# White Paper
## How Technology Can Help During Nurse Shortages

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The United States healthcare system has been experiencing a series of nursing shortages for decades—studies dating back to the 1920s point to low wages and undesirable working conditions.

Federal regulation 42CFR 482.23(b) requires hospitals certified to participate in Medicare to "have adequate numbers of licensed registered nurses, licensed practical nurses, and other personnel to provide nursing care to all patients as needed. There must be supervisory and staff personnel for each department or nursing unit to ensure, when needed, the immediate availability of a registered nurse for bedside care of any patient."

However, the regulation does not provide a clear nurse-to-patient staffing ratio. It is the responsibility of each state to determine appropriate staffing needs. What is clear is that fewer nurses are helping more patients, and their excessive workloads are linked to higher patient adverse outcomes, including patient mortality.

# Useful Technology to Streamline Workflows

Any technology that automates and simplifies nursing duties will free up nurses to spend more time with their patients which leads to better patient outcomes. According to an article by Katherine Virkstis, ND and Karen Drenkard, PhD, RN, NEA-BC, FAAN entitled, "It Is Time to Focus Digital Strategy on Supporting Nurse Workflow," there are many technologies healthcare organizations can leverage to improve nurse workflows. Some of the solutions they list include:

- Technology-driven pumps and monitors that automate the collection of information needed for care.
- Smart devices, including automated beds and vital sign monitoring.
- Wearables that provide clinical data to the provider.
- Electronic white boards integrated with the electronic health record to keep patients and families up to date.
- Centralized data command centers that integrate multiple systems into a single monitoring center, including coordination of care, requests for services, and discharge tracking.
- Tele-technology that enables virtual inpatient care models, including virtual sitter and virtual expert RN models.
- Mobile apps that enable bidirectional communication between patients and clinicians across all levels of care.

# Tapping Into Remote and Part-time Workforces

Currently, the average age of a nurse is around 52, and there are concerns that 4 million nurses will retire by 2030. This will only exacerbate future nursing shortages. However, technology can be used to provide a way for retired nurses, or those who are on their way to retirement and want to work less hours, to provide non-traditional care and support to patients.

Virtual nursing is a newer model of care that provides nurses with a flexible, less demanding schedule. Virtual nursing can include anything from nursing triage or nurse on-call via telehealth to overseeing alarms and alerts in a command center.

Nurses can use telehealth to prescreen patients for virtual appointments. Depending on the patient's needs and if the nurse is advanced enough, virtual nurses can even meet with patients for their telehealth visit and avoid handing off the appointment to a physician.

Instead of the traditional bedside nurse capturing patient health data while also trying to care for patients, health systems can dedicate virtual nurses to conduct pain assessments and data collection remotely. They can look at lab values, alarm notifications, and other monitor alerts and escalate when appropriate.

## Where Are the Next Generation of Nurses?

Another contributing factor to the nursing shortage is the scarcity of nursing school instructors. For years, it has been common for nursing programs to use a lottery system for selection into their programs. The 2020-2021 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing report from the American Association of Colleges of Nursing (AACN) states, "U.S. nursing schools turned away 80,521 qualified applications from baccalaureate and graduate nursing programs in 2020 due to an insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints." The report further says most universities cited a lack of qualified teaching faculty as a key reason for having to reject the qualified nursing applicants.

When instruction doesn't require teachers and students to be physically present in a classroom, technology can help address students' educational needs by using online education. Virtual learning won't completely replace traditional instruction. However, virtual reality (VR) and high-fidelity simulation, which uses realistic, life-like manikins (a full-body patient simulator) to mimic human anatomy and physiology, can teach clinical skills and help alleviate the instructor shortage.

## Overcoming Negative Aspects of Technology

Sometimes, you can have too much of a good thing. One of the major challenges of using multiple technologies is when they are not interoperable or don't function smoothly in a clinical setting. Health systems must avoid having a scenario where the nurse becomes a human interface between disparate and clunky technologies. Suppose nurses are recording data from one system into another or logging in and out of multiple technologies. In that case, their time is being used up by inefficiencies instead of spending time with patients.
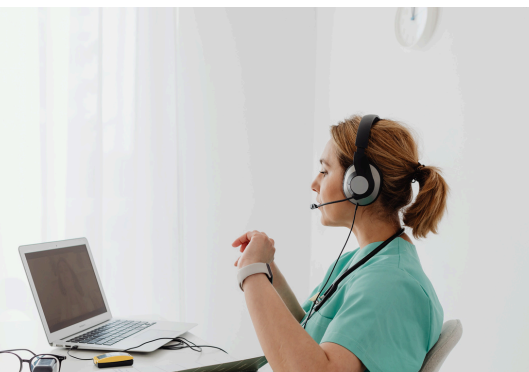
Ideally, design thinking principles are part of the process when creating tech solutions. Input from the people who will use the technology from the beginning, during usability testing, and throughout implementation will ensure the technology works smoothly in real-world applications.

Technology companies need this usability component to ensure that their designs don't negatively impact nurses and other clinicians.

## How Contact Center Software Fits In

Hospital contact centers are the communication hubs for the hospital enterprise. They not only handle a multitude of different calls, the same communications integration engine software used by a hospital call center can also integrate with technologies being used to address the nursing shortage. With the right integration engine acting as a bridge between software solutions, contact centers, and other devices, hospitals can be sure the solutions they are using to streamline nursing workflows are "speaking" to each other to communicate quickly and seamlessly.

These systems, leveraging standardized communication protocols like HL7, eliminate the chaos of moving information between systems and between people. Integration engines act as the "glue" that holds these many IT systems together and translates a variety of different inputs in such a way that other solutions can interpret the data and react accordingly.