

Structured vs Unstructured Radiology Reports

Many radiology reports today look much the same as they always have. They consist of dense blocks of text which stand independent of previous reports. They contain no links, images, or other clarifying data. They are a direct product of the challenge of radiology- making sense of images that would be subjective without the discipline of the radiologist.

The verbose nature of traditional unstructured radiology reports is meant to provide a complete description of the structures and processes depicted in a given image. Concision is not required. The writer simply describes what is imaged in full, using different language in different ways to describe the same thing until understanding, by hook or crook, is achieved.

The idea is that nothing should be lost in translation. Even if the reader of a report has to pack a lunch to read the whole thing- that's better than something critical going unnoticed.

But today's technology has made it possible to better organize radiology reports, making them easier to read- and enabling quick reference to key points within the content.

The Disadvantages of Unstructured Reporting

- Transcription services are costly
- Preliminary reports are not promptly available
- Dictation and transcription are error prone
- Report signatures cause additional delays

- The needs of referring physicians are not met
- A text report is not useful for later research

The Potential Advantages of Structured Reporting

Structured reporting can provide several key improvements over conventional reporting. These include, but are not limited to;

- Time saved in dictation: reports are created more quickly
- Time saved in editing reports: fewer errors than speech recognition-generated and typed reports
- Prompt Turn-around: reports can be approved and transmitted easily
- Make tough cases easier to understand: myriad forms of real-time decision support are available when needed
- Complete, accurate, and reader-friendly reports: physicians will benefit from clear and focused, multi-media reports
- Cost-effective: transcription expenses are eliminated

AI is Helping to Organize Unstructured Radiology Reports

In February 2019, Radiologybusiness.com quoted, biomedical engineering head, Changhwan Lee, at Hanyang University in Seoul, South Korea, as saying;

“Electronic medical records contain significant amounts of unformatted text that pose a challenge to their secondary use as a research data source. For more efficient use, EMR text data such as physician notes and radiology reports must be converted to outcome labels that contain specific information including the type or extent of disease. However, categorizing EMR text with key annotations is difficult because it contains

ambiguous words and narrative sentences.”

Artificial intelligence is changing that by helping researchers to quickly process large amounts of data, a change that is expected to lead to more productive radiology, and ultimately, to better patient care.

Structured Radiology Reports Are Improving Patient Outcomes Today

Structured reporting is raising the quality of radiology reports. Though it is not without its limitations, the benefits are considerable. Structured reports offer the promise of rich reporting and standardization. They represent a realistic set of informative tools that are available now.

But before covering the broad benefits of structured radiology reporting, it would be prudent to mention some broader potential drawbacks. They include;

- **The potential for increased “eyes-off time”:** The job of the radiologist is to analyze images. Some structured reporting systems may cause the radiologist to monitor the report while it is being produced. This may distract the radiologist from spending time examining the images.
- **Search skills may make descriptive skills obsolete:** Structured reporting systems benefit from consistent imaging terms. This requires radiologists to familiarize themselves with the preferred terms. This could reduce the verbosity of conventional reports which could deprive structured reports of descriptive power.
- **Imaging lexicons may not be available:** Some imaging lexicons are still being developed, and the adoption of structured reporting systems may require the wide availability of lexicons across imaging disciplines.
- **Adding to the problem of duplicate records:** Electronic assets that will need to be incorporated into these

reporting systems, (such as electronic patient records) are still in the early stages- and the problem of duplicate medical records may be exacerbated.

The Broader Benefits of Standardized Radiology Reports

Standardization

By standardizing layouts and terminology, doctors will be able to quickly understand reports and radiologists will be able to locate pertinent data more easily. The benefits of shared language and formats across the field can only enhance understanding and speed communication.

Data-rich reports

The ability to link reports with sources and other key data will multiply the value of these reports, reduce confusion, and save time.

Streamlined packages

Structured reporting need not replace image-reading and speech-to-text systems. Rather, it will supplement and support them. Healthcare providers can choose the system that works best for them, or integrate all three into a comprehensive radiology setting. Structured reports, image reading, and speech conversion are already being converged successfully in many organizational settings.

Easing the radiologist's workload

The heart of any radiology dept. is always going to be the radiologist. The healthcare system counts on these professionals to interpret imaging- and no machine has yet managed to replace them. That's why saving radiologists time and effort interpreting the reports of their peers and sharing

their own is so important.

Most Importantly, Everyone Benefits

Collaborative Imaging's [CEO, Dhruv Chopra](#) says that "Based on our experience, utilizing AI tools has helped us provide referring physicians with customized radiology interpretations based on their unique preferences. As a result, the reports are always consistent and structured regardless of who the interpreting physician is."

In the final analysis- clearer data, more robust transmission of information and the standardization of terms and formats mean patients will receive better care and improved outcomes. What's more, standardized reporting makes the job of the radiologist, more productive, more rewarding, and more enjoyable.

About Dhruv Chopra

Dhruv Chopra is the CEO of Collaborative Imaging, a groundbreaking healthcare management and technology company headquartered in Dallas. With more than two decades of experience in the radiology industry, Chopra leads Collaborative Imaging with the goal to help independent practices combat the industry's growing threat of consolidation.

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