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Remote image archiving relieves hospital of storage and obsolescence challenges

Predictable real-time costs, no hardware worries, secure platforms and backup storage help make vendor-neutral outsourced solution viable

The adoption of digital technologies and IT in healthcare, and the consequent growth in the volume of patient data, presents hospitals with significant challenges in terms of data storage and obsolescence management. Dutch regulations require medical data to be available for 10 to 30 years. This prompted the Maasstad Hospital in Rotterdam to evaluate and identify the costs and risks associated with long-term digital data management as part of plans to move its site in September 2010.

The primary requirement of the six-month evaluation was to meet the hospital's goal of doubling activity without inducing system failure. The total cost of long-term data management was also calculated, with all tasks required to maintain minimum service levels for users taken into account. Additional constraints included compliance with Dutch regulations on healthcare data security, privacy, and retention, as well as vendor neutrality, which was necessary to allow seamless connectivity with a cardiology and a radiology PACS.

This process led to an innovative strategy being adopted: to outsource all IT production systems to a remote data center and to use a hosted archive service (provided by Carestream Health). Over 70 TB of legacy data are being migrated to the vendor-neutral archive service, including radiology, cardiology, and echocardiology examinations, digitized patient records, and a variety of back-office data, such as e-mail. All new data, including 180,000 new radiology studies, are now encrypted and sent to the remote data center too.

A data access point has been installed to connect the local RIS/PACS to the remote data center via a virtual private network (VPN). New studies arriving in the PACS are encrypted and forwarded. Data arriving at the remote archive are copied using two different media for continuity and disaster recovery.

Prior studies can take a few seconds or a few minutes to be delivered, depending on bandwidth to the data center and the volume of images requested. Waiting times can be avoided for patients scheduled on the

work list; images are prefetched and made available to the local PACS.

This type of service model has many benefits. Costs are predictable in advance and are incurred in real-time, rather than as a capital expense. The price for outsourcing archive services can be established by either volume of data (GB or TB) or number of studies. The per-study price commonly covers its incorporation in the archive and its retention for an agreed period.

The hospital is also freed from the responsibility and cost of managing hardware and systems obsolescence, including data migration.

Transferring sensitive patient data to a hosted service does not mean losing control. Service providers are usually contracted to provide regular and detailed activity reports on, for instance, the number of studies stored during the previous month, and/or the total volume of data held. Proven IT technologies and secure platforms, the storage of backup copies of information, and the use of VPN tunnels, data encryption, and audit trails should all ensure data security.

A hosted archive service need not be more expensive than an onsite archive. Economies of scale will drive costs down as more hospitals adopt this model of outsourced archiving. Some European countries are using this type of service to establish electronic patient records and build national or regional data repositories.

In time, additional services will be launched that relate to workflow management or viewing capabilities. Pay-as-you-go will be introduced, allowing users to concentrate on clinical applications instead of which technology to use. Value-added services such as teleradiology portals, consultation portals, and data mining services will help to improve the quality of care. ■

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