ORIGINAL ARTICLE

ANALYSIS OF THE ADEQUACY OF RADIOLOGICAL REQUEST FORM COMPLETION: A MULTICENTRE EVALUATION

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ABSTRACT

BACKGROUND AND AIM: Radiology request forms (RRFs) are clinical documents that state the patient's biodata, requisite investigation, justification for the investigation and identities of the referring clinician. The aim of the study is to determine the rate of inadequacy in completing the radiology request forms in order to create awareness on the import of the information on the medical request forms amongst the clinicians. **METHODS:** This was a descriptive study designed to measure the compliance of the referring clinicians in completing the radiology request forms. Radiology request forms were collected from the radiology department of the three largest public hospitals in our locality over five consecutive years and the rate of completion of each field in the request forms were analysed. **RESULTS:** The least completed field in the patients' biodata are patients' address, folder number, phone number and last menstrual period(LMP) which are 35%,19%, 10 and 50.6% respectively for hospital A, and 23%, 1%, 2.5% and11.5% for hospital B. Folder number and LMP were not enlisted in hospital C request forms. Clinical details, date, patient's name and surname have the highest completion rate in the three hospitals. Of the clinician's details, the resident/doctor's phone number is the least completed. **CONCLUSION:** There is general deficiency in adequate and complete filling of the request forms for radiological investigation in all the three major public hospital in our locality. Patient management should be seen as team work and all impediments should be removed to facilitate proper patient's management.

Key words: Request form, Clinician, Radiology, Surname, Hospital.

Introduction

Radiology request forms (RRFs) are clinical documents that state the patient's biodata, requisite investigation, justification for the investigation and identity of the referring clinician. In a hospital setting with computerized record system, these information are digitally entered by a referring clinician and passed to the radiologist or radiographer designated as the radiological practitioner. However in settings like ours where the record system is not computerized, the patient carries the request form to the radiological practitioner; in effect the radiology request forms (RRFs) are essential means of communication between the referring clinicians and the radiological practitioners on the patient's case.

The design of the request form should be such that information obtained are enough to justify the study. And should conform to the guidelines by Royal College of Radiologist and ionizing Radiation (Medical Exposure) Regulation.[1,2]

The referring doctor is responsible for the collection of all diagnostic information that justify the requested radiological investigations as well as information about previous exposures.[2] These information are sent to the radiologist via the RRFs. Incomplete and inappropriate request for radiological investigations is a wasted exercise and creates scope of errors with

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resultant unnecessary repetition of investigation and radiation exposure to the patient.[3]

A detailed and thorough radiology report is a vital component of the communication between the radiologist and the ordering physician, culminating in providing vital information to the physician for proper patient treatment.

Inadequate information can lead to mistakes in patient identification and delay in returning of reports for patient's management and can reduce the value of the report. All request forms have clearly marked fields, for ease of completion by requesting clinicians as well as ample space for pertinent clinical history which must be completely filled by the clinician before the investigation is carried out.

Over the years, radiologist in our institution (including the authors) have observed that vital information which may be necessary for smooth reporting of the radiological investigations and making proper diagnosis were lacking from the request forms; especially as they do not have direct contact with the patients before some of the investigations were carried out which would have enabled them elicit more information from the patients. We also noted that similar observations had been reported in literatures.[4,5,6,7] Due to these difficulties encountered by radiologist in our centre with some of these inadequately filled forms in reaching a comprehensive diagnosis, an audit study was conducted in our centre to assess this inadequacy,[8] however this study was not comprehensive as it failed to assess all the information in the radiology department request form for our institution which are very vital in patients' evaluation radiologically. In view of these we set out to analysis request forms submitted to the radiology department of the three major public hospitals serving our local area with the aim of determining the rate of inadequacy in completing the radiology request forms in our locality in order to create awareness on the import of the information on the medical request forms amongst the clinicians.

Materials and Methods

This was a descriptive study designed to measure the compliance of the referring clinician's in the completion of the radiology request forms.

Radiology request forms were collected from the radiology department of the three largest public hospitals in our locality.

Using stratified random sampling, for each imaging modality available in the hospital, 10 cards were collected from each year for five consecutive years, 2011- 2015. The three hospitals were represented with the alphabets A, B & C. There are 4 imaging modalities in hospital A & B (conventional x-ray, computed tomography (CT), magnetic resonance imaging (MRI) and ultrasonography) while hospital C has only two modalities (conventional x-ray and ultrasonography). Two hundred forms were retrieved from hospital A & B but only one hundred forms from hospital C. These gave a total of 500 forms for analysis. The data was collated for each modality and for the different hospitals separately. Each form was assessed for completeness of the fields. A field is taken as completed when something is written in the field and a score of 1 (one) is assigned to each completed field. A blind field is assigned a 0 (zero). The total score is based on the number of fields on the request forms

The inclusion criteria was for any radiology request form for radiological investigation performed in the respective hospitals and request made by a qualified clinician practicing in the hospital.

Exclusion criteria was for any request not made on proper radiology request forms of the hospital. Also excluded were mutilated request forms.

This study does not involve human subject directly and there was no assessment of patient's disease entity, hence no institutional ethical approval was required.

The data was analysed using statistical package for social sciences (SPSS version 20) for windows. The results were presented in form of tables and text.

Results

We did not evaluate the appropriateness of the responses to the details on the request forms. The use of unconventional abbreviations were common especially for age and clinical information or diagnosis. The least completed field in the patient's biodata are patients' address, folder number, phone number and last menstrual period (LMP) which are 35%, 19%, 10% and 50.6% respectively for hospital A, and 23%,

Biodata information	CT	MRI	USS	CX-Ray	Total (%)
	Filled	Filled	Filled	Filled	
Date	48	49	50	50	197(98.5)
Ward/Clinic	50	46	50	50	196(98%)
Age	50	48	50	47	195(97.5%)
Gender	50	50	49	49	198(99%)
Surname	50	50	50	50	200(100%)
Other names	50	50	50	50	200(100%)
Home address	20	28	10	12	70(35%)
Patient's phone no:	4	9	3	4	20(10%)
Folder no:	4	26	10	11	38(19%)
Physical state/mobility	20	9	13	12	54(27%)
LMP(only females)	5/15	2/7	16/32	16/23	39/77(50.6%)
Clinical information	50	50	50	50	200(100%)
Exam required	50	50	50	50	200(100%)
Allergies	7	6	2	3	18(9%)
Previous x-rays	9	6	2	3	20(10%)
Previous operations	7	7	2	3	19(9.5%)
Resident's name.	47	41	45	43	176(88%)
Resident's signature	47	36	40	39	162(81%)
Resident's phone no:	3	2	2	5	12(6%)
Consultant's name	47	39	41	39	166(83%)

Table 1: Frequency of completion of the radiology request forms details in hospital A

Request form details	CT	MRI	USS	CX-Ray	Percentage filled
	Filled	Filled	Filled	Filled	
Date	49	48	47	48	192 (96%)
Ward/Clinic	37	33	45	39	154 (77%)
Age	49	43	41	46	179 (89.5%)
Gender	49	49	48	50	196 (98%)
Surname	50	50	50	50	200(100%)
Other names	50	50	50	50	200 (100%)
Home address	8	16	10	12	46 (23%)
Patient's phone no:	3	0	2	0	5 (2.5%)
Folder no:	0	0	2	0	2 (1%)
Physical state/mobility	8	3	4	6	21 (10.5%)
LMP	0	3/18	17/37	3/18	23 (11.5%)
Clinical information	50	50	50	50	200 (100%)
Exam required	50	50	50	50	200 (100%)
Allergies	5	3	3	2	13(6.5%)
Previous x-rays	5	3	3	2	13 (6.5%)
Previous operations	5	3	3	2	13 (6.5%)
Resident's name	33	28	37	38	106 (53%)
Resident's sign.	36	32	37	41	146(73%)
Resident's phone no	0	0	0	0	0(0%)
Consultant's name	41	30	36	33	140 (70%)

Table 2: Frequency of completion of radiology request forms details in hospital B

1%, 2.5% and11.5% for hospital B. Folder number and LMP were not enlisted in hospital C request forms and for patient's address only 4% were filled (Tab. 1, 2 & 3). Ward/clinic and gender were also found to have very low completion in hospital C, 43% and 14% respectively (Tab. 3).

Request form details	USS	CX-Ray	Percentage filled
	Filled	Filled	
Date	50	47	97(97%)
Ward/clinic	29	14	43(43%)
Age	46	45	91(91%)
Gender	8	6	14(14%)
Surname	50	50	100(100%)
Other names	50	50	100(100%)
Patient's address	0	4	4(4%)
Clinical information	45	43	88(88%)
Exam requested	50	50	100(100%)
Doctor's name	48	41	89(89%)
Doctor's signature	21	20	41(41%)
Doctor's phone no:	0	0	0(0%)

Table 3: Frequency of completion of the radiology request form details in hospital C

Clinical details, date, patient's name and surname have the highest completion rate in the three hospitals (Tab. 4) but past surgical and radiological history was very low in hospital A and B (Tab. 4 & 5). These were not enlisted in hospital B request form.

Of the clinician's details, the resident/doctor's phone number is the least completed, only 6% in hospital A and zero in hospital B and C. The doctor's name and signature had better response in hospital A.

Request form details	Percentage of request form completion (%)		
	Hospital A	Hospital B	Hospital C
Date	98.5	96	97
Ward/clinic	98	77	93
Age	97.5	89.5	91
Gender	99	98	66
Surname	100	100	100
Other names	100	100	100
Patient's address	35	23	4
Clinical information	100	100	88
Exam requested	100	100	100
Doctor's name	88	53	89
Doctor's signature	81	73	41
Doctor's phone no:	6	0	0

Table 4: Comparing the degree of completion of the radiology request forms in the three hospitals

Request form details	Percentage of completion	
	Hospital A	Hospital B
Date	98	96
Ward/clinic	98	77
Age	97.5	89.5
Gender	99	98
Surname	100	100
Other names	99.5	100
Patient's address	35	23
Patient's phone no:	10	2.5
Folder no:	19	1
Physical state	27	10.5
LMP(females)	19.5	11.5
Clinical information	100	100
Exam requested	100	100
Allergies	9	6.5
Previous operation	10	6.5
Previous surgery	9.5	6.5
Resident's name	88	53
Resident's signature	81	73
Resident's phone no:	6	0
Consultant's name	83	70

Table 5: Comparing the degree of completion of the forms in the two tertiary institutions with resident training (A & B).

Discussion

Inadequate filling of the radiology request forms is a worldwide problem,[9] hence regular auditing is crucial in order to increase the awareness of referring clinicians on the import of the details in the radiology request forms and the need to adequately complete them to enhance radiological report and diagnosis. In this study non of the 500 cards evaluated were completely filled, this is in keeping with previous studies[5,10,11] except few which reported 4%,1.3% completion.[4,10]

In medical record, patient's biodata is very essential for patient's identification. This study reveals that among the three hospitals, patient's address is the least completed with rates as follow 35%, 23% and 4%. The address of patient is necessary for some reasons, where an out patient needs to be recalled or if in the course of investigation, something goes wrong with the patient and there is need to contact the relations. Similar finding was reported by previous researchers who showed that only 13%,[10] 5.6%[4] of the request forms were completed.

Deficiency in completion of the folder number, patient's phone number, physical state/ mobility and last menstrual period was also noted in hospital A and B which listed them in their request forms. These information were lacking in hospital C request forms and this is a very important omission, as the amount of information in the radiology request form determines the effectiveness of the department. The biodata serves as a guide for radiologist to decide the appropriate radiological investigations and limit patients, exposure to unnecessary radiation which may be harmful.[9] Knowledge of the last menstrual period of a female patient helps in determining if there is risk of an existing pregnancy which could face the danger of radiation especially for computed tomography and conventional radiography. It is quite pathetic that in this study and previous studies[12,13] LMP is one of the aspects of the request form that is commonly ignored, it was found not recorded for all cases of CT in hospital B and not listed in the requested form for hospital C. Similar observation was made in Sudan in evaluation of radiology request forms in seven centres, four had zero percent for filling in for LMP.[12]

The ward or clinic from which a patient is referred is important in identifying and recalling the patient. It enables locating the patient and eliciting more information about the patient. It also makes it possible to obtain the patient's folder and make enquiries about the attending clinician. It may help in envisaging the severity of the patient's illness and consider necessary adjustments in the radiological investigation. In as much as this field is important in the request forms most clinicians ignore it while filling the request forms. Only 77% was recorded in hospital B and 43% in hospital C, The rate was encouraging in hospital A (96%). The high rate in hospital A may be due to its highly specialized departmental and unit system of a University training tertiary institution.

Similar to the observation in previous studies,[4,10,14] we recorded 100% completion of patients' name and surname. The clinical information or diagnosis as well as the investigation requested were completely filled in two of the hospitals (A & B), for hospital C only 88% of the forms were completed for clinical information; similar findings have been reported in previous studies were only 86.90%,[13] 65.9%[15] of the forms were completed for clinical information. Not giving the clinical information about a patient undergoing radiological investigation is not acceptable as this

information is relevant in justification of the requisite investigation as declared by the Regulation of the Department of Health, UK on medical ionizing radiation.[2] It has been stated by previous studies that inadequate or uncertain clinical information is responsible for increased level of irrelevant report from radiologists.[16] The radiologist report are expected to answer specific question and this wouldn't be possible if the referrer fails to specify a clinical question.

Information on previous surgery, previous x-rays and allergies were not given in most of the cases in hospital A & B and was not included in hospital C request form. These information are important because previous surgery in the area of interest may have caused anatomical changes that may be erroneously attributed to a lesion, similarly history of allergy especially where contrast medium and some other pharmaceuticals were to be used are very important in averting a dangerous reaction. A record of all the previous exposures is important in order to avoid repeat. It is also required for comparison in follow up cases.

Clinician's details are areas we found in this study to be inadequately filled. It is important to know the consultant in charge of the patient as well as the resident doctor working with the consultant in a training institution who in most cases refers the patients for investigation. Their signature is important especially for medicolegal reasons, because an impersonator could fill a form and write a doctor's name but wouldn't be able to sign the signature correctly, hence the doctor's signature authenticates the request. The requesting doctor's phone number is necessary for contacting the doctor and eliciting more information about the patient or for giving feedback, especially where urgent attention to patient's condition is required. As important as the doctor's phone number is for ease of communication, it was not included in hospital C request forms and this will create communication difficulty and a dislocation to the idea of managing the patient as a team which gives better patient outcome. In this era of GSM (Global System for Mobile communication) which had made communication easy, all medical request should include requesting clinician's phone number for easy communication in the hospital environment.

Conclusion

There is general deficiency in adequate and complete filling of the request forms for radiological investigation in all the three major public hospitals in our locality. This will have effect in the overall management of patient as there may be delay in carrying out the investigation or writing up report on the images. Patient management should be seen as team work and all impediments should be removed to facilitate proper patient's care.

Recommendations

Seminars and workshops should be organized for clinicians to enlighten them on the importance of the request forms details and the need to complete them adequately. Orientation courses on completion of request form should be organized for house officers and resident doctors as they begin their training. All request forms should contain basic information about the patients and clinicians to enable the radiologist know the patient and able to commu-nicate with the clinicians with ease. Poorly filled forms should be returned to the clinicians with note on rea-son for rejection.

Limitations

The limitation in this study is our inability to compare some of the data in the forms as the three hospitals do not share similar information in the request forms.

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