

# X-Ray Description: Past, Present, Future

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**Abstract.** The wide variety of description protocol styles that currently exist in radiology diagnostics is proof that a basic, universal description format has not been found, and there is no uniform standard for describing studies. All this allows us to formulate the main goals and objectives that must be overcome to improve and create a new form of radiological description protocols - protocols of the future.

**Keywords:** radiology, structured protocols, radiographic protocol, standardized terminology.

## Introduction

The last century has been a period of rapid, dynamic development of imaging techniques, but the protocol for radiographic description has remained unchanged.

The very first description protocol was published in 1896 by Wilhelm Roentgen, who discovered a new technique that allows “seeing through the human body.” This radically changed medical diagnostics and led to the emergence of a new medical specialty – radiology. The quality of the protocol drawn up by the radiologist determines how fully the unique capabilities of this method will be reflected [1].

## Materials And Methods

A. Wallis et al. [2] note that the radiologist’s protocol should have a logical structure:

- 1) title of the study;
- 2) clinical history or referral;
- 3) technical equipment;
- 4) comparison of data;
- 5) description of the identified changes;
- 6) conclusion/summary/opinion.

F.V. Coakley et al. [2] emphasize that the protocol should be clear, concise and relevant. Clinicians are also more in favor of creating structured protocols than freely written reports.

## Results And Discussion

The X-ray protocol must answer the specific question posed. For example, “there is no demyelinating disease” when the directional diagnosis is “to exclude a demyelinating process”. The style of presentation is also very important. Therefore, the protocol should not be overly technical or verbose.

F.V. Coakley et al. recommend adhering to three basic stylistic rules: brevity, clarity, relevance.

Although many radiology guidelines and references report quality criteria for radiology protocols, only two indicators are the most studied: protocol preparation time (the period between completion of the study and the final written report) and protocol quality. While the time it takes to prepare a report can be measured and recorded, the quality of this report does not have specific quantitative indicators.

Some researchers link protocol quality to error rates. Errors in X-ray protocols are not uncommon and amount to about 30%, with a range in some observations from 26 to 90% [3].

A reduction in the frequency of errors can be achieved through additional training of specialists. However, the causes of interpretation errors can be multifactorial and are not necessarily related to insufficient knowledge (eg, lack of access to clinical information). At the same time, many of these factors can be eliminated with the advent of new technologies [2].

The most extensive part of the x-ray protocol is the “findings (description)” section. Organizing this section by organ, or by pathological change, or using any other structure is the basis of standardized and structured protocols. The use of unambiguous and consistent terminology is the basic rule for describing identified changes when creating structured description protocols.

Identified changes and results should be classified using certain standards of radiological diagnostics, for example, the nomenclature of degenerative changes in the discs when describing the spine. When specifying measurements or quantities, reference should also be made to best practice guidelines.

B. Reiner et al. [2] divided the main goals and objectives facing the radiologist drawing up the description protocol into four groups:

- 1) be better (increase quality and reduce the number of errors);
- 2) improve safety (reduce medico-legal risks and improve clinical outcomes);
- 3) work faster and more efficiently (increase productivity);
- 4) increase profitability. The authors note that some of the goals they indicated may seem unattainable, but all of them can be realized by optimizing existing technologies in medicine and the education system.

One of the most common causes of medical errors in the practice of a radiologist is errors in interaction with other specialists [4].

D.C. Kushner and ACR experts describe the most common cases when direct contact between the radiologist and the referring physician is necessary. These are radiological findings that require urgent medical intervention; a radiologist's report, different from the previous ones; findings that may lead to deterioration of the patient's condition if left untreated or may be detrimental to the patient's health.

It should be noted that of the 16 recommendations created by the ACR, none were as controversial and discussed as the Recommendations for Communication of Radiologists with Attending Physicians.

Despite the fact that new information technologies (PACS, RIS, EMR) have improved access to clinical and other data, the integration of obtained images with clinical data, modern technologies have not led to an increase in the productivity of radiologists. This is due to the fact that the development of modern technologies has a dual impact: on the one hand, it leads to increased productivity due to automation of the process, and on the other hand, it increases the stress on doctors, since they have to adapt and learn new (often difficult) technologies.

Therefore, the solution to this problem is the development of new applications for creating description protocols that are simple and easy to use and do not require special training [2].

The use of standardized and structured image description protocols will facilitate the simultaneous solution of many of the listed problems.

Creating standardized terminology and templates can be effective in developing different styles and variations of description protocols that will vary depending on clinician preferences. The development of specialized software will make it possible to create structured description protocols. These technologies may be available in the foreseeable future [3].

The raw metadata of each protocol description can also be submitted to the national registry for the purpose of monitoring use, as well as taking into account the effective dose of radiation. This will help various departments and institutions automatically monitor and control the quality of service provided by the regulatory authorities.

## Conclusion

All of the above goals can be achieved by improving the system of description protocols and creating new structured forms.

## References

1. Hickey P. The interpretation of radiographs. *J. Mich. Med. Soc.* 2014; 3:496.
2. Wallis A., McCoubrie P. The radiology report: are we getting the message across? *Clin. Radiol.* 2011; 66 (11): 1015–22.
3. Enfield C. The scope of the roentgenologist's report. *JAMA.* 2013; 80:999.
4. Kahn C.E., Langlotz C.P., Burnside E.S. et al. Toward best practices in radiology reporting. *Radiology.* 2019; 252(3):852–6.