

# School of Diagnostic Medical Sonography

## History

CoxHealth originated in 1906 as a 30-bed facility known as Burge Deaconess Hospital. The hospital grew due to the influence of many community leaders including Lester E. Cox. In May 1969 the hospital's board of directors renamed the hospital Lester E. Cox Medical Center in memory of the community and hospital leader.

In the years that followed, the hospital experienced marked expansion in home health care services, physician offices, retail pharmacies, as well as other endeavors. Because of this expansion, Larry D. Wallis, chief executive officer of Cox Medical Centers, announced June 2, 1993, the organization would be named Cox Health Systems.

In June 2002, the official name of the organization changed to CoxHealth to represent the progressive, innovative organization that we feel is constantly moving forward to meet the health care needs of our community – a star in health care.

Today, CoxHealth is a four-hospital system in southwest Missouri. It includes: Cox North, a 309-bed community hospital in north Springfield; Cox South, a 561-bed tertiary care facility on Springfield's south edge; Cox-Walnut Lawn, a 116-bed hospital in Springfield; Cox Monett, a 46-bed hospital in Monett, Mo.; more than 50 regional clinics throughout the Ozarks, Primrose Place Health Care Center, a skilled nursing facility; Oxford HealthCare, a home health agency;



Burrell Behavioral Health, offering outpatient behavioral health services in Springfield and three additional counties; ambulance stations in seven counties and various other physician office buildings and facilities.

In February 1978 Cox began an on the job training program for registered radiologic technologists to train in diagnostic medical sonography. In 1997, Cox developed a curriculum-based School of Diagnostic Medical Sonography to allow for the expansion of the field and to provide formally educated qualified sonographers. The school was granted accreditation through the Commission of Accreditation of Allied Health Education Programs (CAAHEP) in the fall of 2001. In spring 2002, an echocardiography extension program was created. This program is a six-month extension of the above program concentrating on adult echocardiography. The program is open to all registered sonographers using the School of Diagnostic Medical Sonography criteria for applications.

CoxHealth School of Diagnostic Medical Sonography is in the process of implementing a masters degree program through an affiliation with an area university.

Cox is proud of the quality of its graduates and their contributions to the health care community. The school continually strives for educational, clinical and professional excellence.

### *Freeman History*

In 1921, the John and Florence Freeman family donated their home and land at 2008 Sergeant in Joplin to the city's Protestant churches for a hospital. Freeman Hospital was officially incorporated as a 75-bed acute care general hospital in October 1922. In July 1975, a new hospital was dedicated at 1102 W. 32nd St. Sale Memorial Hospital in Neosho agreed

to the hospital's acquisition by Freeman in December of 1993, creating Freeman-Neosho. In November 1995, the Freeman and Oak Hill hospital boards voted to merge. As a result, the former Oak Hill became Freeman East and a 389-bed, fully integrated health system became a reality. Today, Freeman continues its mission of caring for the "four states" with 2,000 employees, three main campuses and 19 area facilities.

In October 1998, the School of Diagnostic Medical Sonography joined with Freeman Health System as an affiliate clinical education site.

### *Ozarks Medical Center History*

Originally named West Plains Memorial Hospital, the 42-bed hospital opened its doors March 1959. The name was changed to Ozarks Medical Center in January 1985 to reflect its growth as a regional medical center serving an 11-county area of south central Missouri and northern Arkansas.

Ozarks Medical Center is owned by an association of approximately 500 individuals who believe that quality health care is vital in West Plains and its outreach service sites. A 15-member board of directors, elected from the members of the association, governs the operations of the now 120-bed, not-for-profit medical center.

Ozarks Medical Center received full accreditation by the Joint Commission on Accreditation of Healthcare Organizations in 1997. This national recognition exhibits the medical center's continuing investment in quality.

Ozarks Medical Center continues to expand its services to include all facets of health care. It is truly making a healthy difference.

Ozarks medical Center became an affiliated clinical site for the School of Diagnostic Medical Sonography in June 1999.

## *The Field of Diagnostic Medical Sonography*

Diagnostic medical sonography, often referred to as ultrasound or ultrasonography, is a diagnostic medical procedure that uses high frequency sound waves to produce visual images of organs, tissues or blood flow inside the body. This type of procedure is often referred to as a sonogram or ultrasound scan. Sonography can be used to examine many parts of the body and can be used for all ages. Sonography is increasingly used in the detection and treatment of heart disease, heart attack and vascular disease. Unlike X-rays, sonography is a radiation-free imaging procedure.

A diagnostic medical sonographer is a highly skilled professional who performs ultrasound examinations using specialized equipment to create high quality images of structures inside the human body. These images are used to aid the physician in making a medical diagnosis. The art and science of diagnostic medical sonography requires the sonographer to achieve a specific level of knowledge and skill in each subspecialty performed.

The different areas of specialization within the field of sonography are:

**Abdomen**– evaluation of all the soft tissues, blood vessels and organs in the abdomen, such as liver, gallbladder, spleen, pancreas.

**Breast**– evaluation of the anatomy of the breast including benign and malignant lesions.

**Obstetrics/Gynecology**– evaluation of the female reproductive system.

**Echocardiography**– evaluation of the anatomy and hemodynamics (blood flow) of the heart, its valves and related blood vessels.

**Vascular Technology**– evaluation of the hemodynamics (blood flow) of blood vessels.

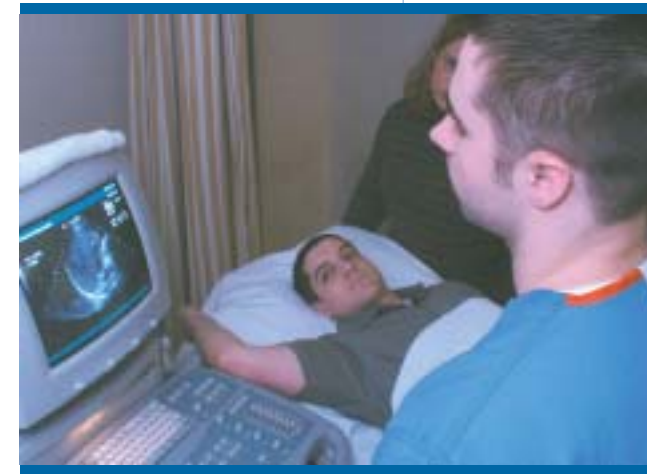
**Neurosonology**– evaluation of the brain and spinal cord.

**Ophthalmology**– evaluation of the eye, including orbital structures and muscles.

For each subspecialty the sonographer must possess and demonstrate knowledge and competency in, but not limited to: human structure and function, instrumentation, medical ethics, medical terminology, pathology, patient care, physical science, quality control, scanning procedures, and computer literacy and applications.

The sonographer's professional responsibilities include, but are not limited to: obtaining and recording an accurate patient history, performing diagnostic procedures and obtaining diagnostic images, and analyzing technical information using independent judgment in recognizing the need to extend the scope of the procedure according to the diagnostic findings; providing an oral or written summary of the technical findings to the physician for medical diagnosis collaborating with physicians and other members of the health care team. (SDMS, 2002)

Imaging examinations and accompanying responsibilities assigned to the sonographer shall be at the direction of physicians qualified to request and/or perform sonographic examinations.



## Program Mission

The philosophy of CoxHealth School of Diagnostic Medical Sonography is to produce professionally competent sonographers. The faculty of this program strives to instill in their graduates high standards of education, clinical training, patient care, and pride in themselves and their profession.

CoxHealth School of Diagnostic Medical Sonography is committed to providing our graduates with the knowledge and skills necessary to meet the challenges of their chosen professions.

## Program Goals

Upon completion of the Cox School of Diagnostic Medical Sonography, the sonographer will be able to accomplish the following:

- function as an effective member of the sonography team by utilizing proper written and oral communication skills specific to a medical environment
- apply knowledge of anatomy, physiology, pathology and sonographic techniques to accurately demonstrate anatomical structures and related pathology
- use principles of body mechanics, medical hygiene and patient care to provide and ensure the health and safety of the patient, sonographer and others
- exercise independent judgment and discretion in the technical performance of medical imaging procedures
- assist in and complete minimum competency in general sonography, obstetrics and gynecology, vascular imaging and neurosonography
- successfully take the national registry examination for registered diagnostic medical sonographers in the areas of physics and instrumentation, abdomen, obstetrics and gynecology, vascular physical principals, and instrumentation and vascular technology

- utilize sonographic procedures to assist the radiologist in optimum diagnoses
- assume responsibility for personal and professional behavior within moral, ethical and legal standards
- function as a beginning sonographer in varied medical settings such as hospitals, clinics and mobile services
- recognize emergency patient conditions and initiate first aid and basic life support systems
- properly prepare the imaging system and ancillary equipment necessary to perform diagnostic sonographic examinations and procedures
- properly adjust and operate the sonographic equipment and accessories to maintain appropriate sonographic quality for various patient conditions to produce accurate diagnostic studies
- evaluate sonographic images for appropriate image quality and diagnostic validity
- demonstrate through the evaluation of the sonographic image knowledge and skills relating to quality assurance and quality control
- manipulate the image acquisition system to include the PACS system and the laser printer
- evaluate the performance of sonographic systems, know the safe limits of equipment operation and report malfunctions to the proper authority.

CoxHealth's program provides the degree of knowledge and clinical skills to enable a graduate to perform to the expected level of competency and meet the responsibilities required of a sonographer.

## Organization of the Program

Cox School of Diagnostic Medical Sonography is an 18-month hospital-based accredited educational program. Curriculum and clinical assignments are designed to facilitate student learning. The 18-week introductory session concentrates on courses in medical terminology, cross-sectional anatomy of the

abdomen and small parts, pathology of the abdomen, ethics and physics. Simulations on the MedSim ultrasound simulator for abdominal structures and pathologies are completed in the introductory session, as are simulated laboratory studies. After completion of the introductory session, actual clinical experience begins under direct departmental supervision. Didactic courses in obstetrics and gynecology, vascular technology and neonatal sonography are then presented. Following the completion of the didactic courses, a comprehensive registry review period follows which focuses on each specific national registry.

The following is a diagram explaining the curriculum sequence of the program.

Program Organization Chart

<p><u>20 Week Introductory Session</u> <i>Includes two-week Christmas break</i></p> <p>SON 500 SON 510 SON 520 SON 530 SON 540</p> <p><i>All simulated scan time</i></p>	<p><u>Practicum I</u> <i>13 week, one-week vacation</i></p> <p>SON 500 SON 520 SON 650 SON 670</p> <p><i>Combined actual and simulated scan time</i></p>	<p><u>Practicum III</u> <i>12 weeks</i></p> <p>SON 500 SON 660 SON 670 SON 680</p> <p><i>Combined actual and simulated scan time</i></p>
<p><u>Practicum II</u> <i>13 week, one-week vacation</i></p> <p>SON 500 SON 650 SON 660 SON 670 SON 680</p> <p><i>Combined actual and simulated scan time</i></p>	<p><u>Practicum IV</u> <i>14 weeks, two-weeks vacation</i></p> <p>SON 500 SON 670 Registry Review</p> <p><i>Combined actual and simulated scan time</i></p>	<p><u>Practicum V</u> <i>4 weeks</i></p> <p>SON 500 Registry Review</p> <p><i>Combined actual and simulated scan time</i></p>

## Admission Requirements and Procedures

Cox School of Diagnostic Medical Sonography is open to **all registered radiographers**, regardless of race, sex, religion, disability or national origin. Applicants must be physically capable of performing all job requirements of a registered sonographer.

The minimum application requirements are as follows:

- *An application form must be completed and forwarded to the school office:*

CoxHealth  
School of Diagnostic Medical Sonography  
3801 S. National Ave.  
Springfield, Mo. 65807-5297

A non-refundable \$30 application fee must accompany all applications to the program.

- *All applicants must be ARRT registered or registry eligible.*

A copy of transcripts from an accredited program in radiologic technology must be forwarded from the institute at which the program was completed. A Xeroxed or a faxed copy of the transcript will be accepted as a temporary until an original copy is mailed to us from the institution. A current copy of the applicant's ARRT card is required. Applicants that are ARRT registry eligible will be allowed two chances to pass the registry. Unsuccessful completion of the second attempt is grounds for dismissal from the sonography program.

- *A copy of all college transcripts containing ACT scores must be forwarded to the school office from the institution where the courses were completed.*
- *Letters of recommendation*

Two personal letters of recommendation are required; one educational and one work related. The person giving the recommendation should send these to the school office.

- *Deadline*

The completed application form, a \$30 application fee, transcripts from an accredited program in radiologic technology, transcripts for all college courses and letters of recommendation must be received by the school office no later than May 31. Applications not received by May 31 will be kept on file for consideration the following year. All applicants must adhere to these admission procedures.

Although an effort is made to contact applicants whose files are not complete, it is not the responsibility of the program to see that a candidate's file is complete.

Following receipt of all required information, the director will arrange for a personal interview with the applicant.

Enrollment in educational programs of diagnostic medical sonography is limited. Through an extensive interview process, only the most qualified applicants will be selected by our acceptance committee.

Final notification of acceptance, alternate status or non-acceptance of applicants to this program will be mailed no later than July 1. Classes begin the second week of October.

- *Applicant Qualities*

Applicants should possess the personal qualities necessary to work in a hospital as a registered sonographer. These will include but not be limited to the following:

- a sincere desire to help others
- motivated, responsible and hard working
- emotionally stable
- present a neat, professional appearance
- possess strong communication skills
- demonstrate sound judgment
- demonstrate independent decision making skills
- demonstrate critical thinking skills.

### *Compliance of Fair Practices in Education*

Cox School of Diagnostic Medical Sonography complies with the JRC-DMS policy of fair practices in education which emphasizes that “student selection shall be nondiscriminatory with respect to race, color, creed, sex, age, disability or national origin.” Applicants must be physically capable of performing all job requirements of a registered sonographer.

### *Reminder*

Hand carried transcripts and unsealed letters of recommendation will not be accepted as official. Transcripts must come from the school of origin.

*A personal meeting concerning the program, the applicant or the application are encouraged prior to the actual scheduled interview for acceptance. Cox School of Diagnostic Medical Sonography also offers a “shadow program” in which interested applicants may schedule a time to spend observing in the sonography department. These appointments may be made through the director.*

### *Advanced Placement and Transfer*

Applicants with previous experience in the field of sonography, in an educational system not approved by the JRC-DMS or in an on the job situation will not be granted advanced standing in the program. Students from JRC-DMS approved programs of diagnostic medical sonography seeking transfer must satisfy all of the requirements of a regular applicant. An updated transcript and a letter of recommendation from the director of the current program must be mailed to the school office. Consideration for transfer will be granted on an individual basis.



## Grading System

Both academic and clinical grades are determined on a 4.0 cumulative grade point average system. Semester hour equivalents are listed by each course title in the Course Description sections of this brochure. All students are expected to maintain a minimum of **3.0 GPA** with no course grade lower than a “B.”

A+	100-99 = 4.00	C	85-83 = 2.00
A	98-96 = 3.75	C-	82-80 = 1.75
A-	95-94 = 3.50	D+	79-78 = 1.50
B+	93-92 = 3.25	D	77-76 = 1.00
B	91-90 = 3.00	D-	75 = 0.75
B-	89-88 = 2.75	F	74 and below = 0.00
C+	87-86 = 2.50		

## Course Descriptions

### **SON 500**     *Ethics - 3 credit hours*

This course explains the professional and ethical behavior of a professional sonographer within the medical setting. Emphasis is placed on the Society of Diagnostic Medical Sonography code of ethics, patient rights and associated medico-legal implications.

### **SON 510**     *Medical Terminology - 2 credit hours*

This course is an overview of medical terms as applied to sonography including anatomic, diagnostic, and symptomatic terms and descriptions.

### **SON 520**     *Physics and Equipment - 3 credit hours*

This course will provide a detailed study of the principles of the production and propagation of sound waves as applied to diagnostic medical sonography. In addition, the student will be provided with detailed knowledge of equipment operation and the steps necessary to optimize the sonographic image.

### **SON 530**     *Cross-Sectional Anatomy and Sonography of the Abdomen and Small Parts - 3 credit hours*

This course is a review of basic abdominal anatomy as applied to sonographic scanning. It also includes the male pelvis, vascular structures and an in-depth study of the abdominal, retro-peritoneal and superficial structures. Patient preparation, scanning techniques and imaging protocol are also covered in this course. Labs for simulated scanning of these structures will be included.

### **SON 540**     *Abdominal and Small Part Pathology - 3 credit hours*

This course is an in-depth study of the abdominal, retroperitoneal and superficial anatomical structures. Emphasis will be placed on interpretation of laboratory tests, related clinical signs and symptoms, and recognition of normal and abnormal sonographic patterns.

### **SON 650**     *Gynecological Sonography - 1.5 credit hours*

This course consists of basic anatomy and function of the female reproductive system and related anatomy. It includes the normal and abnormal sonographic appearance of the female pelvis and scanning techniques to demonstrate uterine and ovarian pathology. Labs for simulated scanning of these structures will be included.

### **SON 660**     *Obstetrical Sonography - 1.5 credit hours*

This course will cover the normal growth and anatomy of the fetus from conception through the third trimester. It includes the normal and abnormal sonographic appearance of the fetus, placenta, umbilical cord and related structures as well as scanning techniques for demonstration of congenital anomalies and pathology. Labs for simulated scanning of these structures will be included.

**SON 670**      ***Vascular Imaging and Instrumentation - 3 credit hours***

This course will include all aspects and topics related to vascular testing and evaluations. Emphasis will be placed on arterial evaluations, venous evaluations, cerebrovascular testing and test validation. The capabilities, limitations, physical properties, techniques, patient positioning and test interpretation of each section will be discussed. Labs for simulated scanning of these structures will be included.

**SON 680**      ***Neonatal Sonography - 2 credit hours***

This course will provide a detailed study of the anatomy, pathology and scanning techniques related to sonographic examinations of the neonate. Emphasis is placed on the imaging of neonatal intracranial structures. Dissection lab is included.

**ECHO 400**      ***Cardiac Physics - 3 credit hours***

This course applies general and vascular ultrasound physics to the discipline of echocardiography. This course is designed for those who have successfully completed general or vascular physics. Course is taught during the echo-extension.

**ECHO 710**      ***Cardiac Anatomy & Physiology - 3 credit hours***

This course is an in-depth study of the adult heart anatomy and physiology beginning with embryology. This course is designed for those who are already registered sonographers. Course is taught during the echo-extension.

**ECHO 720**      ***Adult Echocardiography - 4 credit hours***

This course is an in-depth study of the techniques utilized to scan the adult heart. This course is designed for those who are already registered sonographers. Course is taught during the echo-extension.

**MedSim I**      ***Abdomen and Small Parts***

**MedSim II**      ***Abdomen Pathology***

**MedSim III**      ***Vascular sonography***

**MedSim IV**      ***Gynecology***

**MedSim V**      ***Obstetrics***

**PRACTICUM I**

**PRACTICUM II**

**PRACTICUM III**

**PRACTICUM IV**

**PRACTICUM V**

### ***School Facilities and Equipment***

All sonography equipment used by the student is inspected bi-annually by the Missouri Department of Health in conjunction with federal regulations. The student will experience rotations in hospital and clinical settings. The following list contains the types of sonographic equipment that the student will be using in the clinical setting:

- hospital-wide Acuson Sequoia Equipment
- Parks and IMEX peripheral vascular units
- KinetDx PACS system.

Educational training materials used to enhance student learning will include:

- MedSim ultrasound simulator with modules
- dissection labs
- three fully equipped classrooms
- computer lab testing
- life-size anatomical model
- film library
- medical library.

## *Accreditation and Certification*

To insure educational quality, the Joint Review Committee on Education in Diagnostic Medical Sonography periodically surveys schools of diagnostic medical sonography. The United States Secretary of Education recognizes the Commission on Accreditation of Allied Health Education Programs (CAA-HEP) and seven of its sponsor committees on accreditation including the JRC-DMS or the Joint Review Committee on Education in Diagnostic Medical Sonography.

Accreditation assures educational quality of the sonography program. After completion of an educational program the graduate will take five national registries offered by the American Registry of Diagnostic Medical Sonography.

Cox School of Diagnostic Medical Sonography was granted accreditation fall 2001.

## *Health and Insurance*

All applicants accepted into training are required to have a physical examination prior to the start date of the program. Health insurance is not available to students through CoxHealth. All students are expected to maintain their own health insurance and will be responsible for the cost of any medical care required while in training.

## *Student Records*

In accordance with the Privacy Rights Act, all information retained on applicants and students is secure and protected from general release. Only school faculty and the individual applicant/student have access to these records. Others wishing to view applicant/student records (including parents and other family members) must have written permission from

the faculty and individual applicant/student. Select portions of student files are maintained as permanent records in the care of the Cox School of Diagnostic Medical Sonography. Files of applicants not accepted for training will be retained for consideration the following year only upon request of the applicant.

## *Probation and Dismissal*

Because of the clinical and academic requirements, students must put forth a sincere effort for the entire 18-month program. All students are expected to maintain a “B” or 3.0 GPA with no academic or clinical course score lower than a “B.” Students with grades lower than the set standard will be placed on probation for a specified period of time. If the GPA is increased satisfactorily, the student will continue in the program. Students who have not increased their GPA or course grade will be considered for dismissal. Placement on probation more than once will be considered as grounds for dismissal.

Students are granted 10 sick days for the 18-month program. Makeup time will be required prior to graduation if a student misses more than that amount. If the student fails to make up the required clinical time, dismissal will be considered.

In addition, students who demonstrate an unprofessional attitude or unsatisfactory clinical performance will be considered for probation or immediate dismissal at the discretion of the program director.



## *Graduation*

Students who complete all academic, clinical and other program requirements earn the right to graduate from Cox School of Diagnostic Medical Sonography. The graduate is entitled to receive a diploma, a school pin and eligibility to sit for the American Registry of Diagnostic Medical Sonographers (ARDMS) examination. Awards are presented for outstanding academic, clinical and patient care performance at the annual graduation ceremony.

## *The Future as a Diagnostic Medical Sonographer*

The future as a registered diagnostic medical sonographer offers many options. There are a variety of settings in which a sonographer's skills are required: hospital, clinic, physician offices and mobile services. There are subspecialties within this imaging specialty such as abdomen, obstetrics and gynecology, vascular, ophthalmology, neonatal, neuro-sonography and echocardiography.

Sonography is a dynamic, challenging, high responsibility health profession. It provides a progressive career with opportunities for personal growth.

## *Your Choice*

Be inquisitive into your career choice. If you choose diagnostic medical sonography as a career, you should be confident of your choice of educational programs. Your success in this field will depend upon many factors. One of the largest factors is the education and training that you initially receive.

Cox School of Diagnostic Medical Sonography is committed to developing the knowledge and clinical skills necessary for you to become a competent sonographer.

## *Tuition and Fees\**

A non-refundable \$30 application fee must accompany all applications to the program.

A \$50 deposit is required within two weeks of notification of acceptance. This \$50 will be credited to the first semester's tuition. The remaining \$4,950 will be payable in six parcels. Textbooks are purchased by the student at a cost of \$850 and are distributed the first day of class.

A school dress code will be furnished to those applicants accepted into the program. Each student is responsible for the cost and maintenance of all uniforms. The annual cost is approximately \$200.

\*Tuition and fees may vary and are subject to change.

## *Vacations and Holidays*

All students will be allowed a two-week Christmas break, a week spring vacation and a week fall vacation for each year. The school will be closed on the following six holidays:

New Years Day	Labor Day
Memorial Day	Thanksgiving Day
Independence Day	Christmas Day

## *Financial Aid*

Financial aid is available to those who qualify. The program has a financial aid officer who may be reached at 417/269-3068.

## *Refund Policy*

Cox School of Diagnostic Medical Sonography has a pro-rate refund policy for students who withdraw from school. A student will receive a refund of total tuition charged based on amounts paid and the percentage of school completed at the point of withdrawal up to 60 percent of the school year for the first year of the program. No refund will be granted to those withdrawing after the first year of the program.

This refund will be allocated in the following order:

- Subsidized Stafford Loan
- Unsubsidized Stafford Loan
- Plus Loan
- Pell Grant
- Student.

Federal financial aid programs available to the student are:

- Federal Pell Grant
- Federal Stafford Loan (Subsidized and Unsubsidized)
- Federal Parent Loan for Undergraduate Students (FPLUS).

## *For additional information:*

- School Office - South      417/269-4074
- School Office - North      417/269-8987
- School Office - North      417/269-1074
- Financial Aid office      417/269-3068
- SMSU advisor      417/836-5252
- [www.coxhealth.com](http://www.coxhealth.com)

**Cox North**

1423 N. Jefferson Ave.  
Springfield, MO 65802  
School office 417/269-8987  
Financial Aid office 417/269-3068

**Cox South**

3801 S. National Ave.  
Springfield, MO 65807  
School office 417/269-4074

**Cox Monett**

801 Lincoln Ave.  
Monett, MO 65708  
Radiology department 417/235-3144

**Ozarks Medical Center**

1100 Kentucky Ave.  
P.O. Box 1100  
West Plains, MO 65775  
Radiology department 417/257-6713

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