Task Overlap Among Primary Care Team Members: An Opportunity for System Redesign?

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EXECUTIVE SUMMARY

This article presents the results of research on a systematic approach to the assignment of primary care work in the Veterans Health Administration. Based on a functional job analysis protocol, the study identified overlap in the performance of primary care tasks among multiple occupational groups as prima facie evidence of opportunities to reallocate work responsibilities. Results show that registered nurses, physicians, advanced practitioners, and licensed vocational nurses reported performing 60 percent to 97 percent of the same tasks, while clerks and health technicians appeared to be underutilized. The frequency and duration with which occupational groups performed each task were also examined, providing additional evidence to be used in improving clinic efficiency.

The management of healthcare personnel can be improved through systematic analysis of the work, the worker, and the work organization and through more informed decisions about the appropriateness of task assignment (or reassignment). This article presents an evidence-based approach to personnel management with important implications for clinic efficiency. The approach can be used to guide strategic planning and staffing decisions by identifying not only who currently does the work but, more importantly, who should be doing the work given the full array of data.

For more information on the concepts in this article, please contact Dr. Best at rbest@satx.rr.com.
The fundamental change deemed necessary to bridge the chasm between current healthcare and the ideal is thought to be systemic in nature (Institute of Medicine 2001). According to the Institute for Healthcare Improvement (2002), “We firmly believe that performance at this level cannot be achieved by the simple accumulation of many small process changes without the guiding architecture of a new care system as a whole. In other words, these dramatic improvements are entirely out of reach for healthcare systems under current operating designs, without radical and sustained system-level change.” The Veterans Health Administration (VHA) has embarked on systemwide change to transform its mode of care delivery from acute care with an inpatient focus to one featuring primary care and outpatient care as the principal points of access. The VHA has implemented a sophisticated computerized patient-record system with clinical reminders for guideline-concordant actions and pharmacy alerts for unsafe prescribing practices (Pugh 2001). The VHA also regularly monitors the quality of outpatient care performance. However, what has not yet been addressed by the VHA is the allocation of work within the practice team, or delivery system redesign (Von Korff et al. 1997). The objective of this article is to examine current work assignments among VHA primary care personnel to identify delivery system redesign opportunities.

RELEVANCE OF DELIVERY SYSTEM REDESIGN
Delivery system redesign is emphasized by VHA managers at multiple levels because staffing mix and the assignment of task responsibility are high priorities for VHA primary care. Indeed, research in the VHA has indicated considerable variation in the assignment of task responsibility for clinical practice guidelines (Pugh 2002). Reallocation of work assignments is also important to initiatives to improve timely access to care. One key principle of improving access is managing constraints or bottlenecks that restrict patient flow through the primary care clinic. Constraints are “rate-limiting steps” that determine clinic throughput; they often include primary care providers who perform work that uniquely adds value to the system (Murray and Berwick 2003). Accordingly, work assigned to primary care providers should maximize their skills and expertise.

Although the importance of task reassignment for optimizing clinic efficiency is clear, little guidance exists on how to systematically identify work tasks that could be reassigned. Research on a primary care system in Colombia found that registered nurses (RNs) and licensed vocational nurses (LVNs) shared 95 percent of their work tasks (Moore 2000). More recently, a systematic review found that nurse practitioners performed work comparable to that of physicians, with equivalent or superior short-term outcomes (Horrocks, Anderson, and Salisbury 2002). These studies point to an overlap in the performance of primary care work as prima facie evidence that multiple occupational groups can do and are doing the same work. The identification of overlap in work performance suggests that
opportunities exist to reassign task responsibilities. Therefore, systematic examination of primary care work for the purpose of identifying overlap is the foundation of delivery system redesign.

**WORK-DOING SYSTEMS THEORY AND FUNCTIONAL JOB ANALYSIS**

We used Fine’s work-doing systems theory to guide our examination of current patterns in primary care work in the VHA (Fine and Cronshaw 1999). This framework posits a dynamic interaction of three components of organizational systems: (1) the work organization (its purpose, goals, and objectives); (2) the worker (capacities, experiences, education, and training); and (3) the work content (the functions, subfunctions, activities, tasks, and associated performance standards). The advantages of this conceptualization are that it contributes to the organization and marshalling of resources (technologies, materials, workers) for optimum efficiency and that it serves the master purpose of the organization (Fine and Cronshaw 1999). The work-doing systems theory provided a comprehensive architecture for the examination of current work patterns within the VHA.

**Functional Job Analysis**

Functional job analysis (FJA) is a job analytic methodology based on the work-doing systems theory. FJA has a venerable history as the original foundation on which the Dictionary of Occupational Titles (a comprehensive classification system developed for the Office of Personnel Management) was based. This is important for two reasons: (1) job analytic methods are required for legally validating personnel decisions, and (2) they provide an empirical foundation for evidence-based management (Pfeffer and Sutton 2006; Walshe and Rundall 2001).

FJA analyzes task statements of work as the basic building blocks of human resource management and organizational strategic planning. Task statements explicitly implicate the three components of work-doing systems—work content, worker characteristics, and the work organization—using the following elements:

- who performs (the subject matter expert)
- what action
- with what tools, materials, or work aids
- upon what instructions (including the requisite knowledge, skills, abilities, and performance standards for task performance)
- to accomplish what organizational outcome or result?

Tasks are also rated according to functional skills requirements that define the complexity of performance across cognitive, interpersonal, and physical dimensions (see Fine and Cronshaw 1999 for the full description of the scales). Given the current climate for patient safety, we also used a dimension that evaluates the potential consequence given an error in performance (Institute of Medicine 2000; Gilpatrick 1972). These ratings help describe the relative simplicity or complexity of the work content (Fine
and Getkate 1995). Thus, functional complexity ratings provide additional guidance for decisions about task assignment. Tasks may be assigned to maximize the unique skills and expertise of workers (promoting employee growth and satisfaction) as well as to ensure that competent personnel perform the work (enhancing quality of care and patient safety). Indeed, the rich array of information at the task level highlights the utility and flexibility that result from aligning the work with the worker.

Our research used FJA to systematically investigate VHA primary care work. We hypothesized that considerable overlap in task performance occurred among (1) physicians and advanced practitioners (i.e., nurse practitioners and physician assistants), (2) physicians and RNs, (3) RNs and LVNs, and (4) nurses and clerks or health technicians.

Although we focused on overlap in task performance as prima facie evidence that multiple occupational groups perform many of the same tasks, the identification of overlap by itself is insufficient for actual task reallocation and delivery system redesign. Assignment of primary care task responsibility could be informed by additional factors such as (1) the frequency and duration by which different occupational groups perform the same task; (2) the functional skills required to perform the task, here represented as the level of complexity rating on data, people, reasoning, and human error consequence of the tasks being considered for reallocation; (3) the scope of practice based on licensure and certifications; and (4) local contextual issues regarding number of staff and/or process issues.

The frequency and duration by which different occupational groups perform the same tasks circumscribe the extent to which reallocation is both feasible and beneficial. For example, efficiency is less likely when task responsibility is reassigned to an occupational group that performs that work less frequently and for longer duration. Although overlap in task performance indicates who currently is doing the work, functional and content skill ratings offer guidance as to who should perform tasks given the complexity of task performance. If, for example, an error in task performance is considered consequential, allocation to an occupational group with more training and experience is preferred in the interest of patient safety. Whereas the primary objective of this article is to demonstrate the use of a job analytic database to identify overlap in task performance among multiple primary care occupational groups, we will also illustrate the frequency and duration of task performance by occupational groups and the level of task complexity in simulated reallocation decisions.

**METHODS**

**Study Design**

The FJA protocol is well documented and uses a mixture of qualitative and quantitative methods to develop task databases (see Fine and Cronshaw 1999; Moore 1999; Fine and Getkate 1995). Thus, our research design used
qualitative focus groups and quantitative survey data collection to develop and verify a database of task statements describing VHA primary care work.

Site Selection
We convened an expert advisory panel (EAP), consisting of VHA managers at multiple levels, to guide our research design, including nominating and recruiting participating facilities. Our EAP identified organizational characteristics believed to influence assignment of task responsibility (i.e., academic affiliation, size, and the degree of primary care service line implementation) and nominated facilities for inclusion based on these characteristics as well as the EAP members’ experience with the facilities and the likelihood of facility interest in participation. We engaged six facilities that met these inclusion criteria.

Subjects
We invited between six and eight subject matter experts (SMEs) or job incumbents to participate in separate focus groups of each of six primary care jobs (physician [MD], nurse practitioner [NP] or physician assistant [PA], RN, LVN, health technician, and clerk). The SMEs were incumbents with the requisite experience of the job being analyzed. We invited SMEs with varying lengths of tenure both in the job and in the VHA. We invited all primary care personnel from participating sites to complete the survey.

Procedure
Development and verification of the task database. We conducted two-day focus groups with each of six core primary care occupations across the six participating sites. To minimize the burden to each facility, we restricted the number of occupational groups to three per facility (i.e., no more than three job-specific focus groups per site). Across the six participating sites, however, we conducted two to three focus groups for each occupational title. In total, we conducted 15 focus groups among 77 healthcare personnel to compose primary care task statements for the database. Per FJA protocol, task statements generated in the focus groups were evaluated and edited by three certified job analysts and reviewed by the focus group participants to ensure linguistic fidelity. As the final step in developing task statements, two job analysts independently rated each task according to the functional complexity dimensions. Rating discrepancies were resolved through a consensus process and mediated by a third job analyst as necessary. All task statements were merged into a final database consisting of 243 unique task statements of VHA primary care work.

The final set of task statements was compiled into a machine-readable survey format and sent to the local principal investigators at the six participating facilities. The principal investigators distributed the survey to all primary care personnel. For each task statement, participants were asked to indicate whether or not they performed the task in question (task endorsement), how frequently they performed the task per week (frequency), and how many minutes it took them to complete one instance of the task (duration).
These frequency and duration measures reflect actual time-spent metrics with demonstrated reliability (Albert et al. 1997). We also asked respondents to report the number of years they had been employed, the number of years they had been in the current position, and the highest degree they had earned.

To test our hypothesis of substantial overlap in task performance among relevant occupational groups, we examined the survey data using relational database utilities. We first created occupation-specific tables featuring the subset of task statements endorsed by each occupational group. Then we analyzed task endorsement (e.g., responses to the question, “Do you perform this task?”) to identify tasks performed by each of the core occupational groups of interest.

We also computed the average frequency (per week) and duration (in minutes) of performance for each task statement in each occupation-specific table. The cross-products of these data were used as estimates of the number of minutes per week spent on each task endorsed by each occupational group. Time estimates were then used in conjunction with cost information from the VHA’s Personnel Automated Information Database and from the Office of Personnel Management to calculate average cost per week for each task.

To examine overlap in task performance, we queried the occupation-specific tables and identified task statements that were common across occupational dyads (e.g., MD/advanced practitioner, MD/RN, MD/LVN, MD/clerk, and MD/health technician, and so on). The queries generated separate tables featuring task statements mutually endorsed by occupational group dyads. Next we calculated the percentage of overlap from the perspectives of both occupational groups in each dyad. Specifically, both ratios featured the number of overlapping tasks (i.e., mutually endorsed) in the numerator and the number of endorsed occupation-specific tasks in the denominator. To illustrate, the two perspectives featured in the MD/advanced practitioner dyad are represented analytically as follows (see Table 1):

- MD perspective = the number of overlapping tasks divided by the number of MD tasks, or 12/141
- Advanced practitioner perspective = the number of overlapping tasks divided by the number of advanced practitioner tasks, or 12/134

**RESULTS**

We received 231 responses to the survey from a distribution of 619 for an overall response rate of 37.32 percent. Among the survey participants, 51 percent were MDs, 39 percent were RNs, 35 percent were NPs or PAs, 24 percent were LVNs, 12 percent were health technicians, and 18 percent were clerks. Slightly more than half of the respondents indicated that they had been in their current position five years or less and the average number of years of education reported was 15.3.

**Tasks Performed by Occupational Groups**

We defined “work performed by targeted occupational groups” as the set of task statements, from among the
full set of 243 tasks in our database, that were endorsed by at least two job incumbents from two different VHA facilities. As seen in Tables 1 and 2, the MDs, NPs and PAs, RNs, and LVNs reported performing the greatest number of tasks and endorsed the highest percentages of the 243 tasks. RNs endorsed the most tasks (173/243, or 71.19 percent of the full set), while clerks (MAS/PSA) reported performing the fewest number (i.e., 44/243, or 18.11 percent of the full set).

**Task Overlap Among Occupational Groups**

The percentages listed in Table 3 reflect overlap from the perspectives of each occupational group in each dyad comparison. Results revealed substantial overlap in task endorsement among MDs, NPs and PAs, RNs, and LVNs. Overlap among these occupational groups was substantial. For example, the percentage of tasks endorsed by RNs in the MD/RN dyad was 71.19 percent, while the percentage endorsed by LVNs in the RN/LVN dyad was 54.73 percent.
TABLE 3
Percentage of Task Overlap Among Occupational Titles

<table>
<thead>
<tr>
<th></th>
<th>MD</th>
<th>NP/PA</th>
<th>RN</th>
<th>LVN</th>
<th>MAS/PSA</th>
<th>Health Technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td>90.30</td>
<td>63.01</td>
<td>63.91</td>
<td>45.45</td>
<td>68.75</td>
<td></td>
</tr>
<tr>
<td>NP/PA</td>
<td>85.82</td>
<td>65.90</td>
<td>65.41</td>
<td>40.91</td>
<td>64.58</td>
<td></td>
</tr>
<tr>
<td>RN</td>
<td>77.30</td>
<td>85.07</td>
<td>96.99</td>
<td>93.18</td>
<td>95.83</td>
<td></td>
</tr>
<tr>
<td>LVN</td>
<td>60.28</td>
<td>64.93</td>
<td>74.57</td>
<td>77.27</td>
<td>87.50</td>
<td></td>
</tr>
<tr>
<td>MAS/PSA</td>
<td>14.18</td>
<td>13.43</td>
<td>23.70</td>
<td>25.56</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>Health technician</td>
<td>23.40</td>
<td>23.13</td>
<td>26.59</td>
<td>31.58</td>
<td>54.55</td>
<td></td>
</tr>
</tbody>
</table>

Note: Percentages reflect the perspective of one occupational group (listed in the top row) compared to the other group (listed in the left-hand column) in each dyad. The percentages are derived from a ratio in which the numerator is the number of overlapping tasks and the denominator is the number of occupation-specific tasks.

Frequency and Duration of Task Performance

To illustrate a potential application of frequency and duration information in task reassignment analyses, we examined the reported frequencies per week for each of the 129 overlapping RN/LVN tasks. There was substantial variation in the frequency of the tasks performed by the two groups. Conversely, clerks endorsed the smallest percentage of work also endorsed by the other occupational groups (i.e., ranging from 13.43 percent of the tasks also endorsed by advanced practitioners to 50 percent of the tasks endorsed by health technicians). The percentage of task overlap among nursing personnel (RNs and LVNs) and clerks and health technicians ranged from 77.27 percent (LVNs endorsed 34 of the 44 clerk task statements) to 95.83 percent (RNs endorsed 46 of the 48 health technician statements). These findings support our hypotheses of overlap in task endorsement among the targeted occupational groups.

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scenarios resulted in an estimated weekly time savings of 308.35 minutes and 143.03 minutes and projected cost savings of $212.65 and $161.67 for the two tasks, respectively.

DISCUSSION AND IMPLICATIONS
Job analytic methods for delivery system redesign represent an innovative, systems approach to evidence-based management of human resources. Our research illustrates how systematic identification of overlap in task performance can be used as the first step in delivery system redesign. When multiple occupational groups perform the same work, as we found in our analysis of VHA primary care, opportunities exist for delivery system redesign. Our finding that the bulk of tasks in our database were performed by RNs, MDs, NPs and PAs, and LVNs raises the question of whether health technicians and clerks are being used effectively in primary care. Perhaps MDs, advanced practitioners, and RNs and LVNs could be relieved of the responsibility for tasks already being performed by clerks and health technicians. In our study, RNs reported performing all but three tasks endorsed by clerks and all but two tasks performed by health technicians. This signals a tremendous opportunity to redesign the delivery system by offloading work, if the functional complexity of task performance permits the work to be done by others. In theory, relieving RNs of responsibility for performing low complexity tasks would allow more time for tasks that are higher in functional complexity and that make better use of RNs’ skills and training. Optimizing the fit between worker competencies and task complexity should also yield greater comfort and satisfaction among healthcare workers by minimizing consequences such as boredom (underutilization of worker skills) and burnout (overutilization of worker skills). Actual reassignment decisions, however, must consider contextual factors such as process flow, local skill levels, and clinic layout.

Evidence-based decisions regarding the appropriateness of task assignment may also assist the implementation of clinical practice guidelines. Systematic assignment of task responsibility for practice guidelines may help ensure greater adherence to the guidelines and avoid the default of allowing “whoever has time” to perform the work (Pugh 2002). This approach also affects quality of care: task assignments are not based exclusively on who can do the work, but rather on who is best suited given the full array of information.

Using a task database also helps to enhance timely access to care. Theories of advanced clinic access advocate redistribution of work among other qualified members of the care team to minimize constraints in clinic flow. Our results offer evidence to support such redistribution efforts. In addition, the use of a primary care task database also affects patient safety. For example, task ratings that evaluate human error highlight the potential ramifications of errors in task performance. This evidence may be used to guide task allocation such that the most consequential tasks are delegated to workers with the greatest skill, training, and
experience. Although it may be argued that licensure and certification already circumscribe work responsibilities for patient safety insurance, a job analytic database offers greater precision by drilling down to task-level specificity. Whereas licensure and certification focus on scopes of practice in general, our approach guides the determination of who should perform individual tasks, the smallest identifiable unit of work content. In addition, task statements afford maximum flexibility in analyses of work processes (Fine and Getkate 1995).

Limitations
Our study was inherently descriptive and intended solely to illustrate the potential utility of task analysis toward redesigning current patterns of work assignment. Our goal was to construct a database describing primary care service delivery. Other functional areas such as administrative and logistic (supplies and materials) responsibilities require further development. The 243 task statements should not be construed as the entire universe of primary care work in the VHA. We used survey information to profile task endorsement, including the frequency and duration of performance. Accordingly, our data are subject to the psychometric concern for accuracy that is common in survey research. Even though we examined the distribution of responses and statistically trimmed data points beyond two standard deviations of the mean, the usual caveats regarding survey data apply here (i.e., sample dependence, cross-sectional data collection, and self-report bias). However, while we cannot claim complete reliability with regard to our task performance data (e.g., frequency and duration), our research clearly illustrates the potential utility of a primary care task database methodology in evidence-based decision making regarding personnel.

Caution should be taken in interpreting overlap among the occupational dyads. Our finding that tasks endorsed by RNs overlapped most often with other tasks performed by the other occupational titles is not unexpected, given that RNs reported performing the greatest number of tasks. However, to the extent that these data accurately reflect current patterns of work responsibility, these percentages signal extensive opportunities for delivery system redesign.

CONCLUSION
A primary care task database has great potential for calibrating human resources and reengineering work responsibilities. In contrast to subjective approaches to personnel decision making, FJA explicitly uses subject matter expertise to compile a rich array of evidence to better align the work content with requisite worker characteristics. Based on the high levels of overlap among primary care team members, there appears to be tremendous opportunity to reallocate work more efficiently and effectively. Identification of overlap in task performance, however, is but one step in the process of delivery system redesign. The functional complexity ratings must also be used to guide the assignment of task responsibility to personnel with the required competencies to perform the task. Likewise,
delivery system redesign should not focus on any one dimension (e.g., cost) and should consider the possibility of unintended consequences of the reallocation of tasks (e.g., worker dissatisfaction).

Healthcare managers will find the validity of job analytic methods useful in personnel decision making, both in terms of legal defensibility and in terms of quality of care and patient safety (U.S. Department of Labor 1978). The proposition that job analytic databases provide evidence to help guide delivery system redesign is philosophically analogous to implementing evidence-based medicine to guide healthcare quality. In a sense, the primary care database may be likened to a toolkit for guiding evidence-based management of human resources.

This methodology is not a standard pathway to evidence-based personnel management. Rather, a primary care task database is a tool that must be adapted to the local context (including clinic layout, staffing configurations, and skill levels) in a collaborative effort among SMEs, management, and labor (Bray et al. 2000; Kowalski et al. 2003; Yorks et al. 1996). Indeed, this methodology has been used in many different industries and has a time-honored history (Fine and Cronshaw 1999; Fine and Getkate 1995; Moore 1999 and 2000; Gilpatrick 1972). Thus, while the methodology is generalizable across different settings, it must be adapted for implementation in the local context.

According to the Institute of Medicine (2000), “tens of thousands of Americans die each year from errors in their care, and hundreds of thousands suffer or barely escape from nonfatal injuries that a truly high-quality care system would largely prevent.” To help bridge this quality chasm, systematic analysis of the work, worker, and work organization provides evidence to guide one aspect of the “radical and sustained system-level change” recommended by the Institute for Healthcare Improvement.

Acknowledgment
The authors thank Dr. Judith Patterson, director of the Biometry Core at VERDICT, for her assistance in database analyses.

Note
1. The research reported here was supported by the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service (IIR-01–185). The views expressed in this article are solely those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the University of Texas School of Public Health.

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PRACTITIONER APPLICATION

Robert P. McDivitt, FACHE, deputy network director, U.S. Department of Veterans Affairs, VA Midwest Health Care Network (VISN 23), Minneapolis, Minnesota

The primary question posed by Dr. Best and his colleagues is whether the use of functional job analysis and other traditional tools for selecting and training

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healthcare workers can be expanded to improve task assignment in a primary care setting. Based on the data provided, the answer clearly is yes.

For years primary care managers have struggled to determine an appropriate mix of physicians, mid-level providers, RNs, LVNs, health technicians, and clerical support. We have used guides such as panel size, workload projections, and a subjective staffing “feel” developed through years of experience. The authors assert that staffing assignments can be based largely on objective, measurable criteria. Best and colleagues propose that evidence-based validation takes much of the guesswork out of the staffing process.

An unsurprising conclusion of the study is that physicians and other independent practitioners (physician assistants, nurse practitioners, and clinical nurse specialists) perform many of the same duties. We must strive to eliminate these duplications. However, the large percentage of a physician’s time that is spent on duties more appropriate to less complex positions is disturbing. Appropriate redistribution of these duties should allow healthcare managers to significantly improve primary care efficiency. The study suggests that there is clear opportunity to move more routine duties from our most expensive staff (physicians) to others. This is a finding that must be further explored and developed in the practical laboratories of our hospitals and clinics.

The primary analytical tool used in the study—functional job analysis (FJA)—is a technique developed in the 1950s by Sidney Fine and others seeking a databased, equitable method to select employees for promotion or training opportunities. Best and his team have transferred this tool to the arena of healthcare. The 243-question survey, administered by professional job analysts and supported by clinical and administrative subject matter experts (SMEs), provided a supportable scientific foundation for the kind of decision making that is currently lacking in most healthcare staffing models.

Implementation of FJA in a primary care setting is fully compatible with current methods of flow analysis such as advanced clinic access (ACA), which, like FJA, breaks our workflow processes into their component parts. As a national leader in ACA, the U.S. Department of Veterans Affairs is well suited to complement ACA initiatives with FJA and is appropriately viewed as a potential pilot implementation site. Variables in the implementation process that may substantially affect task assignment are clinic layout and the existing skill set of providers and support staff.

The authors have identified significant duplication and potential misassignment of duties among providers and staff from the six primary care sites participating in the study. FJA techniques, combined with other process improvement activities such as ACA, show great promise in injecting evidenced-based decision making into our primary care staffing plans and improving efficiency by assigning the right work to the right staff.