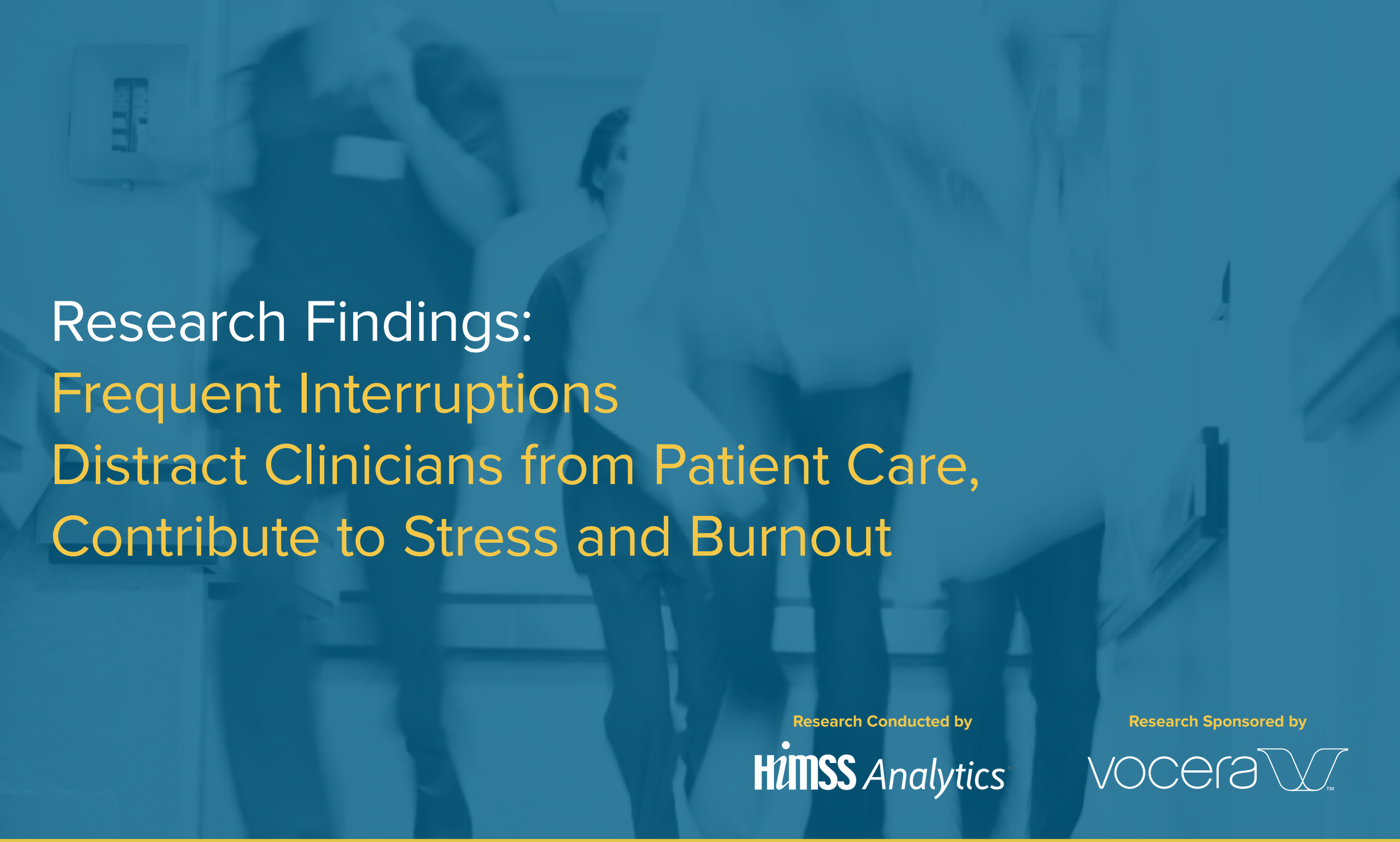


Research Findings:
Frequent Interruptions Distract Clinicians from Patient Care, Contribute to Stress and Burnout

Research Conducted by

HIMSS Analytics

Research Sponsored by

Vocera

Introduction

The American Medical Association recently published a study reporting that for every hour physicians spend with patients, they spend roughly two hours on EHR and desk work.[1] Another study, published in the Journal of General Internal Medicine, showed that internal medicine interns spent 40% of their time with computers.[2] And a study at University of Pittsburgh Medical Center (UPMC) showed that nurses spent 21% of their 12 hour shift interacting with the EHR, and 33% total with technology.[3]

When looking at how technology affects patient care, EHRs get a lot of attention. But EHRs aren't the only technology revolution frontline clinicians must grapple with. Doctors and nurses receive texts, pages, alerts, alarms, and interruptive phone calls on an array of mobile technology devices.

"Disparate communication systems using non-integrated devices can profoundly affect the clinician's ability to get the right information at the right time to care for patients," says Rhonda Collins, MSN, RN, chief nursing officer at Vocera Communications. "The complex, chaotic, environment that is healthcare requires a disciplined approach to building a communication strategy to ensure clinician satisfaction and patient safety."

While new technologies have the potential to bring critical patient information to the right clinician at the right time, they also have the potential, if unmanaged and unchecked, to create a cacophony of interruptions and data overload that leaves physicians, nurses, and other care team members distracted, interrupted, and burned out.

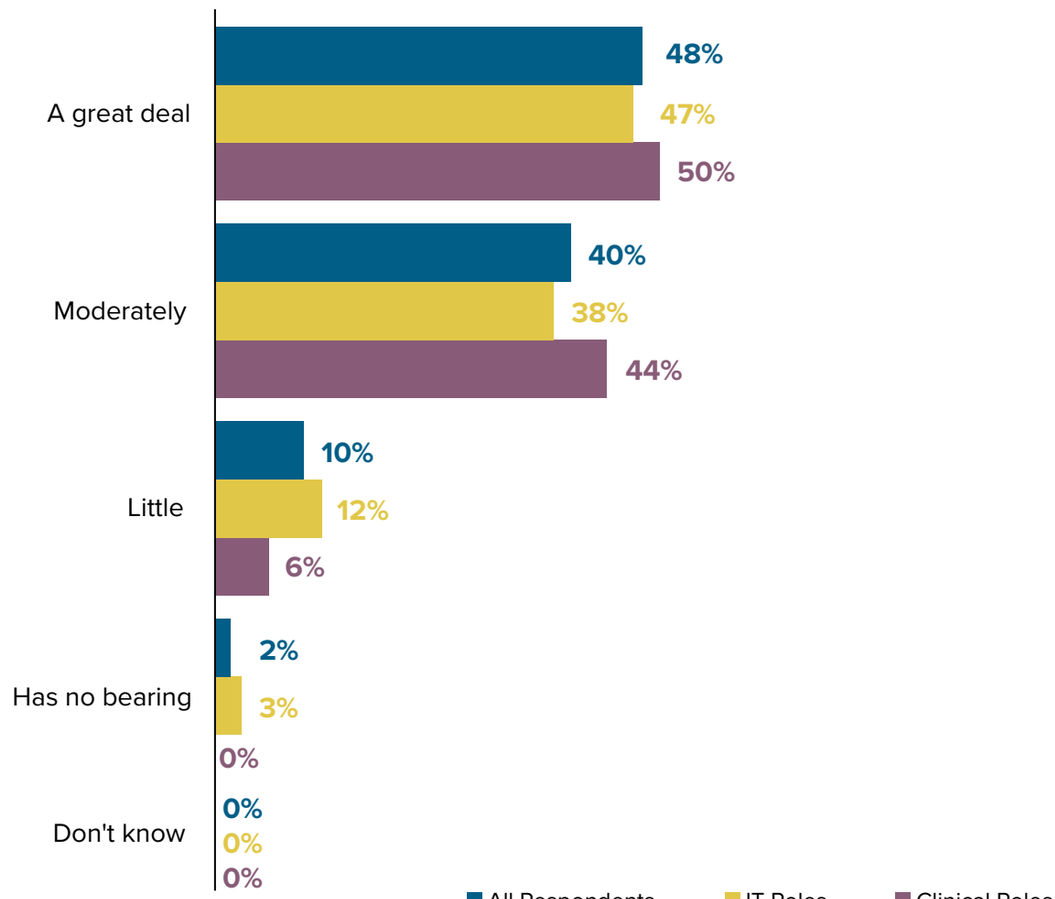
In this study, Vocera Communications, in partnership with HIMSS Analytics, sought to understand how clinical and IT leaders understand and manage the rising challenge of interruptions from technology system sources such as phone calls, pages, texts, notifications, alerts, and alarms. We surveyed 150 clinical and IT leaders via HIMSS Analytics Logic online, and onsite at the HIMSS 2018 annual conference (see the Survey Demographics section for more details).

Technology-Related Interruptions Make Patient Care More Difficult

We asked respondents whether interruptions from technology system sources contribute to making it more difficult for clinicians (doctors and nurses) to focus on patient care. Almost half said they make patient care focus a great deal more difficult, and 40% said they have a moderate impact.

Clinical leaders see a stronger tie between system-based interruptions and difficulty focusing on patient care, with 94% saying interruptions contribute moderately or a great deal to difficulty focusing on patient care versus only 85% of IT leaders. All clinical leaders thought system-based interruptions have bearing on disrupting focus on patient care.

In general, how much do you think interruptions from technology system sources such as phone calls, pages, texts, notifications, alerts, and alarms contribute to making it more difficult for clinicians (doctors and nurses) to focus on patient care?



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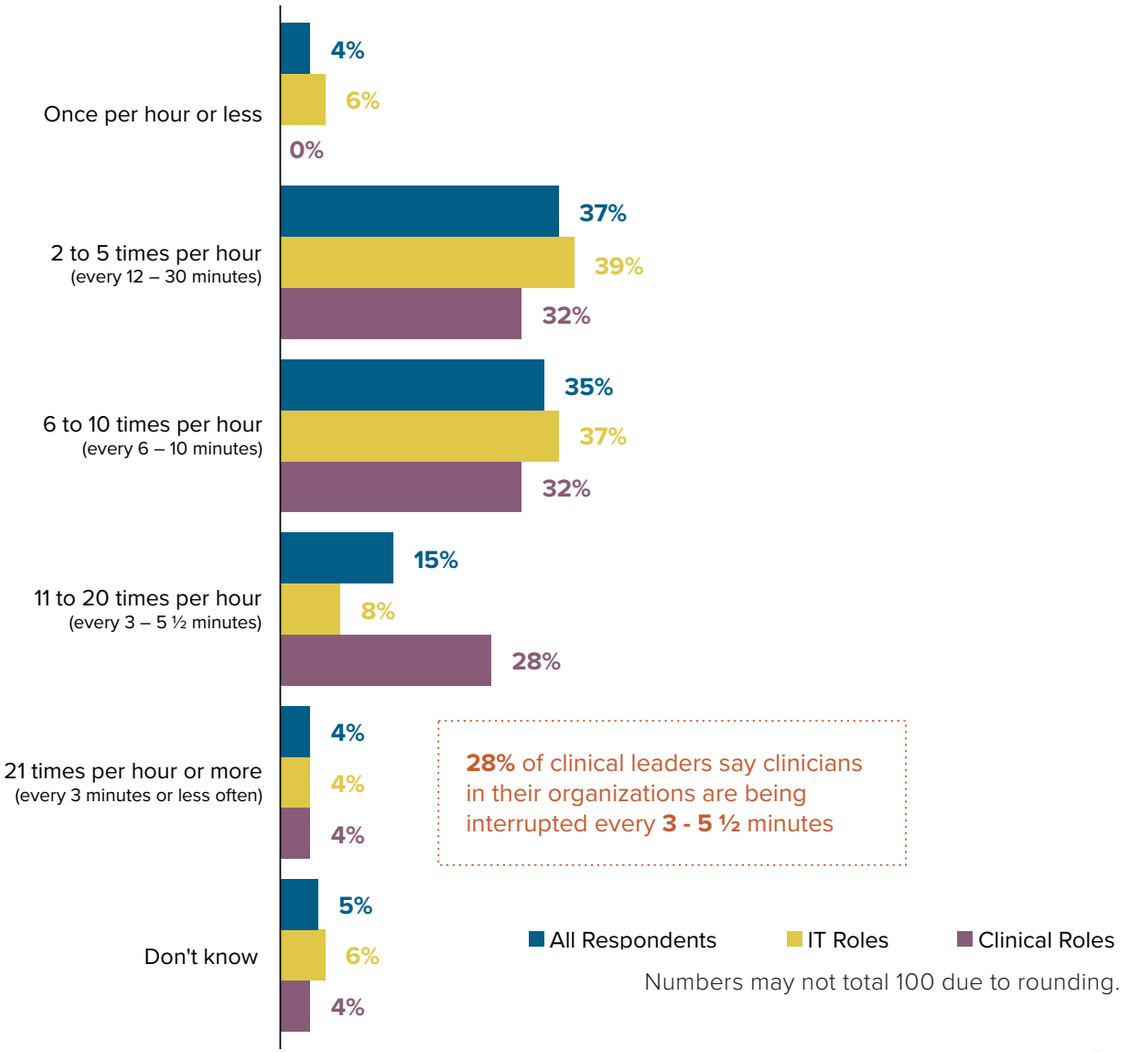
Interruptions Occur Multiple Times Each Hour

To gauge the level of impact interruptions have on clinical care, we asked respondents how frequently, on average, they think system-based sources interrupt the focused patient care activities of clinicians in their organizations. Seventy-two percent estimated that interruptions occur an average of 2-10 times per hour. Another 14% believe interruptions occur as frequently as 11-20 times per hour. Overall, respondents cited interruptions occurring on average seven times per hour – or roughly every nine minutes.

Clinical leaders, who typically spend more time observing and interacting with clinical team members than their IT peers do, believe the rate of interruptions is even higher. While almost two thirds agree with the 2-10 times per hour estimate, more than a quarter cited interruption rates of 11-20 times per hour, or roughly every three to six minutes.

On average, how frequently do you think clinicians in your organization have their focused patient care activities interrupted by system-based sources such as phone calls, pages, texts, notifications, alerts, and alarms?

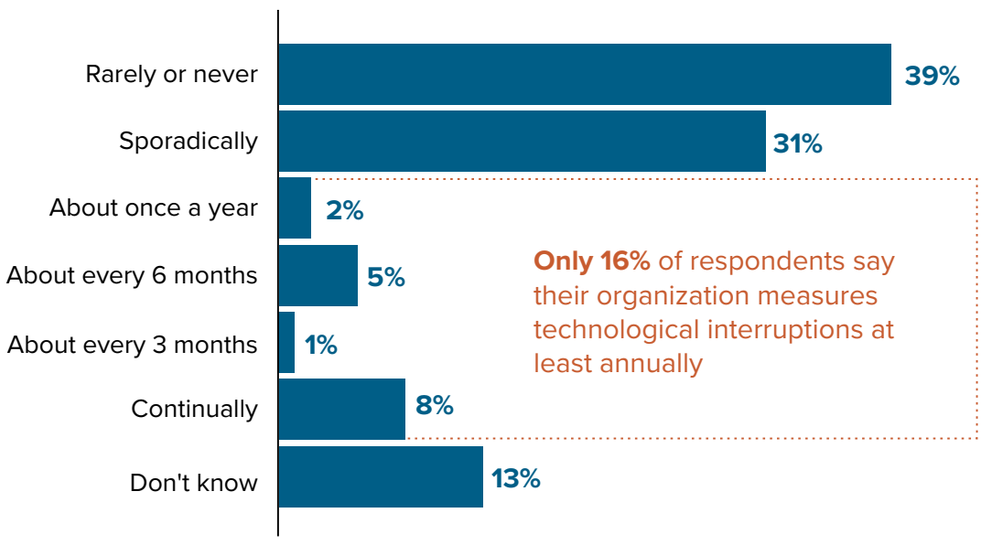


Measurement of Technology-Related Interruptions is Rare and Reactive

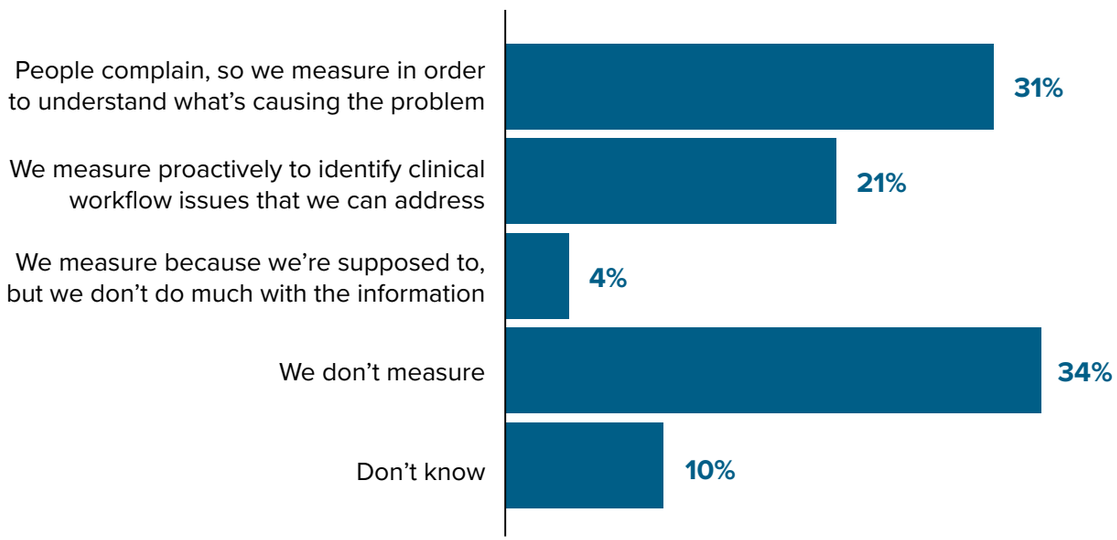
We asked whether respondents' organizations have a practice of measuring the frequency or impact of interruptions. The majority reported measuring sporadically, if at all. Only 16% of respondents say their organization looks at interruptions data at least annually.

When we further probed into what prompts organizations to measure interruptions, only 21% indicated they measure proactively to identify workflow issues they might be able to solve. Almost a third measure only in response to a specific complaint.

How often do you measure clinician interruptions from system-based sources such as phone calls, pages, texts, notifications, alerts, and alarms?



What prompts you to measure clinician interruptions from system-based sources?



All Respondents

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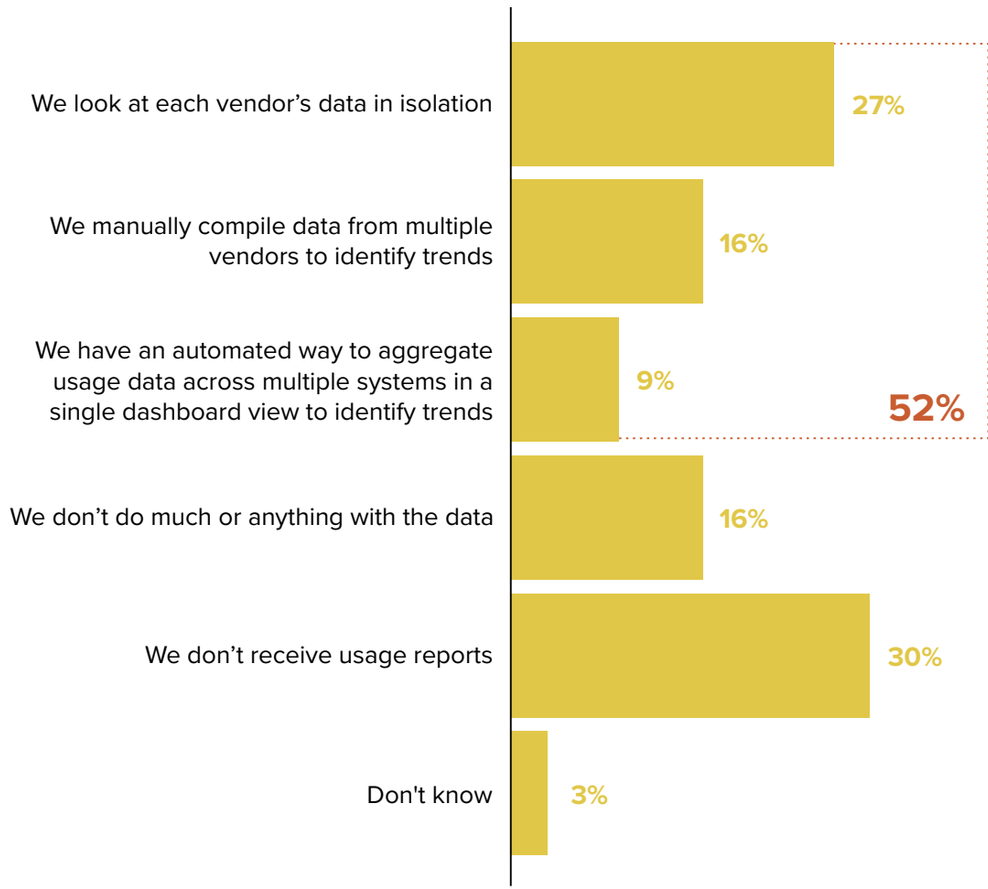
IT Leaders View Vendor Usage Reports in Isolation – If at All

Many vendors of IT systems (such as communication, alarm, and EHR systems) provide usage reports that outline the frequency and context of messages, alerts, and alarms. We asked IT leaders how, if at all, they use these reports. Because multiple systems might generate interruptive messages, alerts, and alarms, we asked whether respondents are able to easily combine data from multiple systems to create a more complete picture of clinical interruptions.

Almost half of IT respondents told us they either don't receive usage reports, or don't do anything with the data. Of the 51% who do receive reports, the majority (27%) look at each vendor's data in isolation. Sixteen percent of respondents manually compile data from multiple vendors, and only 9% have an automated process to aggregate usage data across multiple systems in a single dashboard view to identify trends.

Thinking about vendors' usage reports, which of the following best describes how you work with vendors' usage data to identify interruptions trends?



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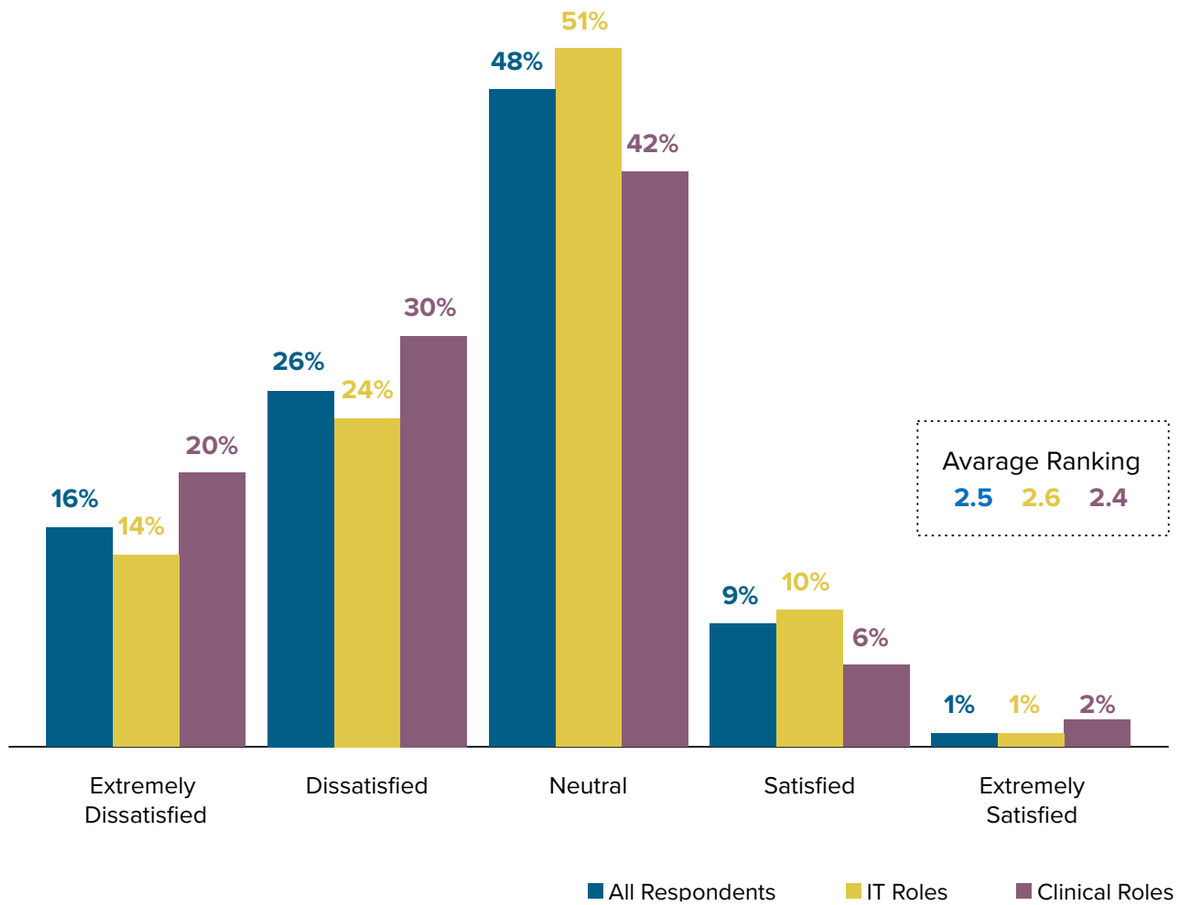
"N=90 *(This question was only presented to respondents who identified themselves as having an IT role by selecting an answer option. The 10 IT respondents who wrote in their role instead of selecting an answer option were not polled.)*

Leaders Are Dissatisfied with Responsiveness in Identifying Interruption Frequency and Adjusting Workflow Design

We asked both clinical and IT leaders how satisfied they are with their organization's current responsiveness and agility in identifying the frequency of system-based interruptions and adjusting workflow to address problems. The responses leaned toward dissatisfied, with an average rating of 2.5 on a scale of 1 (extremely dissatisfied) to 5 (extremely satisfied). Clinical leaders are less satisfied with the process, giving an average score of 2.4 versus 2.6 for IT leaders.

How satisfied are you with your organization's current responsiveness and agility in identifying the frequency of interruptions from system-based sources and adjusting workflow design to address the problems?



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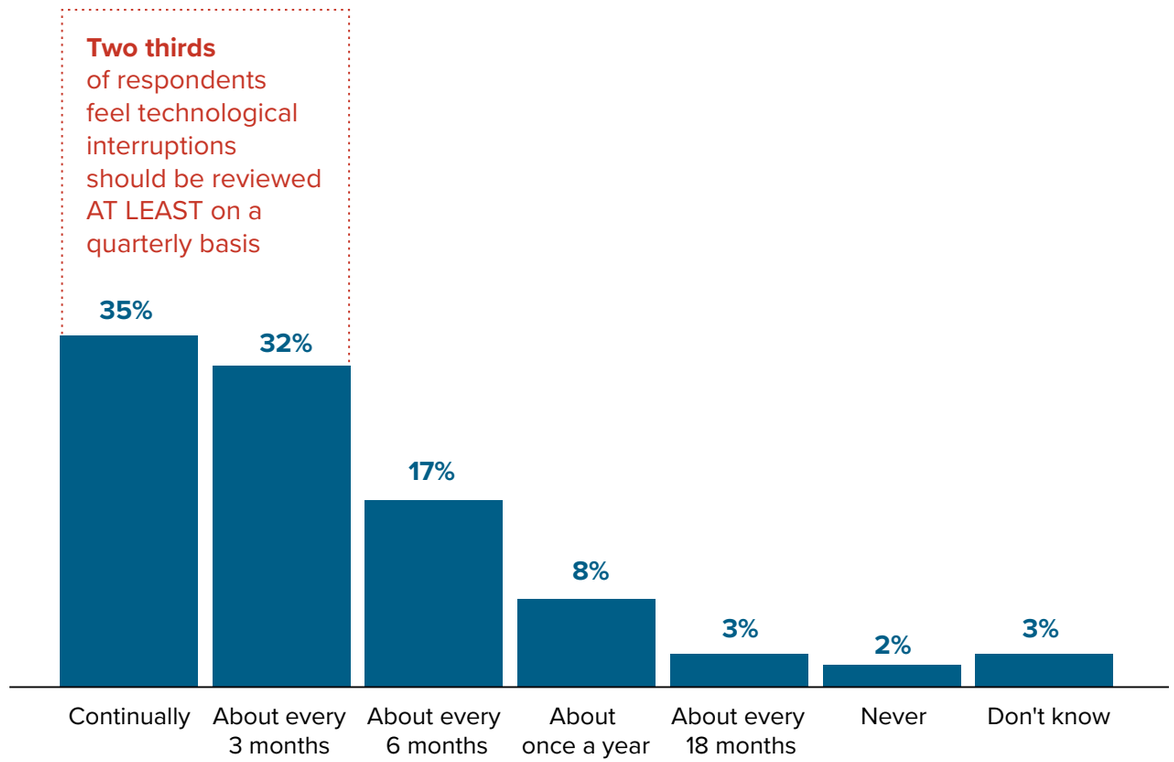
Leaders Want Measurement at Least Quarterly

When asked what constitutes an ideal cadence for reviewing usage data, two thirds of respondents indicated that reviewing data at least quarterly (versus today's approach where most review interruptions sporadically, at best) would be best. In addition, when we cross-tabulated responses about how frequently organizations review interruptions data with how satisfied leaders were with the process, we found a positive correlation; respondents whose organizations review the data more frequently were more satisfied with the process.

Many vendors of IT systems (such as communication systems, alarm management systems, and electronic health records) provide usage reports that outline the frequency and context of messages, alerts, and alarms to most effectively enable management of clinician interruptions; what do you think would be an ideal frequency for reviewing usage data?



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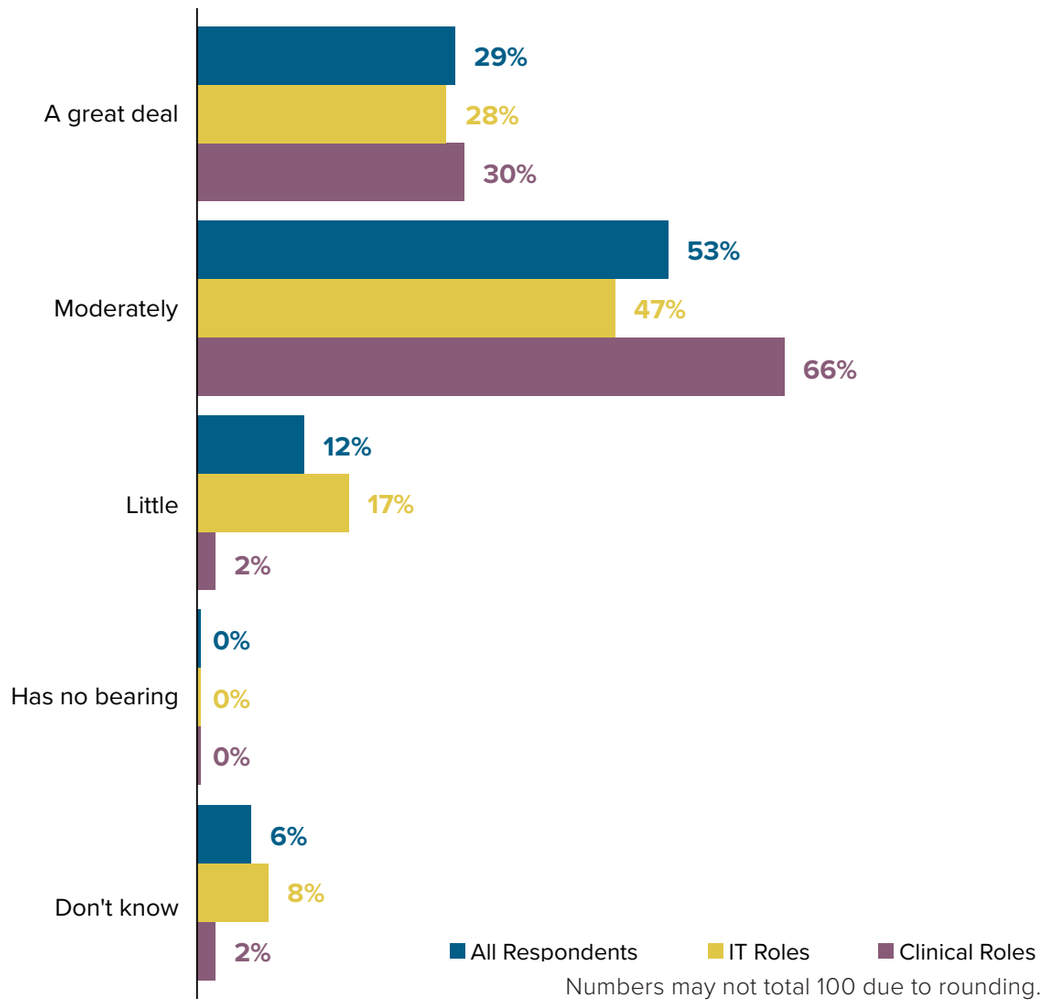
Interruptions Contribute to Burnout

Studies show that interruptions in clinical workflows lead to increases in medical errors and frequency of safety events. We asked respondents whether they think interruptions that disrupt focus on patient care contribute to emotional stress and burnout among clinicians. Eighty-two percent of respondents said they contribute either moderately or a great deal. All thought interruptions have at least some impact well-being.

Here, again, clinical leaders who work more closely with the frontline team members who experience interruptions had a stronger sense of the magnitude of the problem: 96% said clinical interruptions have at least a moderate impact on burnout and emotional stress.

How much do you think interruptions that disrupt focus on patient care contribute to emotional stress and burnout among clinicians?



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Discussion: What Clinical and IT Leaders Can Do

Technology solutions have great potential to improve the flow of information within and across clinical teams, resulting in better decision making and care coordination, and more efficient workflows. But if competing systems deliver disjointed information to clinicians without regard to overall workflow and total volume of interruptions, they cannot achieve their potential. Instead of delivering the right information to the right person at the right time with the right context, the result is messaging overload.

To allow technology solutions – and the clinicians they serve – to reach their potential, clinical and IT leaders need to work together to create a continuous learning process based on system usage, quality, safety, and human experience data. Applying analytics to all relevant data, clinical and IT leaders can adapt and adjust communication workflows to ensure each clinical team member gets the information they need – without overload.

"We've looked deeply at care team member's capacity to tolerate communication interruptions (alarms, alerts, messages and voice calls) no matter how well-meaning or how actionable," explains Ben Kanter M.D., chief medical information officer at Vocera Communications. "There's a limit to the number of interruptions someone can get and still perform their clinical duties safely and efficiently. An individual's bandwidth for distraction is finite: past a certain threshold, frustration rapidly builds, and system adoption is lost. Leaders need to understand this, monitoring and adapting the flow of information to ensure that each team member gets what he or she needs without developing interruption overload."

Given the dynamic nature of healthcare teams, IT and clinical leaders will need to examine and adjust information flows far more frequently than they do today. The effort should result in better system usage, better clinical outcomes, and a more resilient, healthy, and productive workforce.[5]

Survey Demographics

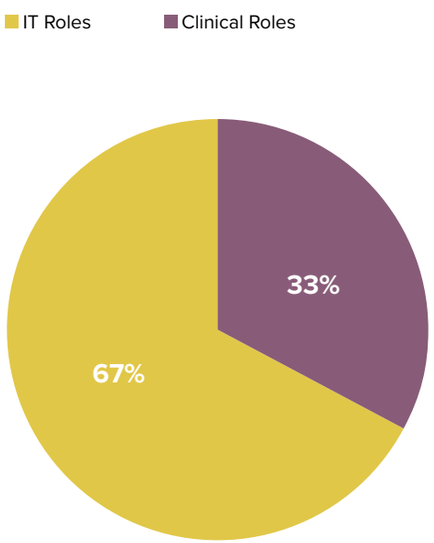
The web survey link was open between February 2 and March 16, 2018, and HIMSS onsite collection occurred between March 6 and 8, 2018.

150 respondents

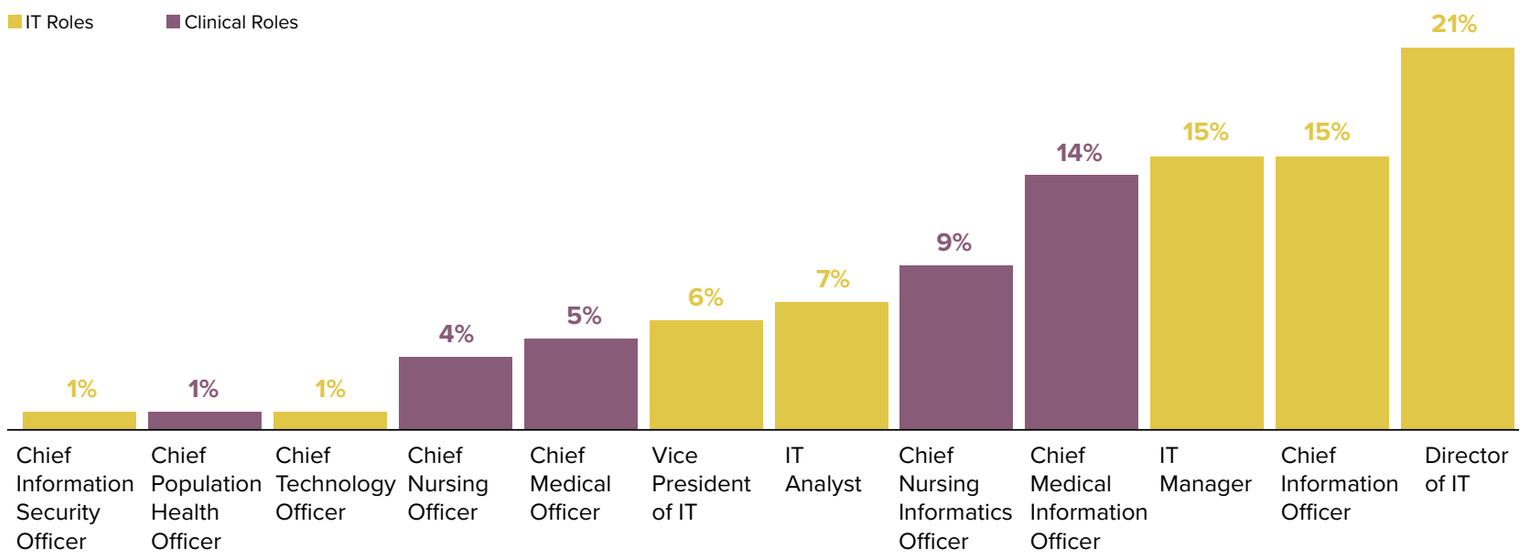
100% involved in the use of healthcare technology at their healthcare organization

- **45%** 501+ Beds
- **58%** Healthcare System
- **67%** IT Roles
- **33%** Clinical Roles

Role Grouping

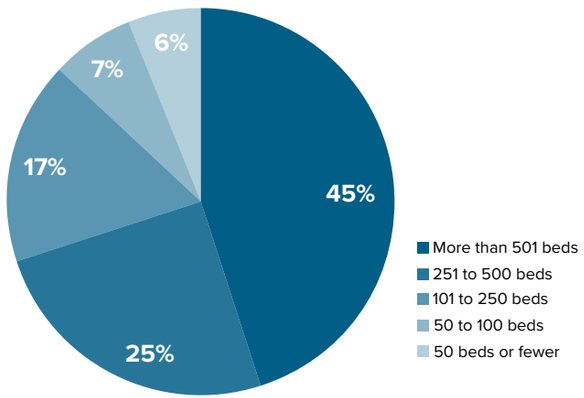


Role/Job Title

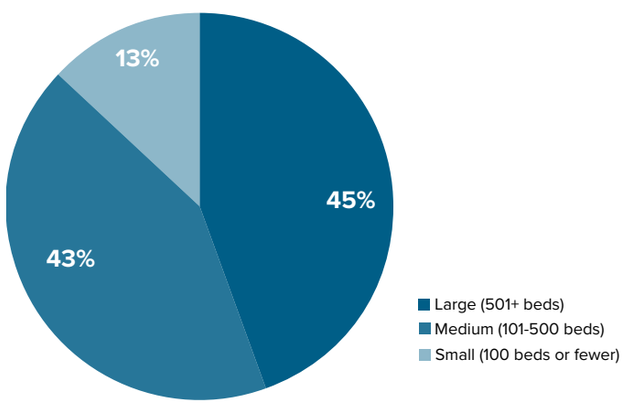


Survey Demographics

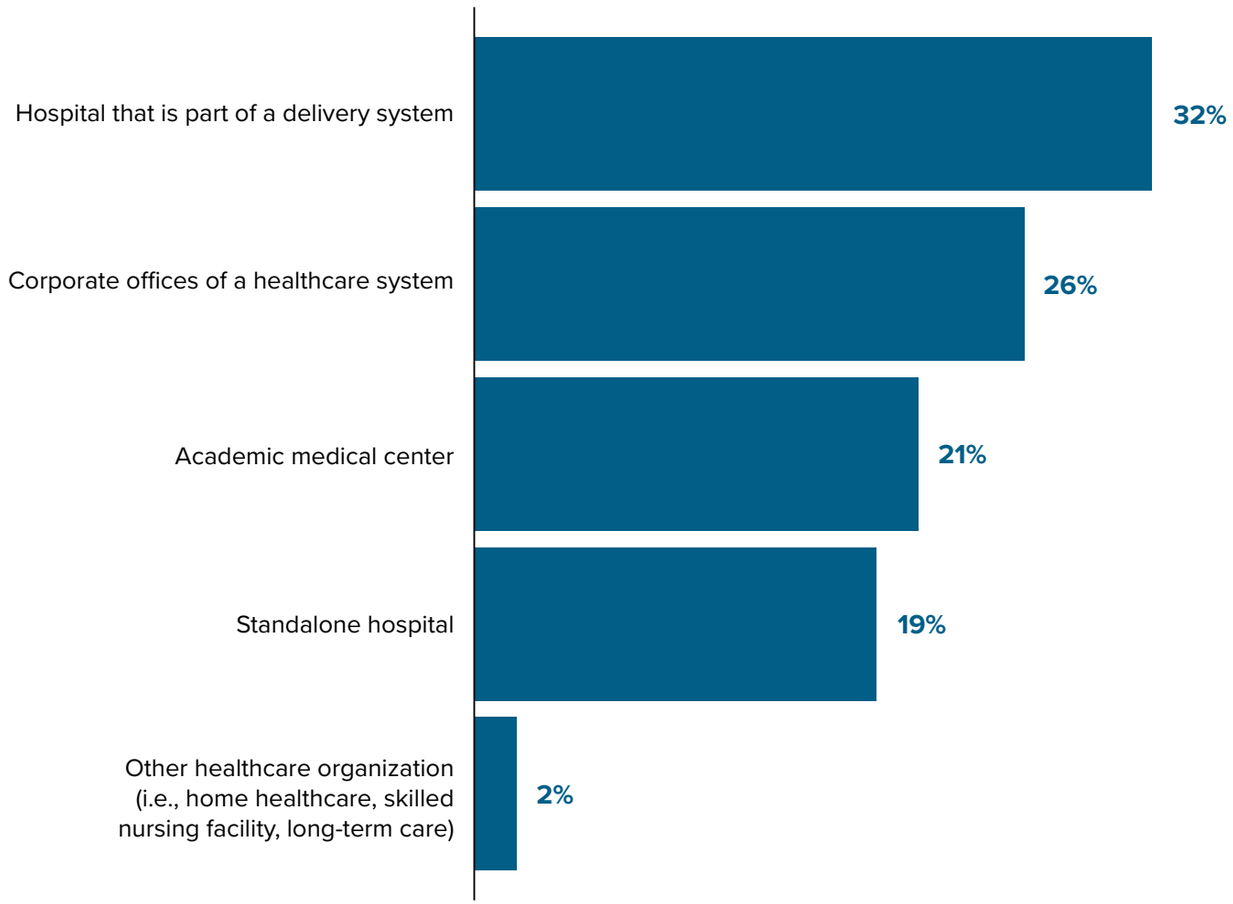
Bed size



Bed size (grouped)



Organization type



End notes

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3 Higgins, L. W., Shovel, J. A., Bilderback, A. L., Lorenz, H. L., Martin, S. C., Rogers, D. J., & Minnier, T. E. (2017). Hospital Nurses' Work Activity in a Technology-Rich Environment: A Triangulated Quality Improvement Assessment. Journal of Nursing Care Quality, 32(3), 208-217.

4 Boehm, L., & LaBranche, E. (2017). Clinical Communication Deconstructed. Retrieved from Experience Innovation Network Website: https://www.vocera.com/blog/seven-elements-effective-clinical-communication

5 Abrahams, R., Boehm, L., & Purdy, A. (2017). In Pursuit of Resilience, Well-being, and Joy in Healthcare. Retrieved from Experience Innovation Network Website: https://www.vocera.com/resource/pursuit-resilience-well-being-and-joy-healthcare

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About Vocera

The mission of Vocera is to simplify and improve the lives of healthcare professionals and patients, while enabling hospitals to enhance quality of care and operational efficiency.

In 2000, when the company was founded, we began to forever change the way care teams communicate. Today, Vocera continues to offer the leading platform for clinical communication and workflow. Nearly 1,500 hospitals and health systems around the world have selected our solutions to enable care teams to text securely using smartphones or make calls with our hands-free, wearable Vocera Badge.

Interoperability between our platform and more than 140 clinical and operational systems helps reduce alarm fatigue and speed up staff response times to improve patient care, safety, and experience, and foster caregiver resiliency.

Vocera (NYSE: VCRA) is publicly traded with the resources and fortitude to help ensure your success with our solutions over the long term. In 2017, Vocera made the list of Forbes 100 Most Trustworthy Companies in America. Learn more at www.vocera.com, and follow @VoceraComm on Twitter.