

CUSTOMER SUCCESS STORY

Advocate Christ Medical Center



→ The XAP 800 is a complete conferencing system featuring the most sophisticated audio technologies available

Everyone is listening for a heartbeat. They are listening in the operating room, in the auditorium, in the lunchroom. They are listening miles away in the museum and in high school classrooms across North America. They are all listening for the same heartbeat. As the skilled hands of a cardiac surgeon bring the live teleconference of open heart surgery to a close, everyone is waiting for the familiar beep-beep-beep of the monitor that means the heart is beating on its own again.

Since Advocate Christ Medical Center in Oak Lawn, Illinois, began videoconferencing live heart surgery from its ORs, countless physicians, nurses, students and medical personnel of all kinds have watched these delicate procedures come to life. Initially, the hospital connected exclusively to the Museum of Science and Industry in Chicago, through its program “*Live... from the Heart.*” The OR signal would be sent via T1 line directly to the museum, where an invited audience would view the real time surgery, as would designated high school students across the country.

With the opening in 2007 of a new conference center and adult surgical heart unit, Advocate Christ Medical Center has greatly increased its audience and its influence. A sophisticated video distribution system now links four operating rooms, a 245 seat auditorium, nine breakout meeting rooms, two open air lobbies and a dining area. “Nobody has anything like this,” says hospital AV director Alan Drachenberg, “I have physicians coming in here and asking, ‘What do you have?’ and I say, ‘What do you need?’ This is unbelievable.”

Clarity Critical

Nestled in among the shiny chrome tools of Operating Room 16 are three Sony video cameras, two on robotic arms, and a third fixed to the wall. One of the robotic cameras is positioned directly above the patient’s chest area, the second above his legs to capture vein harvesting during surgery. The third camera provides wide shots plus close-ups of the surgeon or his team. The hospital’s AV staff operates the cameras robotically from a mini TV studio housed in the hallway outside the OR. A 20” monitor and two wall speakers bring questions from the viewing audience. Lavalier mikes are available to the team, but strategically placed shotgun mikes are less obtrusive and equally effective in making conversation between the OR and audience completely natural.

That clarity of audio is vital in this surgical videoconferencing. Media Resources of Lisle, Illinois, which designed and installed the conference center AV system, chose ClearOne XAP 800 and 400 audio management and distribution technology to erase the echos that can cause audio chaos. “In an operating suite a doctor’s hands are kind of busy,” says Scott Woolley, Director of Product Marketing, Professional Audio for ClearOne. “Handsfree conversation is needed. A headset

would limit his mobility. Instead a microphone is placed so the doctor or anyone else in the room can move about freely, but their audio can still be picked up and transmitted to distant sites.”

The challenge was to keep that OR mike from picking up the audio coming from the distant site and sending it back via the doctor’s microphone along with his voice. “What our product does is prevent the audio that comes from a remote location from returning back to that location causing echo,” says Woolley. “Imagine, if you speak into your microphone, your voice comes out of the speaker here and my microphone then picks up not just my voice, but yours as well. If your voice comes back to you through my microphone, you get echo.” That problem is eliminated by the XAP units’ echo cancellation technology.

Videoconferencing systems don’t accommodate enough microphones for AV systems as large as this one. “The nice thing is that the XAP is also a matrix switcher,” says Brian Maksa of Media Resources. “You can run all your mikes into the ClearOne and then run your outputs to the Tandberg codec or your recorder and so forth. Different devices sometimes receive signals at different levels so you may have to lower the level going to the Tandberg but raise it going to the recorder. The ClearOne is also an equalizer so you can adjust each individual input.”

The ClearOne XAP 800 has eight mike inputs, the 400 four more, and an AV integrator can add even more by linking multiple XAP units together. “Getting microphones close to the talker increases intelligibility. The larger the group, the more mikes are needed,” says Woolley. “Our systems automatically voice activate the mikes. If only one person is speaking, our system senses that and only activates the mike closest to that person. If a second person talks it activates the second microphone and so on.” The system is smart enough to know who’s in the local room and distinguish that audio from the loudspeaker audio. All of these features and more make the two way conversation between the OR and audience seem as if everyone was in the same room.



Heart of the System

The auditorium at Advocate Christ is home to most of the technology that powers the hospital’s new conference center. During a presentation three ceiling mounted Sony VPL-FX51 6000-lumen projectors allow for either a single image on the 24 foot wide electronic wall screen, or two 9 by 12’ images side by side, perhaps one of the surgery, the other of a PowerPoint presentation or something from the Wolfvision document camera. “Once,” says Drachenberg, “*after Live.. from the Heart*, a surgical nurse came in with a tumor they’d removed from the aorta and put it on the document camera so kids could see the actual tumor.”

Two wall-mounted cameras convey images of either the front of the auditorium and a presenter or of the audience. Several wireless handheld or gooseneck microphones offer audio options during any session. An equipment rack in the control booth at the rear of the auditorium holds most of the support equipment, including the Tandberg codec and the ClearOne audio units. A console at the front of the room houses the DVD/VHS players, two PCs, a laptop connection, the document camera, a 15” AMX touchpanel, and a 17” Hitachi interactive monitor that displays the same images that appear on the wall screen behind the presenter.

Staying out of trouble

Since most of the presenters are physicians and nurses with varying degrees of AV expertise, the system at Advocate Christ needed to be easy to use. All touchpanels in the center look the same, but presenters are given individual passwords that grant them access based on their own level of expertise. “As you advance there are more buttons available on the touchpanel,” says Maksa. “If you’re a basic operator you can’t accidentally start a videoconference. You have access to a PC input, the DVD player and maybe the volume. With a little more training, you get the ability to do project dual images. Third level operators can access audio and video conferencing.” For added security, Media Resources linked one of the rear cameras to a distribution amplifier that sends the camera feed to the AV department.

The AV department can take control of the touchpanel from any networked computer if someone gets in trouble.

Not all meetings involve live teleconferencing. For simple business meetings, staff tend to choose the larger ground floor conference rather than the auditorium. There's a simple reason for that: "There's no food allowed in the auditorium," says Drachenberg. "Physicians have no time to eat and then meet. They have to do both at the same time."

The two larger first floor conference rooms, both divisible, have systems similar to that of the auditorium with 12" AMX touchpanels controlling a single camera and Sony VPL-PX41 projector. There, Tandberg's picture-in-picture feature takes the place of the dual image technology. The smaller conference rooms have basic AV systems that include a PC connection, a projector, DVD player, and audioconferencing capabilities. Staff can plug in a portable Tandberg 3000 videoconferencing codec as needed. Extron Medialink push-button panels offer all the control these basic systems need for smaller meetings or overflow crowds from the auditorium.

Cardiac operating rooms are an environment unto themselves. They are very cold. They are sterile. More often than not, a surgeon has music playing while he works. The various audiences watching the surgery at Advocate Christ Medical Center, whether they are doctors, staff or students, are privy to all that goes on, asking questions, listening to answers, watching closely. What no one forgets, however, is that a patient is waiting too..for the beat of that same heart.