

Labor Planning Outcomes: Systemic Management Models, Human Interactions, and Knowledge Sharing

By

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As the economy fluctuates from cycle to cycle, a continuing concern for health-care providers is the control of labor costs. This concern is especially true in hospitals where labor shortages are a constant challenge. Nurses and support labor are increasingly harder to attract and retain as hospital provider alternatives (e.g., stand-alone surgery centers and physicians' offices) provide more attractive working conditions in the form of hours and stress levels. The hospital environment is made more complex by the seasonality of hospital demand adding complexity to labor planning and allocation tasks.

Hospital responses to these challenges have focused on recruiting to hire core staff, utilization of premium and contract labor to fill existing unmet needs, and reduction of patient intake when adequate staff is not available. While these responses achieve a certain level of success, they merely treat symptoms rather than root causes. This research project takes a novel approach to the above problem. While existing environments tend to sub-optimize solutions through a segregated systems approach (i.e.,

every hospital department plans and allocates labor to serve its own needs), this project posits that system approaches at the service line, and higher levels produce a more productive allocation of labor. The systemic approach is better able to contract and expand to match the ebbs and flows of patient demands through hospital sub-systems. The project explores solutions within the gap between sub-optimized, siloed approaches and system-based approaches to the labor planning and allocation cycle.

A systemic, centralized approach to labor planning and allocation in hospitals can overcome disconnected, siloed results by engaging natural feedback loops providing better-managed labor.

The labor planning and allocation cycle (LPAC) consists of workload forecasting, labor scheduling, and labor staffing tasks. These interconnected and interdependent tasks represent a system containing all in-

herent properties of a system including internal and external factors (refer to Figure 1). The LPAC system operates within a larger system of interconnected departments forming the service line (e.g., medical/surgical, critical care, women's services, etc.). These service lines, in turn, form a larger system in conjunction with all service lines encompassed as the hospital system.

Keywords: Labor Staffing, Labor Scheduling, Hospital Labor Management, Performance Metrics

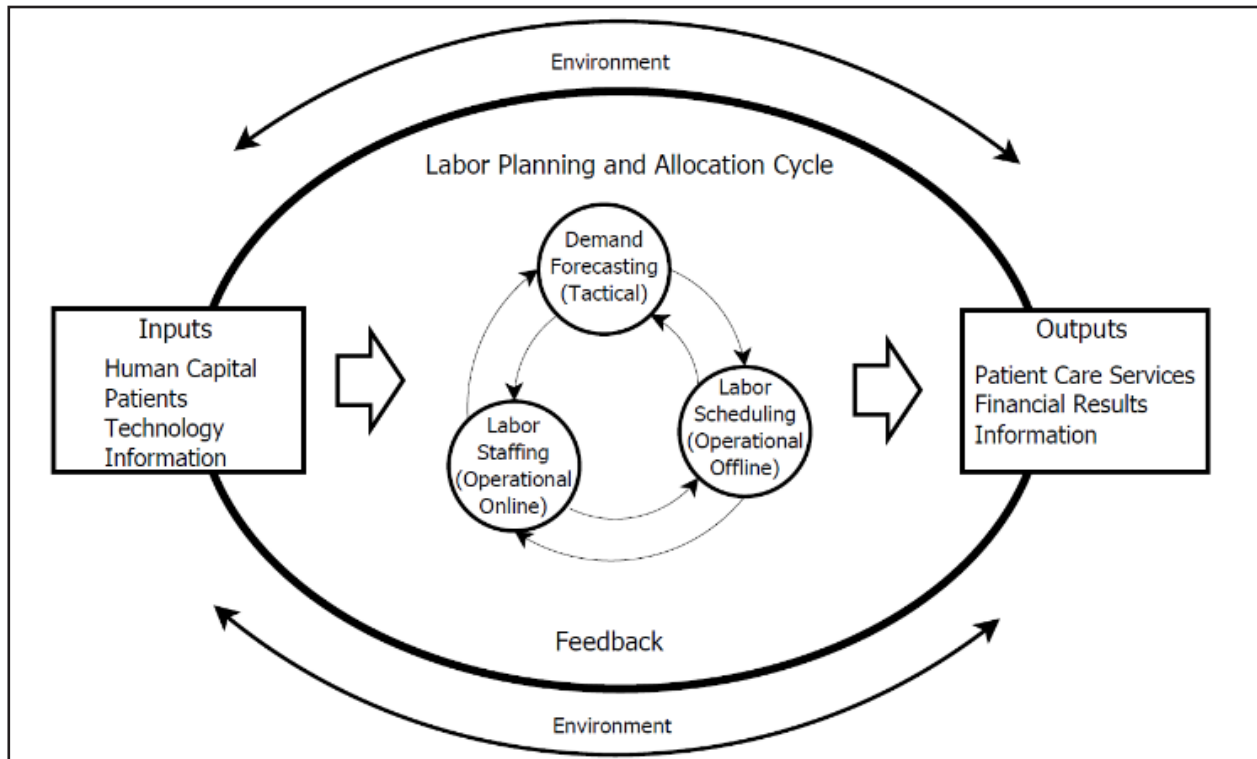


Figure 1: Labor Planning and Allocation Cycle (LPAC Cycle)

Patients move through the hospital system via a sophisticated effort known as patient placement or patient throughput, which has been studied often both from the academic and practitioner perspectives. Advanced software connecting departments, typically control this process allowing patients to flow through the system from one service line and department to another based on the patients' progression of care. The LPAC systems, however, usually operate independently at the department level, disconnected from LPAC systems operating in other associated departments creating an artificial gap in labor flows (refer to Figure 2). This gap prevents the feedback loops of the system from effectively operating preventing labor balancing with patient needs. This research project sought to reconnect the LPAC subsystems with the larger hospital system to bring the planning and allocation of all assets in line with patient demand.

Research Description

The research asked the following questions:

- *Question #1:* What will a better future look like with a Systemic LPAC deployed in a typical hospital?
- *Question #2:* How will a systems approach driven by resource flows and not limited by departmental structures lead to greater optimization of the balance between nursing labor, nursing satisfaction, and patient outcomes?

The project employed a four-stage elaborated Action Design Science Research (eADR) model (Mullarkey & Hevner, 2015) to structure the research method. This methodology allowed for the embedding of researchers within the practitioner environment, which was critical to iteratively design and refine artifacts used within the LPAC cycle to implement a system-based, centralized labor-management model. Repetitive refinement of the artifacts came through the iterative use – define, build, evaluate, learn, reflect, re-define process resulting in relevant and tested operational models.

The research consisted of three phases. The first phase involved establishing foundational performance metrics for measuring individual outcomes in the areas of demand forecasting accuracy, labor scheduling, and labor staffing. These metrics were critical to providing the ability to measure success within each component of the LPAC to determine the performance of the new labor-management model. The second phase of the project developed a new model of systemic, centralized labor planning and allocation serving to facilitate knowledge sharing, human judgment, and human interactions to leverage system opportunities and improve outcomes. This phase documented existing siloed approaches focusing on social (human) interactions and the impact of centralizing and restructuring work on LPAC outcomes. The project thoroughly documented each component of the LPAC concerning roles, communications, social interactions,

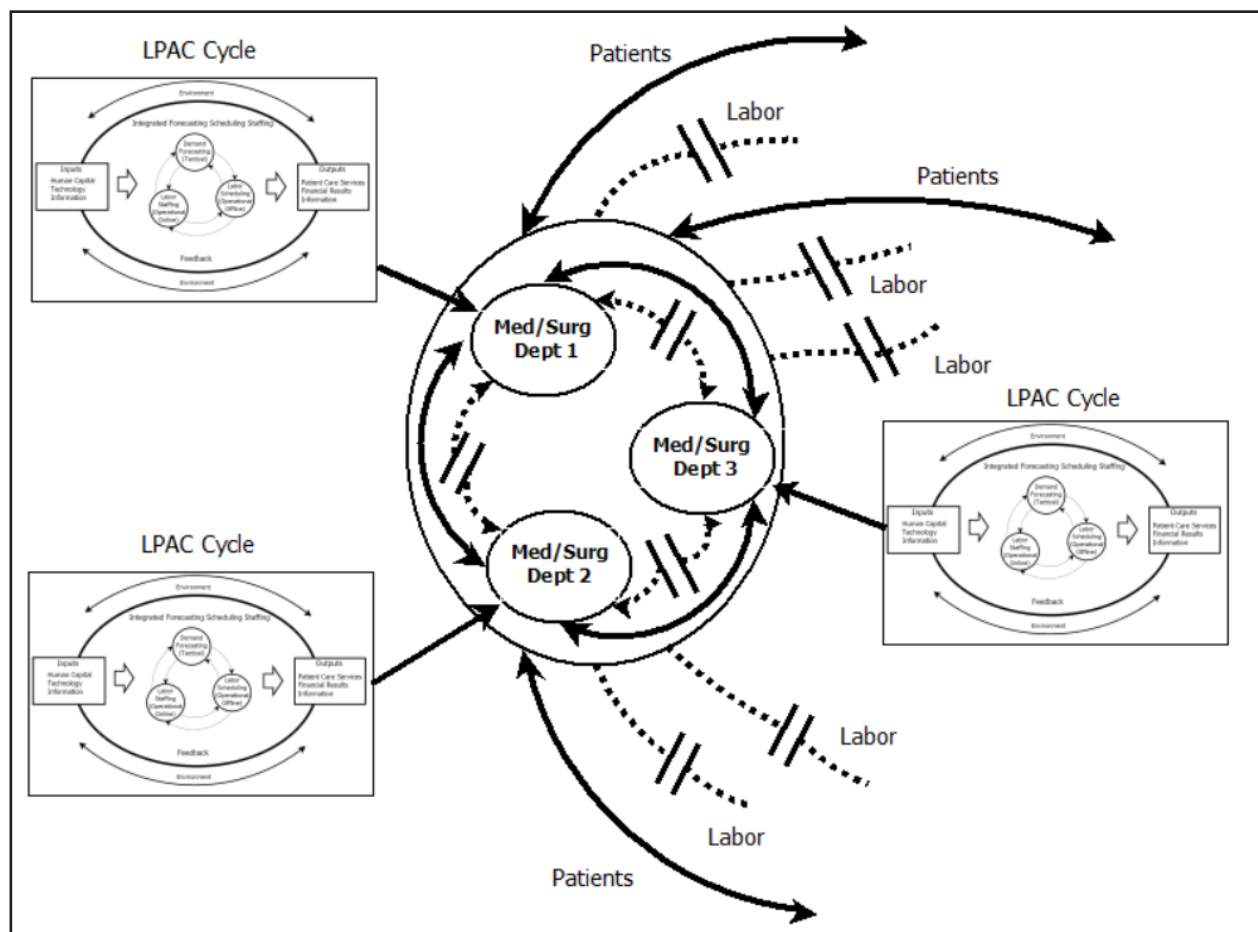


Figure 2 - Operating Departments or Service Line Isolation from Higher Layer Systems

technical interactions, inputs, and outputs. The objective was the restructuring of roles and activities within the labor forecasting, scheduling and allocation of work streams to facilitate a systems approach increasing participant interaction, communication and ultimately knowledge sharing. The third phase of the project extended the new model across a larger sample set utilizing a centralized approach to labor planning and allocation across multiple service lines and hospitals to determine the potential impact to outcomes. This phase further evaluated and improved the model through interventions in situ with practitioners.

Findings

The research resulted in the creation of two main artifacts, the set of LPAC performance metrics, and the Systemic LPAC Management Model. The LPAC performance metrics provide the ability to define success and opportunity within each phase of the LPAC (workload forecasting, scheduling, and staffing functions). The researchers used this artifact to evaluate the performance of the second artifact, the Systemic LPAC Management Model as compared to the pre-implementation state.

Through the multi-phased project, researchers found that a centralized, focused management model successfully moved multiple organizational hospital units away from a sub-optimized, departmental focus to a system focused model of labor planning and allocation. The systemic approach resulted in performance improvements in each of the LPAC phase performance metrics resulting in more accurate workload forecasts, more accurate labor schedules mapped to expected unit demands, and more accurate staffing allocations mapped to patient needs. The new LPAC Management Model allowed for a service line view of labor to guide operational decisions at each level of the LPAC improving overall results.

These findings had several limitations. Although the LPAC Management Model showed improved performance when extended and generalized over multiple service lines and hospitals, technology was a limiting factor. Existing technology was not able to fully support the management functions necessary in the systems approach. Significant amounts of manual work were necessary to accomplish the LPAC phase functions at a system level. True scalability of the LPAC

management model will be dependent on more advanced technology that can support the management of both technological and social interactions while providing decision support functions across each of the system layers. A second limitation is that the research did not include an assessment of the sociological impact of the LPAC Management Model on employee engagement and patient experience. The model resulted in performance improvement when considering the operational tasks, but the impact on employee engagement and patient experience can be significant considerations to research further. One additional limitation is that controls and considerations for potential “Hawthorne effects” were not included, regarding performance improvement as a result of the in situ work involved with an eADR structured project.

Conclusions

The system disconnect between departmental, siloed labor planning and system managed patient demand results in inefficient system feedback loops within the LPAC cycle that exasperates existing complexity with labor management. To close this gap, a new operational and management model based on a systemic approach provided the mechanisms to restore the LPAC balancing feedback loops resulting in improved labor allocation performance. The centralization of the workload forecasting, scheduling, and staffing tasks provided specialization opportunities as well as a focal point for the control and move-

ment of labor based on real-time information and knowledge. The redesign of social and technological interactions resulting in changes to roles, processes, and communication structures provided the mechanisms to focus attention on the planning and allocation of labor across higher level systems within the hospital such as service lines to better map labor across the multiple departments in conjunction with patient movement.

Where to Find Out More

The source dissertation is available by accessing the University of South Florida Electronic Theses & Dissertation system on the University of South Florida website. The author is available for contact for additional information or questions via the following email address: cssqtarpey@gmail.com.

References

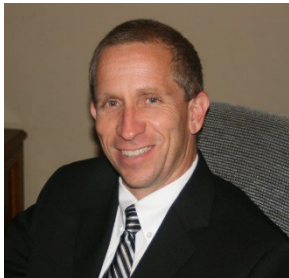
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Review

This article was accepted under the *editorial review* option. For further details, see the descriptions at:

<http://mumabusinessreview.org/peer-review-options/>

Author



Richard Tarpey has spent over 27 years working with resource scheduling concepts and systems within the airline and health care industries. He currently leads an initiative to consolidate scheduling and staffing functions into a shared services model for hospitals at one of the largest for-profit hospital operators in the United States. Tarpey earned a Bachelor’s degree and an MBA from Middle Tennessee State University and a DBA from the University of South Florida. He currently holds an adjunct professor position within the MTSU-Jones College of Business.