

Health care facilities range from large hospitals to clinics, all to serve patients needing medical attention. Granting patients access, while keeping threats out, forms the delicate balancing act for health care security.

BY TONY M. WING



Integrated Security:

Just What the Doctor Ordered

Visits to health care facilities are inevitable, as individuals make trips in and out of them from birth to death. With so many patients at hospitals, clinics and long-term care institutions, health care forms a significant security market. A recent ranking of top American system integrators placed health care as the third most promising market for security, ahead of government and industrial markets.

As health care facilities provide rapid and convenient access to medical care, they also need to guard valuable equipment and medical supplies. Security equipment must account for medical technology, making sure lives are not negatively affected.

Technology budgets vary for health care facilities, resulting in a trend of antiquated equipment being deployed, according a 2007 survey conducted by GE Security and the International Association for Health Care Security and Safety. This makes estimating the size of the health care market difficult, as institutions may not spend for security upgrades, instead using the same technology for extended time periods.

The sheer size of hospitals also poses a daunting task for security, which usually incorporates safety to ensure the well-being of patients and staff. With so many factors to consider, securing health facilities is crucial and requires careful planning.

THREATS

While hospitals and other health facilities are havens for healing, emotions run high, ranging from

joyful new parents to bereaved family members. Depending on the situation, hospitals constantly face danger.

"Health care is challenged with many obstacles and threats, which vary depending on demographics and facility," said Evelyn Meserve, Executive Director of the International Association for Health Care Security and Safety. "The three most commonly mentioned by our membership are visitor and access control, workplace violence, and forensic patients."

For workplace violence, physical attacks against medical staff are a threat. "Health care personnel carry monitoring systems to protect them against violent patients or, for example, a patient's family member who is unhappy with the treatment given to a patient," said Werner Hulst, Business Unit Manager Care Solutions, and Marieke Vermaas, Care Consultant from Isolectra Netherlands. Metal detectors are also being installed near emergency rooms to detect for guns and knives.

The term "forensic patient" refers to patients under law enforcement custody who need medical



▲ Evelyn Meserve, Executive Director of the International Association for Health Care Security and Safety



▲ Werner Hulst, Business Unit Manager Care Solutions, Isolectra Netherlands



▲ Marieke Vermaas, Care Consultant, Isolectra Netherlands



▲ Andrew Fulton, Business Development Director of Tyco International's CDM Systems



treatment. "These patients are usually in handcuffs and possibly more," Meserve said. "Their captivity is always a concern, as they see the hospital as an opportunity to break away and escape. These patients are often violent and dangerous."

Along with ensuring prisoners stay in, facilities must also ensure unauthorized individuals stay out of restricted areas. "With an access badge, only authorized personnel have access to a restricted area and therefore it eliminates the risk of undesirable visitors," Hulst said.

Effective access control aids the elimination of medical equipment theft, and reduces pharmaceutical theft and fraud, said Andrew Fulton, Business Development Director of Tyco International's CEM Systems. "Working in consultation with hospitals, CEM has found that pharmaceutical fraud is a particularly high concern."

Theft or misuse of data, such as medical files, requires logical data protection, he said. In the physical

world, infant abduction poses a threat as well, with RFID solutions to track mothers and babies. "This involves babies being tagged on the ankle, with mothers tagged on the wrist," Fulton said. "In the event of a baby exiting an exit point with unidentified mother, an emergency alarm occurs."

Another threat is higher costs hurting a facility's bottom line. "Integrating security systems can help to minimize the total cost of system ownership, improve hospital processes and help keep hospital operating costs to a minimum," said Mike Bliss, Honeywell Senior Marketing Manager.

SITE-SPECIFIC CONCERNS

Some situations health care facilities deal with cannot be found anywhere else. For one, emergency rooms are uniquely chaotic places. "Emergency rooms typically involve a combination of patients, highly compensated staff, security personnel, police and



▲ Mike Bliss, Senior Marketing Manager, Honeywell Security

loosely regulated visitors," Bliss said. "Mitigating the risks posed by the constant interaction of large numbers of people requires significant training, processes, design and security systems."

Another issue hospitals must face are contagions, which are present elsewhere, but not at as dense concentrations. "Anyone in the confines of a hospital risks exposure to blood-borne and airborne pathogens," Bliss said. "Hospitals must carefully train staff on proper procedures and equipment use to protect everyone in the building and surrounding community. Access control systems can help facilitate and enforce these processes and procedures throughout the organization."

TECHNOLOGY SOLUTIONS

With risks in mind, an array of technologies keeps patients and medical staff safe. To bring a wide range of systems together, integration plays a major role in how security is implemented.

This is seen in the convergence



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of physical and logical security. "We're using RFID, smart card, access control and environmental monitoring," said Dr. John Halamka, Chief Information Officer of Harvard Medical School. "Our data center has a Faraday cage to prevent radio transmission from going in and out. The physical security for our paper records is stored in secure off-site location, which is all encrypted."

Convergent solutions protect patient data. "Protecting patient confidentiality and minimizing the risk of situations that might damage a facility's reputation requires a seamless connection between logical and physical security," Bliss said.

Integration between security systems is also among the technology solutions for health care. "Honeywell Security reduces redundant effort within hospital operations by providing an integrated access and video platform," Bliss said.

Large health care facilities like hospitals need fully integrated management systems, Fulton said. "The CEM AC2000 SE system integrates with DVR/CCTV, intruder alarms, and offers central alarm monitoring within health care sites using the AC2000 Alarm and Event Display application."

ACCESS CONTROL

With the constant ebb and flow of patients, medical staff and visitors, access control is paramount in health care.

"Access control and identification systems are the most common security systems in health care," Meserve said. "The technology varies depending on the patient population in many facilities."

Some locations seek to maximize

their existing technical investments. "Health care establishments wish to utilize existing network infrastructure, particular in the case of new purpose-built facilities," Fulton said. CEM's equipment works on existing networks, saving costs.

Multipurpose cards also add another layer to access control. "In terms of access control applications, we've seen smart card technology used for managing access to scrub dispensing, food service payment, parking access, employee time management and attendance," Bliss said.

VIDEO

Advances in video technology have led to some exciting purpose-built solution for health care. Remote monitoring, boosted by affordable cameras and stable networks, has turned "telemedicine" a reality.

"Telehealth is the delivery of health-related services and information via telecommunication technologies," Vermaa

said. "Telehealth delivery could be as simple as two health professionals discussing a case over the telephone, or as sophisticated as using videoconferencing to connect a patient to his caregiver."

This holds tantalizing promise for nursing homes or homebound individuals. "Videoconferencing provides the possibility to offer remote care to elderly and people with disabilities," Hulst said.

Telemedicine has already been deployed in Afghanistan since February 2007, where there is one doctor for every 5,300 people, according to a Cisco press release. Cisco and its local telecommunications partner Roshan link rural patients to physicians at the Aga Khan University Hospital in Karachi, Pakistan, and the French Medical Institute for Children in Kabul.

HOME AUTOMATION

The trend for remote monitoring has emerged in alarms. While cameras are acceptable for "seeing" the doctor on a monitor, some elderly or infirm people in their homes dislike the idea of cameras watching their every move. Instead of deploying cameras, alarms can perform the same functions in a less intrusive way.

"Home automation is being implemented into more and more homes of the elderly and disabled in order to maintain their independence and safety," Hulst said. "Sensors can detect a range of potential risk situations including wandering (particularly useful for people with dementia), falls and intruders, as well as environmental issues such as floods, fire and gas leaks."

Sensors provide useful information



▲ Home automation is increasingly adopted by households with elderly people.



in a timely fashion. "When a sensor is activated it sends a radio signal to a central home unit, which then automatically calls a 24-hour monitoring center, where highly trained operators can take the most appropriate action, whether it be contacting a local key holder, doctor or the emergency services," Verma said. "These systems allow for the individual to feel secure in their homes, knowing that help is only minutes away."

WIRELESS COMMUNICATIONS

For large health care establishment like hospitals, keeping track of equipment can be overwhelming. To track inventory in hospitals — and sometimes track employees — real time location system (RTLS) and radio frequency identification (RFID) technologies are deployed.

"Both technologies use radio frequency signals to communicate and may converge with other technologies such as sensors or global positioning systems," Richard Sebastian, Research Analyst for Frost & Sullivan. "Moreover, both



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these technologies may operate in passive, semi-passive or active mode, although most types of RTLS solutions at the present stage operates in active mode."

RTLS offers more granularity, or more accuracy in identifying what and where items are, Sebastian said. "In the health care industry, RTLS is used in several areas: Medical asset management, personnel tracking, patient tracking and billing support and verification."

CHALLENGES

As health care adopts new technologies to nurture patients, security also adapts for the future. Among the challenges for health care security are meeting market demands, integration of facilities and services, and continuous changes in legislation and standards, Meserve said.

The need for health care is outpacing hospital capacity, due to longer life spans. "New hospitals should have access controls

connected to other parent company sites to facilitate the flow of staff between them," Bliss said.

Increased longevity will affect long-term care facilities as well. "Capacity issues extend beyond short-term care facilities," Bliss said. "It is also a concern in assisted living facilities and health care institutions specializing in long-term care."

With more demand, security providers will need to strengthen their offerings. "From a technology provider's point of view, the most important challenges are having a broad solution portfolio to provide solutions to each type of patient and each level of care," Hulst said.

Security technology no longer has to be separate from hospital operations. The lines have been blurred, with remote monitoring enabling virtual doctor visits and smart cards becoming more than contactless keys. As security develops, it will become part of the cure for health care solutions. ■

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