanth (2014) in India which revealed that Last Menstrual Period slot was filled in 100% out of 200 request forms that were analyzed.

Secondly, the next most omitted slot in the study was mobility status with 87.0% not filled. Mobility status of patient prepares the radiographer for the selection of an appropriate technique.

The next most common blank field in my study also is patient's address slot with 45.4%. Which is in line with the study of Irurhe et al. (2012) at Lagos State University Teaching Hospital which revealed patient's address field was not completed in 261(87%) forms that were analyzed. The previous studies stated above are contrary from the study of Despaquale *et al.*,

(2005) with 77% of the forms correctly filled with patient's full address. Patient's address helps in recalling patient when there is absence of demographic data, and incorrect information which may cause serious errors even in identifying the patient.

Referring clinicians name were illegible and missing, physicians' signatures and consultant radiologists' signatures were missing in 26.8%, 5.6%, and 40.7%, respectively where majority of the fields were just signed while others had both names and signatures which is similar to the findings by Despaquale and Crockford, where less than half (40.0%) of clinician's names were illegible on the forms and also related with the study of Iruhe *et al.*, (2012) at Lagos University Teaching Hospital where referring clinician's name and signature were missing in four (1.3%) and seven (2.3%) forms, respectively. This is contrary to the findings of Cohen *et al.*, where the clinician's names were provided in 86% of forms.

According to the result of this study, specific examination requested, clinical information, ward/clinic and hospital number were missing in 0.6%, 1.5%, 0.3%, 22.7%, and 28.6%, respectively. Cohen *et al.*, (2006) study provided clinical information in 71% which is slightly similar to this study where clinical information provided was (97.1%).

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