

WHITE PAPER

Increasing Productivity with Computer Aided Medical Transcription

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Executive Summary

In the traditional transcription model, a clinician dictates and a Medical Transcriptionist (MT) listens to the dictation and transcribes the document. In computer aided medical transcription (CAMT), intelligent, background speech recognition software creates a draft document from the dictation which an MT then reviews and edits, rather than typing from scratch.

Because it is faster to edit than to type, CAMT results in significantly more productive MTs. This concept has important cost savings, turnaround time, and patient care benefits for healthcare organizations. These benefits are achieved no matter what labor resources are used: an in-house transcription team, an outsourced Medical Transcription Service Organization (MTSO), or a combination of the two.

Nuance offers breakthrough CAMT technology in the form of the eScription on-demand platform that allows MTs to be significantly more productive than when they follow a traditional transcription process. All customers who use our eScription CAMT platform achieve significant productivity gains, defined as the percentage increase in editing speed over typing. Yet we have observed that some customers are able to realize higher productivity gains than others.

The Productivity Recipe

Our experience installing CAMT systems has helped us develop a set of Best Practices in Productivity. We call these Best Practices our “Productivity Recipe.” Like a true recipe, each ingredient makes a difference. The ingredients of the Productivity Recipe are:

- Technology
- Style Consistency
- Training
- Compensation
- Workflow
- Clinician Behavior

As you explore the potential role of CAMT at your healthcare organization, we hope that this white paper will help you understand the ingredients that drive the greatest productivity gains, and what Nuance is doing to help you make the most of them.

Ingredient #1: Technology

The eScription speech recognition engine was developed to address the specific requirements of medical transcription. Our underlying technology continues to improve over time both through our own development efforts and because the software automatically learns from MT corrections and other data. This continual improvement results in a higher percentage of clinicians' dictations being speech recognized and in higher quality drafts being produced through the background speech recognition process. More and better drafts in turn have led to higher productivity and resulting cost savings for our customers.

A case in point is Carle Clinic. When Carle made the decision to work with the eScription platform in 2004, its initial success criteria included a 40% increase in editing speed over typing speed for its in-house MTs. According to Project Manager Linda Wilkins, after four months Carle had already experienced a 50% productivity increase and consequently was able to project \$1 million in cost savings per year once fully deployed. In 2007, Carle enjoys even higher productivity gains, currently 100%, due in large measure to improvements in the underlying technology. This productivity improvement rate of 100% means that Carle's in-house MTs are editing twice as fast as they are typing. Growing productivity allows the MTs to take on more and more work, which in turn allows management to keep staffing levels flat and to reduce Carle's outsourced transcription expenses. According to CAO Mike Bukosky, the organization is currently experiencing significant annual cost savings as a result.

Continuous Improvement

The approach at Nuance is to continually introduce technology and product enhancements for the eScription platform that improve productivity. To direct our efforts, we ask:

- How can we improve our CAMT technology so that the resulting draft documents are more accurate and easier for MTs to edit?
- How can we improve our editing tools to make MTs more productive?
- What other product enhancements can positively impact productivity?

Here are the key components of the eScription CAMT solution that improve productivity:

- **Voice Capture:** The voice capture component improves transcription productivity by optimizing the digitized voice for speech processing and MTs' use, resulting in more accurate drafts.
- **Speech Processing:** The intelligent, background speech recognition engine interprets and formats clinicians' dictations, creating close to final drafts that minimize editing time by MTs.
- **Transcriptionist Tools:** The transcriptionist tools are designed to increase MT productivity by speeding up the editing process. This component was developed by consulting with MTs, watching them at work to understand the way they process transcription, and creating features that would make them more efficient.

Features that differentiate eScription technology include:

- **Better Context Analysis:** We use sophisticated contextual information at the document, sentence, and phoneme level to produce accurate content and correct formatting.
- **Better Recognition Models:** We create language and formatting models specific to every clinician and to the work type being dictated. We build and continually update models from billions of words of medical dictations, and this database continues to grow.
- **Better Transcription Integration:** We incorporate specified formatting rules from each healthcare organization. Our speech recognition engine learns from MTs' corrections, adapting the speech recognition models continually.

Our speech recognition engine and transcriptionist tools were designed with an integrated feedback loop that continually improves our speech recognition models based on the corrections made by MTs. As the speech models improve, so do the draft documents, leading to increased productivity in the editing process. The Style Consistency section below explains this feedback loop in more detail, along with recommendations for MTs on providing the right kind of “feedback.”

Ingredient #2: Style Consistency

Style matters! Organizations that consistently follow a uniform set of style guidelines will be more productive on a CAMT system than those which do not.

What do we mean by “style?” Consider this example of how the phrase “Abdomen soft, neck supple” could be formatted:

- Abdomen soft. Neck supple.
- Abdomen: soft. Neck: supple.
- ABDOMEN: Abdomen is soft.
NECK: Neck is supple.

There are probably a dozen or more other ways that same phrase could be formatted. The point is that once an organization decides on its preferred formatting style, that style will be presented in the recognized first drafts, and all MTs should edit documents according to that style. MTs need not spend precious time formatting because it is already done for them. Further, the more consistent feedback the speech recognition engine receives, the better drafts it will produce, thereby increasing MT productivity.

Nuance helps your organization develop and maintain a consistent style in two ways. First, we work with your organization to compile a Style Guide which is used to determine how the first draft documents are formatted by the eScription platform during background speech recognition. Your Style Guide helps ensure that style elements of a document will conform to your organization's standards. In addition, the Guide is provided as a resource for MTs to use when editing.

Second, our background speech recognition engine automatically analyzes edits made by MTs in previous documents. If a formatting change is made consistently across an organization, the change will be learned and automatically applied, relieving MTs from making that same edit in the future.

To maximize productivity, MTs should be encouraged to do “just enough” editing. The speech recognizer produces highly accurate results which gets most of the words right. In cases where the draft does not exactly match the dictation but the meaning is close, an MT should focus on the meaning of the dictator’s words and consciously avoid making an edit if it is being done strictly for cosmetic reasons. The most productive editors are those who make only those edits which are absolutely necessary, while following the Style Guide.

All MTs and supervisors should be familiar with the Style Guide and other formatting guidelines for their organizations. If editing is being outsourced, the Style Guide should be shared with your MTSOs.

MT Compliance

Even when style guidelines are agreed upon and implemented at the time of initial deployment, style can become inconsistent when MTs enter or leave the healthcare organization or MTSO. Nuance recommends monitoring MT compliance with style guidelines and putting corrective measures in place, as necessary, to maximize consistency.

A special challenge with style compliance can be found at organizations where individual clinicians are free to request their own style guidelines. Productivity will suffer when MTs are faced with a multitude of guidelines and report formats within the same healthcare organization. Not only is it time consuming for MTs to create reports of varying styles, but the speech recognizer will not improve as quickly because feedback is inconsistent. Conversely, consistent style compliance eliminates unnecessary edits, making the resulting drafts easier to read by the caregiver and making it easier to perform data mining in the future.

Healthcare organizations that outsource should make sure to communicate periodic style changes to their MTSOs to promote consistency. This is particularly important to do at organizations that use both in-house MTs and MTSOs so that speech models that are optimized at one organization are reinforced by MTs at every other organization.

Ingredient #3: Training

Proper training leads to high productivity. With traditional transcription, there is a physical limit to how quickly a person can type; this is much less so with editing, where mastery of shortcut techniques can lead to significantly higher productivity rates.

Nuance offers different levels of training for MTs who will be editing on the eScription platform system. Introductory EditScript MT training shows transcriptionists how to use the software features that are provided to handle workflow, audio, and editing functions. Microsoft® Word™ shortcuts which can be used to improve productivity are also discussed, as are workflow management techniques. Most important, we teach MTs about mouse-free operation and keyboard shortcuts which will maximize their productivity.

The Importance of Shortcuts

The productivity enhancing effect of mouse-free operation used in conjunction with keyboard shortcuts cannot be overstated. Consider the following chart which lists Total Shortcuts Used by MTs and the resulting Average Lines Per Hour aggregated across all in-house transcriptionists in January, 2007:

TOTAL SHORTCUTS USED	AVERAGE LINES PER HOUR
0	267
1	346
2	386
3	415
4	443
5	460
6	461

Here is the same chart for MTs who work for MTSOs:

TOTAL SHORTCUTS USED	AVERAGE LINES PER HOUR
0	192
1	229
2	260
3	332
4	401
5	451
6	559

As you can see in both cases, the more shortcuts that are used by MTs on a consistent basis, the higher the productivity levels they can be expected to attain. It is interesting to note that the percentage increase in average lines per hour between in-house MTs who used 6 shortcuts (461) versus those who used no shortcuts (267) is over 70%. The difference between outsourced MTs who used 6 shortcuts (559) versus those who used no shortcuts (192) is even more pronounced at 190%.

Feature Analysis Report

In order to provide healthcare organizations and MTSOs with data on eScripture shortcut feature usage by their MTs, Nuance provides a tool called the Feature Analysis Report (FAR). The FAR can be used by individual MTs to see how they are doing and it can be used by organizations to determine training needs and to generate customized messages to individual MTs.

Carle Clinic uses the FAR to gather information on shortcut feature usage by its in-house MTs each month. Those MTs whose productivity falls below expectations are counseled on how to improve their productivity through greater shortcut feature usage. Carle reports that most of their in-house MTs use either 5 or all 6 shortcut features, and all of their MTs operate mouse-free. Carle periodically schedules all-day refresher courses for their MTs to review best transcription practices as a group. These tactics have helped Carle achieve consistently high productivity levels.

Other Training Tools

To encourage and acknowledge mastery of editing skills, the eScription Training department has instituted a certification program, with three levels of certification available to MTs. The Basic certification level is given after a new student completes the basic EditScript MT training and passes a skills test. Advanced and Expert certification levels are based on achieving certain minimum productivity benchmarks, sufficient shortcut usage, and quality verification from an MT's supervisor.

Peer review can also be an effective training tool. When Washington County Health System first deployed the eScription platform, one MT had problems meeting the minimum productivity requirements on the incentive plan that had been implemented and she requested assistance from a "super-user." HIM Director Shereen Martin reports that the super-user went to that MT's home, observed her work habits, and reviewed her Feature Analysis Report. What she found was that shortcuts weren't being used by this MT. The super-user helped her work through those issues, with the result being that the MT started using shortcut keys and meeting her incentive goals.

Another way to reinforce training and mastery of new shortcut skills is by holding contests. Prizes can be offered to those who meet various productivity criteria outlined in the contest challenge. Whether or not prizes are offered, the main benefit to everyone is the productivity improvements that result from the process. Nuance periodically holds contests, such as one in which over 300 participating MTs increased their FAR feature usage and consequently their productivity by at least 6%. Healthcare organizations and MTSOs are similarly encouraged to run contests in order to spur their MTs on to higher levels of productivity.

MTSO Selection

When a healthcare organization decides to outsource the transcription function, it is important to make sure that its designated MTSO(s) has been properly trained on the transcription platform so as to maximize their productivity. To assist healthcare organizations in their MTSO selection process, Nuance provides a list of experienced MTSOs. These eScription MTSO Alliance Members have the most experience working on the eScription platform and are committed to achieving performance criteria in areas of training, productivity, and certification.

Ingredient #4: Compensation

An incentive-based compensation plan for organizations using in-house MTs is an important ingredient to improving editing productivity. Of course, many managers have incentive plans in place prior to changing to eScription CAMT. However, the dynamics of editing versus typing will enable managers to "raise the bar" and use incentives to ensure that MTs are learning and embracing the product features that will make them highly productive editors.

There are various approaches to incentive plans. One simple and effective approach is production-based, where MTs are paid a higher rate per line (i.e., one rate for editing and one for traditional transcription) if they meet a certain weekly or monthly volume requirement. Nuance advocates the production-based approach, which is used by its own MTs and by many of its customers. Another approach is to pay a higher hourly differential rate for superior production. Further, there are plans that use a combination of hourly plus incentive.

Transitioning to an Incentive Plan

When Washington County Health System was transitioning to CAMT, it froze MTs' pay for two pay periods at the incentive rate they were receiving just prior to deployment. This created a financial cushion while they practiced their new skills. Despite some initial concern by MTs about how the new incentive plan would work, the MTs saw that their new goals were attainable once they got started, and they subsequently adjusted well to the new plan. Washington County's experience is similar to that of many successful eScripture customers, achieving over 100% productivity gains. Those who take the time to transition their MTs with open communication get the greatest buy-in and productivity results.

Incentive plans typically include a quality component ensuring that overall excellence is maintained even as productivity increases. Some organizations, for example, require home-based MTs whose quality falls below standard to work on-site instead of at home until their work quality improves. This approach often yields quick results.

Any new incentive plan based on editing should be re-evaluated from time to time. Productivity will increase as MTs become more experienced, and this will affect how well an existing incentive plan will work to continue to motivate your team.

Ingredient #5: Workflow

Optimizing workflow for MTs can yield a significant improvement in productivity. Here are some ways to accomplish this:

- **Software System Configuration:** eScripture platform components are configurable to facilitate optimized workflow. For example, customers can automate job assignments; reduce or eliminate redundant text entry through the use of templates; eliminate the time consuming task of needing to go to an outside system to retrieve patient information; and automatically distribute completed documents to clinicians.
- **Pool Sharing:** Some healthcare organizations have more than one transcription group (e.g., an in-house group of MTs and one or more MTSOs). These organizations have the option of either segregating the jobs that go to each transcription group by work type or business entity or they can have multiple transcription groups take work from a common dictation pool. Pool sharing results in lower turnaround time and higher productivity due to increased competition among transcription groups for the available work.
- **Streamlining Problem Resolution:** If information is missing from a dictation, an MT may stop editing in order to research the issue. One way to increase productivity is for the MT to flag the draft as requiring additional information and allowing a supervisor to perform the research while the MT moves on to the next job.
- **Avoid MT Multitasking:** In some healthcare organizations, MTs are assigned non-transcription related tasks such as answering the phone or serving as receptionist. Requiring MTs to multitask will hurt their productivity. If budgetary constraints necessitate MT multitasking, one productivity enhancing approach is to have MTs rotate on their non-transcription duties so the others can transcribe for extended periods without interruption.

The Advantages of Cross-Training

With the eScripton system, Priority Rules are parameters which ensure that documents are completed and returned in the desired order. Quincy Medical Group recently changed its Priority Rules to reflect a new work assignment philosophy. Under the old scheme, MTs specialized in certain work types and were given only jobs which fell in their designated work type categories. Under the new scheme, all MTs are cross-trained on all work types and are instead assigned work on a first-in/first-out (FIFO) basis. HIM Director Verlene Miklich reports several advantages with the new FIFO system: there is now a constant flow of work to all MTs; turnaround time across all work types is improved; entire work types are no longer delayed when specific MTs are unavailable to work; there is a larger body of knowledge spread out across the entire transcription team; incentive plan goals are fairer; and MT productivity has increased throughout the organization.

Ingredient #6: Clinician Behavior

While clinicians are not required to change their dictating patterns in order for the eScripton platform to produce highly accurate drafts, there are things that can be done by and for clinicians which will result in higher productivity. Clinicians who regularly dictate in a consistent, organized manner will have more dictations processed through the speech recognizer, and their drafts will be produced more quickly and will be easier for MTs to review and edit, thereby increasing productivity.

To maximize consistency, clinicians are advised to adhere to the following dictation guidelines:

- Organize your thoughts before speaking
- Avoid distractions during dictation
- Speak in order
- Do not spell words
- Be consistent in dictating style from report to report

Facilitating Consistency

To assist clinicians, some healthcare organizations produce wallet-sized cards which contain dictation-related information at-a-glance, such as dictation instructions, telephone keypad functions, voice recognition tips, and work type lists. These cards can help clinicians organize their thoughts prior to dictating.

For clinicians whose dictation habits tend to result in lower transcription productivity, some healthcare organizations produce a custom clinician report. This report contains information such as MT productivity and turnaround time statistics derived from transcriptions produced for that clinician. The intent is that by comparing these statistics for the clinician in question with those of other clinicians, the clinician for whom poorer results were generated will make a greater effort to follow recommended dictation guidelines.

While it can be challenging to convince clinicians to adjust their dictation behavior, some customers have found that articulating the benefits of consistent dictating style and the resulting productivity and cost savings to the institution forms a persuasive argument that results in greater cooperation.

Your Recipe for Success

At Nuance, we are dedicated to working with our customers and applying our Productivity Recipe to each healthcare organization's unique transcription environment. We provide an industry-leading platform, the management tools, the training, and the teamwork. As we deploy new systems, we impart an understanding of how all the ingredients mix together to help our customers increase productivity and continually improve. We look forward to doing the same for you.

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