

## BRIGHT IDEAS

# From Disarray to Shipshape: Implementing an E-Library

Joseph Sheffer

Chaos can be a great motivator. Years ago, following the departure of his librarian technician, Salah Alkhalagi, MD, director of Clinical Engineering Services (CES) at King Abdulaziz Medical City–Jeddah (KAMCJ) in Saudi Arabia, was witness to the increasing disarray that befell the hospital’s collection of medical device manuals. From this chaos sprung an idea that would eventually lead to a highly organized and user-friendly electronic library (e-library).

CES is responsible for managing medical technology and maintaining and repairing medical equipment at KAMCJ facilities, which include King Khalid Hospital, Princess Nora Oncology Center, King Faisal Cardiac Center, and the Ambulatory Care Center. The department uses a team-based approach to assist Hospital and Primary Care Services in developing and delivering the Quality Care System—KAMCJ’s continuous-quality-improvement strategy, the goal of which is to satisfy patients’ expectations and facilitate cost containment.

### Challenge

Following the launch of KAMCJ in 1982, CES began to maintain a technical library in which hard copies of operating and service manuals were kept for use of medical

department (e.g., electrical, mechanical, medical gas) and Clinical Engineering staff. The library technician was solely responsible for ensuring an accurate inventory of resources for the library.

“The problem started when the library technician left the hospital, and the position was eliminated,” said Alkhalagi. “This was back in 2000 or 2001. Then, gradually, the library began to disintegrate: manuals were scattered, and the library was disorganized and untidy. Many of the hundreds of new manuals were not secured, and some began to go missing. Staff frequently removed the manuals from the library but did not return them.”

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Replacing certain manuals was not an easy task, added Alkhalagi. “We encountered difficulties obtaining substitute copies from suppliers and vendors, especially for service manuals. The greatest problem we encountered was with user operating manuals, which often went missing from departments, usually as a result of staff turnover,” he said.

### Solution

In 2005, CES received the go-ahead from hospital administration to construct its own library. After construction wrapped up about a year later, the department spent another



## At a Glance

### SUBJECT

Clinical Engineering Services, King Abdulaziz Medical City–Jeddah

### LOCATION

Jeddah, Saudi Arabia

### SIZE

500 beds

### STAFF

Four key team members (director of clinical engineering, technical library technician, administrative assistant, and data entry clerk)

### About the Author



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year transferring the manuals from the old to new library.

When the new space was organized, Alkhalagi began to map out a plan for creating an e-library. To accomplish this, four key elements would be needed: 1) dedicated staff, 2) equipment (personal computers [PCs], scanners, and an external hard drive), 3) an equipment inventory, and 4) a high-capacity storage folder on the KAMCJ network.

CES gained approval for a dedicated library staffer; the position was titled technical library technician. The technician's duties included the following:

- Arranging the library's manuals according to manufacturer
- Creating and updating an inventory medical equipment, arranged by manufacturer
- Developing an access database, organized by manufacturer, equipment category, and model

**Following completion of the e-library, CES spread word of its availability to all medical departments at KAMCJ and provided a link to the e-library's home on the hospital's network.**

- Distributing a list of manuals to all CES staff for review, to ensure that the library's inventory was complete and up to date
- Communicating with vendors to provide copies of missing manuals, if possible
- Searching manufacturer websites to determine availability of needed manuals
- For newly procured equipment, requesting that all vendors provide a soft copy of manuals

The next step in bringing the e-library to life was to purchase and set up the necessary hardware in the library. PCs, scanners, and a 500-GB external hard drive were used to transfer the hardcopy manuals into electronic format. Scanning began in October 2008, with all manuals saved as PDF files on the hospital's network, as well as backed up on the external hard drive.

"The main challenge we encountered with scanning was that it's an extremely time-consuming task," said Alkhalagi. This required CES to bring an administrative assistant and data entry clerk on board, and the bulk of the scanning was done off-hours, mostly on weekends.

"We completed scanning of all existing hardcopy manuals by the end of 2010," said Alkhalagi. "Since then, we request that all suppliers and vendors provide us with soft copies of manuals, whenever available. Otherwise, we are continuing to scan hardcopies and save them to the KAMCJ network, so they are accessible to all technical staff and the end-user departments."

### Results

Following completion of the e-library, CES spread word of its availability to all medical departments at KAMCJ and provided a link to the e-library's home on the hospital's network. At the time this article was written, the e-library consisted of 334 network file folders representing 334 manufacturers, with "thousands of manuals" contained within the folders, Alkhalagi said.

The main file folders are named according to manufacturer, and they contain subfolders for equipment category, followed by subfolders for model category that contain PDFs of individual manuals.



Staff members use the technical library at King Abdulaziz Medical City-Jeddah.



The King Abdulaziz Medical City in Jeddah, Saudi Arabia, is a sprawling complex that serves a wide variety of healthcare needs in the western region of the country.

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Alkhalagi described several benefits of the e-library initiative:

- The manuals can be easily accessed 24 hours a day, seven days a week by any PC on the hospital network via dedicated access from CES.
- The e-library provides a safeguard against loss of hardcopy manuals.
- It saves time for medical and technical staff, as they no longer have to search for hardcopy manuals.
- Because the naming convention for the file folders has been standardized, searching/filtering folders according to manufacturer and/or equipment type can be done easily.
- Staff can print out PDFs of all or particularly useful pages from manuals.

“The e-library has been instrumental in improving efficiency, both within clinical engineering and for the hospital as a whole,” said Alkhalagi. “This added efficiency allows hospital staff to better manage risk, as well as to deliver more effective patient care.” ■



Key players in maintaining the technical library at King Abdulaziz Medical City–Jeddah (clockwise from top left): Salah Alkhalagi, director of clinical engineering; Joel Ferrer, technical library technician; Jasper Gaspar, administrative assistant; Louie Curias, data entry clerk.



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