

# Digital radiology: what about the radiological reports?

*Radiologia digital: como fica o laudo radiológico?*

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The advances in Radiology appear to be never ending. New developments take place not only in equipment, techniques and sequences, but also in the technological support for the services. One of such advances has been the development of the Picture Archiving and Communication System (PACS), which not only improved the system of images and reports storage, but also optimized workflow in radiology centers.

In such workflow, a key stage is the elaboration of radiological reports, which can be made in the conventional system (the radiologist analyzes and interprets the images, handwrites the report, sends it to a transcriptionist who types it and sends it back for review and signature) or by dictating the report (into a cassette recorder, or other recording means or utilizing other means that can be integrated with the PACS, including speech to text capability and dictating the report directly to the computer).

With the expansion of the centers of Radiology and Imaging Diagnosis, the preoccupation with workflow optimization has increased. In 1997, Seltzer et al.<sup>(1)</sup>, from the Department of Radiology of the Harvard Medical School, reported the utilization of dictated reports and speech to text capability among several measures to improve the services quality in radiology centers.

Since that time<sup>(2)</sup>, speech to text systems already existed, allowing the user simply spoke while the computer “heard” and directly transformed the speech into the corresponding text in the screen. Such system utilized a vocabulary or a pre-selected word base, and compared the sounds with this vocabulary or word base, with the possibility of real time speech to text, in which as the radiologist spoke, the text could be immediately seen on the screen at the

workstation in front of him, or the report was simply dictated and recorded, and then was sent to another computer, and a transcriptionist heard the report and typed it.

Wheeler & Cassimus<sup>(3)</sup>, in 1999, reported that the use of PACS and speech to text capability had a significant impact on the workflow of the Emory University Hospital complex in Atlanta, GA, USA (actually comprising three separated hospitals), with 65% of the reports being made in 15 minutes, 80% in less than 30 minutes and 90% in less than one hour, with the implementation of such tools. Later, other studies confirmed the improvement in workflow by means of the use of PACS and dictated reports<sup>(4-6)</sup>.

Today there are several systems that allow the use of dictated reports, both for later transcription as well as by automated transcription on the screen by speech to text capability. The problems with these systems have been their acceptance by the radiologists, due to the direct implication on their way of performing their work, besides the costs for acquisition and deployment of such systems. Additionally, a dictated report requires an appropriate environment, as quiet as possible, as well as appropriate training for the practitioner who will be utilizing the tool, in order to reduce errors<sup>(7,8)</sup>.

Currently in Brazil, there are several such systems, involving a wide range of costs, allowing the dictated report with later transcription and the speech to text mode. These systems are more expensive and depend on a number of other factors, in particular the training of the reporting radiologist besides voice storage in the system to accept the several variations in emitted sounds.

In an excellent article published in the present issue of **Radiologia Brasileira**, Ferreira et al.<sup>(9)</sup> compare the dictated electronic report and the traditional systems, demonstrating that the electronic system was more efficient than the traditional one, with respect to report generation time. However, the authors report that with regards to transcription time, the traditional system presented better

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results. Such article deserves special attention, as it documents the differences between the use of the traditional system and the use of a new electronic tool that will increasingly become a part of the day to day activities of Brazilian radiologists. The article also draws attention to the need of appropriately training the involved personnel, and also to the personal difficulties in using new technologies. Such difficulties tend to be reduced to a minimum with routine use and continuous training in digital reports.

With the trend towards increasing the use of electronic methods, the work done by the transcriptionists at the radiological centers tends to fade away over time, as with speech to text capability with the radiologist being able to see on a screen the text he is dictating in real time, typing errors will no longer exist, and formatting will be solely dependent upon the radiologist. It is important, however, that the costs of such systems be reduced in order to encourage their use in our community. There are already several alternative manners to adopt the use of electronically dictated reports, as mentioned in the article in the present issue, that can be replicated at any type of Radiology center, optimizing workflows. Currently, the use of electronically dictated reports is perfectly feasible at a relatively low cost, still keeping the transcriptionist in the workflow. The direct speech to text systems can still be greatly improved, although there are excellent systems in use, with a good performance in the daily practice.

Another important factor to be considered is that the use of PACS and dictated reports play a significant role in the training of residents/trainees in Radiology, as referred by Gutierrez et al.<sup>(10)</sup>, but they also point out that the residents who have participated in their study indicated that speech to text is less reliable and takes longer than the traditional dictated system. This observation must be taken carefully, as both reliability and time required to prepare the reports are largely dependent on the system, local conditions and especially on user training. With greater user experience and time using the system, errors decrease in an exponential manner.

Finally, it is important to highlight that the Brazilian Protocol for Training in Radiology and Imaging Diagnosis<sup>(11)</sup> of Colégio Brasileiro de Radiologia e Diagnóstico por Imagem, and the Teaching Commission, recommend that residents and trainees acquire the necessary knowledge on basic sciences, including knowledge on the PACS and other information systems for hospitals and radiology centers. Thus the importance of reading the article published in the present issue, which is also a stimulus to all private or public institutions providing Radiology training in Brazil to adopt such technological tool at their Radiology centers, providing users with quality training, with the final objective of overall improvement of Radiology in our country.

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