SciMedCentral

Journal of Radiology & Radiation therapy

Research Article

Audit of X-Ray Requisition form at Tamale Central Hospital, Ghana

Asare HK*

X-ray unit, Tamale Central Hospital, Ghana

***Corresponding author**

Asare HK, X-ray Unit, Tamale Central Hospital, P. O. Box TL 2649, Tamale, Ghana, Tel: 233200876050; Email: nkwabrodo@yahoo.com

Submitted: 29 December 2017

Accepted: 13 April 2018

Published: 15 April 2018

ISSN: 2333-7095

Keywords

- Clinical audit
- Radiology request form
- Ghana

Abstract

Aim: To assess the extent to which x-ray request forms referred to the x-ray unit of the Tamale Central Hospital are filled by referring practitioners.

Methods: 189 x-ray request forms were audited. The research was conducted between October 2017 and December 2017. Each request form was thoroughly assessed for completeness or adequate filling of information provided by referring practitioners. The components of information on the form included: patient demographic data, brief clinical history, date of requested examination, investigation required, x-ray serial numbers, and referring practitioner details (see appendix 1). The data was processed and analyzed with Microsoft excel 2013. The result is summarized in Table 1. The study received approval from the hospital's regional health directorate, and patient anonymity was ensured.

Results: The x-ray serial number and previous serial number/ previous exams details fields in the request form were not filled at all in 100%. Also, 97% of referring practitioners did not fill-in their station/address.

Significant number of the forms (31% and 39%) did not have the ages and wards of patients completed respectively.

Furthermore, other fields were partly completed; brief clinical history 143 (76%), referring practitioner name 163 (86%), date of requested investigation 172 (91%), radiological investigation requested 186 (98%), patient's name 188 (1%).

Conclusion: Practitioners who refer patients for x-ray at the Tamale Central Hospital do not thoroughly complete the request form. This emphasizes a need for the radiographers who review the x-ray request forms to engage the referrers in regular education to improve or change the habit. Aside, some fields of the request form may require update and revision.

INTRODUCTION

Clinical auditing implies measuring clinical outcome or process against a standardized criteria. Such practice is useful to identify causes of lapse(s) in service delivery, so that change can be effected or implemented to improve the quality of services [1]. Among the three principal elements of clinical audit, the pre-analytical phase, of which the filling-out of diagnostic requisition form relates, causes more errors in clinical outcomes than the remaining phases (analytical and post-analytical) [2,3].

Per the periodic guidelines of the Royal College of Radiologists, x-ray request form (XRF) must at all times be completed accurately, legibly and fully to avoid any misleading interpretation [4,5].

Though different settings adopt personalized versions of request forms [6] nonetheless, all XRF should contain standard and essential clinical information. These should include; patient bio data (name, age, sex), hospital folder number, patient ward, telephone number and address, clinical history/diagnosis, specific question to be answered and referring practitioner's information (name, signature) [5-8].

In some facilities or settings the request form may be digitalized or computerized [9,10] however, at the Tamale Central Hospital (TCH) a paper format is used.

The XRF is an essential medico-legal document through which referring practitioners communicate to radiology staff, such as radiographers about patient clinical condition(s) and other essential patient clinical data [11]. The information assist radiographers to understand the patient so that the required expertize can be maximized during the imaging processes [7].

Completing the XRF is important in many ways. It indirectly helps to reduce investigation time and improve quality of care given to the patient. It also help radiographers to avoid

giving less clinically unhelpful radiographic examinations and to give concise radiological diagnosis. Additionally, it guides radiographers in justifying radiation exposures in the quest to minimizing unnecessary radiation dose to patients [6,12,13].

Failing to completely fill-out all the fields of the XRF may lead to; unnecessary patient exposure to ionizing radiation, patient identity difficulty that could implicate mixing-ups of results to wrong patients or referrers (other than the referring practitioner), delay communications with the referring practitioner- importantly where critical results needs to be conveyed promptly. Other implications include; tendencies of misdiagnosis, increase cost of treatment, interpretation errors, limitation for radiologists and radiographers to give an appropriate report, waste of time and money of the patient and hospital [10,11,14,15].

Studies in some healthcare institutions have reported problems of incomplete and inadequate completion of request forms submitted to diagnostic investigation departments [4,7,9,15], however, no such research has ever been conducted in any x-ray facility in Ghana to examine our own local practice situation of completion of XRFs. Therefore, this current study seeks to assess the extent of referrers completion of XRFs presented at the x-ray unit of the TCH. The study is anticipated to provide valuable insight which may be useful to inform critical recommendations to improve the current practice of requesting for enhancing patient care and experience.

MATERIALS AND METHODS

The research was a retrospective study carried out at the x-ray unit of the TCH. A total of two hundred and one (201) XRF were reviewed and assessed, covering the operational starting date of the x-ray facility up-to the study time (October 18th 2017-December 18th 2017). Twelve (12) requests on medication or drug prescription forms which mainly came from peripheral hospitals were excluded because they lacked standard entry fields to complete (see appendix 2), leaving one hundred and eighty nine (189) for the final audit. Each XRF was thoroughly scrutinized to check if the referring practitioner had completely supplied the required information details expected. The detail to fill consisted patient name and age, ward or address of patient, date of requested examination, radiological investigation requested, brief clinical history, x-ray serial number, previous x-ray serial number/previous exams details, requesting practitioner name and station/address. The data was processed and analyzed with Microsoft excel 2013 version. The outcome was summarized in raw numerical values and percentages, and presented in table format. The study received ethical clearance from the hospital's regional health directorate. Patients' names were not entered on the data spread sheet for statistical analysis, to maintain confidentiality and anonymity. A sample of the XRF from which the data was extracted can be found in the appendix 1.

RESULTS

One hundred and eighty nine (189) XRF were audited. Of these forms, 94% (177) came from the TCH while 6% (12) were from periphery or other hospitals.

Information on referrer's signature and extension telephone number, consulting room identity, patient hospital number, patient date of birth and gender are not enlisted on the form. The information that are captured on the request form are presented in Table 1, and shows the score rates of the areas of filled, and those not filled.

Table 1: Statistics of filling of radiograph request form (total number 189) by referring practitioners.

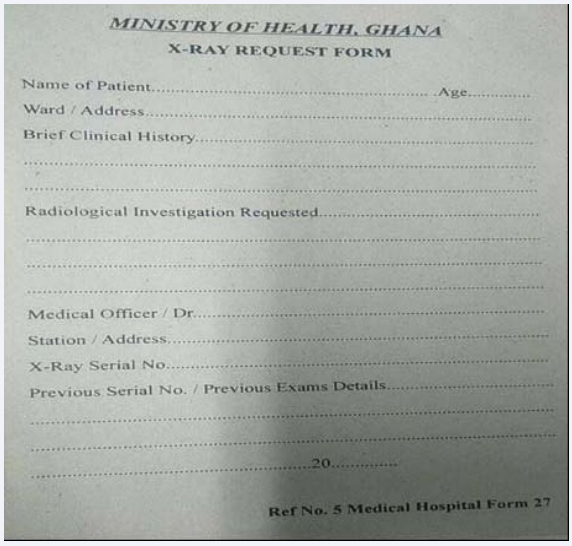
Information component	Filled	Not filled
Name of Patient	188(99%)	1(1%)
Age	131(69%)	58(31%)
Ward/Address	115(61%)	74(39%)
Brief clinical history	143(76%)	46(24%)
Radiological investigation requested	186(98%)	3(2%)
Medical Officer/Dr	163(86%)	26(14%)
Station/Address of referrer	5(3%)	184(97%)
X-ray serial number	0(0%)	189(100%)
Previous serial No. / Previous exams details	0(0%)	189(100%)
Date of examination request	172(91%)	17(9%)

Of the 189 forms, the names of patients were filled in 99% (188). On all the 189 XRF the referring practitioners did not fill-in the information on x-ray serial number and previous x-ray serial number/previous exams details. Also, only 3% (5) of the referrer's indicated their station/address on the form.

The date of the requested examination was completed in 91% (172) of the forms. Also, the brief clinical history and radiological investigation requested were supplied in only 76% (143) and 98% (186) respectively. 163 (86%) forms had referring practitioners indicating their names. The ages and wards of patients were not provided on 58 (31%) and 74 (39%) forms respectively.

DISCUSSION

Clinicians use imaging findings to inform medical judgement and appropriate treatment for patients. However, the quality of imaging findings lies substantially in the quality and adequacy of information that is communicated to the radiology workforce on the XRF regarding the patient [15]. According to the Ionising Radiation Medical Exposure Regulations (IRMER) 2000 of the United Kingdom (UK), a regulation which in principle of radiation protection is also used or applied in Ghana, requires that any clinician who may be requesting a radiological investigation provide sufficient and accurate clinical information so that the IRMER practitioner (i.e. radiographer) can determine whether the examination is appropriate and if radiation exposure to the patient can be justified [13]. Justification of radiographic examinations is the practice or process of evaluating requested radiological examinations to assess for; clinical merit and appropriateness or sufficient net benefit against risk of potential radiation exposure to the patient, based on clinical notes and patient information, with an overarching goal of avoiding unnecessary irradiation of patients. It suggests that in principle the radiographer must necessarily be aware of the patient clinical history/indication before the final decision to perform an examination for the patient is executed [13,16]. Thus, the clinical information helps the

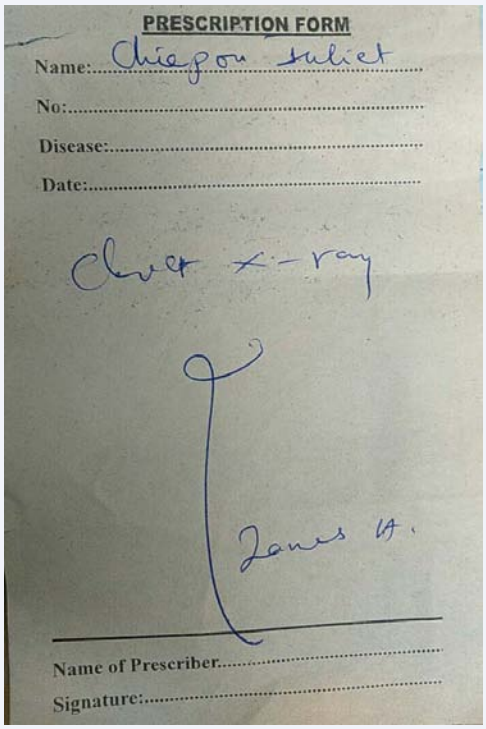


MINISTRY OF HEALTH, GHANA
X-RAY REQUEST FORM

Name of Patient.....Age.....
Ward / Address.....
Brief Clinical History.....
.....
.....
Radiological Investigation Requested.....
.....
.....
.....
Medical Officer / Dr.....
Station / Address.....
X-Ray Serial No.....
Previous Serial No. / Previous Exams Details.....
.....
.....
.....20.....

Ref No. 5 Medical Hospital Form 27

Appendix 1 Sample of x-ray request form (XRF) which referring practitioners complete.



PRESCRIPTION FORM

Name: Chiapou Juliet
No:.....
Disease:.....
Date:.....

Chest x-ray

James M.

Name of Prescriber.....
Signature:.....

Appendix 2 One of the twelve copies of prescription forms excluded in the audit.

radiographer to decide or determine which specific radiographic techniques (i.e. patient positioning and beam projections) should be adopted or applied to best investigate or answer the clinical question/indication or whether other imaging choices, i.e. non-ionizing modalities (magnetic resonance imaging or ultrasound) may be more suitable instead [16]. Both patient positioning and beam projections are fundamental pillars to accurate pathology or abnormality detections in imaging. For example if the XRF suggest a clinical information or history of suspected pleural effusion, the radiographer by this indication will know that postero-anterior (PA) erect position with horizontal beam projection, or a PA lateral chest decubitus (patient lying on the side and x-ray taken using a horizontal beam) will best demonstrate the suspected condition than any other positioning and projections, such antero-posterior or PA supine using vertical x-ray beams.

The current study sought to assess the extent to which the information on XRFs presented to the TCH x-ray unit were adequately filled by referring practitioners. The finding reviews that, some of the fields of the request form were never filled, whereas those attempted were partly completed.

As much as 39% of the wards where patients were referred from were left blank in the form. This value is higher than mentioned in the findings of [4,5,7] where referring wards were only absent in 1.7%, 5% and 31.2 % of the XRFs respectively. The relevance of knowing the ward of the patient would assist the radiographer in envisaging severity of patient's condition to prioritize services. Some wards are often associated with increasing critical cases and frailties than others. For instance patients from emergency, children and maternity wards may require prompt attention compared to patients of other ward categories. Also, knowledge about the patient ward is helpful for easy tracking and recalling of patient for either a repeat of procedure or eliciting more information, as well as for contacting staff of the ward in the event that something go wrong with the patient in the process of the examination.

Where the referring practitioners are required to register their client's name, 1% of the XRF was left uncompleted. This observation is inconsistent with previous studies [4,5,14] where the same category of information were completed in 100%. Similarly, the name of referring practitioners was not completed in 14% of the forms. This figure is higher than indicated in a previous research [4]. Both the names of patients and referrers is important for purposes of identification and contacts [15]. For instance, radiographers may be able to contact referrers and patients for further discussions when necessary; making communication between radiographers with patients and referring practitioners much easier.

Close to 98% of the requesters failed to indicate their stations/addresses on the XRFs. This outcome seem to be suggesting that the requesters might not be aware of the appropriate answers to supply. On the other hand, the percentage of the forms that were blank with dates of requested examinations were fewer (9%), and compares well with earlier reports [4,11].

Moreover, the fields where the referring practitioners are required to fill-in information on x-ray serial number and previous x-ray serial number/previous exams details were left blank in 100%. Literally from the result, it might be possible that the referring practitioners do not know exactly what must be written as x-ray serial numbers. Perhaps, assessing the knowledge or understanding of the referring practitioners on the serial number in another research may be more appropriate for concrete answer since it was beyond the aim of the current study to investigate that. However, the author of this study is also of the view that since the field of the x-ray serial number

is not a universal component it would be more laudable or of standard to replace such field with patient medical record number (patient folder number). Meanwhile the unavailable information about previous x-ray exam details can limit access and the opportunity to review previous radiographs and reports that can positively influence radiologic decision, and the privilege of avoiding unnecessary exposures that can increase collective radiation dose to a patient, especially where there is no net benefit for the patient undergoing the exposure [7,17]. The lack of these information on the XRF particularly regarding previous radiological details informs that there might be a systemic deficiencies in record keeping.

Surprisingly, records of majority of other radiological research works [4-6,10,12,15] cited in this current study did not have the x-ray serial number and previous serial number/ previous exams details enlisted in the request forms audited, except in only two studies [7,9], which listed previous x-ray details. Meanwhile, some of the fields that have been enlisted in most request forms in previous literatures, such as patient folder and phone numbers, last menstrual period (LMP), referrers signature, and patient gender [2,5,6,8,9, 11,15] are not found in the understudied TCH XRFs. Awareness of the LMP of a female patient helps the radiographer in determining if there is a risk of an existing pregnancy which could face the danger of ionizing radiation. It is unfortunate that in this current study LMP is not listed in the form, and been ignored.

Furthermore, the completion rate for the age component (69%) is poorer compared to earlier research outcomes [4,11] whereby 98% and 98.1% of the age fields were respectively completed. Nonetheless, the current completion rate is higher measuring with the outcome (29%) of another study [5]. Perhaps in addition to informing diagnoses, radiographers could utilize the patient's age and gender for research or survey especially on demographic related issues [14].

Additionally, the brief clinical history/diagnosis was filled in 76%. This is lower than the findings stated in previous studies [2,4,5,14]. Knowing the patient's brief clinical history will assist the radiographer or radiologist to decide on the best radiological technique, and subsequently combine the radiological findings with the clinical picture to reach final or tentative diagnosis [5,6]. Similarly, 98% of the forms were completed for investigation/ examination requested, however the completion rate is also lower compared to another study in which forms were filled in 100% [4].

Due to the current challenge of referring practitioners not always filling out their basic details such as address and names, and the fact that the current XRF does not have a field or space recording extension phone and telephone numbers of referrers, it becomes challenging for radiographers who review the XRFs and perform the examination to communicate and establish direct contacts with referrers for any onward discussions. As a result, radiographers at the current study site tend to seek any additional information directly from patients in scenarios where the XRFs presented lacks sufficient information, particularly if it regards patient specific details (i.e demographic information and clinical history), and proceed to perform the examination. Any of such further information the radiographers may obtain from patients are routinely recorded in the patient XRFs in red ink so to easily distinguish the radiographers' entries on the XRFs from that of the referrers, as has also been earlier advised that radiographers must place more emphasis on recording accurate patient data in order to justify decisions [16]. Advocates reiterate that clinical history taking should be given more serious consideration by radiographers as it offers benefits to justification, error prevention and clinical management of patients [16].

Perhaps, it is important to indicate that those information or data entered by the radiographers (in red ink) were not included in the analysis or results of this study as it would have distorted the results and aim of the study.

Generally, information provided on XRF help radiographers to get full clinical picture about the patient, and enhance the radiological process, including minimizing interpretation errors, possible complications, and reduce the time and financial wastages of patient [9,10].

Maybe, some other factors might account for the failure of requesters not adequately completing the XRF.

Probably, the overwhelmingly high patient- clinician ratio in Ghana tend to overburden clinicians with increased workload [18], and is further complicated with the fact that, attendances of patients to hospitals in Ghana is mainly a walked-in service. Therefore clinicians do not have a predetermined knowledge and direct control over the number of attending patients. These impact negatively on the time consulting clinicians devote to patients. Hence, clinicians are likely to regard it a waste of time to thoroughly complete every detail in the XRF instead of hasting to clerk the huge number of patients in the waiting area.

Also, it may be because radiographers compromise to perform examination for referrers even if the XRF is not adequately filled.

CONCLUSION

In modern practice of medicine, imaging plays an unarguable role in patient management. Findings of this current study demonstrate that, XRFs that are submitted to the x-ray unit of the TCH are inadequately completed by referring practitioners. However, the findings of this study should be generalized or applied cautiously to other setting (s), due that the study was conducted with a single facility. Nonetheless, on the basis of the study outcome, the author suggest the following inputs as ways to improve imaging examination requisitions to enhance quality patient care.

- There should be continuous in-house seminars for all certified requesting practitioners of the hospitals involved about the relevance of the request form and negative impact of incomplete request form on quality of care.
- Some of the information on the current XRFs of the hospitals should be reviewed and updated. The x-ray serial number may be removed, and rather gender, patient hospital number/patient medical record number (which gives unique identification to patients in case of mix-ups of data with other patients), and LMP (to reduce the risk of radiation exposure to women of reproductive age) should be added or listed on the form. Meanwhile,

the age field should be updated to patient date of birth (DOB) since the current x-ray computer system of TCH will not allow successful patient registration until the full DOB is entered.

- Additional fields should be added to accommodate extension phone numbers of internal referring clinicians and telephone numbers of external requesters. This will facilitate direct contact with referrers if necessary.
- Newly appointed clinicians who may act in the capacity to request for x-rays should be educated about the value of adequately filling XRF as part of their induction and orientation programme.
- Furthermore, a space should be provided for requesting practitioners to append their signature. Also, referring practitioners should emboss their practicing stamp.
- Moreover, the field captioned "medical officer/Dr" might be modified to "prescriber". This is because the current caption has the tendency of deterring other requesters such as physiotherapists, physician assistants, nurse practitioners and midwives who are not necessarily medical doctors from completing as they might not consider it applicable to them.
- Requisition on prescription forms/ papers should be discouraged and if necessary refused since most of the time they do not have enough and relevant fields to complete.
- Not the least, the wording of the section "station/ address" can be revised to state as "facility referred from/ consulting room number.
- Lastly, the study should be repeated between 3-6months' time after some of the above recommendations have been initiated. This will help to compare if there has been any change, in order that any other or further recommendation(s) can be made especially if the improvement is insignificant.

REFERENCES

1. Esposito P, Canton AD. Clinical audit, a valuable tool to improve quality of care: general methodology and applications in nephrology. World J Nephrol. 2014; 3: 249-255.
2. Olayemi E, Asiamah-Broni R. Evaluation of request forms submitted to the haematology laboratory in a Ghanaian tertiary hospital. Pan Afr Med J. 2011; 8: 33.
3. Bhatia K, Bhatia P, Kumar MP. Assessment of biochemistry laboratory requisition forms as a contributory factor to preanalytical errors in a tertiary care teaching hospital. IJCMR. 2017; 4: 84-89.
4. Irurhe NK, Sulaymon FA, Olowoyeye OA, Adeyomoye AAO. Compliance rate of adequate filling of radiology request forms in a Lagos university teaching hospital. World J Med Sci. 2012; 7: 10-12.
5. Depasquale R, Crockford MP. Are radiology request forms adequately filled in? An audit assessing local practice. Malta Med J. 2005; 17: 36-38.
6. Yousef MO, Ayad CE, Sulieman A. Evaluation of radiology request forms in diagnostic centers in Khartoum state. Sudan Med Monit. 2011; 6: 201-210.
7. Afolabi1 OA, Fadare JO, Essien EM. Audit of completion of radiology request form in a Nigerian specialist hospital. Ann Ib Postgrad Med. 2012; 10: 48-52.
8. Kiani RA, Waheed U, Khan H, Zaheer HA. Audit of laboratory request forms at a tertiary care hospital of Islamabad, Pakistan. J Soc Obstet Gynaecol Pak. 2016; 6: 132-136.
9. Onwuchekwa RC, Maduforo CO. Analysis of the adequacy of radiological request form completion: a multicentre evaluation. Pak J Radiol. 2017; 27: 233-338.
10. Troudea P, Dozola A, Soyerb P, Girarda D, Martineza F, Montagnec B, et al. Improvement of radiology requisition. Diagn Interv Imaging. 2014; 95: 69-75.
11. Karunanandham S, Rajappa T, Jesudoss S, Naveethalakshmi N. A study of adequacy of completion of clinical biochemistry laboratory request forms. Int J Med Res Rev. 2015; 3: 1378-1382.
12. Abbas M, Omer A, Hamad M. Adequacy of clinical information on radiology request cards from medical assessment unit. Clinical Audit. Nucl Med Biomed Imaging. 2016; 1: 5-6.
13. Murray M. IR(ME)R 2000 and IR(ME) Amendment Regulations 2006 & 2011. Society of Radiographers. 2012; 1-26.
14. Alagoa PJ, Udoye EP. Laboatory request form- how well do doctors fill them? A look at the practice at the Nigeria Delta university teaching hospital, Okolobiri, Bayelsa State, Nigeria. Nigerian health J. 2015; 15: 14-17.
15. Rajanikanth Rao V. Audit of radiology request forms- "are they adequately filled?. J Med Sci Res. 2014; 2: 41-44.
16. Vom J, Williams I. Justification of radiographic examinations: what are the key issues? J Med Radiat Sci. 2017; 64: 212-219.
17. Teunen D. The European Directive on health protection of individuals against the dangers of ionising radiation in relation to medical exposures (97/43/EURATOM). J Radiol Prot. 1998; 18: 133-137.
18. Alhassan RK, Spieker N, Van Ostenberg P, Ogink A, Nketia-Amponsah E, De Wit TFR. Association between health worker motivation and healthcare quality efforts in Ghana. Hum Resour Health. 2013; 11: 37.

Cite this article

Asare HK (2018) Audit of X-Ray Requisition form at Tamale Central Hospital, Ghana. J Radiol Radiat Ther 6(1): 1078.