## Taking the Electronic Medical Record to the Cloud

*The field of correctional health is starting to realize the benefits of the EMR – here's why the cloud computing model makes sense.*

As a information technology (IT) strategy, cloud computing took the business world by storm, allowing companies to store massive amounts of data virtually, rather than making a huge investment in developing and maintaining their own information system storage. Yet health care has been a relative late-comer to cloud computing, largely because of the industry's unique data security, regulatory, and patient privacy concerns. Within the general health care industry, however, the mandate to widely adopt electronic medical records (EMRs) is changing that, as providers scramble to find technology solutions that work for them. In fact, a recent report by research firm MarketsandMarkets projected that health care-related cloud computing will become a $5.4 billion global industry by 2017, encompassing both clinical and non-clinical applications.[i]

If you've ever accessed your online email account from a smartphone, uploaded a photo album to the Web, or used a file-sharing site to make a document accessible to a colleague, you're no stranger to the cloud. As its ethereal name suggests, the "cloud" is an intangible but ubiquitous presence in our tech-loaded lives. It is essentially the next generation of data hosting, a way to take advantage of the maturity of the Web and the widespread availability of broadband, wireless, and cellular connectivity.

Within correctional health care, the cloud computing model makes tremendous sense as a way to manage clinical data. The term "cloud computing" is used here in a general sense, to refer to any system that delivers hosted services over the Internet. This model enables on-demand access to a shared pool of technology resources, which might include networks, servers, software, and back-up storage in any combination. Since the service is fully managed by the provider, a correctional facility needs only Internet access and a network of desktop computers for health care staff – it does not need a large mainframe computer or on-site server, for example. While correctional facilities have lagged behind the wider health care industry in adopting the EMR, cloud computing offers a viable way to reverse this trend, allowing correctional health to catch up.

**Advantages of the EMR in Correctional Health**

Health care providers in correctional facilities have distinct challenges when it comes to documenting patient care. Resources are limited, inmates are moved often, and chronic conditions (including mental health issues) are common. Every encounter with an inmate must be documented thoroughly to mitigate risk, and medical information must be handled with the same security precautions used by any other health care organization. Where correctional health care staff turnover is high, it becomes critical to have a system in place that promotes consistency among medical records, and makes it easy to train new staff.

Paper-based records are especially cumbersome in the correctional environment – they must be copied and manually transported whenever an inmate is transferred to another

facility, they take up a lot of space and can be easily lost or misfiled, and care providers often have to look through hundreds of handwritten pages to get a complete picture of a medical history. Paper systems also do nothing to support the disease management strategies that are recommended by the National Commission on Correctional Health Care (NCCHC) – while an EMR can automatically monitor the recurring health care needs of a population and provide templates or decision support capabilities that promote compliance with evidence-based standards.

There have been two major concerns about the use of EMRs in correctional facilities: data security and high costs. Some patients and providers perceive electronic records as more vulnerable to unauthorized use than paper records – yet all the systems on the market today are fully HIPAA-compliant and capable of keeping data secure. Those that have been tailored specifically to the correctional environment are also likely to adhere to standards for medical records set by the NCCHC. When electronic records are backed up off-site or in the cloud, they are safe from many of the physical hazards faced by paper records, like fire or water damage. They may also be safer from unauthorized access, due to security tools like encryption, password protection, and automatically generated logs of who accessed the data and when.

It is true that implementing an EMR comes with significant start-up costs, as well as ongoing costs related to system maintenance. Yet the EMR is also likely to confer cost savings through organizational efficiencies and better access to data. Paper charts are often fragmented and disorganized. In contrast, electronic records can allow data to be sorted by various parameters, providing a customized view of the information that is most relevant to providers at that point in time – potentially allowing them to save time or make better clinical decisions. With EMRs, all providers use centralized patient information, allowing them to better communicate to optimize care and potentially reduce liability.

A cloud-based infrastructure also helps to keep EMR costs lower, since on-site equipment isn't being purchased or maintained. There is very little downtime with cloud-based systems – data is generally stored redundantly across multiple servers, so it is accessible even when maintenance and updates are being performed. Additionally, computer crashes do not result in data loss, because the data is hosted remotely. As EMR use is more widely adopted in correctional health, the trend toward cloud computing is likely to continue as well.

**The Business Case for Cloud Computing**

One of the key business benefits of cloud computing is its scalability – most cloud service providers will allow facilities to upscale or downscale technology requirements as needed, to accommodate shifting demands on health care resources. Another benefit is flexibility: care providers are no longer tethered to a specific location, but can access files across facilities, using secure devices like laptops and tablets, to support both internal and external collaboration. Cost savings can also result from the following:

- Better access to data. When patient encounters are documented electronically and uploaded to the cloud, providers can access lab results, imaging scans, and other pertinent test results at any time and in any place, allowing for improved care coordination and better decision making. For example, when inmates are moved frequently, it can be difficult to maintain a cohesive chart and match lab work to the correct patient at the correct facility – resulting in the added expense of duplicate lab tests. A corrections-specific, cloud-based EMR will receive lab results electronically, matching them to an inmate's unique identifier and notifying providers that the EMR has been updated.

- Economies of scale. Cloud computing relies on resource-pooling to offer massive amounts of computing power for a lower price. The large cloud service providers can build an IT infrastructure far beyond anything correctional facility or system could manage on its own – so there's very little downtime spent on system maintenance. Data integrity is maintained through redundant backup systems that just wouldn't be feasible or cost-efficient in a smaller system.

- Speed to innovation: By leveraging the economies of scale discussed above, cloud-based services can be up and running quickly, and system upgrades can be performed cheaply, with minimal downtime. On-site systems, in comparison, typically involve a long and arduous initial implementation, followed by major software updates every few years. Correctional health care systems can manage data with more agility when working in the cloud.

From reduced infrastructure costs to better data access, cloud computing will offer competitive advantages to traditional options as the EMR becomes more widely adopted by correctional health facilities.

[i] http://www.marketsandmarkets.com/Market-Reports/cloud-computing-healthcare-market-347.html