Powering Predictive Staffing in Healthcare with AI

PREDICTIVE STAFFING HELPS ENSURE THE RIGHT PEOPLE ARE AVAILABLE AT THE RIGHT TIME TO PROVIDE THE RIGHT CARE.

The healthcare labor shortage is still affecting staffing levels for provider organizations — and creating financial strain. Predictive staffing optimizes staffing levels and may help organizations better provide timely and safe care while saving money. This methodology uses historical data, such as specific dates, the season or time of year, weather, and other factors to help determine the number and types of clinicians and other workers a healthcare organization needs to staff on certain shifts.

Nursing, medical technologist, and medical assistant roles tend to be the most conducive to predictive staffing, but it can also be used with some physician roles. While predictive staffing itself is not a new concept, artificial intelligence (AI) presents opportunities for healthcare providers to use the methodology more efficiently — and to begin exploring other ways to implement AI technology throughout their organizations.

Benefits of Leveraging AI for Predictive Staffing Models

Predictive staffing models play a crucial role in helping providers schedule the optimal number of clinicians for each shift. Right now, most predictive staffing models require someone like a charge nurse to manually examine prior data, create a model, and use the model to determine how many people are needed for a given shift.

AI presents an opportunity to streamline the process by creating data-based models that humans then use to make final staffing decisions. Using AI for predictive staffing can also help optimize staffing based on demand, potentially creating a positive impact on operating margins.

The benefits are not limited to planning schedules. They can also help manage operating expenses by optimizing staffing levels on a given shift, decreasing the need for costly contract labor, and identifying the correct levels of float pool and per diem staff. This not only benefits the finance function but also enables the organization to retain the right number of full-time employees to appropriately staff each shift. Maintaining optimal staffing levels may also help prevent staff **burnout or moral injury**, create a better overall work environment, and reduce time spent on administrative tasks, all of which enables clinical staff to practice at the top of their licenses.

While using AI for predictive staffing is still in its infancy, there are **several other ways AI is poised to transform business processes**. Specifically, healthcare may leverage AI to transform staffing and scheduling processes by:

▶ **Integrating AI-powered predictive staffing models with scheduling technology that identifies open shifts and enables nurses or other clinical staff to claim available shifts via a mobile app.** This can be particularly attractive to millennials and Gen Z because it mirrors the "gig economy" approach typically associated with rideshare and hospitality work. It can also help support staffing needs for a variety of specialties such as surgical technicians, respiratory technicians, pharmacy technicians, radiology technicians, environmental services (EVS) workers, and more. Physician staffing agencies could also leverage these scheduling tools.

▶ **Meeting growing staffing demands at retail or urgent care clinics as consumer site-of-care demands shift.** These clinics are primarily staffed with advanced practice providers (APP), such as nurse practitioners (NPs), physician assistants (PAs), and advanced practice registered nurses (APRNs) during certain times, and with physicians during others. If a clinic is experiencing unusually high demand, an AI-powered model could identify real-time or upcoming staffing needs, send push notifications to available staff to ask if they're interested in picking up shifts, and enable clinicians to add themselves to the schedule.

Why Now is the Time to Adopt AI

The healthcare industry tends to be slow to adopt new technologies. Leaders that hesitate to adopt AI may face financial and cultural risks such as:

▶ Continued excessive spending on unecessary staffing and contract labor costs

▶ Persistent labor shortages

▶ Higher rates of clinician burnout or moral injury

For organizations that want to experiment with AI, but don't have the risk tolerance to test it for patients or diagnoses yet, predictive staffing offers an excellent first use case. Because predictive staffing models do not require sensitive patient information, integrating AI in this area presents a lower risk from both **a data privacy and ethical standpoint**.

As your organization prepares to implement AI for predictive staffing, remember that **the model is only as good as the information on which it is trained**. Organizations ready to take this first step should recognize the commitment involved in continuously training the model, feeding it new data, and regularly validating it. This may require some additional process improvements to other technology infrastructure and systems to simplify data entry.

AI-powered predictive staffing is an excellent opportunity for organizations with a lower risk tolerance to integrate AI into their operations, but there are still many important steps and considerations that we recommend taking. It's essential to make sure leadership understands the capabilities and limitations of the AI, that you have considered the necessary IT infrastructure and types of data needed, and that your employees understand the model isn't there to replace people or jobs.

READY TO ADOPT AI FOR PREDICTIVE STAFFING? USE THIS CHECKLIST TO GET STARTED:

Build an enterprise data warehouse. Mature organizations may already have one, but if your organization does not, this is the first step. It's crucial to consolidate as much data as possible prior to layering an AI model over the data warehouse.

Select your data sources. The types of data you'll need in your data warehouse depend on the specific type of care your organization provides — inpatient versus outpatient, ambulatory, perioperative, primary care, and so on — but the greater variety of data you have, the better. Your data warehouse should include historical information such as rates of admissions and discharges, number and type of staff, patient acuity, types of treatments or procedures provided, and scheduled PTO or parental leave. Having a data mix that includes information from several business areas, including accounting and payroll, is also important.

It's also essential to make sure your data warehouse includes important events and reflects different times of year. This includes external factors such as major holidays when traffic is heavier and historical staffing levels. This way, the model has information about how back-to-school season increases demand for physicals, how seasonal flu outbreaks may impact inpatient admissions during the winter, and more. Make sure to also include data from the COVID-19 pandemic. It may seem like that data could skew your model, but as long as you teach the model to recognize which data came from a pandemic, it will be able to leverage that historical information if and when another pandemic or public health emergency occurs.

The most important thing to remember is that to avoid bias, your data must be relevant to your organization and patient population. For example, data warehouse statistics from a facility in an urban metropolis with a population of 1.5 million will not be particularly applicable to a rural hospital in a community of 1,500 people.

Create a change management program. Build a plan for how changes will be rolled out and strategize how they'll be communicated to employees. Clinical staff might be skeptical about how AI will impact their job functions or affect their ability to pick up shifts, so addressing their concerns is key. Using AI for predictive staffing can also help automate and serve the needs of on-call and post-call staff, including rest periods where required or desired by healthcare organizations. To help your staff understand the power of AI to improve their work experience, identify clinicians who can serve as ambassadors for the technology. Staff members who are enthusiastic about AI and willing to share their positive experiences with their colleagues can help build trust in the technology.

Optimize the data entry process. Creating an AI model is not a "one-and-done" task. These models rely on a continuous stream of data to learn new information and identify patterns. To keep those inputs flowing, organizations need to make it as simple as possible for staff to enter new, clean data. Evaluate your current data entry systems and determine the best way to encourage your staff to input data as well as how to minimize the number of steps involved.

Validate your model. While it's crucial to feed the AI model new information consistently, testing the model is equally important. A model that incorrectly predicts staffing levels will never learn how to correct those errors unless you teach it. Organizations should establish regular testing protocols for their AI models and create an efficient way for staff to flag any issues.

Keep a human in the loop. It's crucial to remember — and remind staff — that an AI model is not there to replace jobs or people. It's a tool to augment their skills and create efficiencies that enable them to spend more time taking care of their patients. AI models will always require a person to review the model's suggestions and make final decisions accordingly.

While a person must ultimately make final staffing decisions, incorporating AI in predictive staffing models can create efficiencies by making suggestions that previously required tedious manual input.

The resulting opportunities are abundant: freeing up staff to perform at the top of their licenses, preventing clinician burnout, helping optimize finances by avoiding unnecessary spending on staffing and contract labor, and even potentially generating interest in healthcare professions among younger generations who have avoided the industry in favor of more flexible careers.

Ready to power predictive staffing with AI?
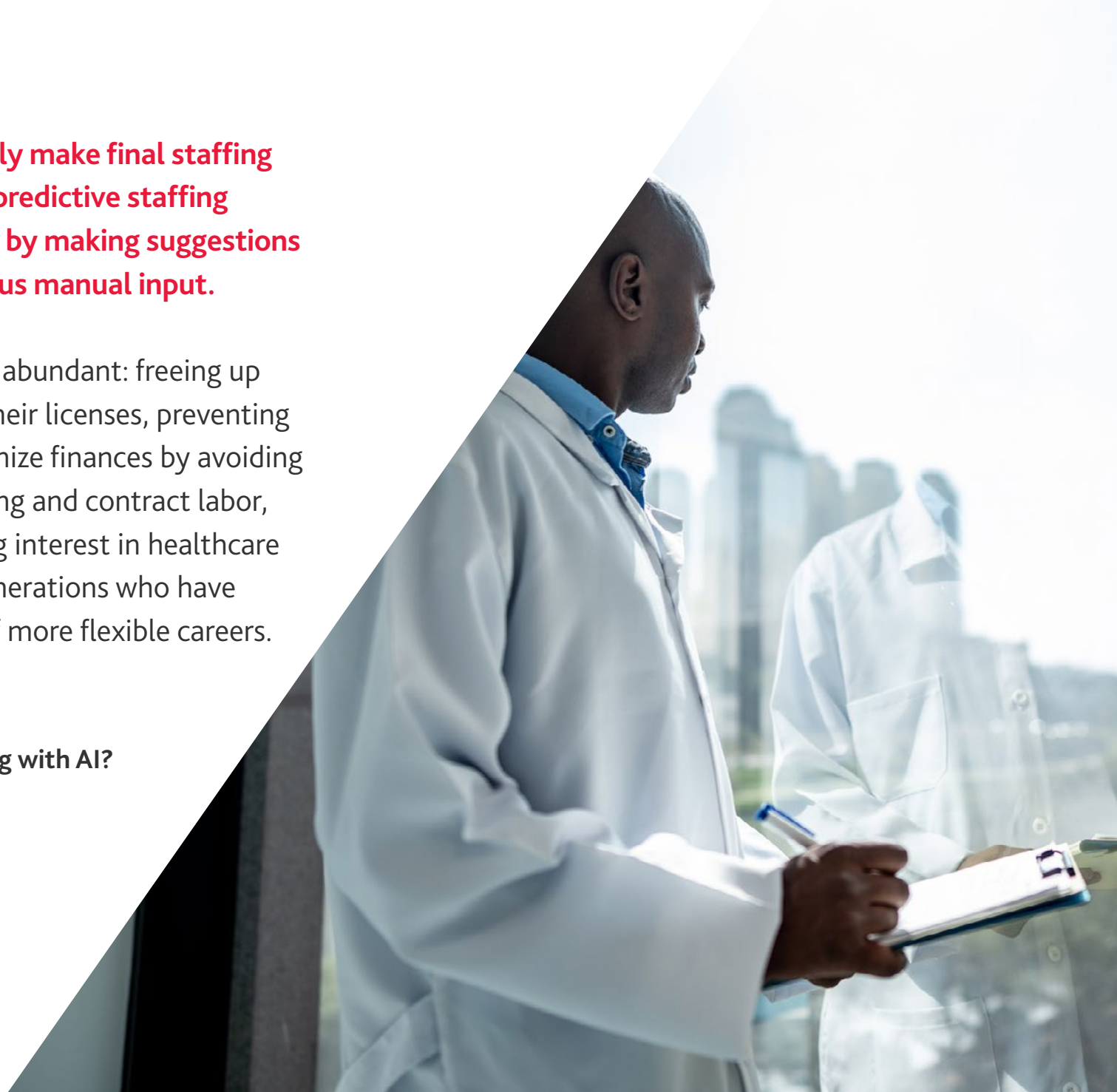
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