

Efficiency in, and Beyond, the DRA Era

THE OFFICIAL ROLLOUT of the Deficit Reduction Act (DRA) served as a wake-up call to all radiology administrators: Be in the driver's seat for your organization. Know the intricacies of your organization's data. The more details the better.

If it was not clear before the DRA, it is crystal clear now that the government's mandate is just the tip of the proverbial iceberg. The overall costs of diagnostic imaging surpassed those of pharmacy in 2005, making imaging a target for ongoing cuts.

So, what is an imaging center or radiology practice to do? How do you help your business grow and, at the same time, thrive under the new guidelines? How do you do more with less and stay competitive in the market?

The answer – become more efficient – is obvious, but getting there is less so. While more reductions are being considered by the government, some of the major imaging companies are lobbying Congress to slow down the cuts, and presidential candidates have come out against them, as well, but there are no guarantees.

In the meantime, if they were not already doing so before, radiology organizations must mitigate against revenue drops through a variety of institutional changes, such as system and organizational enhancements, cost-savings analysis across departments and the automation of manual processes. All efforts require lassoing tremendous amounts of data and information from an organization.

NECESSARY TECHNOLOGY

Harnessing these make-or-break details requires more than organizational willpower; it demands technology. Companies must first make sure they are lean in their function, then look to information technology to provide efficiencies in workflow and then to new technologies to automate the critical data abstraction process. Though overused, the adage, "information is power," truly applies to radiology organizations in the DRA era.

It is clear that organizations previously on the fence about automation are quickly seeing what technology can do to ease the crunch they are experiencing. What was once seen as a "nice to have," is becoming more of a "must have" now that the DRA is a reality.

Organizations can use technology to automate their entire workflow. Taking the paper out of a practice or center casts out costly storage fees and general clutter.

Technology can help an organization eliminate data entry and filing, removing the expensive element of human error from the equation and easing overhead expenses. With an automated workflow, organizations can omit lost or missing charges with electronic auditing and tracking capabilities. This, in turn, can boost the organization with enhanced reconciliation on the backend.

Further, this kind of baseline automation helps answer the tremendous need for detailed interpretations of the radiology procedure. Technology helps to ensure that the documentation is complete, leaving little if any room for costly assumptions or misinterpretations of what was done.

Since the 1950s, natural language processing (NLP) technology has made steady progress with quantitative techniques that learn through language data analysis, rather than by having every



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detail programmed manually. These models formed the basis for speech recognition systems. Thanks largely to funding from the U.S. Defense Advanced Research Projects Agency in the 1990s, the primarily rule-based NLP community and data-driven speech community were encouraged to get reacquainted.

The subsequent decade saw a rise of probabilities-based models throughout speech- and language-processing as the community discovered that data-driven methods could do a better job corralling data and presenting new information. Today, with good reason, quantitative, data-driven methods dominate the NLP field.

The relatively recent market acceleration of NLP in medical coding technology – known as computer-assisted coding (CAC) – is helping radiology organizations across the country harness incredible amounts of information and streamline their coding process.

In essence, CAC software, supported by NLP, coaches computers to understand the English language and read physicians' dictated reports to assign appropriate codes for the patient encounters. Radiologists are particularly well poised to benefit from this technology because the majority of their work is transcription-based. Organizations using CAC can reduce the demands on human coder by removing their involvement in simple and repetitive coding tasks by letting the technology tackle them. This frees human coders to focus on challenging reports.

CAC captures documented information consistently and accurately. The technology fully reviews medical reports and codes for every element mentioned, supporting organizations' efforts to obtain the maximum appropriate reimbursement.

To that end, sophisticated NLP systems modernize compliance efforts and internal audits, both concurrently and retroactively examining the flow of information for revenue sources, missed opportunities or kinks in the workflow, all of which satisfy some of the demands the DRA places on organizations.

PATHWAY TO NEW DISCOVERIES

In the era of the DRA, however, radiology organizations can leverage NLP beyond their coding systems. At its core, NLP technology is customizable to derive patterns and identify outliers by analyzing

the data that is funneled through it. Think of the opportunities such a portal would open up for a strapped radiology organization looking for cost savings that maximize staff time, workflow and business modeling. With NLP gathering data from all corners of the organization, an administrator could slice and dice the information in myriad ways – analyzing demographic patterns, payer mix patterns, referral patterns and clinical data for cross-facility comparison.

Using the referral patterns, as an example, what changes would administrators make if they knew the intricacies of referrals entering their organization? Who is sending them business? How does the organization typically respond? Does the organization's coding or dictation differ based on a particular referral source? If so, how much are those differences costing and what can be learned from the patterns? The opportunities to find new efficiencies and new information are unlimited.

By positioning NLP as a value-add, organizations can offer referring physicians a validation of their work and of the entire care process, ensuring the tests ordered were clinically relevant or analyzing the positive or negative results to discern additional patterns and discoveries.

From a marketing or patient satisfaction perspective, referring practices can drill down into their communications, using NLP to improve the quality of their medical reports. By identifying unclear language or vague references and offering tips on how to avoid them, practices can increase their patients' understanding, leaving a more positive impression.

Ultimately, NLP is an enabling technology for cost-effective decision support, making it possible with more affordability and granularity than code sets and old-fashioned healthcare data.

THE POWER OF SURVEILLANCE

More broadly, NLP provides an automated bridge between the current form of input – physicians' natural language – and the proposed structures needed to make electronic health records feasible. Electronic records can easily be defined in terms of the record's original content, the kind physicians already know how to create without a day of new training, and a mapping from said content to a representational structure defined by interoperable system standards. As the natural process continues over time, those

mappings can be changed, allowing organizations to aggregate, mine, visualize and generalize according to new categories, structures and organizations of knowledge.

A great example harnessing language is the evolution of the term "ground glass opacity," which refers to a hazy increase in lung attenuation through which pulmonary vessels may still be seen in a lung CT.

A recent study showed that a survey of 1,000 patients revealed a solid lung nodule was cancerous 8 percent of the time, while a ground glass opacity was cancerous 18 percent of the time. When the two were both present, 63 percent proved to be cancerous. Radiologists' use of the term can be dated to 1992, yet ground glass opacity has yet to be included in SNOMED. NLP would allow organizations to identify that 63 percent.

The efforts radiology organizations must make in the DRA era are becoming more and more clear. Fortunately, NLP technology is available to help in a different and unique way. By implementing NLP, organizations receive a level of surveillance that simply is not readily available otherwise. Without it, organizations may risk analyzing uncertain data, making decisions in a vacuum and worse, losing critical data that impacts research, discovery and patient well-being.

Yet, beyond one individual organization, NLP has the power to elevate the entire radiology industry. Radiologists may identify something suspicious, but to know something is suspicious, you must connect it back with something in the full spectrum of care. NLP allows that to happen with real data discovery. It makes it possible for the radiology industry to define the value of the clinical care it provides.

By using NLP technology to thrive in today's DRA marketplace, administrators can translate data and newfound information into organizational knowledge and wisdom. With meaningful information at their fingertips, administrators can know their organizations even more than before, become proactive with a greater understanding and avoid the scramble to comply with the next federal cost cutting measure aimed at radiologists.

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