Transcription Cost Analysis Reveals Opportunities for Savings, Efficiencies

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Under pressure to maximize efficiency and resources, a VA hospital department ananlyzed its dictation processes and was able to pinpoint opportunites for savings. Here's how they did it.

Levels of utilization and quality of specialty services in Veterans Administration healthcare facilities are often under scrutiny. To address these issues, the Gainesville Veterans Administration Medical Center (GVAMC) required an efficiency analysis of certain specialty departments. In this article, we'll look at how an analysis of the electromyography (EMG) department revealed a more efficient and productive use of current resources and manpower. Specifically, by analyzing the dictation process physicians used after EMG appointments and exploring transcription alternatives, we were able to pinpoint outsourced transcription as a way to increase productivity while decreasing costs.

Why the EMG Department?

The average veteran seeking care at the GVAMC is more than 40 percent disabled and uses greater amounts of specialty services compared to same-size neighboring facilities. Because EMGs are required for most of the disabled individuals, decreasing the cost of providing them would be highly beneficial to the VA.

Preliminary analysis of the EMG department identified dictation as the single greatest consumer of physician time and therefore a direct influence on productivity. Physicians operate EMG tests primarily for follow-up treatment through medication or rehabilitation. On average, the physician requires an hour to execute EMG tests on patients with suspected neurological dysfunction or neuromuscular disease. The physician then spends 30 minutes dictating and types the consultation results directly into the VA medical record database. This time-consuming process results in a substantial backlog of patients awaiting diagnosis.

The inputs to the patient examination process and testing (outside of general facility costs) include the equipment, physician time, and dictation to record the activity. These input costs can be quantified, whereas the benefits are defined in terms of increased productivity, lower cost, and decreased waiting times. To explore reducing costs and increasing efficiency, we identified the most plausible systems of transcription and compared their costs and productivity benefits. We chose to compare the following systems against the present system:

- voice recognition transcription system
- outsourcing transcription
- in-house transcription operations

Although other medical methods of intervention are not an option, we examined other specialty departments and the manner in which they conduct their operations to identify potential efficiencies that physicians performing EMGs might adopt. We chose to examine the radiology departments at both the VA and Shands Teaching Hospital at the University of Florida in Gainesville, FL, which use alternative systems of transcription. VA Radiology uses a transcription service and Shands Radiology uses voice recognition hardware. Additionally, we reviewed services tied to the VA EMG department and determined their system costs and operations (i.e., time to see patients and the number of cases seen within an average day). We also contacted four transcription services in the Gainesville area and interviewed selected contractors about voice recognition software and hardware.

Breaking Down the Costs

The specific costs of transcription activities in the VA EMG department break down into several components. First, the fixed costs need to be determined in each system, because these costs affect the average cost per appointment. However, they have no effect on the marginal cost of an additional appointment because they are applied toward the entire system for any number of patients. Variable costs apply on a per appointment basis and affect both the average cost and marginal cost.

Current System

The current system of transcription has no direct fixed costs other than the "sunk" costs of computers and office space. The system requires neither additional equipment nor employees to handle the transcription, because physicians transcribe and edit their own notes. The salary expense for time used by the physicians in this capacity is a variable cost of transcription. The physician spends approximately 30 minutes outside of the appointment to record his or her notes. The portion of the physician's salary specifically spent on transcription activity is the only cost applicable to transcription under the current system. Assuming the physician's hourly rate at $70 (their annual salary is $116,000 and we assumed them to work eight hours a day, 210 days a year), the transcription portion of the appointment costs $35. At an 80 percent utilization rate, the system can handle 2,352 appointments annually (capacity is determined by assuming three physicians working seven-hour days and 210 days a year with 90-minute appointments). Thus, $82,320 is spent annually on transcription activity.

Voice Recognition Transcription

The voice recognition (VR) system allows the physician to dictate into a computer module, which then transcribes the dictation and produces a hard copy. The compliance level with the vocabulary depends on the level of programming prior to actual dictation (which was not measured in this analysis).

The VR system carries some fixed costs:

- the equipment sells for $6,000 and will last approximately four years
- the equipment requires $200 of annual maintenance and the doctors would need a one-time training session to implement the system

Under this system, the doctor would spend only 15 minutes after each appointment dictating, corresponding to $17.50 of salary or $41,160 per year based on the assumptions above. The total cost average, including equipment and maintenance, is $18.86. However, the marginal cost of an additional appointment would be only $17.50. The only limitations for this system are the number of appointments the physicians can manage: 2,822 75-minute appointments annually for three doctors.

Outsourced Transcription

In an outsourced transcription scenario, the service is supplied through an outside vendor and requires the physician to talk into a phone that records the conversation on a special dictation module located at an off-site vendor facility. The service then transcribes the recording and returns it both digitally and in print. Like the current system, outsourcing attaches no fixed costs to the department. All the equipment and personnel are supplied as part of the service from the outsourcing company. The service itself charges a variable fee of $0.14 per line of transcription. With an appointment averaging 60 lines, the average variable cost per appointment is $8.40. The physicians still need to spend five minutes preparing their notes for transcription, which results in a $5.83 salary expense per appointment ($13,720 annually). Thus, with no fixed cost, the average and variable costs are equal at $14.23 for each appointment. In this scenario, the transcription activity is not the capacity-limiting factor. Instead, with only three physicians, the office would reach capacity at 3,257 65-minute appointments per year.

Although outsourcing the transcription would require contract negotiations and associated costs, these costs are negligible because similar negotiations are handled in the VA for other services in other departments by current personnel.

In-house Transcription

Operating an in-house transcription system involves hiring one or more transcriptionists to perform all medical record dictation. An in-house transcription system produces both fixed and variable costs. The equipment costs $10,000 and will depreciate over five years. It also requires annual maintenance and training costs, similar to the VR system, but because a specifically trained transcriptionist would be hired, these training costs are negligible. Hiring costs would be negligible because VA human resources operations are already in place.

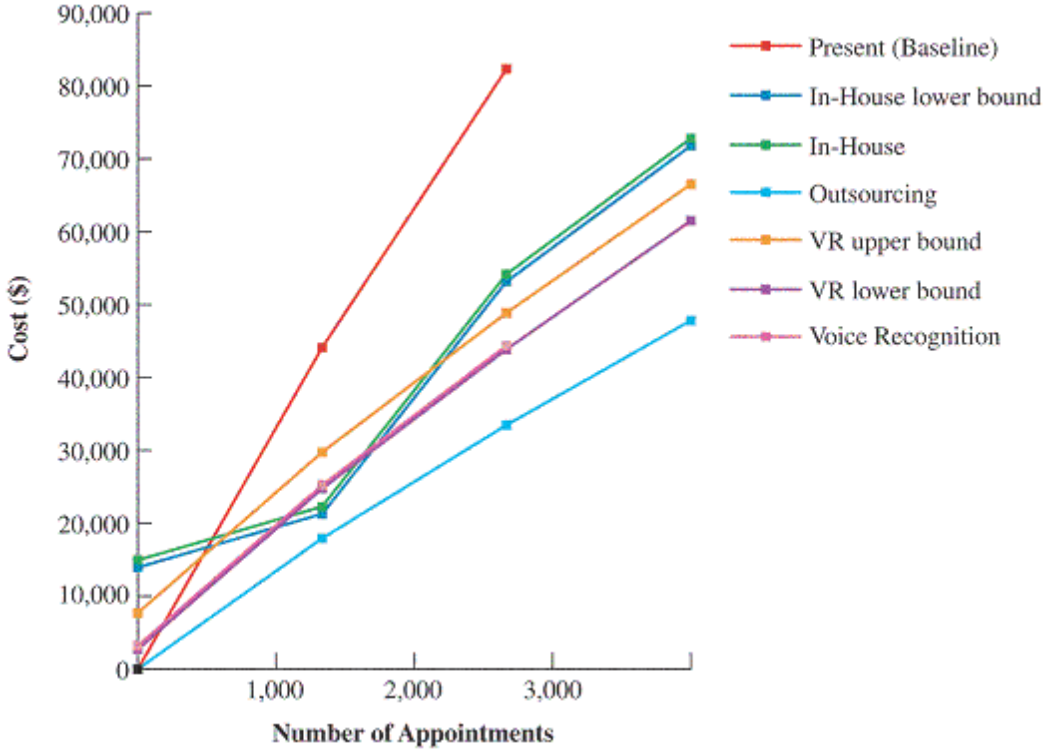
In this scenario, the transcriptionist salary is considered a fixed cost because we know one full-time and one part-time transcriptionist could handle the present workload, and once they are hired, there is no additional charge to add or subtract appointment notes. If the patient load increases or decreases substantially, the department would have to hire or lay off personnel and adjust the fixed salary cost accordingly. The total salary of $38,250 includes a full-time salary of $21,500 with $4,000 in benefits and a part-time salary of $10,750 with $2,000 of benefits. Again, the physician would need to spend five minutes after each appointment to prepare those notes for transcription (at $13,720 annual salary expense). All these expenses contribute to an average cost of $23.03 to transcribe each appointment in-house; however, only the physician salary expense is carried to the marginal appointment ($5.83). Like the outsourcing system, this office would be limited to 3,257 appointments due to physician time.

The Variable: Depreciation

The next step in the analysis was to conduct a sensitivity analysis to determine how depreciation affects our calculations. Depreciation for both the VR system and the in-house systems varies. The VR equipment's useful life could vary from one to six years (one year being the VR upper bound and six years being the VR lower bound in "Transcription Cost Analysis per Appointment," below), which changes the depreciation cost. Further, the total cost of the system would vary between $48,860 and $43,860, adjusting the average cost per appointment between $20.77 and $18.65. The marginal cost of an appointment would not change because depreciation is a fixed cost. Similarly, in-house equipment will last approximately five years; however, it could also last up to 10 years (10 years being the lower bound). In the latter case, depreciation costs decrease total costs to $53,170 and the average cost per appointment to $22.61.

The sensitivity analysis used depreciation values in accordance with equipment life expectancy estimates, which allowed us to view a range of the possible costs attributable in each situation. These ranges provide more clarity when comparing the four options. The year ranges for depreciation are justified because technology is rapidly evolving and the usefulness of the system could have a variable life span. Discounting was not necessary because we are not analyzing the future cash flows of the department and because no machine would be financed or would carry any interest charges.

transcription cost analysis per appointment



Outsourced Transcription Yields Multiple Benefits

In analyzing the results, the outsourced transcription system outperformed the alternate systems in a large facility with established medical and administrative infrastructure (see "Cost Analysis Summary of Transcription Options," below). The relationship between the transcription system and patient population size is a significant factor in the evaluation because sudden significant increases in patient population requirements could result in the need for increased staffing and, in turn, costs. No change would be required from the outsourcing, the least expensive service. However, other transcription services not evaluated could provide other rationales or outcomes in favor of either of the four options.

Beyond the financial benefits, we need to look at the potential individual benefits from renewed process design. Patient waiting times are expected to decrease substantially under the outsourced transcription system, although the actual amount of decrease is unknown without a complementary demand analysis. We also don't know whether the ability to increase productivity will be matched with the necessary office and patient attitude to maintain the greater workload. It is not uncommon for only the perspectives of the physician, patient, or insurer to be considered in cost evaluations, when in fact it's important to consider the department characteristics when choosing the most context-specific transcription service. For example, evaluating the appropriateness and opportunity to use the chosen system in other departments could expose economies of scope, further decreasing the costs and promoting the usefulness of the device for other uses.

This study is limited to analyzing a relatively small department with fairly low patient capacity. Other analyses could include a longitudinal study of transcription costs in different contexts. For example, after implementation of a system, another study could examine which option was the most efficient and least costly to identify differences in physician practice styles (i.e., the time it takes to diagnose a patient) and their effect on the outcomes in terms of costs. Overall, using these other types of cost evaluations could improve our original findings and provide further support for follow-up on analyses and practical application. Although this was a site-specific evaluation and does not constitute the opinion of the VA, the analysis used is a neutral mechanism that can be used to select the best combination of transcription services to support specific mission requirements in a variety of facilities.

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Cost Analysis Summary of Transcription Options

	Voice recognition	Outsourcing	In-house	Present (baseline)
Fixed Costs ($)				
Equipment Depreciation+	1,500	0	2,000	0
Equipment Maintenance	200	0	200	0
Training	1,500	0	0	0
Transcriptionist salary++	0	0	38,250	0
Variable Costs ($)				
Transcription Service	0	19,757	0	0
Physician Salary (towards transcription activities)+++	41,160	13,720	13,720	82,320
Total Costs ($)	44,360	33,477	54,170	82,320
Patient Load	2,352	2,352	2,352	2,352
Average Cost ($)	18.86	14.23	23.03	35.00
Marginal Cost ($)	17.50	14.23	5.83	35.00

+ Estimated depreciation at four years for the voice recognition equipment and at five years for the in-house equipment.
++ To handle the patient load, this assumes 1.5 transcriptionists ($21,500 each) with benefits ($4,000 each). This cost is assigned as a fixed cost, although if the patient load grew substantially, the number of transcriptionists needed would rise.
+++ Calculated by the time necessarily spent by the doctor to transcribe his appointments (present system assumes 30 minutes, voice recognition assumes 15 minutes, outsourcing assumes 5 minutes, and in-house assumes 5 minutes per appointment with a physician hourly pay rate of $70).

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