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An essential resource for managers of clinical trials

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Eye of the needle: Informed consent and emergency medicine research

'It's a difficult option to thread'

Emergency medicine -- like the media and the global marketplace – is being delivered at the increasing speed of rapidly changing technology. However, regulations for conducting emergency medicine research are strictly old school.

They date back decades, and even the latest regulatory improvements are nearly 15 years old. This change took place in 1996 when the Food and Drug Administration (FDA) permitted informed consent waivers in certain emergency research. (*See related story, p. 87.*)

As a result, researchers working to improve emergency medicine are required to obtain informed consent during a very rapid and fast-based medical encounter or take a series of labor intensive steps to meet the waiver's requirements.

"The exception from informed consent under emergency circumstances is a very restricted possibility for clinical research," says **Tom Aufderheide**, MD, professor of emergency medicine and associate chair of research affairs at the Medical College of Wisconsin in Milwaukee, WI.

"But it allows research to be done," he adds. "And we cannot improve emergency care in any other way, so for the practice of emergency medicine I am grateful to have this opportunity."

The public greatly benefits from emergency medicine research, and IRBs recognize this fact.

"We've been involved in a number of trials over the last 15 years, including the public access to defibrillation trial," Aufderheide says.

The Public Access Defibrillation (PAD) research, published in the mid-2000s, found that more people would survive cardiac arrest in public locations when trained laypersons safely used automated external defibrillators.

"It's a trial that evaluated public access to automated defibrillators that are now in airports and airplanes and other locations and that have saved countless numbers of lives," he adds. "Our IRBs believe the processes we use for both community consultation and public notification are rigorous and provide the community with an opportunity to understand what's

going on in the community and provide us with feedback," he adds.

Aufderheide and other emergency medicine researchers have come up with complex, exhaustive strategies for meeting the FDA waiver requirements.

"We're in the eye of the needle; It's a difficult option to thread," says **David Clark**, PhD, assistant dean for clinical research and professor of psychiatry at the Medical College of Wisconsin in Milwaukee, WI.

Many paths to community consultations

Clinical research (CR) sites seeking an informed consent waiver for emergency medicine research have to hold community consultations, public notification, and then follow-up with the public's complaints and concerns. (*See related story p. 87.*)

The first step is community notification, which should not be confused with obtaining community consent for a study, Clark and Aufderheide say.

"This is where the investigator puts together a surrogate community that likely would be entered in a trial and explains the study to that community," Aufderheide says.

Typically, the community consultation will include a discussion of the study's purpose, what informed consent means, how informed consent will not be obtained, and what the study's risks and benefits are. Plus the public is encouraged to provide feedback about the proposed research.

IRBs should be involved in the community consultation process. The IRB's role includes documenting the public's feedback, identifying their objections, deciding whether there is an overall acceptance of the research within the community, and determining if the process has resulted in acceptable community consultation, Aufderheide says.

It takes months to satisfy the requirement for consulting the community, so an investigator's heart has to be into it, Clark says.

"You need to take the temperature of the community, finding out if they understand the study, the importance of the study, what's involved, and what objections they have," he explains. "If the investigator does this right, and it involves a series of public events, then they will have a pretty good feeling for the area where the study will take place."

Through the community consultation, researchers receive feedback about the study's acceptability and implementation.

"There is not a single correct way to perform community consultation," Aufderheide says. "There are different methods available, and the optimal approach should be developed collaboratively by ethicists and the IRB based on an understanding by the local community."

The key to a successful community consultation

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Informed consent waivers under emergency research

1996 reg remains in effect

The Department of Health and Human Services (HHS) current regulations regarding a waiver of informed consent in emergency medicine include the following key points:

• The regulations specifically state that "a waiver of the applicability of the 45 CFR Part 46 requirement for obtaining and documenting informed consent for a strictly limited class of research, involving research activities that may be carried out in human subjects who are in need of emergency therapy and for whom, because of the subjects' medical condition and the unavailability of legally authorized representatives of the subjects, no legally effective informed consent can be obtained."

• "Additional protections of the rights and welfare of the subjects will be provided, including, at least:

- (i) consultation (including, where appropriate, consultation carried out by the IRB) with representatives of the communities in which the research will be conducted and from which the subjects will be drawn;

- (ii) public disclosure to the communities in which the research will be conducted and from which the subjects will be drawn, prior to initiation of the research, of plans for the research and its risks and expected benefits;

- (iii) public disclosure of sufficient information following completion of the research to apprise the community and researchers of the study, including the demographic characteristics of the research population, and its results;

- (iv) establishment of an independent data monitoring committee to exercise oversight of the research; and,

- (v) if obtaining informed consent is not feasible and a legally authorized representative is not reasonably available, the investigator has committed, if feasible, to attempting to contact within the therapeutic window the subject's family member who is not a legally authorized representative, and asking whether he or she objects to the subject's participation in the research. The investigator will summarize efforts made to contact family members and make this information available to the IRB at the time of continuing review." ■

is to know your audience, Clark says.

For instance, if a trial involves heart disease, then investigators might think about ways of attracting older people who have heart problems, especially those in socially marginal groups whose rights might be abridged, Clark says.

There are a variety of ways to hold a community consultation. Clark and Aufderheide describe these methods:

• **Town hall meetings:** One method involves inviting the public through local media to attend large town hall meetings at a community center or other public site. CR staff, investigators, and IRB representatives attend. Community members directly interact with investigators after a research presentation that has been IRB-approved, Aufderheide says.

"The town hall meeting can be a very effective way," he says. "Investigators can go to those meetings, describe the study, and get feedback from those groups."

CR professionals can videotape the meeting, pass out study contact information, and obtain feedback.

All comments and concerns are documented, and investigators and the IRB have to meet soon after the meeting to determine whether acceptable community consultation occurred, Aufderheide says.

Clinical research sites might hold five to eight community meetings over a six-month period, Clark notes.

"We pull in as many people as we think might be affected by the study, and we send out a public notice," he says.

Clinical trial sites should keep in mind that actual attendance for these community meetings will be far less than expected, and it will take CR staff months to successfully invite a suitable number of people.

If there are too few people attending, then the feedback likely will be skewed to the special interests of the small group motivated enough to attend. So researchers have to work hard to bring in more than 20 attendees.

For instance, in Aufderheide's experience,

researchers spent six months inviting people to the town hall meetings, receiving commitments to attend from 2,000 people.

"Then we had about 150 people actually attend," he says. "So it's challenging in this day and age for people to take time out of their busy lives and show up."

• **Focus groups:** Another model for community consultation is the focus group model in which smaller groups of 10-15 people are brought together to discuss the research.

For example, a study that will enroll people who have seizures could invite these patients and their family members to a focus group session.

"We'd ask them what it would be like for them if they were swept up in a study," Clark says. "We have these town hall meetings with as big of a group as we can get, and then we have smaller focus groups."

• **Random digit dialing:** A third way to satisfy community consultation requirements is to hold random digit dialing, Clark says.

"We all hate to get those calls on Saturday," he adds. "But we found that if we script a good description of a study and have meaningful questions, hiring professional groups, we can get hundreds and hundreds of randomly-sampled residents."

The process involves a structured telephone survey that asks specific questions about the study, explains the study over the phone, and asks about the demographics of the person being called, Aufderheide explains.

"The survey obtains their feedback on the acceptability of doing the study with an exception to informed consent and how they feel about it," he adds.

Typically, these calls are made to 500 or more people in a community.

"It's a very objective way to assess a community's feelings about a study," Aufderheide says.

Random digit dialing is particularly helpful in studies where there isn't an easy-to-engage target population, he says.

A good example are studies that focus on trauma from gunshot wounds, he adds.

"There is no focus group for people with gunshot wounds, and these are the type of people who won't show up to a town hall meeting," Aufderheide says. "So random digit-dialing is an approach that probably is most effective."

The 10-15 minute calls ask people to give their thoughts on how a particular research project might impact their rights and welfare, Clark says. ■

Public notice: Pay for ads, but seek free publicity

An 'obligation to let as many people know as possible'

Public notification under an informed consent waiver for emergency research can be a tricky business. After investigators engage in community consultation and the IRB concludes their efforts were successful, then they need to notify the public about the study and its waiver from informed consent.

"Public notification is going to the media, TV, radio, newspaper, and announcing plans for the study," says **Tom Aufderheide**, MD, professor of emergency medicine and associate chair of research affairs at the Medical College of Wisconsin in Milwaukee, WI.

"It's a broadcast to the community that the study is going to be done," he adds.

Researchers can generate free publicity by letting local news reporters know about their plans, and they can ask community groups to put notices in their newsletters.

These notices should briefly explain the study and ask people to call or notify investigators if they have any questions, concerns, or feedback.

All comments obtained are taken to the IRB.

"The trick is to pay for some advertising and to exploit public service advertising too," says **David Clark**, PhD, assistant dean for clinical research and professor of psychiatry at the Medical College of Wisconsin in Milwaukee, WI.

"Ads can be very expensive," Clark adds. "While we have an obligation to let as many people know as possible, we need to operate within budgets."

Researchers should welcome local reporting on their emergency medicine studies and offer writers any assistance they can, he says.

They might attract media interest by putting a human element to the story. For instance, with an emergency medicine study involving the Public Access Defibrillation (PAD) research, investigators could explain to reporters how some people will die in a public place because no one has ready access to a life-saving device. The local heart association might even be able to put reporters in touch with people who have lost a loved one to a heart attack that occurred in a public location.

For magazines and publications that can go in-depth on the story, investigators could explain

what research informed consent is and how difficult it would be to require researchers to obtain informed consent each time an emergency medicine patient appeared at the hospital.

"When you have seconds to minutes to react, there is not enough time to do informed consent in the way it's supposed to be done even if a family member were present," Clark says.

"A lot of studies are done off the back of the ambulance," he adds.

If researchers do their jobs well during the public notification stage, it's likely they will receive a variety of comments, complaints and questions from the public, Clark notes.

"We have a sterling investigator who has been willing to go the extra mile and pioneer the ways we get feedback," he says.

Conflict with civil liberties

In one complaint, a person objected to the possibility of a family member being recruited into the study under an informed consent waiver, he recalls.

"The person who came to us and the patient had such a deep civil liberties belief in the principal of consent that they said they would never allow themselves to be in a study where they weren't asked to enroll," Clark explains.

In this particular study, the public service announcements told people that if they thought there was a possibility they might be enrolled in the study, they could wear a wristband that would exclude them from the research.

This particular complainant had heard the announcement, but also objected to having to wear a wristband, Clark says.

For members of the public with this type of objection, the IRB and investigators came up with a solution to have the person's medical alert bracelet programmed to say that if the person was a candidate for the study that he didn't want to be in the study, he adds.

This change satisfied the patient's objections.

Complaints made during the public notification process have to be addressed or else they could result in the IRB having concerns about approving the study, Clark notes.

"An IRB would be reluctant to endorse the study unless there was a distinct majority of the community who felt comfortable or supportive of the study and unless the kind of objections raised sounded as though they could be raised reasonably," he explains.

Even a strong, vocal subgroup that felt their rights were being violated could lead to a chilling influence over the IRB, he adds.

In Aufderheide's experience, most people who are entered in emergency medicine trials are very grateful for having researchers optimize their outcomes.

"The purpose of community consultation and public notification is not to attain 100% knowledge within the community about the study, because that's never going to happen," Aufderheide says. "The purpose is to derive feedback and do the best job you can to notify the community."

Investigators need to understand the community's feelings about the study through both the community consultation and public notification processes. And they need to document all feedback and how concerns were addressed.

This phase of public notification is informing the IRB where the notification process stands and what changes have been made to satisfy the community's complaints or concerns, Clark says.

"Public notification is a rigorous process that can take six months to a year to complete," Aufderheide says. "Once the IRB thinks the public notification process is complete and acceptable, then the IRB can give investigators approval to start the study." ■

Use technology that works best for your site

Have IT professionals help with tech solutions

Electronic information technology is paradoxically shrinking even as it expands its global reach. Apple CEO Steve Jobs recently predicted that more people in coming decades will be using small hand-held computer devices than will continue to use desktop computers.

Whether or not this prediction will extend to clinical trial investigators and coordinators remains to be seen. But the fact is that trial sites already are evolving to increased use of portable communication and information technology devices.

"We have the freedom mobile technology offers versus the need to secure data and make it safe in that process," says **Jaime Parent**, MA, MHS,

vice president of information services and associate chief information officer at Rush University Medical Center in Chicago, IL.

"The future is with the mobile device and going beyond the laptop," Parent says. "The younger generation can't move fast enough with the technology, but some investigators are reticent about moving to new technology."

This trend is particularly true in clinical medicine where mobile devices can provide continuous monitoring of patients and allow doctors to type in patient care notes on a handheld device.

Research sites also are following the national trend of increasingly relying on mobile devices, but the extent to which these are embraced might depend on site investigators' resistance to change.

"Whether someone is a researcher or a consumer, people are most comfortable with their own way of doing things," Parent notes.

When a research institution plans to upgrade its technology or tighten data security, it's a good idea to have an information technology professional work with research staff in implementing the changes.

"I get to know researchers well and build relationships with them," Parent says. "I make sure they know the risks involved and understand the benefit of information security."

Parent asks investigators these questions in an effort to determine which technology and security strategies will best meet their needs:

- What is it you are trying to accomplish?
- What is it about your research that creates this unique need?
- Do you need mobile devices, telecommuting technology?
- Do you need video conferencing?
- Do you need to share documents online?
- What do you need within your group of researchers?

"By training, I'm a clinical microbiologist and have done research, so at a very basic level I understand their challenges, and that helps me enormously in trying to build bridges with those folks," Parent says.

For example, a researcher in Chicago might be working collaboratively with researchers in another country on a project. The Chicago investigators will come to Parent and say they need to connect electronically with an international colleague, sharing large files. But the Chicago investigators don't know how to do this securely and easily, Parent explains.

Parent asks them what their workflow is like and how they would like to collaborate.

"Would they like to do this online or through videoconferencing?" he says. "If they have large files to send that cannot be attached to email then they might want to set up FTP, a file transfer protocol server, which is used fairly commonly among researchers."

If the files will have protected health information or sensitive data then it's important to encrypt the information.

"I need to understand how they work with other researchers," Parent says. "So I try to figure out how they work together and then provide technology solutions."

In another example, a researcher asked Parent to help him set up video teleconferencing in a private room. Depending on the availability of the equipment, this technology can cost up to $10,000, which would take a substantial chunk of any research grant funding.

Before Parent could make a suggestion, another investigator suggested the researcher have Parent set up a computer monitor camera for a few hundred dollars.

"Because I had established a relationship with this other researcher, there was this bridge built that helped the [new] researcher with buy-in," he says. "This made my job easier in terms of selling the investigator on the less expensive technology."

Some investigators never learn about the cheaper technological options because they go to the wrong sources with their questions.

"They'll get a grant and turn to a major vendor and say, 'Build me a technology solution,' and they'll pay a lot of money for this," Parent says. "It's like buying a cell phone with a lot of features you'll never use."

Parent helps investigators sort through their options to find the best value for their research dollar.

Another problem researchers face is in relying on data back-up that they can manually handle and use.

"I recommend they back up to our data center where we perform multiple back-ups," Parent says. "It's adequately cooled, secured, and monitored 24 hours a day."

The data center can provide investigators with access to any data at any time they need it, and yet some researchers are hesitant to take advantage of this option.

"They way want to use their own PC network under their desk," he adds. "We discourage that

because what happens if you spill coffee on your computer, or what happens if your back-up device fails and you can't retrieve the information?" ■

CR CASE STUDIES

Left in a lurch: Coping with an untimely exit

Ohio CR coordinator offers case study answer

For most researchers the sudden departure of a study coordinator who leaves months of uncollected data is what might happen in a particularly bad dream.

For one Ohio research site, this exact scenario was a living nightmare. The clinical research (CR) site eventually recovered thanks only to the pluck and determination of one research coordinator.

"What happened was their study coordinator called in sick one day and never came back," says **Anne Looney**, RN, CCRC, a research coordinator for Mid-Ohio Heart Clinic Inc. of Mansfield, OH.

When the coordinator disappeared, she left a mess that no one at the site knew how to handle. So the CR site hired Looney, who had no research experience, but proved to be the right person for the job.

"She didn't do a lot of data entry, so even though a lot of patients were enrolled, there was not a lot of data," Looney recalls. "For example, we had one trial with 62 patients and data for only five patients."

Looney's job was to organize the chaos.

"I came in not knowing a lot about research, but had to devise a plan to look at all of the open studies and find the contact person for each," Looney says. "The sponsors gave me lists of patients who had signed informed consent (IC) forms, and then I checked on updates with the IRB."

Once Looney could find IC forms for all patients, she went through the clinic's records and called patients, asking them when they last visited the clinic and whether they are using a study medication.

The next step was to obtain data from study subjects' primary care physicians and hospital visits.

"Some data points were missing," Looney notes. "So if I didn't have records at my clinic, I'd ask the patient if they saw a primary care physician or maybe they went to a rapid response clinic."

From these providers, she could collect vital signs and medications.

"If the patient had been in Florida, then I contacted hospitals in Florida, putting all data together," Looney says. "Then I collected source documents for the trial."

Looney brought her findings to investigators, and they decided that some trials would have to be closed because they had never been properly initiated.

"We were involved in a couple of trials where the site had been opened for a year or more with no patients entered," she says.

But if the study had enrolled patients and had informed consent documents for them, then Mid-Ohio Heart Clinic chose to continue the trial, filling in the data holes wherever possible.

Sponsors were very helpful, she notes.

"They were willing to come out and help us make sense of data," Looney says. "For one trial with no follow-up, they brought in a data manager and two monitors who helped me work through data and get everything organized."

Sponsors also sent Looney source documents from another research coordinator. And the data manager showed her how to use the electronic case report form system for entering data and assisted with regulatory documents.

Looney worked weekends to collect data and submit the information by the study monitors' deadlines. She also began to educate herself about clinical trial research, using online research education and learning from sponsors.

"I went to a lot of beginning research seminars, good clinical practice (GCP) seminars, and protecting research subjects seminars," she adds. "I joined the Association of Clinical Research Professionals (ACRP) and obtained information from ACRP."

Communications breakdown

Looney learned that her predecessor had not responded to follow-up letters, citing study deficiencies, from study monitors and had not shared the letters with principal investigators (PIs).

"There was a serious breakdown of communi-

cation on a lot of levels," she notes.

PIs could learn a great deal from Mid-Ohio Heart Clinic's experience about how to reduce the risk of a data collection disaster.

"One thing researchers and coordinators should do with each trial is chart the research activities on the day of the activities, so if someone leaves today and is hit by a bus, then someone else will know where they are with study visits and data collection," Looney suggests.

Research coordinators should take CR training courses and work closely with sponsors and monitors to get up to speed on studies. They also need to keep communication lines open, perhaps by using electronic spreadsheets and white boards in the office, she says.

"We keep boards in our office with the name of the trial, IRB data, IRB deadline, and other items posted so we know exactly what's going on," she adds. "Originally, I was the only coordinator, but now we have two other ones and a research assistant."

Also, coordinators should be trained to speak with the PI if they have any problems or concerns.

"Let them know before we start a new trial if you can do the work, knowing what else you are doing," Looney says. "And if the PI really wants you to do a study, then you have to be open and communicate, saying, 'I'll need more help.'"

The end result of the records fiasco and Looney's clean-up was that three trials were closed, 10 trials remained open and were successfully launched, meeting all data entry deadlines, Looney says.

"It was a matter of going through everything and setting aside time when the monitors visited," she adds.

"We had no FDA audits during this time, but even if we were audited, we'd be okay at this point," she says. "It was a matter of getting the regulatory documents together and filling in the holes." ■

CROs demanding greater electronic proficiency

Communication cycle is continuous, not quarterly

Clinical research sites increasingly will find sponsors or clinical research organizations (CROs) unwilling to send work their way unless they meet electronic and technological communication standards, experts suggest.

The shift to high-paced electronic communication has been accelerated because of a change in how pharmaceutical companies are working with CROs and other vendors. The new model for these relationships is called functional integrated provider networks, which means pharmaceutical companies are having CROs do more of the clinical research (CR) work they once did entirely on their own.

'The previous version was you had lots of vendors and you outsourced on a project-by-project basis," says **Gregg Dearhammer**, president of i3 Statprobe, a CRO in Ann Arbor, MI.

"The pharmaceutical company would retain responsibilities and tasks in-house and dole out work in a piecemeal fashion," he adds.

Now CROs will do more of the work they once retained in-house, including grant payments, contracting, and regulatory support.

From a CR site's perspective, this means that contacts the site once had with the pharmaceutical company are outdated. Instead, sites will need to work directly with the CRO.

And this shift will push sites to improve their technology and electronic data capture (EDC) capabilities since CROs are motivated to make the clinical trial process as efficient and fast as possible.

"The CRO makes its money by being as efficient as possible," Dearhammer says. "CROs have to improve efficiency while maintaining quality, so trial sites will see a greater push toward automation, electronic communication, and those types of things."

Pharmaceutical companies are not far behind in that technological trend, but CROs are leading the way because it's critical to their making their profit margins.

CR sites that are lagging behind in technological advancement will need to make investments in both electronic systems and in personnel. A first step might be to hire an information technology expert who can work with and educate investigators and study coordinators in finding electronic solutions that they can use in their workflow.

"We bring in technology, security, and the power of technology, and then we attempt to hide it so you don't have to learn the new technology if you don't want to," says **Al A. Cecchetti**, PhD, co-director of the Clinical Pharmacology Data

Center at the Center for Clinical Pharmacology, University of Pittsburgh Department of Medicine in Pittsburgh, PA.

A research information technology expert can create electronic forms that flow identically to paper forms and that can be scanned into a database, he adds.

The goal is to move a study site to electronic data management by creating templates and work processes that will satisfy the most high-tech CR staff while meeting the needs of the paper-and-pencil researchers, Cecchetti says.

Change is the constant

Technological demands are only part of the change CR sites are experiencing as CROs handle more of the clinical study process.

From a CR site perspective, this shift from dealing with sponsors to working entirely with CROs is a whole new world.

"It's not like the old days when a CRO did monitoring and data management and was the arms and legs of the pharmaceutical company," Dearhammer says.

"Now, companies like i3 are being asked to bring scientific and therapeutic expertise to the table," he explains. "This includes having a physician who can help with protocol development and a health economist who makes sure you're doing analytics on the cost effectiveness of a drug prior to market."

CROs like i3 will bring highly scientific services to the table, broadening their role to encompass clinical trial execution.

"Pharmaceutical companies might have had these roles, but have now decided they don't need them or as many of them, so they'll outsource that work," Dearhammer says.

Small-to-midsized biotech and pharmaceutical companies might not build a staff with that expertise, instead contracting with CROs to provide the scientific staff. Big pharmaceutical companies will continue to retain scientific knowledge in-house, but will supplement it with outsourcing to CROs, he adds.

As this transformation takes place, clinical trial sites will need to improve their own efficiency and technological capabilities, particularly from a data services perspective.

"Sites need to ensure they're complying with the timelines required as much as possible," Dearhammer says.

"For example, having data entered electronically only works really well if the investigator goes into the system and enters the data or updates information in a realistic time frame," he says.

From the CRO's perspective, this means data are entered in small doses in real time.

"When a patient has a visit, you go in that night and enter that visit," Dearhammer says.

Principal investigators and CR sites might be accustomed to submitting data on a monthly or quarterly basis, but this no longer will work.

"Letting weeks and months go by before going into the system and entering data defeats the whole purpose of electronic communication and data capture and creates real problems downstream," Dearhammer says.

CR sites that continue to wait weeks before entering data will have CRO representatives calling them repeatedly. CRO monitors might call to ask for 20 hours of the site coordinator's time to resolve the backlog of issues, he adds.

"It creates more chaos and urgency, which no one likes," Dearhammer says. "So you have to take 10 minutes a day instead of six hours at the end of the month, sending in data in small doses, or answering a query immediately and fixing the problem."

CROs typically are willing to work with investigators and study coordinators to help them make the transition to real time data entry.

"We're there to support them and we do that by ensuring investigators are entering the right information in the right timeframe as required by sponsors," says **Tracy Tsuetaki**, president of i3 Research of Basking Ridge, NJ.

"Training is key, so we provide face-to-face training at site initiation visits," Tsuetaki says. "The CRO is the first person the site will call with any general questions about the system."

CROs will monitor sites on a continuous basis, making certain all data are entered in a timely manner, which largely means within a 24-hour timeframe, he adds.

Sites that fail to keep up with the faster EDC pace will find they're held accountable by CROs and are called until they're compliant.

CROs can predict based on a study protocol when patient visits take place, Dearhammer notes.

"If the protocol calls for a visit every six months and the first visit is July 1, then the second would be Jan. 1," Dearhammer says.

"So if on Feb. 1, we see there are no data entered in the system for visit 2, we'll give that

information to the clinical monitor, and someone will call the site," he explains. "We ask if the visit was missed or if its on the side somewhere waiting to be entered into the system, and we try to prod them to comply."

Some investigators will respond to the gentle nudge, and for others it might take several phone calls, he says.

CR sites would do well to accept the trend and prepare for technological improvements. The investment is costly but will pay off over the years, Dearhammer says.

Meantime, CROs will continue to push this trend, asking investigators specific questions about how comfortable they are with using electronic records, he says.

"A lot of our screening process with people is to see if they'll comply," he says.

"But the overriding thing is whether or not a physician can put patients on this study," Dearhammer adds. "If the physician says, 'I'm not comfortable with the electronic technology, but I can deliver 20 patients,' then you'll build in coaching, prodding, but not eliminate them from the study." ■

Electronic research: From leaders to laggards

Sites find enhanced productivity, flexibility

Electronic research management is transforming the way researchers work, communicate, and execute studies. It's also making the clinical trial (CT) process more efficient, flexible, and faster, says **Al A. Cecchetti**, PhD, co-director of the Clinical Pharmacology Data Center at the Center for Clinical Pharmacology, University of Pittsburgh Department of Medicine in Pittsburgh, PA.

Electronic management - clinical translational research (eM-CTR) systems use a novel, integrated strategy to support and manage trials.[1]

The eM-CTR system is a technological answer to questions the National Institutes of Health (NIH) posed seven years ago when the NIH Roadmap for Medical Research was published. NIH now calls the program "Re-Engineering the Clinical Research Enterprise initiatives."

NIH introduced the concept of translational research, asking the CT industry to imagine future studies in terms of how researchers will communicate between teams and how to engage all of the necessary research parties in pursuing a single study research goal or purpose.

"How do you get people who are diverse personalities and in diverse settings to work together?" Cecchetti says. "So eM-CTR was designed to do that."

The eM-CTR system also is a team-building process because CT staff can more effectively communicate and stay up-to-date on research data collection, Cecchetti says.

Cecchetti describes the advantages of eM-CTR and how it can be implemented and used at CT sites:

• **Know technology expertise of staff:** The first step for any CT site is to understand the members of the team and how they relate to technology.

One framework that might be helpful in identifying CT site staff's abilities and educational needs in new technology is the technology adoption lifecycle model developed by Joe M. Bohlen, George M. Beal and Everett M. Rogers at Iowa State University in the late 1950s.

While the social scientists initially created this model to follow hybrid seed corn purchasing patterns, the basic principles can be applied to how people accept and adapt to the current electronic technology revolution, Cecchetti says.

"Your first group includes the innovators who walk in with the newest technology, maybe the iPhone 4," he says. "They tend to be a little annoying, using the technology all the time."

The next group is the early adopters, who might be sending emails while at meetings, checking for information on their laptop or cell phone, he adds.

"The early adopters tend to be leaders of groups and who also know how to use technology well," Cecchetti says.

Late adopters comprise the third group.

"These are people who use computers in their office to check emails, and they won't use technology at meetings," Cecchetti says.

Finally, the last group are the laggards, and possibly every CT site could identify one or more of these people.

"The laggards are the ones who use paper and pencil," Cecchetti says.

The idea is that any new technology implemented at a site will be used first by the innovators, followed by the early adopters, and then the

late adopters. CT sites might have to find alternative solutions for the laggards.

"Some people will grab the new technology, put in their own statistical program, and off they go," Cecchetti says. "Others will want to see electronic charts and graphs and not create these on their own, and still others want the charts printed out."

If a CT site has a high number of innovators and early adopters, then the transition to eM-CTR might be a fairly smooth one. For sites that have more laggards than innovators, then the transition might require an information technology specialist who works with staff until they either can use the technology on their own or until the site has work-around processes in the cases of people who won't change their documentation habits.

"You have a clinical coordinator who is in charge of the study and who works with subjects, and you have an information officer who is in charge of the technology," Cecchetti says. "My job is to make sure the technology works for the people."

So if a laggard technology adopter continues to use paper records, then this can be scanned into the system. Or a CT site's information technology expert can create an electronic form that is similar to what investigators and coordinators already are using.

"For laggards you may hide the technology more than you would for the innovator," Cecchetti says.

• **Enhance work productivity and flexibility with technology:** New technological solutions can save researchers and coordinators time, Cecchetti says.

For example, an older technological process created charts for genetic information. While the information could be more easily updated than the paper and typewriter system, it still required someone to review the data, find the desired numbers, and put these into the correct database and then send them off for analysis, he says.

With a state-of-the-art electronic hub design, there now is an application that enables a person to upload the original document to an information hub. The system can pull information from the uploaded document and automatically put the desired information in a database, he adds.

Depending on the data's sensitivity, it can be password encrypted, scanned, and made available to everyone who needs to view the information.

"So we streamlined that operation," Cecchetti says.

Electronic management systems that include the latest communication technology can help staff complete work and meet deadlines while still catching flights to conferences or taking time to watch their children's soccer games, he notes.

"We have had people who have gone to the airport, talked to the lab staff, and sent information in full [electronic, remote] meetings before they even get on a plane," Cecchetti says. ■

CNE/CME OBJECTIVES / INSTRUCTIONS

The CNE/CME objectives for Clinical Trials Administrator are to help physicians and nurses be able to:

- review pertinent regulatory mandates;
- develop practical clinical trial oversight strategies;
- review best practices shared by facilities that successfully conduct clinical trials.

Physicians and nurses participate in this medical education program by reading the issue, using the provided references for further research, and studying the questions at the end of the issue.

Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material.

After completing this activity at the end of each semester, you must complete the evaluation form provided and return it in the reply envelope provided to receive a letter of credit. When your evaluation is received, a letter of credit will be mailed to you.

COMING IN FUTURE MONTHS

■ Community-based participatory research works well with pediatric obesity studies

■ CBPR project trains teens to become community educators

■ Electronic hub system can enhance clinical trial process

■ Compliance program focuses on IC process

CNE/CME QUESTIONS

5. Which of the following actions should research sites take when seeking a waiver of informed consent for emergency medicine research?
   A. Hold community consultation town hall meetings, focus groups, or other measures to encourage public feedback and questions
   B. Consult with the IRB to make certain investigators are properly engaging the community and meeting all requirements
   C. Notify the public of the study through advertisements, public service announcements, and newspaper or magazine articles
   D. All of the above

6. Which of the following is <u>not</u> a good question to ask investigators when attempting to determine which technology and security strategies will best meet their needs?
   A. What is it you are trying to accomplish?
   B. What is it about your research that creates this unique need?
   C. How comfortable are you with a keyboard?
   D. Do you need mobile devices, telecommuting technology?

7. TRUE or FALSE: Under the functional integrated provider networks model, clinical research organizations (CROs) and pharmaceutical companies have a relationship in which CROs do more of the clinical research work than they previously were asked to do.
   A. True
   B. False

8. Using the technology adoption lifecycle model developed in the late 1950s, which of the following groups of people are likely to be most willing to try new technology and incorporate it in their research work?
   A. Laggards
   B. Early adopters
   C. Late adopters
   D. All of the above

Answers: 5. D; 6. C; 7. A; 8. B.