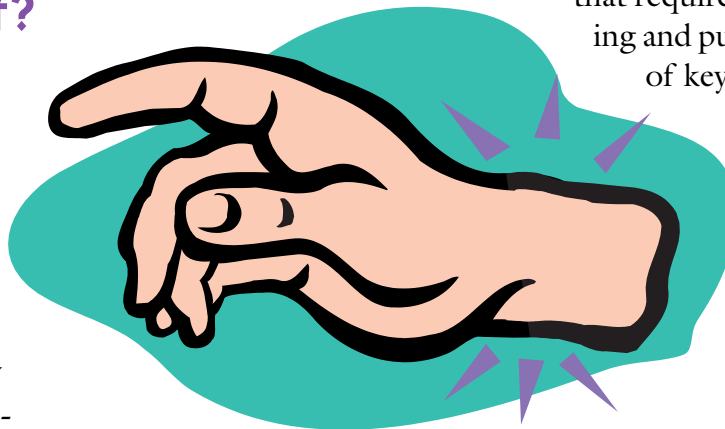


# Twisting and SHOUTING

Your staff may be suffering from repetitive stress disorders as they feel the pinch of a more rapid work pace. How can you provide ergonomic relief?

*Being bent out of shape is an occasional and unavoidable condition in any work environment—at least when you're referring to an employee's temperament. But increasing numbers of radiologic technologists and radiation therapists are also out of joint over the abuse their muscles and tendons endure from the constant twisting, lifting and positioning that their occupation demands of them.*



## ERGONOMICS INJURIES

These technologists and therapists are feeling the effects of repetitive strain, or stress, injuries (RSIs) and cumulative stress trauma disorders (CTDs)—terms common in the parlance of ergonomists, who examine how the mechanics of the workplace accommodate the workers' anatomical and physical needs. Whether it be handling equipment or patients or a combination of the two, technologists and therapists routinely find themselves lifting, twisting, pushing and pulling, in addition to performing several hand-wrist tasks. Repeating these activities on a regular basis without heeding basic ergonomic principles

is an open invitation for debilitating and potentially chronic injuries.

## ROOT OF THE PROBLEM

Of course, technologists and therapists have been performing duties that require lifting, twisting, pushing and pulling, and a fair amount of keyboarding, for decades.

Why, then, are factions of the radiology, radiation oncology and ergonomics fields reporting a sharp spike in ergonomics-related injuries only in recent years?

Joan Baker MSR, RDMS, RDCS, and president of the Society of Diagnostic Imaging Medical Sonographers (SDMS), believes there's a simple reason why her organization is seeing a growing number of work-related injuries among sonographers. Not surprisingly, it involves money.

“The overwhelming evidence started to become obvious on the issues of RSIs in the ultrasound workplace four years [ago when] we were also in a cycle of significant cuts in reimbursement, Baker says. [For] managers who wanted

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# Twisting and SHOUTING

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to essentially maintain the bottom line, meaning the dollars, their motivation was to actually increase patient volume in order to offset reimbursement reduction. And this led to some abuse of staff.”

While Baker says this scenario hasn't occurred with all administrators at all facilities, she offers hard statistics to back up her claims that instances of overburdened sonographers are far from isolated. A 1997 survey co-authored by Baker of nearly 1,000 U.S. sonographers revealed that 81 percent experienced pain or

discomfort since becoming a sonographer and that 91 percent of them still experienced pain. Nearly all of the sonographers - 97 percent- credited their pain to the gripping and pressing motions required to efficiently manipulate a transducer wand. The survey also revealed that the sonographers spent an average of 6.8 hours in an 8.3-hour day using that transducer, often with minimal rest. The majority of the respondents reported an inability to control day-to-day workload, plan over time or extra work in advance, or take scheduled breaks during the workday. More than 60 percent claimed that they had

either no breaks or only one break each day.

But the sonographers pressed on- 84 percent reported attending scheduled work hours despite being in pain, even though 22 percent cited a decreased ability to perform regular work duties. Pressured by management to service more patients in less time in a job market where new ultrasound techs are currently in short supply, these sonographers had little choice but to comply, according to Baker.

“My phones ring off the hook every day,” she says. “The stories I hear are horrible-they are management without concern or consideration.”

Symptoms of these RSI injuries- aches, stiffness, sharp pain or cramping, weakness, numbness and burning- aren't just caused by the number of hours a sonographer logs or holds a transducer, or even by a lack of sufficient breaks, says Baker. Excessive twisting by the sonographer in order to provide both technologist and patient with a clear view of the ultrasound probe frequently places stress on the sonographers body, she says. Also posing a problem: an increasing number of obese patients, whose girth forces the sonographer to press harder

## News RELEASE

Kansas City, MO (July 6, 2000) – American Echo, Inc., manufacturer of Echo™Beds and publisher of *Imaging Update*, announces a name change to Medical Positioning, Inc. The extensive Echo™Bed product line resulted from input by end users in echocardiography. More recently other departments have observed the quality and functionality of Echo™Beds and requested specialized patient positioning tables. This has resulted in an expanded product line and the need for a name that is a better fit.

Medical Positioning, Inc., will continue to publish *Imaging Update* and provide Echo™Beds and Stress Echo™Beds of the highest quality to improve images, improve sensitivity and help to reduce repetitive strain injury.

In addition, Medical Positioning, Inc. now has products for the vascular lab, general ultrasound, ECG, electrophysiology, catheterization lab, and breast biopsy. As with the Echo™Bed product lines, the new products will focus on optimum patient positioning for improved outcomes.

with the transducer to obtain a clear image.

Sonographer injuries, according to Baker, are reaching critical proportions. We have a 20 percent career-ending [rate] right now of the workforce, she says. And things that are causing this..... are getting worse. Reimbursements are [still] getting cut.

Christopher Benson, an ergonomic consultant for Beacon Mutual Insurance in West Warwick, R.I., has been working with radiology and radiation for more than seven years to reduce RSIs and CTDs. Like Baker, he sees a significant number of shoulder and hand-to-wrist injuries in sonographers from handling the transducer.

But Benson says ergonomic injuries, while typically heavy among sonographers, aren't confined to the ultrasound modality. Technologists in MR and CT, for example, routinely report lower back injuries due to forward flexion and rotation of the spine. "They're positioning a patient," he says, "and in some cases, they're actually doing patients transfers-people in wheelchairs, [so] they actually have to transfer them up onto a table to get them to whatever type of test they're performing."

And radiation therapists are hardly immune to ergonomics-related injuries, says Kimberly Paton, BSC, MRTT, supervisor in radiation treatment delivery at the London Regional Cancer Center in Lon-

don, Ontario, Canada. Prior to ergonomic redesign of her treatment facilities last year, Paton says therapist injuries at London Regional were reaching a critical mass. In 1995, 28 injury reports were filed at the facility, mostly from therapists. Six of them became workman's compensation claims. For us, the majority of injuries were shoulder, neck and wrist injuries, she says, noting that most of those injuries were sustained from lifting accessories for the patients treatment.

"There's shielding, wedges, port film holders that we would take X-rays with-they're just an awkward piece of equipment," says Paton. "A lot of it was really related to the block weight. We actually looked at one machine where they treated primarily head and neck cases, and we figured out that [with] one patient going through a five to seven-week treatment regime, we were actually lifting about 936 pounds of lead for that one patient."

In addition, keyboarding and workstation injuries were reported at the facility. "Our workstations were very small and very cramped," Paton says, "so we had people do a lot of twisting and bending that really wasn't effective for them. They had a lot of shoulder problems because of it."

### **SECONDARY SIDE EFFECTS**

Beyond the obvious pitfalls often caused by ergonomically poor work conditions-frequent employee injuries, sick days, extended ab-

sences and lost productivity-are the less obvious, but often no less detrimental effects that RSIs and CTDs can have on a facility.

"If [health care facilities] want to provide the best customer service, they want to have the healthiest employees," says Benson. "Someone who's constantly rubbing their wrist or their shoulder, [or if] their back hurts, they're not going to be as pleasant and as open and as kind to the patient coming in."

And as Paton and Baker have witnessed on many occasions, persistent injury inevitably leads to the filing of costly insurance claims-particularly when technologists and therapists sense that their ailments are being trivialized or even ignored by administrators and upper management. "When you are hurting and you recognize that you have no upper-management support, then you are bound to turn more to these filings of claims," Baker says.

But proponents of ergonomic principles in the workplace insist that a variety of measures-some costly, but many involving little or no money-can be instituted to reduce RSIs and CTDs and improve employee well-being and productivity.

### **EASING THE PAIN**

For some technologists and therapists, keyboarding can be as much a magnet for injury as any other

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# Twisting and SHOUTING

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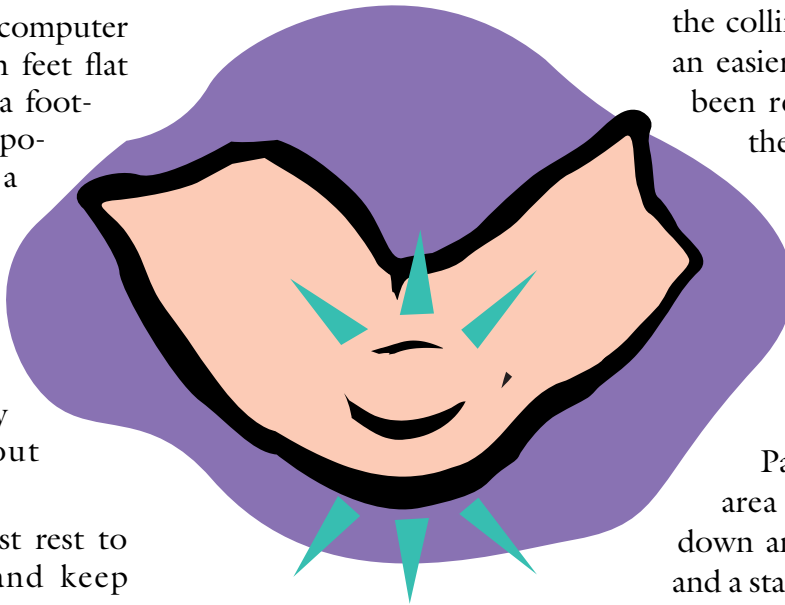
office worker who spends the bulk of the day at a terminal. Following these tips can alleviate RSI's caused by this type of work:

- Adjust office chairs for height, seat pan depth, tilt and lumbar support.
- When working at a computer terminal, place both feet flat on the floor or on a footrest if the keyboards position requires a higher seat to assume the correct typing position.
- Make sure your computer screen is 18-24 inches away from you (or about arms length).
- Consider using wrist rest to provide support and keep wrists from bending.
- Take periodic breaks

But in the radiology and radiation oncology setting, ergonomic injuries frequently extend beyond basic hand-wrist problems caused by extended periods of typing. In these cases, significant overhauls in equipment and work design—although expensive—may be necessary to provide lasting relief for suffering employees.

Sweeping equipment and struc-

tural changes were the course of action at the London Regional Cancer Center following the 28 injury reports filed by employees four years ago. Paton's facility approached an ergonomist associated with the center to conduct a detailed study of the radiation oncology department. The er-



gonomist videotaped therapists as they performed a variety of daily tasks and used that tape to instruct them in how to lift blocking materials and position patients without creating excessive muscle and tendon stress. The ergonomist also used the footage to make recommendations for larger work spaces and more ergonomically correct machines. Many of those recommendations were incorporated in the centers redesign, which had been planned prior to the ergonomists evaluation.

Examining that report, the centers ergonomics team of therapists, administrators and upper management—of which Paton was a member—ushered in a host of changes. The purchase of a multileaf collimator drastically reduced the need to lift and position the heavy blocks. Therapists were instructed on how to adjust the collimator to insert blocks at an easier angle than would have been required without moving the machine.

Work areas were also expanded, and shelves were lowered for easier access. “We basically [redesigned] our entire work area,” says Paton. “We had a passive area where people could sit down and do actual paperwork, and a standing area for treatment, because usually when you’re treating a patient, you’re in and out the room so frequently, you’re falling over your chair or you’re not in your chair long enough anyway, so these [therapists] felt much more comfortable standing. And the counter heights were adjusted. It just made more sense, process-wise.”

But not all changes were technological or structural in nature. Regular test periods were strictly enforced, and work teams were created to alleviate repeated stress.

“We work in teams of four and we take turns going in and out of the room, so every few patients are done by one pair and then the next pair rotates,” Paton says. “It gives everybody a chance to not only do a variety of tasks, but it also allows them not to be doing the same repetitive motions over and over and over again.”

Simple, relatively inexpensive aids also improved stress-related injuries considerably, according to Paton. “Some people were short and when they tried to reach over the patient to put something in the machine, they were actually stretching and twisting too much, so just giving that added bit of height with a little step stool made it very comfortable for them to lift and put things into the machine,” she says. “Were still adjusting monitor heights. We had a lot of problems with stiff necks, because we have a lot of shorter people but... the monitors are set up for the average person.”

But Paton says that many of these minor details, incorporated before adding new, more ergonomically correct equipment and work space in 1998, have contributed significantly to the improved health and attitude of her facility’s therapists. Last year, only nine injuries were reported at London Regional, down from 28 four years ago, and only one of those injuries became a workman’s compensation claim—compared to six in ‘95. “We’ve had less sick time, [fewer] people off [because of] injuring themselves – it’s made a big difference,”

Paton says. “It was really proactive on the part of the management here, because it really showed that, ‘Hey, we really do care about you,’ and it will make a difference in the long run.”

Still, a facility can spend thousands of dollars on big-ticket items like ergonomically correct equipment and still fail to stem injuries if employees don’t know how to use them. “The choices an individual can make are extremely important,” says Benson. “You give someone an ergonomic chair... and they don’t know how it works. The company may have spent upwards of \$500-\$600 for these chairs [and] after a week or two, the person says, ‘Boy, I’m not really comfortable... my back hurts!’ The interaction with the equipment is definitely something that has to be taught.”

Benson says employees should be instructed in effective standing, bending and lifting techniques when using all equipment, regardless of whether its new, old or comes with or without an ‘ergonomically correct’ stamp of approval. “Proper orientation of all new equipment needs to be stressed by management,” says Benson. “I think that gets neglected, because you get a new ultrasound machine [and employers] are going to say, ‘Okay, heres how you turn the monitor on, heres how you turn this on, heres how you get this view...’ but they never mention anything about positioning. Its definitely something that’s lacking out there.”

Which is why, in many instances, radiation technologists and therapists must shoulder a considerable portion of the burden for avoiding repetitive stress disorders. For the past two years, Baker has been instructing sonography students she teaches at Bellevue Community College in Bellevue, Wash., to perform a five-minute upper body stretching warmup to prep the vulnerable shoulder and neck areas, as well as the fingers and wrists. She advises her students to supplement that prework regimen with periodic “hand calisthenics.” “If sonographers would just exercise by opening and closing their hand every five or 10 minutes that they’re standing, that would help a lot,” says Baker.

## MANUFACTURERS ROLE

Demonstrating their increased sensitivity to RSIs and CTDs in the workplace, many manufacturers of imaging and treatment are showing interest in redesigning equipment with an eye on the fundamental principles of ergonomics.

“[In sonography we see] a significant amount of stress on the hand-wrist and the thumb,” says Benson. “The only way you’re going to be able to correct that type of an issue is to redesign the hand tool itself. And some of the manufacturers are doing that now... a lot of the newer designs are looking at the way you actually hold that particular device. If you’re doing a certain type of ap-

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# Twisting and SHOUTING

*continued from page five*

plication to the leg, you might need a different transducer vs. someone who's doing a procedure to the abdomen."

But Benson says professional associations, such as Bakers SDMS, rather than individual medical facilities or insurance companies are best suited to convince equipment manufacturers to alter their designs. "The medical diagnostics societies and different agencies like that... are the ones that are doing more of the lobbying for the changes to equipment," he says.

"The manufacturers have attended a meeting that SDMS has held with manufacturers every single year, and they are very receptive," says Baker. "But we don't have a lot to offer them—we need to do [more] research to determine what really will make a difference. This is not simple; this is not going to have quick and easy solutions to it."

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Paton sees more manufacturers taking ergonomics to heart when developing radiation therapy units. "The last few years, some of the designs that have come out really have shown that they're thinking about those things now," she says. "Depending on the setting you work in, we're spending between eight and 10 hours a day on this unit, so it has to be something that you're comfortable with, too, and able to work on. I think they're getting the idea that the worker needs something that isn't going to put them at risk."

But Paton recognizes that the cost of purchasing the larger "ergonomically correct" devices will, in many cases, deter a facility where concern for employee health and comfort fights a losing battle with high patient volume and large profit margins. "Cost is a huge, huge factor," she concedes. "For us, it just worked out well, but... a lot of places have no intention of buying new machinery because you're talking millions of dollars. I'm sure they're just [thinking], Well find another solution, but sometimes it is the only solution—or you really have to have enough staff available... so they do get rest periods."

Benson encourages administrators to start new employees on a part-time basis and rotate them through different procedures to

familiarize them with the equipment and ergonomic principles. "It phases them in and allows them to build some strength and some conditioning to be able to handle the type of work that they're doing," he says.

And while many agree that radiology and radiation oncology is adhering to sound ergonomic principles more now than in the past most concede that widespread implementation of basic ergonomic principles is an ongoing – and at times, frustratingly slow-process.

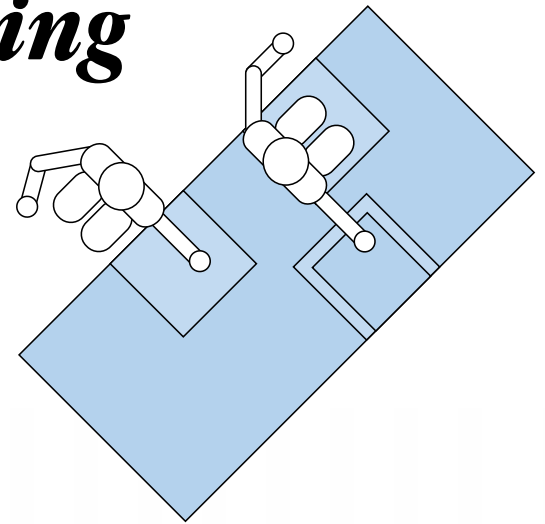
"I think there's a heightened awareness within a certain population—more along the lines of schools and educators," says Benson. "But with the existing employees themselves, I don't see it coming down the line as much yet. Employers may be more aware of it; people who are involved in some of these [professional] societies and groups within their chosen field are beginning to see it, but if you're the person who goes to work 9 to 5 and you're not involved in these types of things – no, they haven't gotten the information yet. They're the ones who are still working in pain, and they don't know how to make that change. I still think there's a long way to go." 



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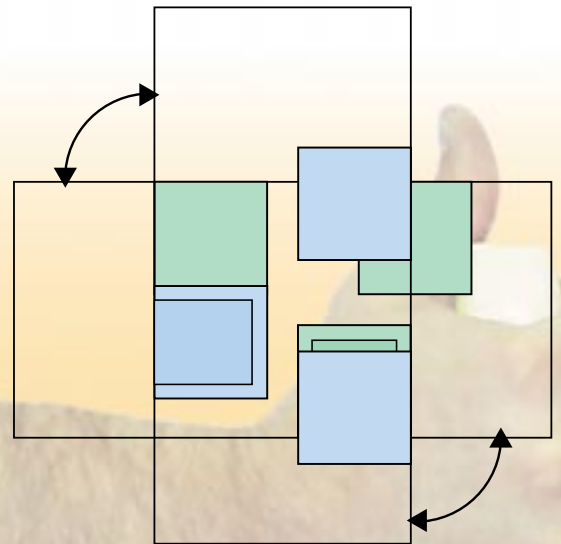
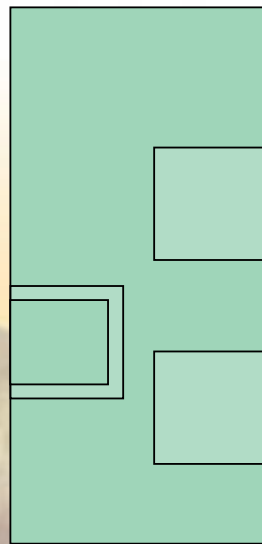
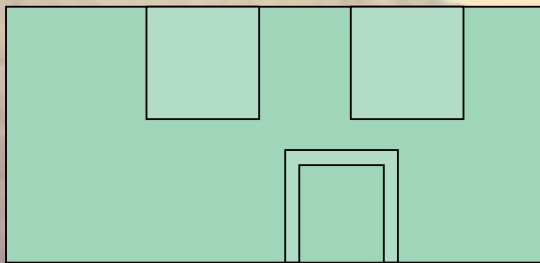


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## Upcoming MEETINGS

### September 13 - 15 15th Annual Advances in Echocardiography:

The latest research and clinical information in  
Contrast Echocardiography and Perfusion  
Imaging

Steven Feinsten, MD  
The Regal Knickerbocker Hotel,  
Chicago, Illinois  
For Info (201) 271-6104

### September 21 - 23 Echocardiography as a Definitive Diagnostic Modality and Therapeutic Guide

American College of Cardiology  
Miguel Quinones, MD & Nelson Shiller,  
MD  
Heart House Learning Center  
Bethesda, Maryland  
For Info (800) 253-4636

### September 23 - 24 Intraoperative Transesophageal Echocardiography Conference

Pittsburgh Mercy Health Systems  
The Sheraton Station Square Hotel  
Pittsburgh, Pennsylvania  
For Info (800) 542-4505; (412) 232-7955

### September 24 - 26 Echocardiography for the Sonographer 2000: Focus on Adult Echocardiography

Mayo Medical Center  
Leighton Auditorium  
Fletcher A. Miller, Jr., MD  
Rochester, MN  
For Info (507) 284-6732  
e-mail: ctri@mayo.edu

### September 25 - 29 December 4 - 8 Introduction to 2D/M-Mode Echo and Cardiac Doppler Color Flow Imaging

Gulfcoast Ultrasound Institute  
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St. Pete Beach, FL 33736  
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e-mail: ultranet@ix.netcom.com

### September 28 - October 1 13th Annual Conference on 2D, Conventional and Color Doppler Echocardiography

University of Alabama at Birmingham  
Calloway Gardens Resort  
Pine Mountain, Georgia  
For Info (205) 934 - 8256  
Contact Lindy Chapman  
Fax: (205) 934 -6747

### September 29 - October 1 Workshop on Stress Echocardiography and Contrast Echo

St. Luke's Hospital of Kansas City  
Linda Crouse, MD  
The Phoenician  
Scottsdale, Arizona  
For Info (816) 932-2220  
e-mail: cme@saint-lukes.org

### October 12-14 10th Annual Symposium on Current Perspectives in Cardiovascular Disease

Saint John Regional Hospital  
Saint John, New Brunswick  
For Info (506) 648-7708

### October 15-18 16th Annual Symposium on Echocardiography in Congenital Heart Disease

Mayo Clinic  
James Seward, M.D.  
Leighton Auditorium of the Siebens  
Educational Building  
Rochester, Minnesota  
For Info (507) 284-6732 or (507) 284-0536  
Sheila M. Flick or Charlene Tri  
e-mail: ctri@mayo.edu

### November 2 Heart Failure: Pathophysiology and Therapy in the New Millennium

Mayo Clinic  
Program Co-Directors: Margaret M.  
Redfield, M.D. and Richard J.  
Rodeheffer, M.D.  
For Info (800)-323-2688 or (507) 284-2509

### November 11 10th Annual International Confer- ence in Echocardiography

University of Alabama at Birmingham  
Navin  
Hilton New Orleans  
Riverside, New Orleans, Louisiana  
For Info (205) 934 - 8256  
Contact: Lindy Chapman

### November 12 - 15 Touching Hearts Through Science - 73rd Scientific Session

American Heart Association  
New Orleans, LA  
For Info (214) 706-1543  
e-mail: sessions@heart.org

### December 7 Hot Topics in Interventional Cardiology

Mayo Clinic  
Kirk N. Garratt, M.D. and  
Guy S. Reeder, M.D.  
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