


# Compliance of Magnetic Resonance Imaging Examination Requests at the Diagnostic Center of the National Social Security Fund of Conakry

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## Abstract

**Introduction:** MRI is a rapidly growing technique with more and more indications and requests in the Republic of Guinea. Its correct prescription is a guarantee for the satisfaction of the actors, both prescribers, radiologists and patients. The main objective of this study was to evaluate the compliance of MRI examination requests at the Diagnostic Center of the National Social Security Fund (CNSS) in Conakry. **Material and Methods:** This was a descriptive cross-sectional study of MRI prescription forms sent to the MRI unit of the CNSS Diagnostic Center from February 1 to May 1, 2021. The 8 compliance criteria established by the French High Authority for Health were used to evaluate the compliance of the examination requests. **Results:** A total of 7003 examination forms were sent to the facility, including 7% (n = 468) of MRIs. 56.2% of MRI requests were performed by specialists. We observed an overall compliance of 10%. Administrative and clinical compliance were missing in 24% and 38%, respectively. More specifically, the purpose of the examination was not mentioned in 60%, followed by the requesting department in 48.1% and the patient's age in 35.1%. **Conclusion:** This study allowed us to highlight the gaps in establishing MRI requests. It would be important to organize an awareness campaign for prescribers on the usefulness of correctly filling an MRI request and to design templates to be filled out by prescribers.

## Keywords

CNSS, Compliance, Conakry Exams, MRI

## 1. Introduction

The request for a radiological examination is a prescription addressed to a radiologist by a healthcare professional authorized by law [1]. It must enable the radiologist to understand the problem posed by the patient and the circumstances for which the examination is requested. It constitutes the basis of the contract between the prescriber, the patient and the radiologist [1] [2].

The accuracy of information in prescriptions is of great interest in the care process and in imaging [3]. In this regard, several studies have assessed the quality of information on prescriptions for imaging examinations. In particular, the study conducted by Cohen *et al.* [4] on the evaluation of the quality of requests for radiology examinations for patients in the intensive care unit at the Riley paediatric hospital of the Indianapolis University Hospital reported that the clinical information was incomplete or inadequate in 24% of cases.

Incorrect prescribing has a significant impact on the radiological workup and can lead to technical protocol errors in the radiologist's performance of the examinations, wasting time and money for the patient and the hospital [5] [6].

Medical imaging examinations require a good prescription to better orient the radiologist, especially for Magnetic Resonance Imaging (MRI). MRI is one of the medical imaging modalities based on the use of electromagnetic fields to obtain images of the human body [7]. It is a rapidly expanding technique, with an increasing number of indications, requests and long waiting times [8].

In France, the Haute Autorité de Santé (HAS) has established a guide of good recommendations, recommending the use of eight compliance criteria for the request of imaging examinations in order to improve patient management:

Administrative information, *i.e.* the date of the request, the requesting department, the name of the requesting physician, the patient's identity and the patient's date of birth or age.

Clinical information, *i.e.* the anatomical region, the reason for the examination (clinical history) and the purpose of the examination (question asked) [9] [10].

In Cameroon, Moifo *et al.* [11] reported in 2014 in their study on the evaluation of compliance of medical imaging examination requests that only 1.1% of requests were compliant.

Napon *et al.* [12] in Burkina Faso in 2020 collected 97/421 MRIs *i.e.* 24.25% overall compliance of MRI requests.

Gbazi *et al.* [13] in Côte d'Ivoire in 2006 reported that 82% of requests for radiology examinations at the CHU of Cocody did not comply with the criteria established by the HAS in France.

The aim of this study was to evaluate the conformity of requests for magnetic resonance imaging examinations at the Diagnostic Center of the National Social Security Fund (CNSS) in Conakry.

## 2. Materials and Methods

This was a cross-sectional study with a descriptive aim lasting three months from

February 1<sup>st</sup> to May 1<sup>st</sup>, 2021 at the CNSS diagnostic center in Conakry.

We included in this study all the MRI examination request forms sent to and performed at the CNSS diagnostic center in Conakry, regardless of the site to be explored, the age, sex and origin of the patients.

Our study variables were the frequency of MRI examinations at the CNSS diagnostic center and the 8 criteria established by the HAS in France.

The compliance or non-compliance of the examination forms was based on the criteria established by the HAS of France. These criteria are eight, divided into two orders (5 administrative and 2 clinical).

The administrative order, includes: date of the request, requesting department, patient's identity, patient's age, identification of the requestor

The clinical order includes: the anatomical region, the reason for the examination and the purpose of the examination

An examination report is considered compliant if the eight criteria established by the HAS of France are present on the report and it is considered non-compliant if one of the criteria is absent.

Data were collected from an established survey form.

SPSS version 21 software was used for data analysis.

### 3. Results

#### 3.1. Overall Results

##### 3.1.1. Frequency of MRI Examinations

During the study period, 7003 requests for medical imaging examinations (MRI, ultrasound, CT and X-ray) were sent to and performed at the CNSS diagnostic center in Conakry, including 468 (7%) requests for MRI examinations (**Figure 1**).

##### 3.1.2. Overall Compliance

In this study, we observed an overall compliance of 10% (n = 47) of MRI examination requests and a 90% (421) of non-compliance (**Figure 2**).

##### 3.1.3. Overall Administrative

For overall administrative compliance, it was represented in our series in 24% (n = 112). Thus at least one administrative criterion was missing in 76% (n = 356) (**Figure 3**).

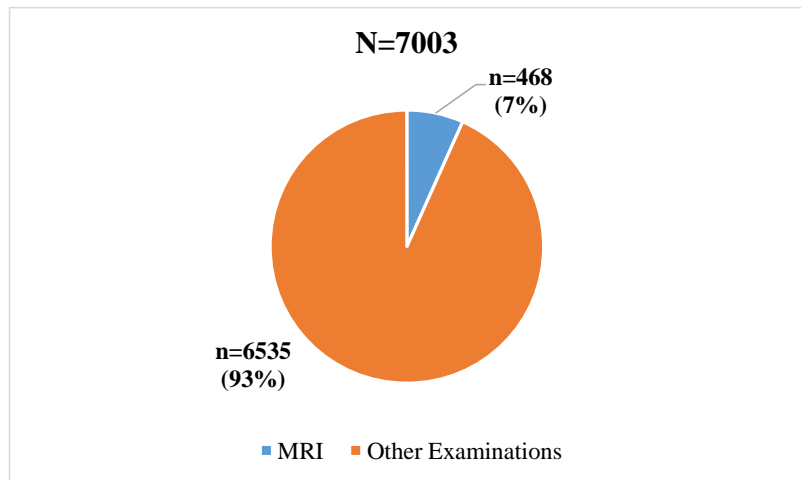
##### 3.1.4. Clinical Compliance

Overall clinical compliance represented 38% (n = 178) of all MRI request. Thus at least one clinical criterion was missing in 62% (n = 290) (**Figure 4**).

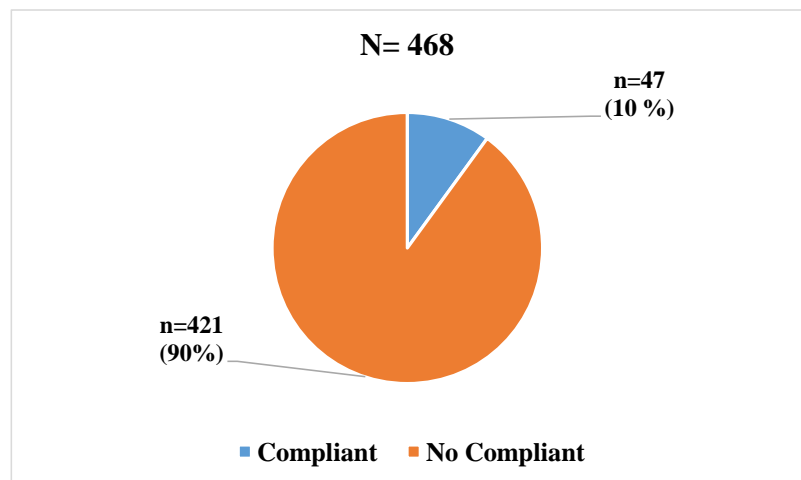
#### 3.2. Specific Results

##### 3.2.1. Administrative Criteria (Table 1)

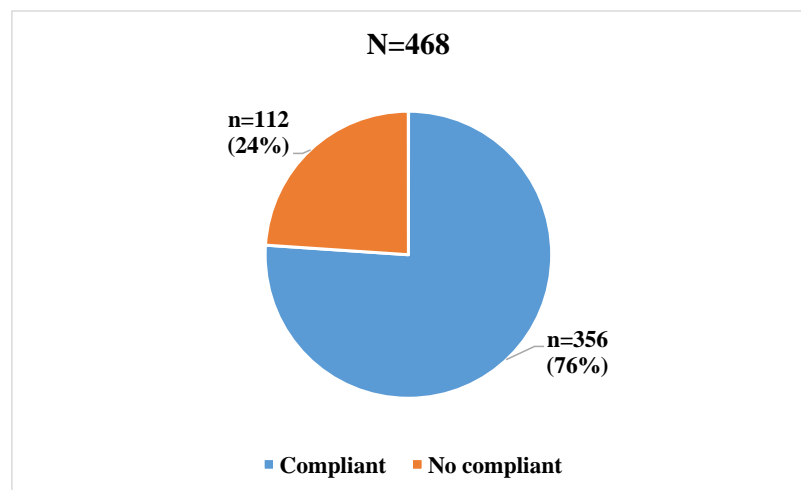
Among the administrative criteria, the requesting service was the parameter with the least information in 48.1% (n = 225) followed by the patient's age in 35.5% (n = 166).



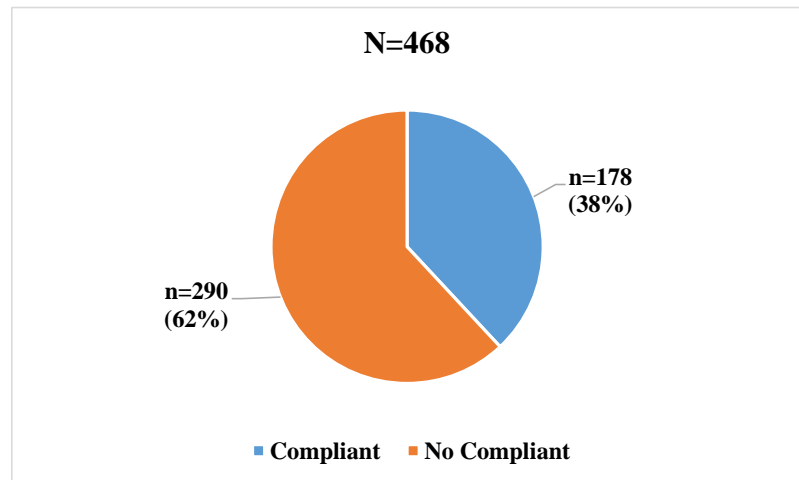
**Figure 1.** Frequency of MRI examinations.



**Figure 2.** Distribution of reports according to overall compliance of MRI examination requests.



**Figure 3.** Distribution of reports according to overall administrative compliance of MRI examination requests.



**Figure 4.** Distribution of reports according to overall clinical compliance of MRI examination requests.

**Table 1.** Distribution of MRI examination requests according to administrative criteria.

Administrative Criteria	Number (N = 468)	Percentage (%)
<b>Request Date</b>		
No	45	9.6
Yes	423	90.4
<b>Requesting Department</b>		
No	225	48.1
Yes	243	51.9
<b>Patient's Name and Surname</b>		
No	7	1.5
Yes	461	98.5
<b>Patient's Age</b>		
No	166	35.5
Yes	302	64.5
<b>Identification of the Prescriber</b>		
No	36	7.7
Yes	432	92.3

### 3.2.2. Clinical Criteria (Table 2)

Among the clinical criteria, the purpose of the examination was not specified in 60% (n = 281).

### 3.2.3. Qualification of the Prescriber (Table 3)

One hundred and forty-nine MRI forms, *i.e.* 31.8%, did not include the qualification of the prescriber. In addition, the healthcare professionals who prescribed the most MRI were specialists in 56.2% (n = 263).

### 3.2.4. Requesting Department (Table 4)

In our series, 48% of the MRI reports (n = 225) did not include the requesting department. Among these requesting departments, the Neurology department represented 32% (n = 150) of the requests followed by Neurosurgery in 7.26% (n = 34).

**Table 2.** Distribution of MRI reports according to clinical criteria.

Clinical Criteria	Number (N = 468)	Percentage (%)
<b>Anatomical Region</b>		
No	26	5.6
Yes	442	94.4
<b>Reason for Examination</b>		
No	39	8.3
Yes	429	91.7
<b>Purpose of the Examination</b>		
No	281	60.0
Yes	187	40.0

**Table 3.** Distribution of MRI reports according to the applicant's qualification.

Qualification of the Prescriber	Number	Percentage (%)
Doctor (Registrars)	34	7.3
General Practitioner	22	4.7
Specialist	263	56.2
Not Know	149	31.8
<b>Total</b>	<b>468</b>	<b>100.0</b>

**Table 4.** Distribution of reports according to the requesting department.

Requesting Department	Numbers (N = 468)	Percentage (%)
Not Known	225	48.1
Neurology	150	32.1
Neurosurgery	34	7.3
Orthopaedics and Traumatology	16	3.4
Ophthalmology	12	2.6
Surgical Oncology	8	1.7
Gynaeco-obstetrics	7	1.5
General Médecine	4	0.9
General Surgery	3	0.6
Cardiology	2	0.4
ENT	2	0.4
Paediatrics	2	0.4
Gynaecological Surgery	1	0.2
Endocrinology	1	0.2
ICU	1	0.2

## 4. Discussion

We carried out a cross-sectional study with a descriptive aim over a period of four months from 1<sup>st</sup> February to 1<sup>st</sup> May at the CNSS in Conakry.

This study represents the first study carried out in our context to assess the compliance of requests for MRI examinations.

It allowed us to provide data on the quality of MRI prescriptions by the health-care professionals.

During our study, the number of MRI examination forms sent to the CNSS imaging department was very low compared to all other examination forms (ultrasound, CT scan and X-ray).

This result shows that MRI remains a relatively inaccessible examination in Guinea because of its cost, which is about seven times the minimum wage.

On the other hand, the frequency of MRI examination requests in our study was higher than that reported by Napon *et al.* [12] in Burkina Faso in 2020, who in a study of 468 MRI prescriptions, reported an MRI examination frequency of 3.97%. This difference can be explained by the size of our sample and the duration of our study.

More than the majority of the MRI requests in our study did not comply with the French HAS recommendations on Indicators of conformity of requests for imaging examinations.

Our result is lower than that of Napon *et al.* [12] in Burkina Faso in 2020 who reported an overall MRI compliance of 24.25%. This result could be explained by our prescribers' lack of knowledge of the compliance criteria and their importance on one hand, and by the absence of a standardized form mentioning all these compliance criteria on the other.

While non-compliance of examination requests could have an impact on the quality of the examination, as mentioned by Alkasab *et al.* [5] and Smith *et al.* [6] "an incorrect prescription has a considerable impact on the radiological assessment and can lead to technical protocol errors in the performance of examinations by the radiologist, a loss of time and money for the patient and the hospital and overall the healthcare system".

During this study, administrative compliance (date of request, requesting department, patient identity, patient age, identification of the requestor) and clinical compliance (anatomical region, reason for the examination and purpose of the examination) were inadequate in less than half of the cases.

Our clinical compliance result is lower than that of the HAS in France in 2014, which found a clinical compliance rate of 69% for all requests for imaging examinations [9].

Among the administrative criteria, the requesting department and the patient's age were the least specified in almost half of the cases. This result is different from that of Togola in his 2014 Ph.D. thesis in Mali [14] who reported that the requesting department and age were missing in 3% and 75.05% respectively. The fact that their study included all radiological examinations could explain this difference.

However, the presence of the requesting service facilitates the identification of the patient and the orientation of the radiologist in his explorations.

Regarding the clinical criteria, the purpose of the examination was the least frequently mentioned in more than half of the examination requests. This reflects the low proportion of the diagnostic hypothesis mentioned in the examination requests. This result is similar to that found by Moifo *et al.* [11] in Cameroon where a high proportion of requests without any purpose in 76.3% of cases.

The purpose of the examination is as important as the reason, as it allows the radiologist's observation to be compared with that of the clinician.

The majority of those requesting the examinations were specialists. This finding is similar to that reported by Napon *et al.* [12] who found that specialists prescribed in 71.25% of cases.

This predominance of specialists could be explained by their higher level of education, reflecting the objectivity of their diagnosis.

## 5. Conclusions

This study shows that the majority of requests for MRI examinations sent to the CNSS diagnostic centre in Conakry were not compliant.

Half of the examination forms had poor administrative and clinical compliance.

Among the administrative criteria, the requesting department and the patient's age were the least specified while for the clinical criteria, the purpose of the examination was the least specified.

Dissemination of the compliance elements and raising prescribers' awareness of the usefulness of correctly filling an MRI examination request and the design and printed use of the form could improve the quality of these requests.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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