

# Radiology request forms: are they adequately filled by clinicians?

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## Abstract

The role of the radiologist in a medical team is to help in making a diagnosis that will aid in an effective and concise management of the patient. This can only be achieved if the clinicians give a detailed clinical history through a properly filled request form. This study was conducted to assess the adequacy of filled request forms in a tertiary health institution. One hundred and forty four request forms with 145 requests for computed tomography scan (CT scan) and Magnetic Resonance Imaging (MRI) received at the diagnostic centre in a teaching hospital were studied for completeness. There were 138 (95.2%) CT scan and 7 (4.8%) MRI requests. Only the surname and examination requested were filled in all cases. About 95.8% of the addresses were not filled. Although patients' ages were provided in 90.3% of cases, 74 (57.0%) of them were only written as figures. Though clinical history was given in almost all patients, only 26 (18.2%) were detailed. Abbreviations which are not universally acceptable were used in all the forms. The study findings revealed that, radiological request forms are often inadequately filled. It is important that clinicians be educated on the value of correctly filling request forms.

## INTRODUCTION

Radiology request forms are essential communication tools used by doctors referring patients for radiological investigations (1). Its importance is highly underestimated. The Royal College of Radiologists clearly suggests that all forms should be adequately and legibly completed to avoid any misunderstanding that may arise (1). The clinician is required to state the reason for referral as this helps radiologists to better understand the patient's condition; so that the required expertise may be utilized to proffer the necessary information to aid proper patient management. However, no standardized format for radiology request forms is available. Different organizations adopt personalized versions.

The standard is that all request forms received should contain the patient's name, age, address, telephone number, ward, clinical background, the specific question to be answered, the name and signature of referring clinician and the name of the consultant responsible for patient's care(1).

Previous studies in literature have shown that up to 20% of radiographic examinations are clinically unhelpful (2) because they were either not appropriate or the request was wrong ab initio. Filling of the request form adequately and in details is therefore paramount to helping the radiologist give

less clinically unhelpful radiographic examinations and concise radiological diagnosis (2). It also indirectly helps to shorten the investigation time and improve the quality of service offered to the patient. It aids the radiologist to determine the justification for radiation exposure and the conformity of these requests to the Royal College of radiologists (RCR) guidelines. Radiologists can only justify exposure when enough clinical history is given.

The aim of this study is to audit the adequacy of completion of CT scan and MRI request forms received at the diagnostic center of this tertiary institution.

## MATERIALS AND METHODS

A total of 144 consecutive request forms, for CT and MRI were gathered and reviewed over a period of 3 months (June to August 2009), to assess the completeness of filling of the forms, details provided, use of abbreviations and the usefulness of clinical information given to the radiologist. The forms came from different departments, wards, outpatient clinics, general practitioners and specialists. The data was collated entered into a spread sheet and processed manually.

## RESULTS

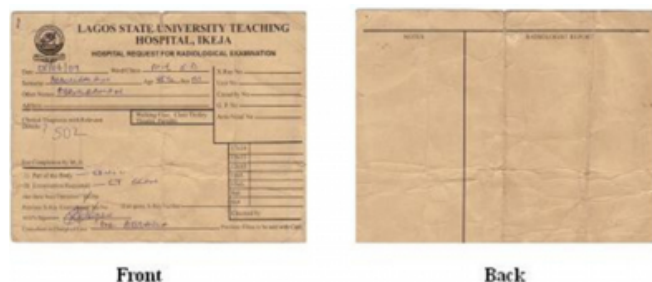
A total of 138 (95.2%) CT scan and 7 (4.8%) MRI requests

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from 144 request forms were received, Fig 1.

### Figure 1

Figure 1: Sample of the request form used



Four (3.0%) of the cards had no information on the specific part of the body to be examined requested. For CT scan, the commonest request was for the brain, 58 (42.0%), whilst the least were one (0.7%) each of sinuses, neck and skull. One of the cards requested for a CT of both head and neck, (Table 1).

### Figure 2

Table 1: EXAMINATION REQUESTED

EXAMINATIONS REQUESTED	CT SCAN		MRI SCAN	
	No.	%	No.	%
<b>NO SPECIFIC PART REQUESTED</b>	4	( 3.0)	-	(0.0)
<b>CHEST</b>	4	( 3.0)	-	(0.0)
<b>ABDOMEN</b>	21	(15.2)	-	(0.0)
<b>BRAIN</b>	58	(42.0)	-	(0.0)
<b>CRANIUM</b>	37	(26.8)	1	(14.3)
<b>HEAD</b>	3	( 2.2)	-	(0.0)
<b>SKULL</b>	1	( 0.7)	1	(14.3)
<b>SINUSES</b>	1	( 0.7)	-	(0.0)
<b>SPINE</b>	4	( 3.0)	2	(28.6)
<b>NECK</b>	1	( 0.7)	3	(42.9)
<b>ANGIOGRAM</b>	4	( 3.0)	-	(0.0)
<b>TOTAL</b>	<b>138</b>	<b>100</b>	<b>7</b>	<b>100</b>

All cards received were incompletely filled. Almost all of them had the names of the patients filled, except two (1.4%), where the column for the "other names" was not filled. Only 130 (90.3%) of them had their ages filled, though 13 (10%) were filled as "A" (Adult) and 74 (57%) did not indicate the unit of measurement in terms of years, months or days. Out of the 6 (4.2%) addresses filled only 3 (50%) were fully filled, while 138 (95.8%) addresses were not filled at all, (Table 2).

### Figure 3

Table 2: INFORMATION ON BIODATA

INFORMATION FIELD	YES		NO	
	No.	%	No.	%
<b>DATE</b>	142	(98.6)	2	(1.4)
<b>SURNAME</b>	144	(100.0)	-	(0.0)
<b>OTHER NAMES</b>	142	(98.6)	2	(1.4)
<b>ADDRESS</b>	6	( 4.2)	138	(95.8)
<b>In full</b>	3	(50.0)	3	(50.0)
<b>WARDS/CLINIC</b>	133	(92.4)	11	(7.6)
<b>SEX</b>	143	(99.3)	1	(0.7)
<b>AGE Filled</b>	130	(90.3)	14	(9.7)
<b>Properly filled</b>	43	(33.1)		
<b>Filled as Adults only ("A")</b>	13	(10.0)		
<b>Filled without Y, M, D</b>	74	(57.0)		

The date was not filled for 2 (1.4%) patients whilst all but one (99.3%) of the sex column was filled. Eleven (7.6%) of the wards / clinic column were not filled, (Table 2).

Although 143 (99.3%) of clinical history were filled, only 26 (18.2%) of these were filled in details. In one particular instance, (0.7%), the clinical history was totally absent. Clinical history with referring doctor asking specific questions occurred in 59 (41.0%) cases and all these received reports that addressed the questions. In Eighty five (59.0%) of the forms, no specific questions, were asked to help the radiologist address the clinicians concern. Less than 2% of forms indicated whether the patient was ambulant or not, (Table 3).

### Figure 4

Table 3: ADDITIONAL INFORMATION

INFORMATION FIELD	YES		NO	
	No.	%	No.	%
<b>AMBULATORY</b>	2	(1.4)	142	(98.6)
<b>PART OF THE BODY</b>	134	(93.1)	10	(6.9)
<b>EXAMINATION REQUESTED</b>	144	(100.0)	-	(0.0)

The part of the body to be examined was filled in the majority (93.1%) of cases and specific examination requested was stated in all cases, (Table 3). History of previous operation or x-ray test was provided in the request forms in 14.6% and 11.1% cases respectively, though none

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of the previous x-ray numbers was written, (Table 4).

**Figure 5**

Table 4: PAST RADIOLOGICAL AND SURGICAL HISTORY

INFORMATION FIELD	YES No.	%	NO No.	%
X-RAY NUMBER	-	(0.0)	144	(100.0)
PREVIOUS X-RAY	16	(11.1)	128	(88.9)
PREVIOUS X-RAY NO.	-	(0.0)	144	(100.0)
PREVIOUS FILM TO BE SENT WITH CARD	-	(0.0)	-	(0.0)
PREVIOUS OPERATION	21	(14.6)	123	(85.4)

The referring officers’ signature was seen in 81 (56.3%) cases. The names of the consultant in charge were given in most (97.2%) of the cases, (Table 5).

**Figure 6**

Table 5: HEALTH PERSONNEL INFORMATION

INFORMATION FIELD	YES No.	%	NO No.	%
CONSULTANT IN CHARGE	140	(97.2)	4	(27.8)
MEDICAL OFFICER’S SIGNATURE	135	(93.8)	9	(6.3)
Written as name only	33	(24.4)		
Written as signature only	81	(60.0)		
Written as both name and signature	21	(15.6)		

Interestingly, the clinical diagnosis was given only in 2 (1.4%) patients, (Table 6).

**Figure 7**

Table 6: CLINICAL INFORMATION N= 144

INFORMATION FIELD	YES No.	%	NO No.	%
CLINICAL HISTORY	143	(99.3)	1	(0.7)
<u>Detailed history</u>	26	(18.2)	117	(81.3)
CLINICAL DIAGNOSIS	2	(1.4)	142	(98.6)
RADIOLOGISTS’ REPORT	144	(100)	-	(0.0)

In the radiographer’s column for number and sizes of the x-ray film used, only 8 (5.6%) were filled, albeit inappropriately. Furthermore, less than 1% of the radiographers signed at the designated location, (Table 5).

All the forms had abbreviations especially in the field of the wards/ clinic, the age, sex and clinical diagnosis with relevant details. The request forms were devoid of telephone numbers of both the clinician and patient

**DISCUSSION**

The radiology request cards 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 is provided to the patient only if a multidisciplinary approach is adopted by the various teams involved in the management (1). It must be stated that inadequate request form filling is a worldwide problem (1).

The absence of patient’s demographic data, contact details and incorrect information may cause serious errors even in identifying the patient. This might sometimes warrant a recall of the patient. The same may also apply when the referring clinician cannot be contacted for further discussions about the patient. The Royal College of Radiologists suggests that all radiologists’ reports should address the question posed by the referring doctors (1, 3), as was seen in 41% of cases in this study.

This can only be achieved by increasing the awareness of referring clinicians on the need to ask specific questions and to provide full clinical details to aid radiological diagnosis. Moreover, it tends to serve as a guide for radiologists to decide the appropriate radiological investigations and to limit patient exposure to unnecessary radiation which may be harmful (1, 2, 3). Subsequently, the final differential diagnosis is reached by combining the radiological findings with the clinical picture.

Though the individual risks are not large, the increasing exposure to radiation in the population may be a public health issue in future (4). Considering that by its nature, CT involves larger radiation doses than the more conventional x-ray imaging procedures, and thus the consequent cancer risks in adults and especially in children (4), the radiologist is able to prevent unnecessary radiation as much as possible.

There is evidence that inadequate clinical information is associated with increased level of inaccurate report; while accurate clinical information is more likely to assist the radiologist in constructing a report which will in turn help the referring doctor with the management of the patient(5). This study has shown that requests which asked specific questions through a detailed clinical history had their questions addressed and was more helpful to the clinician. However, these were much less than those which did not ask

specific questions Table 3.

Similar to the findings by Depasquale and Crockford, (1) who claimed that only 4% of forms were fully filled, none of the forms in this study was fully filled. In their study, all the names and surnames were filled as opposed to the present study. Only 3 (2.1%) addresses were fully filled in this study, contrary to the findings by Depasquale and Crockford who found 77% fully filled addresses in their study(1). This study revealed that less than 20% of the clinical history was detailed, in keeping with the findings by Depasquale and Crockford, (1) and only 41% asked specific questions that need to be addressed by the radiological examination in the present study. The examination was actually able to give a conclusive answer to the questions asked in all these cases. This can be compared to the findings by Nedumaran who claimed that radiological reports explicitly addressed the questions in 91.3% of hospital reports, 90% of A&E reports and 85.7% of GP reports (3).

Unlike Cohen et al, (6) who provided clinical indication in only 71% of the request forms, it was given in all cases in this study; while the clinical diagnosis was only given in 1.4% cases. Ninety seven percent of the consultant in charge was filled in, similar to the findings by Depasquale and Crockford, (1) and less than half (40.0%) of the medical officer's identification were legible on the forms in the present study. This is however much less than findings by Cohen et al, (6) where the medical officer's names were provided in 86% cases. In this study, approximately 24.4% of these were written as names, 15.6% as names and signature while the majority, 60% of them just signed.

All the forms had abbreviations especially in the fields of the wards/clinic, the age and clinical diagnosis with relevant details. Most abbreviations used were often not universally accepted ones, such as SOL(space occupying lesion), CVA (cerebrovascular accident), MVA (we do not know what this means), MCA (middle cerebral artery), CVD (chronic vascular disease), CLD (chronic liver disease), PLCC (Primary liver cell carcinoma), AVM (arteriovenous malformation), NPC (nasopharyngeal carcinoma), TIA (transient ischemic attack), CN (cranial nerve), HT (hypertension), CA (carcinoma), RIF (right iliac fossa), LOC (we do not know what this means), Outp<sub>x</sub> (outpatient), D<sub>z</sub>

(disease), A (adult), R (right), L (left), Lt (left) , RE (right eye), R/o (rule out), 2 (secondary), Paed. (pediatrics), Surg. (surgery), ? (query), # (fracture).

### **CONCLUSION**

There is ample room for a change in the attitude of clinicians in filling a radiology request form. It is essential that a detailed clinical history is provided to enable informed judgment on patient exposure to radiation.

Since the role of a radiologist is to aid other colleagues in reaching their diagnosis and provide appropriate treatment of the various conditions in cases of interventional radiology, it is important that radiologists be furnished with adequate information when the request forms are filled.

### **RECOMMENDATIONS**

There is need

1. To design and provide a request proforma with a view to obtaining good clinical information, which will include telephone numbers.
2. For Continuing Medical Education forum targeting all stakeholders
3. For a review of all radiology request forms by a radiologist to avoid unnecessary radiation

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