Adopting Online Nurse Scheduling and Staffing Systems

Prepared for
CALIFORNIA HEALTHCARE FOUNDATION

by
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About the Foundation
The California HealthCare Foundation, based in Oakland, is an independent philanthropy committed to improving California’s healthcare delivery and financing systems. Formed in 1996, our goal is to ensure that all Californians have access to affordable, quality health care. For more information about CHCF, visit us online at www.chcf.org.

The iHealth Reports series focuses on the effective adoption of IT in health care by analyzing the marketplace, inspiring innovation, and providing practical information on emerging technology trends.

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I. Executive Summary

Online nurse scheduling and staffing software applications, which are relatively new to the health care market, can significantly help organizations overcome the scheduling and staffing challenges they face. The challenges include a nurse shortage, an aging nurse population, restrictive union contracts, and mandated staff-to-patient ratios.

This report reviews the processes and difficulties involved in nurse scheduling and staffing, and explains how new products streamline those processes, making them more accessible and more efficient. Among other benefits, online scheduling and staffing products optimize staff resources, boost staff satisfaction and retention, provide greater control of staffing costs, and enable organizations to better meet regulatory requirements.

Traditional scheduling and staffing applications generally have been very valuable for health care organizations. But newer online tools do a better job of balancing an organization’s needs with staff’s needs, give staff greater access to scheduling and staffing, and, in some cases, offer a significant return on investment. For some of these products, only certain components or functions work online. Other niche products work exclusively online. Indeed, the vendor market is moving toward scheduling and staffing tools that are fully functional on the Internet.

Integrated scheduling and staffing products cost from $60,000 to $150,000 for a 300-bed hospital, depending on the module(s) it selects. The cost typically is based on the total number of users. Stand-alone products that enable nurses to bid on open shifts cost from $3,000 to $9,000 per month for a 300-bed hospital, with the fee based on how much the application is used.

As the case studies included in this report demonstrate, successful implementation hinges on having a clear strategic plan early in the process; targeting a level of software integration or interface and then purchasing one or more applications to accommodate that level; and providing creative, high-quality training to staff. The case studies also suggest that self-scheduling is becoming more prevalent.
Few health care organizations are taking advantage of the online functions now available in scheduling and staffing applications, which can be installed relatively quickly. Once nurses begin using such tools, other departments often demand them. Although there are few formal outcome measurements to date, organizations that use online nurse scheduling and staffing say they would never return to their old methods. Moreover, cost savings can be substantial: St. Peter’s Hospital in Albany, New York, saved more than $1.7 million in the first three years of online bidding by replacing agency staff with internal staff for open shifts.
II. Background

THE CALIFORNIA HEALTHCARE FOUNDATION commis-
sioned First Consulting Group (FCG) to explore the nurse
scheduling process and gain a better understanding of the
potential value of online nurse scheduling systems at hospitals
and other health care organizations.

FCG consulted health care professionals about nurse scheduling
and staffing processes and issues, along with new applications.
The group included executives, managers, and nurses, as well as
health care clients and vendors. It then prepared six case studies of
organizations that use online nurse scheduling and staffing tools.
The case studies are based on interviews with executive sponsors,
scheduling and staffing managers, and other department
representatives, such as those in human resources, nurse recruit-
ing, information systems, and education (see Appendix A).

Levels of online function vary among both niche and more-
integrated products. In this report, “online” means a product
offers, via the Internet, any level of access to a scheduling or
staffing software application.
III. Challenges

Three main factors, listed in Table 1, have negatively affected nurse scheduling and staffing: the current nurse shortage, staff’s lack of control over their own schedules; and the general complexity of staffing and scheduling.

Table 1. Main Issues That Influence Scheduling and Staffing

<table>
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<tr>
<th>Nurse Shortage</th>
<th>Control of Schedule</th>
<th>Complexity of Staffing</th>
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<tr>
<td>High vacancy rate</td>
<td>Staff preferences</td>
<td>24/7 operation</td>
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<td>High turnover rates</td>
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<td>High agency use</td>
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<td>Staff satisfaction</td>
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</tr>
<tr>
<td>High staffing costs</td>
<td>Staff satisfaction</td>
<td>Quality and patient safety</td>
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Because of the nurse shortage, there are not enough staff to fill available shifts, a problem that is projected to persist for the foreseeable future. This leads to high vacancy rates, increased use of agencies, and, ultimately, higher staff costs and dissatisfaction. To fill open shifts, organizations can offer incentives or bonuses, although working overtime often causes greater fatigue. Alternatively, organizations can pay agency staff or travelers to fill the shifts, an expensive approach that increases staffing costs. As recently as 2001, the estimated cost of agency and traveling nurses at U.S. hospitals exceeded $71 million. More use of agencies also can reduce staff satisfaction, as permanent staff may assume heavier workloads to compensate for temporary staff’s unfamiliarity with hospital policies and procedures. Dissatisfied staff either perform poorly or look elsewhere for work. This can be a vicious, self-propagating cycle.

Staff nurses commonly lack control of scheduling and staffing. They want more say and flexibility regarding where and when they work. Some must work overtime or float to other units to accommodate staffing needs. Numerous scheduling and staffing practices do not consider staff’s preferences, which not only dampens staff satisfaction, but can make it more difficult to recruit and retain nurses.

Scheduling and staffing are complex processes that must take into account many factors. Among them are the availability of qualified staff; balancing the organization’s needs with nurses’ preferences.
for particular days, shifts, and units; regulatory and union requirements; and the link between staffing and quality control. Regulatory and union requirements must be built into scheduling and staffing. The requirements govern the number of hours worked, overtime, time off, certifications and credentials in accordance with standards set by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and staffing ratios. They also are tied to internal scheduling and staffing rules. As the number of rules increases, scheduling and staffing become more complicated.

Studies show that fewer nurses and less time spent by nurses with patients can contribute to poor patient outcomes. One study reported that hospitals with high registered nurse (RN) staffing had lower rates of urinary tract infection, pneumonia, shock, and upper gastrointestinal bleeding, as well as shorter hospitalizations, compared to hospitals with low RN staffing. California has pioneered mandated nurse-to-patient ratios, and many states are mulling similar legislation. Ratio calculations must be part of the process of defining staffing needs at the unit level. Hospitals also must document, by means of staffing reports, that they are meeting or trying to meet the ratios.
Scheduling refers to making work assignments for the next work period. It is done four weeks to three months in advance, depending on the organization. Staffing refers to filling open shifts on the current work schedule. Open shifts arise as a result of staff vacancy rates, paid time off, leave, sick calls, and other factors. (Figure 1 shows the sequence of tasks in scheduling and staffing.)

Scheduling and staffing models at health care organizations are centralized, decentralized, or mixed. In the centralized model, an office manages strategy, budget, resources, and process. In the decentralized model, managers of individual hospital units have more flexibility and control over the budget, resources, and process. The mixed model blends aspects of the other two: For example, individual units may manage regular schedules, but if they cannot fill outstanding shifts through normal scheduling, they might forward their needs to a central location for shift coverage.

An organization’s size also can affect scheduling and staffing. Larger organizations with a centralized model, such as integrated delivery networks, have more bargaining power in negotiating contracts with staffing agencies, and their personnel are more mobile. Conversely, smaller community and rural hospitals have less bargaining power with agencies, and their staffs are smaller and less mobile.
Personnel costs are the largest expense in a hospital’s operating budget. Hospitals that want to stay competitive are examining ways to keep personnel costs under control while continuing to provide safe, high-quality care. When considering how a unit will be staffed, a key issue for the nurse manager is the budget, which encompasses RNs, licensed practical nurses, nursing assistants, and ancillary staff.

Each unit works within a budget when it determines scheduling and staffing needs. The budget, often expressed as full-time equivalents, is based on patient census, acuity/workload, and staffing trends. Analysis of and reporting on these trends give the organization more tools to develop accurate and appropriate budgets for each unit.

The JCAHO requires that every accredited health care organization have a defined process for determining scheduling needs. This process must be documented — the organization must be able to show that it is appropriately adhering to the process and staffing — and may include predicting patient census as well as acuity or workload when determining the specific scheduling needs of each unit. Organizations that track census, acuity/workload, and staffing can more clearly define and predict those needs.

Organizations also must have a system in place to track available personnel, who may be permanent full-time or part-time staff; float or per-diem staff; travelers; or internal or external registry staff. Such tracking should be able to determine their skills, certifications, licenses, and training. Aside from being a regulatory requirement, this also is an important part of matching needs with personnel. Systematically tracking credentials verifies the skill level of available staff, links skill level to various job categories, and monitors expiration of or renewal dates for certification. Continuing education units and required in-service programs can be linked to the credentialing process. Knowing the skill levels of staff means they can be matched more effectively with the appropriate unit.

Organizations use one or more of four types of future scheduling:

- **Pattern scheduling.** Whereby staff commit to work a set number of shift types (days, evenings, nights) in a given time period. At the end of that period, the pattern repeats.

- **Preference scheduling.** Staff define their preferences for shift type, days of the week, and unit. Defined rules can override preferences.

- **Rules scheduling.** Based on an organization’s scheduling policies and procedures. Because rules scheduling does not take pattern or preference into account, it rarely is used alone.

- **Self-scheduling.** Scheduling needs are first defined and then staff — on a rotating first-come, first-served basis — sign up for available shifts.

After scheduling is completed, the next tasks are staffing and finalizing the schedule. There are four staffing options:

- **Track and call.** This system involves maintaining a list of available personnel and calling them to find out if they will work an additional shift. Lists that include an individual’s phone number, credentials and skill level, last shift worked, and next scheduled shift are especially valuable.

- **Shift posting.** Open shifts are forwarded to a central location where staff can sign up for extra shifts. This option gives open shifts higher visibility throughout the facility and health system, which increases the likelihood that qualified internal staff will fill vacancies.

- **Shift bidding.** This practice is similar to shift posting except that staff bid an hourly rate for the shift — an additional incentive.

- **Staffing agencies, travelers, and qualified community staff.** These external resources for filling open shifts often are the most expensive option. Furthermore, personnel from outside a health care organization may not completely understand its policies and procedures.
V. Online Scheduling and Staffing

Online scheduling and staffing applications are relatively new to the market. “Online,” in this context, means an entire application or one or more of its components are accessible via the Internet. There are two online modes: Web-enabled and Web-based. Web-enabled systems need additional applications to function on the Internet. Web-based systems are built with technology specifically developed for the Internet; the organization must have a Web server and the appropriate in-house resources to manage the system. Self-service features, such as self-scheduling and shift bidding, are unique to online scheduling and staffing applications.

One of the biggest benefits of online nurse scheduling and staffing is the level of access they give to managers and staff. In the past, hospitals could not coordinate staffing beyond a single site. Now, online tools enable health care organizations to perform this task at multiple sites or units. Shift posting or shift bidding across multiple locations can greatly optimize internal staff resources. To take maximum advantage, organizations must have a clear sense of staffing needs and the staff available to meet those needs at the unit, hospital, and enterprise levels. Online nurse scheduling and staffing can identify needs and resources—permanent staff, float and per-diem staff, internal registry staff, and in some cases qualified external staff—and then help match them. Consequently, there is less need for more costly staff from agencies or travel companies.

Most online nurse scheduling and staffing applications offer self-scheduling, shift posting, and shift bidding. These tools give staff more choices, flexibility, and control in defining schedules and working extra shifts. They increase the level of access that staff have to available shifts, which increases the pool of available personnel to cover those shifts. As a result, the organization is less likely to require overtime or assign staff to units they do not typically work. Additionally, shift bidding in some cases enables staff to earn a higher hourly rate for working extra shifts. All of these factors influence staff satisfaction and, ultimately, turnover and retention rates.
Some online tools offer more-integrated solutions or interfaces with other computer systems, allowing organizations to weigh staffing cost issues against real-time patient census, acuity/workload, and budget. This gives staffing managers better information to make last-minute staffing decisions that can affect the budget, staff satisfaction, and quality of care. By streamlining various processes, the tools reduce the amount of time that must be spent on scheduling and staffing, which generates indirect cost savings.

Online tools also can streamline regulatory and safety requirements. Rules can be defined in the system for hour limits, time-off requirements, overtime, and staffing ratios. This minimizes the time and energy staffing managers must devote to tracking and meeting these requirements. Furthermore, organizations can use the reporting function to verify that they are meeting the defined rules. For example, staffing ratios can be built into the budget; as patient census fluctuates on a unit, the staffing needs match the census based on the ratios defined in the system. The system generates reports on census, staffing needs, and the staff who worked.

Software Components
Industry experts estimate that up to 50 to 75 percent of U.S. hospitals with more than 100 beds have computer-based nurse scheduling systems. However, only 30 to 40 percent of users take full advantage of the systems’ functions. And only 1 to 2 percent of U.S. hospitals currently use scheduling and staffing applications that have online functions.

Numerous barriers affect hospitals’ decision to purchase an online scheduling and staffing product. These include insufficient resources to support the project, resistance to change, control issues between management and staff, and a lack of knowledge about what the products can do and their value.

Among the commercially available online products are niche products exclusively for online shift bidding. These applications often interface with more traditional, client-server scheduling and staffing systems. Other products offer a limited number of online components, the most common being self-scheduling, shift posting, and shift bidding. Still others are highly integrated and have full online capabilities. Health care organizations must consider the level of online function when they assess a product.

Other factors to keep in mind:

- Organizations with a centralized staffing model need tools that enable enterprise-wide scheduling views and function. Decentralized staffing models need flexibility and function at the unit level.

- A scheduling and staffing application should allow self-scheduling, shift posting, track and call, and shift bidding. Some products have advanced functions for managing budgets and resources, applying sophisticated rules and preferences, sophisticated rules and preferences, and for assessing real-time staffing needs.

- While the majority of products are geared to nursing, most also support any other types of shift-based staffing. Settings can be adjusted so the system encompasses particular units or departments, the entire hospital, or an integrated delivery network.

- Some products make it possible to incorporate qualified external staff in self-scheduling and bidding. These staff may include qualified community personnel who want to bid on shifts or communicate with staffing agencies about unit, hospital, or enterprise needs.

- Nursing staff can play a pivotal or passive role in scheduling and staffing. Self-scheduling, shift posting, and shift bidding give staff more access to and control over these tasks.

- Some products offer an integrated solution, while others interface with existing systems. Depending on an organization’s strategic plan for scheduling and staffing, it should weigh the level of integra-
tion it wants within a product suite (for example, whether to include scheduling and staffing, acuity, productivity management, time and attendance, payroll, and perhaps other functions) versus building interfaces with systems already in place. This raises issues such as cost, the amount of effort involved, performance, and how much value a new product will add.

- Web-enabled applications are more expensive, due to license fees, and do not perform as well as Web-based applications. A product either will have online components or it will be entirely Web-based.

**Scheduling Functions**

These online functions vary in terms of configuration level. Some products have set scheduling options — for rules or work patterns, for example — while others accommodate custom-built master schedules and rules. Regardless, organizations typically use four types of scheduling. (Table 2 summarizes the pros and cons of each.)

**Rules-based Scheduling**

Rules-based scheduling applications allow rules to be set at the unit, facility, or enterprise level. The rules include an organization's policies and procedures that govern scheduling and staffing, the rules in union contracts, and regulatory requirements, such as hour limits, time-off requirements, overtime, and staffing ratios. Most of the rules relate to the number of hours worked in a week, the number of hours between shifts, the number of consecutive shifts, and unit-specific minimums, such as a requirement to work every third weekend. All of the rules are defined in the system, and the schedule runs strictly according to them. Some vendors call this scheduling “automatic” because a schedule is generated at the push of a button.

**Pattern Scheduling**

In pattern scheduling, managers can define work patterns at the unit and individual-staff levels. Unit patterns include the number and type of shifts required — for example, two weeks working days, then two weeks working evenings, then two weeks working nights. Individual patterns include preferences for shifts, such as daytime and evening hours on Mondays, Tuesdays, and Wednesdays, and nighttime hours on Fridays, Saturdays, and Sundays.

**Preference Scheduling**

Managers who use this type of scheduling can define a unit’s rules and enter an individual’s work preferences, including shifts, days, spacing between shifts, and any conflicts. The manager must then prioritize how the schedule accepts preferences (on a seniority

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**Table 2. Pros and Cons of Scheduling Types**

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<tr>
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<th>Pros</th>
<th>Cons</th>
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<tr>
<td>Rules-based</td>
<td>Incorporates regulatory issues (hour limits, time-off requirements, overtime, staffing ratios)</td>
<td>Does not take staff preferences into account</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does not take staffing patterns into account</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scheduling is erratic</td>
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<tr>
<td>Pattern</td>
<td>Predictable schedules</td>
<td>Offers little flexibility</td>
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<tr>
<td></td>
<td></td>
<td>Must hire staff to set pattern needs</td>
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<tr>
<td></td>
<td></td>
<td>Impairs recruitment</td>
</tr>
<tr>
<td>Preference</td>
<td>Considers staff preferences for days, shifts, and units</td>
<td>Preferences may not be met due to configuration of rules</td>
</tr>
<tr>
<td>Self</td>
<td>Enables more creativity in covering shifts</td>
<td>Less hospital and manager control of scheduling</td>
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or rotating basis) and how those preferences are to be weighed against the unit’s needs.

**Self-Scheduling**
Self-scheduling allows staff to fill in a blank schedule, taking the unit’s needs into account. Before the schedule is posted, some rules, such as the rotation of self-scheduling or a requirement to work at least every third weekend, can be defined so they are automatically included in the posting. Organizations that use self-scheduling can be more creative about covering shifts. For example, some hospitals suggest that interested staff stipulate not only the minimum hours they want to work, but also any extra shifts. This fosters greater front-end, rather than back-end, coverage of shifts.

**Staffing Functions**
There are four types of staffing options: internal track and call, shift posting, shift bidding, and external resources.

**Track and Call**
To track and call internal staff, a tool is necessary to retrieve a list of those who are available. The tool’s ability to do this depends greatly on the detail and relevance of the list. Some products only list staff who have the appropriate job title; they do not account for scheduled work hours or hours worked. More-sophisticated and integrated products consider these factors along with scheduling and staffing rules. Some enable staff to enter dates they are available to work; the names of those who make work requests also appear on the available-staff list. Some products also can track and document efforts made to fill shifts, an especially valuable function for hospitals that have difficulty meeting mandated staffing ratios.

**Shift Posting**
Through shift posting, which is most effective online, organizations can list available shifts in a unit, department, or elsewhere in the hospital or health system. This is a powerful tool for optimizing the use of internal staff, who can view available shifts online and then send a request to work a particular shift. The manager decides if that person should work the shift and, if appropriate, adds him or her to the schedule. Shift posting gives staff more control of their schedule and an opportunity to work extra shifts, and it reduces the effort needed to fill extra shifts.

Shift-posting products vary significantly in terms of function. At a minimum, staff must be able to view their unit schedule and the personnel needs by job title. After normal scheduling is completed, they can see which shifts need coverage and then send a request to their manager to work one of them. In some cases, rules in the system, rather than the manager, automatically accept or reject the request based on whether the individual has the defined skills for that shift.

**Shift Bidding**
Like shift posting, shift bidding is an online tool that gives qualified staff greater access to open shifts. Unlike shift posting, it offers a financial incentive to work extra shifts. Bidding options include:

- **Silent auction.** Staff propose a price, which only the manager who posted the shift can view.
- **Reverse auction.** Staff view a starting price, then submit decreasing bids until bidding closes.
- **Multiphase auction.** The organization specifies a time period during which bidding is open to a particular group. When time expires, bidding opens to other groups.
- **Fixed bid.** Staff request to work for a defined price set by the posting manager.
- **Best bid.** Staff submit one, lowest bid.
- **Proxy bid.** Staff sets a minimum bid. Then the application automatically places bids on the user's behalf, reducing them by a specified amount on each subsequent round until the user’s minimum bid is reached.
Bids are posted with an hourly maximum and minimum rate range, but they can also be a percentage range above the base rate of pay. Skill level and special credentials are linked with the shift so only staff who meet the defined requirements can bid on the shift. More-advanced products allow staff to stipulate the preferred unit and day of the week; when those shifts become available, they appear on the staff nurse’s home page.

It is important to understand how shifts are awarded. Some products automatically accept the lowest qualified bidder, while others leave the decision to the posting manager or central staffing office. Accepting the lowest bid assumes that the individual is qualified to work the posted shift. Posting managers can define specific experience, such as that related to providing ventilator care, that qualified candidates must have in order to bid on a particular shift. While the lowest-bid format requires less time of managers and is more equitable for staff, giving the posting manager the ultimate decision allows for more flexibility in determining a unit’s needs in relation to staff experience. This latter approach, though more time-intensive for managers, is most effective with silent bidding.

There are stand-alone products that focus strictly on — and integrated scheduling products that handle some level of — shift bidding. The stand-alone variety offer more-advanced functions, such as management reporting, information importing and exporting, inputting of shift preferences, managing employees’ bids, and alerts when bids conflict or overlap. They also are much more configurable.

**External Personnel**

Using external personnel — agency staff, most often — is the last staffing option. Some bidding products also help with recruitment. Online bidding allows community staff to go online and learn more about the process, fill out a bidding application, and complete an organization’s formal process for qualifying to become a community bidder. This process for hiring external bidders is similar to the one for hiring internal agency staff.

**Enhanced Functions**

There are important considerations that affect scheduling and staffing, but are not necessarily part of those processes, such as budget and productivity management; tracking personnel and acuity/workload; and reporting. Some products offer enhanced functions that also take these considerations into account.

**Budget and Productivity Management**

The budget affects future staffing schedules and the current schedule. An application may allow unit-specific budgets to be entered into the system so they play a role in determining the number and mix of staff necessary to fill future schedules.

A benefit of this enhanced function is its ability to simulate “what if” scenarios to analyze the impact that current volume and staffing changes will have on the budget. This is particularly helpful in assessing last-minute staffing changes. For example, if a last-minute shift must be covered, the function indicates how the budget will be affected by using float staff versus external agency staff versus paying time-and-a-half. Products that integrate time and attendance, census, and acuity have the highest level of budgeting function.

**Personnel Tracking**

The level of personnel tracking varies among scheduling and staffing products. Such tracking can be as simple as retrieving demographic information or as sophisticated as managing credentials and education. Advanced functions may include tracking certifications, licenses, health status, performance evaluations, education and salary histories, the in-services that staff have attended, orientation and training classes, and continuing education units. Most products with this capability can track transfer, salary, skill level, and termination histories. Alerts may be built in to notify staff and nurse managers when credentials are about to expire or have not been updated. Some products enable staff, once they are online, to sign up for classes and manage continuing education requirements and...
credentials. Most products require input from the core human resources system.

**Acuity/Workload Tracking**
This is another enhanced function in some products. Calculations can be based on a points system and acuity level, or both. It may include the ability to track different volume or activity indicators across departments. For example, an emergency department may prefer to track admissions, while an operating room may prefer to track procedures. This integrated feature adds value to budget and productivity management. Managers can get real-time information, enabling them to make more-informed staffing decisions based on true need.

**Reporting**
All scheduling and staffing products offer some level of reporting. This may be as simple as providing a defined set of reports or as sophisticated as providing customized reports. Reporting capabilities depend on the degree to which scheduling and staffing are integrated with budget and productivity, and with tracking of personnel, patient census, acuity/workload, and time and attendance. Often, higher levels of integration offer higher levels of reporting, such that budget and productivity reports include agency-staff data, executive summaries, group analyses, and reports on performance and workload management. Personnel management reports include employee lists, class tracking reports, and turnover reports.
VI. Cost and Implementation

Sample Bidding Rules for Nurses

- If you are on orientation, in the disciplinary process, or on a leave of absence for any reason, you are not eligible to participate.
- You are not permitted to bid for a shift on scheduled vacation or holiday time.
- All professional competencies—such as, safety in-services, CPR, advanced cardiac life support, and pediatric advanced life support—and credentials must be up to date and documented for you to be eligible to bid for shifts in units or facilities that require such competencies.
- You must first bid on a shift in your nursing unit—if the shift is available on the date and time that you are interested in working—before bidding on shifts in other units.
- You must first meet your minimum scheduling obligations before bidding on extra shifts.
- You cannot work more than 16 hours in a 24-hour period.
- You cannot switch a scheduled shift with another nurse to participate in bidding.
- You are verifying that you are available to work the shift when you submit the bid. If the bid is accepted and you are no longer available to work, then that shift will be considered a call-off.
- If the unit census changes and you are not needed, (a) you will be offered a position on another unit at the accepted bid rate or (b) you will be canceled up to two hours before the shift starts.
- Abuse of the bidding program will make you ineligible for future bidding.

Integrated Online Scheduling and Staffing products are available for purchase under license. Stand-alone, online shift-bidding products are marketed through an application service provider model: hospitals pay a fee for each shift that receives a bid.

These products vary significantly in terms of price. To get an idea of the price range, the author asked vendors to provide cost estimates for products that would serve a 300-bed hospital. Estimates, which included implementation and support, for integrated scheduling and staffing products were from $60,000 to $150,000, depending on the modules selected. This cost usually is based on the total number of users and, for some integrated solutions, may include time-and-attendance functions. Stand-alone, online shift-bidding products were from $3,000 to $9,000 per month, with the monthly fee typically based on how much the application is used. Some products also have an initial set-up fee. (Table 3 on the following page depicts the implementation phases and the key components of each one.)

The planning phase involves defining the level of quality and financial accountability, strategy, level of integration, measurable objectives, key team members, and system requirements. Discussions about the level of integration should consider applications that handle time and attendance, census, acuity/workload, human resources, payroll, and tracking of education and credentials. For any scheduling and staffing applications, key team members should include representatives from nursing, information systems, payroll, and human resources. The organization may have to establish rules and policies for new functions such as shift bidding (see sidebar). In shift bidding, bid rates need to be defined at the unit level.

System requirements provide a roadmap for selecting a vendor and defining the level of integration or interface an organization needs. System configuration includes populating the database with demographic information, defining the parameters for scheduling and staffing (location, units, types and lengths of shifts, type of staff, skill level, and length of schedule), and setting parameters for the budget, reporting, and regulatory compliance.
(staffing ratios, labor laws). When an organization defines its system, it must ensure that the coding throughout is consistent and should understand how these codes will interact with components, such as reporting, and with interfaces, such as payroll and time and attendance. Testing of the hardware, software, infrastructure, interfaces, functions, and volume should simulate the real-world environment.

Training must take into account the computer competency levels of those who will use the new system; they may need to learn fundamentals first. It also should account for change management and process redesign. The deployment plan specifies the pilot site and subsequent roll-out to units. Starting with a pilot site gives the project team an opportunity to address issues on a small scale before they roll out the system to other units. Support should be available at both the technical and functional levels. The deployment plan should incorporate a marketing and incentive plan for use of the system. The support phase defines the help to be provided during and after deployment. A strong support plan sets the stage for a successful roll-out, which increases the opportunity for more learning and more extensive use of the tools.

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ONLINE NURSE SCHEDULING AND STAFFING PRODUCTS offer simple tools that affect many issues. As more staff participate in scheduling and staffing, vendors will have to develop more-refined tools for viewing and managing these tasks.

The online tools can help organizations minimize their use of agencies. However, given the current nurse shortage, such use will continue at some level. In the future, scheduling and staffing products will integrate organizations’ staffing functions and agency functions. For example, agencies could have access to and submit competing bids for open shifts. Or a hospital’s staffing and scheduling system could send requests directly to agencies. The information flow between organization and agency could include fields that define the type of staff needed, their credentials, and their years of experience. To manage and track agency use, information from agencies could be fed to the organization’s scheduling and staffing system.

Meanwhile, as more functions become available to staff and as staff bear more responsibility for scheduling, movement will continue toward products that are Web-based rather than Web-enabled. There also will be new growth in application server provider (ASP) models. In ASP models, organizations pay a monthly service fee—often based on usage or the number of users—for an online, Web-based application instead of purchasing it. Currently, only online shift-bidding products are available via the ASP model. At some point, vendors of integrated scheduling and staffing products likely will consider offering to host the Web sites and servers. That will make these services more affordable for smaller community hospitals.
Ball Memorial Hospital, Muncie, IN
This nonprofit community hospital, licensed for 370 beds, is affiliated with Cardinal Health System. It has a decentralized scheduling and staffing model with a central office to manage the internal float pool. In 2003, Ball Memorial recognized that using paper for scheduling and staffing was inefficient and ineffective; it was spending a tremendous amount of time, effort, and money on managing these processes. So the hospital committed to purchasing an enterprise-wide, online scheduling and staffing product. Nursing drove the choice of a vendor.

The hospital spent three months shopping for a vendor, a process in which information systems staff participated. In December 2003, it selected Nightingale, a suite of applications from Visual Advance Systems Technology, Inc. (VasTech) that includes IntraGale for online scheduling and Central Staffer for staffing.

With IntraGale, staff can view their personal and unit schedules and then self-schedule, all on the Internet. Once the schedule is completed, units are responsible for finding staff to fill open shifts. Managers who use the shift-posting and bidding capabilities post extra shifts, and interested staff may request them. If shifts are not filled, managers can contact the staffing office for available internal float staff. Ball Memorial does not employ agency staff.

The hospital chose Nightingale based on these key criteria:

- Self-scheduling with IntraGale was easy. Screens were clean, and the look and feel were better than those of competing products.

- Central Staffer was better designed than competing tools. Ball Memorial wanted to be able to view the schedules of all hospital units across types of staff.

- Nightingale was a comprehensive product that Ball Memorial could grow into. The hospital would implement scheduling and staffing initially, and later interface the product with patient census and payroll.
Nurses were the first to adopt Nightingale, although the entire enterprise intends to follow suit. The thinking was that if Nightingale proved successful among nurses, adoption by other departments would be more straightforward. The system for nurses went live in groups, beginning with critical care units in July 2004. All nursing units were live by November 2004.

Since then, Ball Memorial has reduced the number of “staffing specialists” from 16 to 10 full-time equivalents. The system has increased ownership of scheduling and staffing at the nurse manager level, and the process is more streamlined, predictable, and effective.

Ball Memorial suggests that a select group of nurse managers participate in choosing a vendor and that organizations purchase a product they can grow with. It also advises that they develop a strategic plan for scheduling and staffing, not skimp on training, and take maximum advantage of the vendor’s consulting services to optimize the system as the strategic plan is implemented.

The hospital is building an interface with census to get real-time feeds of actual versus budgeted census information. This will help Ball Memorial make staffing decisions based on need and cost.

**Covenant Health Care, Lubbock, TX**

Covenant Health Care is a 1,338-bed, multihospital organization affiliated with St. Joseph Health System. Facing a nurse shortage (the RN vacancy rate was 14.8 percent), Covenant recognized the value of automating its scheduling and staffing, and by giving staff access to scheduling online. It wanted to improve staff satisfaction and reduce the amount of time managers spent on scheduling and staffing issues.

Covenant has a decentralized scheduling and staffing model. Managers post future schedules online, which staff can view either at the hospital or on any PC with Internet access. Staff fills in their ideal schedule, including extra shifts they would like to work. Managers then make sure the schedule meets unit needs and change it accordingly. When it is completed, they print the schedule, which includes outstanding open shifts so staff can request to work extra ones. The number of personnel in the float pool to cover shifts is limited, so managers call unit staff to cover open shifts. Alternatively, unit managers communicate with each other to find out what resources are available due to census fluctuations. Agency staff are used as a last resort.

In April 2004, Covenant settled on RES-Q for scheduling and staffing. The key criteria for selecting RES-Q Healthcare Systems were price, vendor relationship, and function level. RES-Q provides self-scheduling and the functions necessary to move toward centralized staffing. It also provides a high level of reporting.

Covenant formed a project team to design and build application tables and make implementation and training decisions. The team included the director of nursing, a system administrator with human-resources and payroll experience, six nursing unit managers, a pharmacy representative, and a quality representative. The unit managers were “superusers,” or individuals who undergo training for an application, learn to use it expertly, and champion the tool to others.

After the application tables were defined, staff on the six units with superusers received training. The six units went live in October 2004; all other inpatient units were live by the end of November 2004.

Nurse unit managers value the automated staffing and scheduling system because they can get personnel information that previously was difficult to access. They also value the ability to use the system from home. Ease of use has been an important factor.

Covenant was the pilot site for subsequent scheduling and staffing implementations at other sites in
St. Joseph Health System. Among the key lessons it
learned are the importance of:

- Developing a long-term scheduling and staffing
  strategy.
- Setting the order of implementation phases.
- Defining real-time productivity management and
  the desired level of function.
- Looking closely at whether an integrated system
  or an interface is the better approach.
- Purchasing a product that is Web-based. Web-
  enabled products are costly, due to licensing, and
do not perform as well.
- Setting specific project goals (for example,
  provide management decision support, decrease
  redundancies, improve operational efficiencies,
  reduce agency costs, improve regulatory compli-
  ance) and defining the metrics for measuring
  progress toward those goals.
- Assessing nurses’ computer literacy early in the
  planning phase.
- Testing the system in one unit of a small hospital
  first, before rolling it out to other units or larger
  hospitals.
- Standardizing nomenclature, reports, and forms.
- Standardizing codes for scheduling, human
  resources, and payroll at the organization level,
  and making sure that functions can be
  customized at the facility level.
- For the implementation team, enlisting members
  from information systems, payroll, and human
  resources as well as nursing.
- Recognizing that change management and
  process redesign are critical in setting realistic
  expectations and boosting use of the nurse
  scheduling and staffing system.
- Being creative when it comes to training — for
  example, by providing online and self-directed
  training, and using wireless tools to demonstrate
  applications on the unit — particularly at hospi-
tals that are struggling with staffing ratios and
staff shortages.

Future implementations of RES-Q elsewhere in the
St. Joseph Health System will take advantage of the
lessons Covenant has learned. Meanwhile, the
hospital is evaluating the impact of moving to a
centralized staffing model and increasing its report-
ing capabilities. In this model, scheduling would
remain at the unit level and staffing would shift to a
central location, where there is an enterprise-wide
view of staffing needs and resources. The corporate
strategic goal is to integrate scheduling and staffing
with productivity management, enabling each
hospital to manage productivity at the unit level
with real-time budget, census, acuity/workload, and
ratio information.

Resurrection Health Care, Chicago, IL
Resurrection Health Care is a nonprofit, Catholic
health system that comprises nine acute care
hospitals, home health services, a behavioral health
network, a rehabilitation center, and senior services.
The nurse shortage has increased its vacancy rate
and use of agency staff, prompting Resurrection to
seek creative ways to optimize the use of internal
staff throughout the system.

Resurrection has a decentralized scheduling model.
The nurse manager in each unit does the schedul-
ing. Unit managers also are responsible for covering
open shifts after normal scheduling is completed.
A central staffing office works with the managers
to cover shifts that become vacant due to sick calls
and census increases. Internal registry staff and
additional unit resources are allocated to units
according to their needs and skill requirements. In
the spring of 2004, Resurrection began exploring
online shift bidding as a way to improve scheduling
and staffing.

Nurse executives at Resurrection attended a presenta-
tion by FlexeStaff about eShift. The concept of bidding
on shifts and giving staff flexibility to bid across the health system was very attractive. Resurrection ultimately decided that this tool would be of great value. Shift bidding would help reduce the use of external agency staff, encourage part-time and internal registry staff to work more shifts within Resurrection, and enable the health system to pay premiums to internal staff rather than external agency staff. It also would give nurses more control of staffing, reduce the number of calls by managers trying to cover shifts, and help recruit internal registry staff.

Participation in the project by nurse executives was optional; six of the nine hospitals, as well as the home-health and senior services, elected to take part. A steering committee included representatives from nursing, human resources, and marketing.

One challenge was working with payroll to ensure that the accepted bid rate was correctly translated to payroll; pay codes were developed for each bid. Human resources helped set bid rates and bidding guidelines, and helped define recruitment opportunities. Marketing helped with content for the Resurrection Web site so potential recruits could learn about shift bidding, and contributed to a shift-bidding marketing plan targeted to nurses in the community who are interested in joining the internal registry pool.

Resurrection rolled out eShift to one facility at a time, beginning with nurse managers, who were trained to enter shifts and manage applications from potential bidders. Then it rolled out the product unit by unit to staff nurses. The first hospital, St. Joseph, went live in October 2004, and the last one in February 2005.

Both nurse managers and staff nurses have embraced the project. At St. Joseph Hospital, only 16 percent of posted shifts were filled during that first month; now, monthly coverage is nearly 50 percent. More than 1,000 nurses at Resurrection have applied to do shift bidding.

Resurrection learned that not all nurses are computer literate and that there is a learning curve; that during implementation, having a dedicated superuser available at the unit level to provide retraining and to champion the product can improve usage; and that creative marketing and incentive programs early on are valuable in terms of gaining and improving usage.

Resurrection is making eShift available to home health services and senior services, and is exploring the possibility of bringing rehabilitation staff on board. Other staff, such as nurse assistants and unit secretaries, have expressed interest, too. In the future, Resurrection hopes to find objective ways to measure eShift’s impact on quality of care. It believes that adding four-hour shifts would offer more flexibility, attract nurses in the community who are balancing family needs, and attract staff who want to pare their work hours rather than retire.

St. Mary’s Medical Center, Roanoke, WV

In 2002, St. Mary’s, a private Catholic hospital licensed for 440 beds, was struggling with inconsistencies in pay, so it decided to invest in a new time-and-attendance (T&A) system. The hospital already had a scheduling and staffing product, but it wanted an enterprise-wide T&A system that would be integrated with that product.

The nurse scheduling and staffing model at St. Mary’s is decentralized; nurse supervisors handle staffing issues related to sick calls. St. Mary’s has a low nurse-vacancy rate, which minimizes the amount of work necessary to staff open shifts in the current schedule. It does not use agency staff.

The hospital sought a single product that, at a minimum, combined T&A with scheduling and staffing. The main criteria related to nursing were fast data entry (schedules are set by managers on paper, then keyed into the system); character codes for tracking shifts and staff type; daily staffing reports for tracking staff-to-patient ratios; and daily
listing reports detailing who is working where, sick calls, open shifts, and extra staff available to float. Kronos Workforce Scheduler seemed to be the best choice.

Implementation planning started in July 2002. The pilot site was up and running by November, and the entire hospital by February 2003. Nurse managers use Kronos Workforce Scheduler to develop future schedules. Although they initially resisted the change in scheduling systems until it was mandated, the medical center now has a more consistent and effective T&A system that is integrated with scheduling and staffing.

St. Mary’s found it helpful to have a few key individuals receive training from the vendor, then tailor training to how the hospital would use the new system. Its “transitional training” showed how things were done in the past and how they would be done in the future. St. Mary’s suggests that organizations provide baseline training followed by supplemental training as users become more proficient.

The hospital began a pay-for-performance program for employees: instead of receiving maximum pay for their job title, they now receive bonuses based on whether they meet defined goals. To make managers more accountable for managing budgets, St. Mary’s is implementing Kronos Visionware, which will integrate time-card hours, costs, and patient census into one system for managing productivity.

The health system decided to institute centralized staffing for the whole enterprise. In 1985, it purchased the ANSOS scheduling and productivity management system to manage staffing and agency resources for the entire workforce. The system was upgraded in 1996 to One Staff, which provides automated schedules at the unit level for full-time, part-time, and per-diem staff. After schedules are completed, they are forwarded to a central staffing office that fills open shifts. In 2002, Sharp purchased BidShift, an online system, to fill open shifts with internal rather than registry staff. In addition to bidding, Sharp fills open shifts by calling float and unit staff. It uses agency staff only as a last resort.

Sharp selected ANSOS primarily for resource management because ANSOS was the only product on the market at that time that could operate on a wide area network. It upgraded to One Staff because of the potential value and return on investment, and selected BidShift because it generated high interest among nurses and is easy to use.

The scheduling and productivity product was rolled out one facility at a time, taking into account the resources necessary for successful implementation and, from an information systems perspective, the need for little or no down time. Nursing assistants were the first to use shift bidding in October 2002, followed by RNs in May 2003. Because Sharp has a union contract, it introduced the union to the shift-bidding tool and got the union’s approval of related policies and procedures before implementing it. This provided an opportunity to discuss any concerns. Shift bidding occurs after normal scheduling is completed, so there is no impact on seniority, average wages, or working conditions.

Sharp sees great value in One Staff’s ability to show staffing needs throughout the enterprise. This has enabled it to deploy staff more easily, effectively, and efficiently. Calculations of nurse-to-patient ratios are part of the system, which ensures that Sharp meets the minimum requirement. Also,
the health system uses current census and acuity information every day to tailor staffing needs to resources. Centralized staffing and shift bidding have reduced registry use. According to staff, the shift-bidding tool is fun to use.

Sharp found that in a centralized staffing model, having consistent codes and processes is imperative. If codes are inconsistent, reporting and tracking are much more challenging. In addition, both the organization and its tools must be flexible and adaptable, given the complexity of staffing and scheduling. Finally, staff feedback about a tool’s function is important so future upgrades can take into account end-users’ needs.

The health system wants to move toward self-scheduling. It would like to see products that have employee portals so staff can self-schedule, view schedules, and enter personal preferences and availability, and a function that posts open shifts to agencies so competing agencies can bid on them. This would improve communication with agencies and potentially reduce agency costs.

University Medical Center, Tucson, AZ

University Medical Center (UMC), a private, nonprofit academic medical center that is licensed for 355 beds and has magnet status, regularly feels the effects of the nurse shortage. Although its nurse vacancy rate is relatively low, getting extra staff, including agency staff, to cover shifts is difficult. Compounding the problem is a 1:4 staffing ratio on medical/surgical units.

UMC has decentralized scheduling and staffing. Staff can self-schedule online, view their schedule, and request shifts they are available to work. Schedules are reviewed and modified as needed and then posted. The medical center’s centralized staffing office helps fill shifts 24 to 48 hours before they start. The office has access to an internal staff pool and the local agency pool, which is limited. UMC does not use shift posting or shift bidding, but staff can view units’ schedules and needs. Supplemental staff (agency and travelers) account for 6.5 percent of direct-care hours.

UMC originally automated its scheduling and staffing in 1980. It did not use the scheduling function then because the organization committed itself to supporting self-scheduling for nursing. At the time, most products were biased toward pattern scheduling. In 1998, UMC acquired different scheduling and staffing products. It wanted tools that were Windows-based, could be integrated with the medical center’s payroll and time-and-attendance system, and would support self-scheduling. In 1999, UMC upgraded to API ActiveStaffer.

First it tested the product on a single unit. Then, after resolving kinks and issues, it rolled out ActiveStaff to groups of units. Although staff were interested in the system’s online capabilities and acceptance was high, training managers to use it proved challenging. Functions were very detailed. This necessitated re-education on a regular basis and, because of decentralized scheduling and staffing, great expertise among more managers. Centralized scheduling and staffing, in contrast, would have required that only a limited number of staff have such expertise.

Given ActiveStaff’s integration with payroll and time and attendance, there are checks and balances between scheduled work and work actually performed. The staffing office particularly appreciates the automated data; it can view schedules in advance and anticipate needs.

UMC learned that initial set-up is very important: if set-up is not done correctly, the configuration can become a barrier down the road. Second, hospitals must select a knowledgeable vendor who has implementation experience. Third, the medical center suggests that organizations allocate more time for planning and implementation than the initial estimate calls for, and, during the pilot phase, focus training on staff who need it most.
UMC is integrating the API Education Tracker, which enables staff to sign up online for education classes. They can also view credential- and license-expiration dates, and receive reminders about renewals and classes. UMC anticipates better management of time and costs associated with internal education.
Adopting Online Nurse Scheduling and Staffing Systems

TRADITIONAL CLIENT-SERVER APPLICATIONS FOR NURSE scheduling and staffing have been a big help to health care organizations as they struggle to match staffing needs with available personnel. Now, a newer generation of software makes it possible to handle those increasingly onerous tasks partly or exclusively on the Internet. These online tools optimize the use of personnel, give staff more access to and responsibility for scheduling, afford greater control of staffing costs, and enable organizations to better meet regulatory requirements. Online bidding, in particular, may generate a significant return on investment.

Four major themes emerged from the case studies in this report:

- Organizations developed a strategy early on;
- They targeted a level of integration, then purchased applications to accommodate that level;
- They recognized the value of creative, high-quality training; and
- Self-scheduling is becoming more prevalent.

Because staffing and scheduling are so complex, having a clear strategy at the outset about how to perform these tasks more efficiently may save a tremendous amount of time and money in the long term. Ideally, the strategy should include a close examination of vacancy and turnover rates, the use of agencies and travelers, recruitment and retention efforts, the type of staff and settings that are likely to utilize a new product, and the level of functions necessary to handle everything from scheduling and staffing to productivity management.

Many of the new tools offer enterprise-wide solutions, so even though nurses may be the primary users, the strategic plan should not overlook nursing assistants, pharmacists, and other high-vacancy staff. Nor should it overlook possibly using the tools in outpatient as well as inpatient settings—in long-term care facilities, home care, and clinics, for example.

Two key factors for an organization that is trying to determine which tools it needs are financial accountability and quality.
accountability. It must define accountability at the executive level and focus on the tools necessary to achieve it. If the organization’s ultimate goal is to place accountability at the unit level, unit managers must have tools to manage staffing needs and resources. And if managers are to make informed decisions about scheduling and staffing that will ultimately affect productivity management, they must be able to retrieve real-time information about costs, the budget, patient census, and acuity/workload. Finally, the organization must be able to measure the impact of scheduling and staffing on quality of care.

Once a strategy is set, how sophisticated the new tools should be will depend on the cost of integrated products and interfaces, the amount of effort necessary to install interfaces, integrated versus interface functions, and system performance. Key barometers that health care organizations can track with online tools are patient census, acuity/workload, payroll, and time and attendance.

Another ingredient for success is training. Creative training methods take into account staff whose computer literacy may be limited. In addition, training should include lessons on how to optimize the use of new tools. Health care organizations and vendors that work closely together and establish a strong relationship, which includes providing feedback, increase the likelihood that future products will better meet buyers’ needs.

Very few hospitals are taking advantage of online scheduling and staffing. Those that do discovered that implementation occurs reasonably fast once a system is configured. They also found that after nursing staff adopted these tools, other departments wanted them, too. Although few users have formally measured the impact on patient outcomes, they say they would never return to old, less-accessible methods of scheduling and staffing.

Vendors have turned the corner in terms of understanding the delicate balance among getting shifts covered, satisfying staff, and managing productivity. They are moving away from Web-enabled applications and toward Web-based products, which address those three challenges. Improved access via the Internet enables more staff participation in scheduling and staffing. That, in turn, gives managers more time to focus on managing productivity and quality of care at the unit level. Vendors recognize the value of products that provide integration, information, accountability, and incentive.

Online nurse scheduling and staffing applications are at the point where they truly support self-scheduling. Many organizations that strongly believe in self-scheduling decided not to automate this task until vendors offered reliable tools. Products available today not only support self-scheduling, but also add value in terms of track-and-call lists, shift posting, and shift bidding. Because self-scheduling is highly satisfying to staff, more organizations will leverage this capability to boost recruitment and retention.
Appendix A: Interviewees

Sandi Acevedo, R.N.
Staff nurse, renal telemetry
Covenant Health Care
Lubbock, TX

Angela Athis
Director, staffing resource network
Sharp Health Care
San Diego, CA

Julie Bell, R.N., B.S.N.
Nurse manager, dialysis
Covenant Health Care
Lubbock, TX

Betty Bush, R.N., B.S.N., O.N.C.
Nurse manager, oncology
Covenant Health Care
Lubbock, TX

Leslie Cowan, R.N., B.S.N.
Patient placement and resource manager
Ball Memorial Hospital
Muncie, IN

Sandy Czapla-Myers, R.N., B.Sc.N.
Educator, ActiveStaffer
University Medical Center
Tucson, AZ

Anne Davis, R.N.
Vice president, workforce support services
Sharp Health Care
San Diego, CA

Kathy Douglas, R.N.
Vice president and chief nursing executive
BidShift, Inc.
San Diego, CA

Dan Duroux
Director, application support
Covenant Health Care
Lubbock, TX

Patricia Geegan
Resource coordinator
University Medical Center
Tucson, AZ

Theresa Guillmen
Unit secretary, pediatric intensive care unit
Covenant Health Care
Lubbock, TX

Gary Hamilton, R.N.
Nurse manager, renal telemetry
Covenant Health Care
Lubbock, TX

Rod Hart
Co-Founder and president
Flexestaff
Chicago, IL

Jean Hood, R.N.
Nurse manager, pediatric intensive care unit
Covenant Health Care
Lubbock, TX

Becky Hull, R.N., M.S.
Systems manager for patient care services
University Medical Center
Tucson, AZ

Dave Imhoff
Associate director, information services
St. Mary’s Medical Center
Roanoke, WV

Jim Klink
Vice president, sales
API Software, Inc.
Hartford, WI

Susan Kratz
Nightingale application specialist
Ball Memorial Hospital
Muncie, IN

Christopher Larco
Health care industry manager
Kronos, Inc.
Chelmsford, MA

Ophelia Loa, R.N., M.S.N.
Director, nursing (Covenant in Levelland)
Covenant Health Care
Lubbock, TX

Joe Matassa, M.B.A.
Vice president, sales
Visual Advance Systems Technology, Inc.
Annapolis, MD

Kathryn McClellan
Director, solutions
CTG HealthCare Solutions
Cincinnati, OH

Michael Meisel
President and chief executive officer
RES-Q Healthcare Systems
Calabasas, CA

Kelly Murphy, R.N.
Staff nurse
Alfred I. duPont for Children
Wilmington, DE

Daniel Palmer, P.M.P.
Senior product manager, workforce central engineering
Kronos, Inc.
Chelmsford, MA

Tony Quinonez
Application specialist
Covenant Health Care
Lubbock, TX

Susan Sayari, R.N.
Director, medical/surgery and critical care nursing services
Covenant Health Care
Lubbock, TX

Janell Smith, R.N.
Charge nurse, dialysis
Covenant Health Care
Lubbock, TX

Janet Stifter
Vice president, patient services
St. Joseph Hospital
Chicago, IL

Gil Sullivan
Workforce scheduling solutions
Kronos, Inc.
Chelmsford, MA

Connie Thomman, R.N.
Nursing supervisor (Covenant in Levelland)
Covenant Health Care
Lubbock, TX

Karen Walker
Clinical applications coordinator
Covenant Health Care
Lubbock, TX
Appendix B: Vendors

Stand-Alone, Shift-Bidding Products

Product/Functions
BidShift
• Reverse auctions
• Fixed bids
• Proxy bids
• Best bid
• Multiphase auctions

Breadth and Length of Use
• 32 hospitals and more than 16,000 clinicians and other health care professionals
• Largest nurse-scheduling, Web-based implementation: Sharp Health Care, San Diego, CA
  * Length of online use: 2.5 years
  * Deployed at 8 union hospitals

Contact
BidShift, Inc.
5405 Oberlin Drive
San Diego, CA 92121
(858) 882-8500
Fax: (858) 882-8501
www.bidshift.com

Product/Functions
eShift
• Reverse auctions
• Instant win

Breadth and Length of Use
• 14 hospitals, 8 long-term care facilities, and 1 home health agency (encompassing about 4,000 users)
• Largest nurse-scheduling, Web-based implementation at a multihospital organization: Resurrection Health Care, Chicago, IL
  * 8 sites, 1,000 users, 1,300 shifts filled/month
  * Length of online use: 7 months (first system)
• Largest nurse-scheduling, Web-based implementation at an individual hospital: Spartanburg Regional Health System, Spartanburg, SC
  * 1,300 users, 1,900 shifts filled/month
  * Length of online use: 2 years
• 4 unionized health systems discussing purchase with vendor

Contact
Flexestaff
North LaSalle Center
203 N. LaSalle, Suite 2100
Chicago, IL 60601
(773) 635-0030
www.flexestaff.com

Integrated Scheduling and Staffing Products

Product/Functions
ActiveStaffer
• Scheduling and staffing (rules, preferences, patterning, self-scheduling)
• Time and attendance
• Payroll
• Acuity
• Productivity management
• Education management
• Shift posting and bidding

Breadth and Length of Use
• About 100 health care organizations
• Largest nurse-scheduling, Web-based implementation: Health Alliance, Cincinnati, OH
  * 7,500 employees use ActiveStaffer
  * Length of online use: nearly 3 years
• Deployed at 2 unionized health care organizations

Contact
API Software, Inc.
310 N. Wilson Ave.
Hartford, WI 53027
(262) 673-6815
Fax: (262) 673-2650
www.api-wi.com

Product/Functions
Nightingale
• Scheduling and staffing (rules, preferences, patterning, self-scheduling)
• Credential tracking
• Matches personnel with open shifts
• Time and attendance
• Shift posting and bidding

Breadth and Length of Use
• More than 70 hospitals and 100 facilities
• Largest nurse-scheduling, Web-based implementation: Johns Hopkins Hospital, Baltimore, MD
  * More than 5,000 employees
  * Length of online use: 7 years
  * Deployed at 10 unionized hospitals

Contact
Visual Advance Systems Technology, Inc. (VasTech)
888 Bestgate Road, Suite 310
Annapolis, MD 21401
(410) 897-9880
Fax: (410) 897-9885
www.vastech.com
Integrated Scheduling and Staffing
Products, cont.

Product/Functions
RES-Q for Windows
• Scheduling and staffing (rules, preferences, patterning, self-scheduling)
• Personnel management
• Staff credentialing
• Budgeting
• Workload management
• Productivity management

Breadth and Length of Use
• 150 health care organizations
• Largest nurse-scheduling, Web-based implementation: Memorial Hermann Health System, Houston, TX
  • 9 hospitals, 14,000 employees
  • Length of online use: 15 years
  • Deployed at 20 unionized hospitals

Contact
RES-Q Healthcare Systems, Inc.
26500 W. Agoura Road, Suite 210
Calabassas, CA 91302
(818) 878-9747
Fax: (818) 878-5721
www.res-q.com

Products/Functions
Workforce Scheduler
• Scheduling and staffing (rules, preferences, patterning)
• Personnel management
• Staff credentialing
• Time and attendance

Workforce Central Suite
• Scheduling
• Human resources
• Payroll
• Time and attendance

Visionware
• Productivity management

Breadth and Length of Use
• 50 health care organizations
• First nurse-scheduling, Web-based implementation: St. Mary’s Medical Center, Roanoke, WV
  • 800 nurses
  • Length of online use: 1 year
  • Number of union settings unknown

Contact
Kronos, Inc.
297 Billerica Road
Chelmsford, MA 01824
(978) 250-9800
Fax: (978) 367-5900
www.kronos.com

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