*Abstract: Nurses at Magnet hospitals are significantly more engaged in their work than nurses at other hospitals. This culture of engagement is significant not only because it leads to lower employee turnover, but because research shows that the level of nursing engagement at a facility is a reliable predictor of mortality and complication rates. In creating a culture of engagement it's important that the workplace environment include IT applications that are ubiquitous, up-to-date and used in a way that allow nurses to function as knowledge-workers rather than task-executors. There are several ways in which IT can contribute to the workplace characteristics that are known to make nurses more engaged with their work. In addition, predictive modeling is an IT application that helps hospitals measure and influence engagement, allowing for better employee retention rates and possibly better clinical outcomes.*

# Technology's Role in Creating a More Engaged Workforce

A recent blog entry by Ben Casnocha, the precocious Silicon Valley entrepreneur who started two companies before his twentieth birthday, looked at the topic of job satisfaction as it relates to individual tasks. He wrote, "If you want to find out what someone really does for a living, ask him what he does 'on a day-to-day basis.' Usually, when you ask someone, 'What do you do?' you get a grand, idealized vision of what their job is *supposed* to be. Hence, I follow this question with, 'Interesting. So what does that entail on a day-to-day basis?'"

Researcher Barbara Mackoff has also gained new insights into job satisfaction by simply reframing a question. In the ongoing discussion about the escalating nursing shortage, the healthcare industry has had to take a hard look at the factors that create job dissatisfaction among nurses and nurse managers. But in a recent survey, Mackoff flipped the inquiry around: instead of looking at the conditions that make nurses leave, she set out to study the positive factors that make nurse leaders *stay* in their jobs and in the profession. Specifically, she looked at the individual characteristics and workplace conditions that keep nurse leaders effective and engaged in their work. Mackoff considered nurses to be "engaged" (as opposed to merely happy or satisfied with their jobs) if they had been in their current positions for at least five years and had been designated as excellent by their chief nursing officers.[1] In other words, for the purpose of the study, nurses had to be both outstanding at their jobs and *long-tenured* to be considered engaged – an important distinction, as studies have shown that the longer an employee stays with a company, the less engaged he or she is likely to become.[2]

The Gallup Organizations have done extensive research on the topic of engagement in the workplace, estimating that actively disengaged workers cost the American economy up to $350 billion per year in lost productivity.[3] Research specific to the healthcare industry reveals that nurses at hospitals with the Magnet designation of excellence are significantly more engaged in their work than nurses at other hospitals.[4] This culture of engagement is significant not only because it leads to lower employee turnover, but because the level of nursing engagement at a facility is a reliable predictor of mortality

and complication rates.[5] So how do Magnet hospitals do it? The 1983 study that resulted in the creation of the Magnet Recognition Program listed 14 traits that were eventually dubbed the "forces of magnetism" because of their ability to draw in nurses like a magnet attracts steel. The traits deal with nearly every possible aspect of organizational structure and culture; notably, three of them relate directly to high-quality models of care as delivered and influenced by nurses. If there's one thing conspicuously missing it's any mention of technology's role in a culture of engagement – it would seem logical that nurses will be more engaged in an environment where information technology is ubiquitous, up-to-date and used in a way that empowers nurses as knowledge workers rather than task-executors. IT is a critical tool in optimizing the workplace to facilitate a culture of engagement.

### *How IT Contributes to Engagement*

While the "forces of magnetism" don't directly mention information technology, they identify the factors that ostensibly work together to contribute to a culture of nursing engagement. Many of these factors can be linked to IT, either directly or indirectly, as seen in the examples below.

- ***Nurses are more engaged when they truly believe they are delivering quality care.*** Hospitals place a tremendous emphasis on improving quality of care, in part by reducing preventable errors. Nurses represent the "human factor" in delivering care, as they are a key connecting point between patients, physicians, pharmacists and lab workers. Since they are in a particularly critical position to ensure medication safety (up to 40 percent of medication errors occur during administration[6]), nurses who are given tools such as bar codes can feel more confident they are administering the right dose to the right patient at the right time. Even IT tools used primarily by other caregivers can strengthen the perception that a high standard of care is in place. For example, decision support systems can alert doctors and pharmacists to contraindications before nurses ever receive orders, ensuring that appropriate care is being delivered. And when CPOE is used, nurses are less likely to waste time tracking down a physician because of illegible, handwritten orders or missing information.
- ***Nurses are more engaged when the workflow is not task-oriented, but outcomes- oriented.*** To influence an outcome is to employ critical thinking and evidence-based practices, rather than just to run down a checklist of chores. In order to feel empowered to influence patient outcomes, it's imperative that nurses spend less time documenting care and more time providing care. Point-of-care clinical systems significantly reduce paperwork: when charting is done immediately at the bedside instead of hours later, nurses benefit from a more streamlined workflow. In the ICU, clinical systems that automatically document vital signs and other data supplied by patient monitors are especially useful in freeing nurses from paperwork.
- ***Nurses are more engaged when there is shared governance in decision making.*** Powerless nurses are ineffective nurses. While the Magnet criteria for shared governance focus mainly on giving nurses a voice when it comes to organizational policies and procedures, there is a need for nursing-specific

decision support systems and other software that can close the gap between knowledge and practice. Partnerships between vendors, hospitals and educational institutions can help. For example, the Knowledge-based Nursing Initiative (KBNI) began two years ago as such a liaison. The initiative, which focuses on identifying nursing knowledge and synthesizing it, has designed a clinical, point-of-care information system that actually embeds essential nursing knowledge in its screens, in the form of reminders, options and alerts. For example, if a general patient assessment reveals factors that warrant an additional, more focused assessment, that focused assessment will appear on the screen, from problem and interventions to desired and predicted outcomes.[7]

- ***Nurses are more engaged when staffing is flexible.*** Magnet hospitals are known to have personnel policies, including innovative scheduling programs, which work well for nurses who are balancing career and personal life. A 2005 analysis by the First Consulting Group examined the impact of technology on challenges related to scheduling (e.g. safety issues related to staff-patient ratios, the high cost of overtime, employee dissatisfaction with extra or "floating" shifts, etc.) It found that the practice of self-scheduling is becoming more prevalent, concluding that Web-based programs that allow employees to bid for shifts or otherwise self-schedule are highly satisfying to staff, at the same time freeing up time for nurse managers.[8]
- ***Nurses are more engaged when they have opportunities for professional development.*** Technology has created special roles for nursing informaticians. While specialties like telenursing are already being used to extend nursing capabilities to a wider area, it's time nurses became involved with the process of implementing clinical information systems as hospitals move toward EHRs and adopt more advanced technologies.

## *IT's Role in Measuring Engagement*

There are compelling reasons to measure – and influence – nursing engagement. Research shows there is a direct correlation between an engaged workforce and high rates of staff retention, and that employee turnover comes with a high price. In 2005, the National Commission on Nursing Workforce for Long-Term Care reported that long-term care facilities spend an estimated $4 billion on recruiting and training nurses.[9] It also found there are nearly 100,000 vacant nursing positions in long-term care facilities on any given day.[10] Such vacancies obviously have indirect costs, due to the increased likelihood of adverse events associated with staff shortages. Creating a culture of engagement is part of the solution – yet how can hospitals influence what they can't measure? Predictive modeling is the answer.

Predictive modeling (PM) is an IT application long used by the insurance industry to forecast future events, calculate the probability of an outcome and anticipate the costs and consequences of a change. As applied to nursing staffing issues in an individual hospital, it's a new way of looking at data: PM can quantify the bottom line impact of staff trends and the risk to the organization if nurses leave, both in terms of recruitment and training costs, and patient safety.

But PM can also reduce turnover, by analyzing the relationships between a nurse's salary, education level, skill level, tenure and other factors, then identifying the patterns that cause nurses' voluntary termination of employment. The result is a statistical model that quantifies the relationship of each of these factors to the probability of retention and gives each nurse an individual retention score (e.g. Carla has a 22 percent chance of leaving in the next year). As employee attributes change over time, retention scores also change (e.g. in March Laura has a high risk of leaving because of her salary level; in September she receives a raise that changes her retention score and places her in a low-risk group).

The benefits of PM in measuring and affecting engagement – and therefore retention – are enormous. If a hospital can predict which type of employee is most likely to leave, it can employ retention programs focused on that group. For example, young nurses in entry level jobs might be willing to start out at a low salary, but they tend to move on once they've gained experience. To prevent this kind of predictable turnover, a hospital might implement regular salary and performance reviews, raises, bonuses, benefits and other incentives. For nurse leaders, the outcomes of using PM in this way might include not only staff retention, but increased patient satisfaction, improved budget management and better clinical outcomes.

In addition to predicting individual behavior, PM can also identify potential problems and patterns before they snowball and have a tremendously negative impact on the organization. Imagine discovering that your top performers are the nurses most likely to leave in a short time – wouldn't you want to take steps to derail this troubling trend? Finally, PM can create models of performance abilities that can help identify key talent that's suitable for leadership promotion, benefitting the individual nurse, nurse managers and the organization as a whole.

### *The Future is Now*

In 2006, The Aging Workforce Survey reported that 55 percent of the nurses surveyed, most of them nurse managers, intend to retire by the year 2020.[11] Who will take their places? Is there a way to keep these aging nurses engaged and in the workforce? Aside from the efforts of Magnet hospitals, retention strategies have not kept up with retention needs. Technology offers many untapped solutions for redesigning roles for mature nurses, as well as helping to create a culture where caregivers are actively engaged in providing high quality care.

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