FIVE REASONS HOSPITALS STILL VALUE PAGERS

Although pagers have been a mainstay in hospitals for decades, there's no question that smartphones, tablets, and other devices have changed how people communicate in healthcare. But while some physicians and other clinical staff have migrated to using smartphones for time-sensitive communications, pagers remain key for many personnel, especially now that encrypted options are available for use in environments that demand HIPAA compliance. In fact, in a 2015 study of more than 450 hospitals, 57 percent of the organizations used wide-area paging, and 67 percent used onsite paging.[1]

Many leading hospitals are still maintaining their proven, affordable paging systems while adding many other device types to the mix. In this eBrief, we'll explore why pagers are still being used. We'll look in depth at the technologies at play and how they actually work in different ways to keep staff in touch about important patient care activities.

WIDE-AREA VERSUS ONSITE PAGING

There are two types of paging, wide-area and onsite. With wide-area paging, transmitter towers provide service to all pagers in the area. Onsite paging means that the transmitters and terminals operate within a particular campus environment and function as a standalone paging system where devices work just at that location.

1 PAGING CAN COMPLEMENT SECURE TEXT MESSAGING IN STAFF WORKFLOWS

Many healthcare systems today integrate pagers into their workflows and secure communications along with smartphones. In fact, 'device diversity' is a powerful approach. Truly effective enterprise-wide communications necessitate the ability to send various staff members a single message and have it received on whichever mobile device they carry. Hospitals need a communications approach that supports their workflows, which likely means different devices for different staff.

Picture this scenario: A contact center agent launches a code STEMI for a heart attack patient. The response team includes 15–20 people throughout the organization, some of whom use smartphones, some who use pagers, and others Wi-Fi phones. The agent uses an emergency notification system to deploy a single message, which reaches everyone on the right device.

| Heart Attack | Contact Center Deploys Code to 15-20 Response Team Members | Staff Respond w/ Availability Via a Variety of Devices | Emergency Notification Solution Manages Response and Escalation | Balloon Successful |

Some secure texting apps support critical healthcare communications by integrating with the hospital's directory and on-call information. Smartphones can work hand-in-hand with pagers, as both can receive alerts from patient monitoring, nurse call, and other communication systems. When hospitals evaluate communications technology, finding a partner that offers the ability to send messages to a variety of devices is key.

2 NOT EVERYONE NEEDS A SMARTPHONE TO DO THEIR JOB

Smartphones are expensive whether an organization supports a 'bring your own device' (BYOD) program or provides fully-covered devices to certain staff. While physicians may require smartphones, housekeeping, transport, and certain members of code teams can rely fully on pagers. Again, having a communication system in place that can send messages to all team members regardless of the devices being used helps in effective care coordination at every step. And even physicians who may use their smartphones for some applications may still use pagers for workflow preferences such as being on call.

> "There are so many reasons to continue using pagers in a hospital environment: the ability to share pagers for code teams, as an extra "safety" alert device in a cath lab member's profile, and as a communication tool for Environmental Services members who are notoriously hard on communication devices. But one of the key reasons we keep using pagers is if there is ever a disaster in the area, we know that cellular phone lines will be overloaded very quickly, and we can communicate with key staff via pager. There will probably always be pagers in healthcare!"
>
> Mary Ann Wise
> Business Systems Analyst
> Northeast Georgia Medical Center

3 HIPAA COMPLIANCE (YES, YOU READ THAT RIGHT)

Many people don't realize that some pagers now offer an important advantage previously only available on smartphones equipped with a secure texting app: encrypted communications. Encrypted pagers can provide a secure communication option that is also highly reliable even when cellular and Wi-Fi coverage is spotty. Spok's exclusive T5 pager is one of only a few pagers that offers this critical capability. This means protected health information (PHI) can be shared among staff on pagers and smartphones seamlessly to meet industry guidelines for sharing sensitive information.

4 PAGING IS TRIED AND TRUE—AND COST EFFECTIVE

The fact is that paging isn't old technology; it's simple, reliable technology. Its value remains high for critical messaging. It's not affected by lapses in cellular or Wi-Fi coverage. Additionally, paging is exceptionally reliable and cost effective. In fact, for the daily price of a cup of coffee, it's possible to keep a pager on hand and ready to go. There is still nothing even close to paging from a cost-effectiveness perspective. If someone loses a pager, the replacement cost isn't an issue. But if that smartphone goes missing…

5 NOTHING BEATS PAGING IN DISASTER SITUATIONS

While we certainly can't predict when disasters will strike, we can definitely lay the groundwork that will give critical communications the best chance of getting through when almost nothing else can. And that is accomplished only through the reliability and survivability of paging technology. Most hospitals have defined procedures for disaster response. With their demonstrated reliability in disaster situations and ability to provide secure communications, pagers should be an integral part of this plan. Even if the power is out and Wi-Fi and cellular networks are down, AA battery-powered pagers mean it's easy to remain operational and function independently of the power grid without needing to recharge.

WHY DO CELLULAR NETWORKS CONGEST AND FAIL?

Cellular networks are a mobile consumer and enterprise business. This infrastructure was not designed to handle the amount of traffic that happens all at once during a disaster. Under normal circumstances, these design parameters are not an issue. When disaster strikes, however, network failure is almost a foregone conclusion.

Cellular networks have a well-documented history of failing in emergency response scenarios:

- 9/11 in 2001
- Hurricane Katrina in 2005
- Minneapolis bridge collapse in 2007
- Southern California earthquakes in 2007 and 2008
- Virginia's 5.8 magnitude earthquake in 2011
- Hurricane Sandy in 2012
- Boston Marathon bombing in 2013

The 2007 Minnesota Bridge Collapse

In all these crisis scenarios, congestion rendered cellular phones nearly useless for emergency responders. During these situations, people were discouraged from using their cell phones.

Paging, on the other hand, is not subject to the same consumer demand and congestion issues as cellular phone service. The reasons are simple: Paging networks are built to accommodate a high percentage of users at times of congestion. Both one-way and two-way paging are sequential in nature, with the first message in being the first message out. Paging also has limited message lengths, which, in contrast to the unlimited consumption capabilities for cellular, allows for more equal sharing of bandwidth. With cellular, a very small number of users can monopolize a channel for a particular cell site for a long period. In paging, messages are handled and done, with the system moving on to process the next message.

THE SURVIVABLE ARCHITECTURE OF PAGING

Paging technology is particularly well suited for emergency situations due to unique features that impact reliability:

OVERLAPPING COVERAGE

Paging networks provide redundant wireless coverage on the ground to serve the coverage needs of mission-critical users. As emergency events often involve physical damage to property (including wireless transmitters), having overlapping coverage is critical for continuation of service. With the paging network architecture, all messages are simulcast from multiple towers within a specific coverage zone at the same time, so pagers are communicating with more than one tower at once. If one tower goes down, other paging towers in the area can still deliver messages. Cellular networks are not designed with such redundancies.

HEIGHT AND POWER

Paging transmitters are high off the ground (up to 300 feet, compared with approximately 90 feet for a cellular tower), and transmissions for paging service utilize high power, resulting in superior in-building and geographic coverage. Paging transmitters operate with an Effective Ratiated Power (ERP) of up to 3,500 watts. By comparison, cellular transmissions have an ERP of approximately 100 watts.

SATELLITE CONNECTION

Paging networks use satellite connections between the core messaging network and transmitter towers, eliminating a critical point of failure for many wireless systems. Because data is transmitted to the transmitter network via satellite, the local public telephone network that is often impacted by a disaster situation, as with Hurricane Katrina, is bypassed. In addition, many satellite dishes are at ground level or on building rooftops, making them easy to access if technicians need to make repairs.

REDUNDANCY

The core elements of a paging provider's network can be designed with fully redundant infrastructure, including diversity on WAN/LAN, messaging switches, power sources, and satellite uplinks. This redundancy is intended to help ensure operational continuity of all network systems and provide an extra layer of reliability.

WHAT TO LOOK FOR IN A PAGING VENDOR

Not all paging vendors are alike. While paging is an important element of a hospital's overall communications infrastructure, it's not the only consideration. Look for a solution partner that can provide an enterprise platform of critical communication solutions that meet a variety of needs. These solutions should be flexible enough to enable paging as well as secure messaging on smartphones. Other components of the platform should span the contact center, clinical alerting and test results management, and emergency notification.

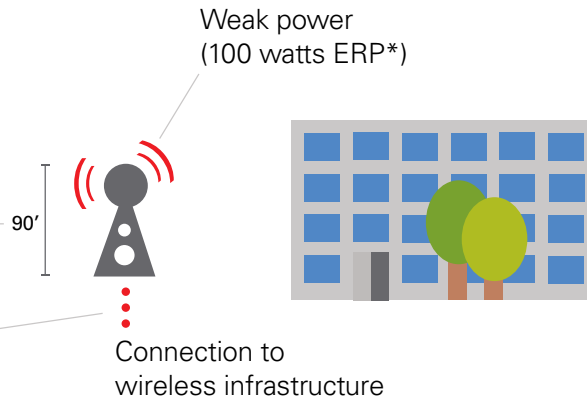# AN IN-DEPTH LOOK AT HOW PAGING WORKS

CELLULAR ARCHITECTURE

Transmission from a single tower

Transmitters low to the ground (90ft)

90'

Connectivity via wireline telephone system

Weak power (100 watts ERP*)

Connection to wireless infrastructure

PAGING ARCHITECTURE

Messages are simulcast from multiple towers

Transmitters high off ground (up to 300ft)

300'

High power (up to 3500 watts ERP*)

Connectivity to towers via satellite
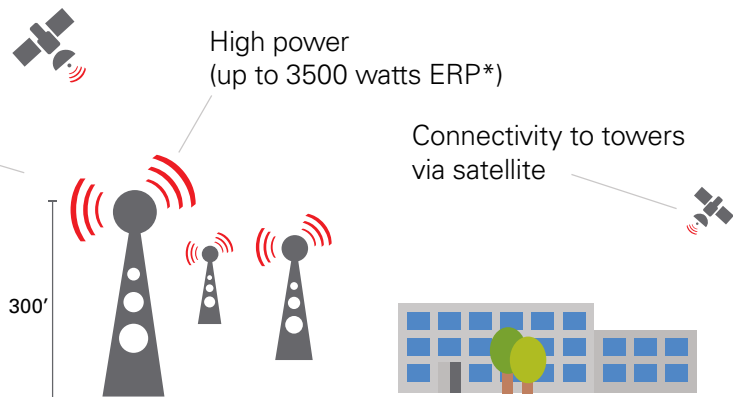
*Effective Radiated Power

CONCLUSION: DEVICE DIVERSITY IS THE NAME OF THE GAME

Many leading hospitals today seek to integrate pagers into their workflows and secure communications along with smartphones for maximum benefit and coverage. The reliable, cost-effective nature of paging provides an excellent communication method not only for roles that don't require smartphones, but also in emergency situations when cellular and Wi-Fi communications can fail. Ultimately, a broad and flexible device-agnostic communications infrastructure supports not only swift, effective care coordination, but also better outcomes.

> "We are often asked "Why pagers?". It's true they have been around for many, many years; however, during 9/11 and severe storms such as Hurricane Sandy, cell phone coverage in New York was intermittent, yet paging stayed up and we were able to keep our communications open."

Pat Black
Manager of Telecom Operations
Memorial Sloan Kettering Cancer Center

References

[1] BYOD Trends In Healthcare: An Industry Snapshot – 2015 Survey Results Revealed. Spok Inc., 2015.

ABOUT SPOK, INC.

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