January 2012
PE 11-22-511

SUNRISE REPORT

WEST VIRGINIA IMAGING AND RADIATION BOARD OF EXAMINERS SONOGRAPHERS

AUDIT OVERVIEW

The Legislative Auditor Does Not Recommend Licensure of Sonographers Because Physician Supervision Over Sonographers Is the Primary Safeguard Against Harm, Which Will not Change if the Profession is Licensed

WEST VIRGINIA LEGISLATIVE AUDITOR
PERFORMANCE EVALUATION & RESEARCH DIVISION

JOINT COMMITTEE ON GOVERNMENT OPERATIONS

Senate	House of Delegates	Agency/ Citizen Members
Herb Snyder, Chair	Jim Morgan, Chair	John A. Canfield
Douglas E. Facemire	Dale Stephens, Vice-Chair	W. Joseph McCoy
Orphy Klempa	Ron Fragale	Kenneth Queen
Brooks McCabe	Eric Nelson	James Willison
Clark S. Barnes	Ruth Rowan	Vacancy
	Scott G. Varner, Nonvoting	

JOINT COMMITTEE ON GOVERNMENT ORGANIZATION

Senate	House of Delegates	
Herb Snyder, Chair	Jim Morgan, Chair	Rupert Phillips, Jr.
Mike Green, Vice-Chair	Dale Stephens, Vice-Chair	Margaret A. Staggers
Richard Browning	William Romine, Minority Chair	Randy Swartzmiller
H. Truman Chafin	Tom Azinger, Minority Vice-Chair	Joe Talbott
Dan Foster	Brent Boggs	Anna Border
Orphy Klempa	Greg Butcher	Eric Householder
Brooks McCabe	Samuel J. Cann, Sr.	Gary G. Howell
Ronald F. Miller	Ryan Ferns	Larry D. Kump
Joseph M. Minard	Roy Givens	Eric Nelson
Corey L. Palumbo	Daniel J. Hall	Rick Snuffer
Bob Williams	William G. Hartman	Erikka Storch
Jack Yost	Barbara Hatfield	
Donna J. Boley	Ronnie D. Jones	
Dave Sypolt	Helen Martin	

WEST VIRGINIA LEGISLATIVE AUDITOR

PERFORMANCE EVALUATION & RESEARCH DIVISION

Building 1, Room W-314
State Capitol Complex
Charleston, West Virginia 25305
(304) 347-4890

Aaron Allred	John Sylvia	Brian Armentrout	Keith Brown	Daniel Caldwell
Legislative Auditor	Director	Research Manager	Research Analyst	Referencer

CONTENTS

EXECUTIVE SUMMARY

The Legislative Auditor Does Not Recommend Licensure of Sonographers Because Physician Supervision Over Sonographers Is the Primary Safeguard Against Harm, Which Will not Change if the Profession Is Licensed.

The West Virginia Imaging and Radiation Therapy Board of Examiners submitted its second application in five years to the Joint Committee on Government Organization requesting licensure for the profession of sonography. The Board presented three arguments to justify licensure:

- First, the lack of any state laws regulating the profession allows anyone to perform ultrasound procedures.
- Second, licensure would prevent the inappropriate use of ultrasound devices in the form of keepsake ultrasound businesses.
- Finally, rampant Medicaid fraud associated with ultrasound is occurring in West Virginia, and licensure would be an adequate deterrent in the future.

Overall, the Board believes that the public is at risk when inexperienced or poorly trained individuals fail to adequately identify pathology or other medical conditions needing medical intervention. The Legislative Auditor agrees that the risk of harm comes from misdiagnosis of ultrasound images; however, sonographers do not have the authority to make diagnoses nor would they gain that authority through licensure. The authority to make medical diagnoses is limited to the practice of medicine. The Legislative Auditor concludes that the risk of harm from an ultrasound procedure is primarily dependent on the level of physician supervision of the sonographer and the physician's diagnoses. This conclusion is also supported by relevant legal evidence from three court cases in West Virginia. The Applicant's concern over entertainment ultrasound procedures is justified; however, it can be addressed through legislation without the need for licensure. The Applicant's concern regarding Medicaid fraud has insufficient evidence; moreover, licensure would not solve that issue if it does exists**. It is the Legislative Auditor's opinion that physician oversight is the primary safeguard against the risk of harm, and the costs associated with licensure would likely outweigh any benefits to the public.**

Recommendations

1. *The Legislative Auditor does not recommend licensure for sonographers.*

2. *The Legislative Auditor recommends that the Legislature consider legislation that would require an order or written prescription by a licensed practitioner prior to any obstetrical ultrasound procedure being performed in West Virginia.*

FINDING

The Legislative Auditor Does Not Recommend Licensure of Sonographers Because Physician Supervision Over Sonographers Is the Primary Safeguard Against Harm, Which Will not Change if the Profession Is Licensed.

Summary

The West Virginia Imaging and Radiation Therapy Board of Examiners (Applicant) submitted an application for the regulation of sonographers in West Virginia to the Joint Committee on Government Organization. Sonography is the only form of medical imaging not regulated by the Applicant. The Legislative Auditor determined in a 2006 Sunrise Report that the lack of regulation of sonography does not pose a discernable risk to the public. After reviewing the 2011 application, the Legislative Auditor concludes that the risk of harm from an ultrasound procedure is primarily dependent on the level of physician supervision of the sonographer and the physician's diagnoses. Incidents of harm that were involved in an ultrasound procedure invariably occurred because of inadequate physician supervision or the physician's misdiagnoses. Although licensure of the sonography profession will enhance the competency of the practice, physician oversight will still be needed, which is the primary safeguard from harm of the ultrasound procedure. Therefore, licensure of the sonography profession will increase overall social costs but will have minimal effects on reducing the risk of harm to the public. Therefore, the Legislative Auditor does not recommend licensure of sonographers. The Applicant also included a provision in the proposed legislation to require a doctor's prescription for all ultrasound procedures in order to address the establishment of unregulated businesses performing ultrasound procedures for entertainment purposes. The Legislative Auditor recommends the provision be considered by the Legislature, but this issue can be addressed through legislation without the need for licensure of sonographers.

After reviewing the 2011 application, the Legislative Auditor concludes that the risk of harm from an ultrasound procedure is primarily dependent on the level of physician supervision of the sonographer and the physician's diagnoses.

The Applicant also included a provision in the proposed legislation to require a doctor's prescription for all ultrasound procedures in order to address the establishment of unregulated businesses performing ultrasound procedures for entertainment purposes.

Background

Ultrasound has served as a reliable medical diagnostic tool since the 1960's. Ultrasound images are created by mechanical means to aid in the evaluation and treatment of a variety of medical conditions. Diagnostic ultrasound is widely used in medical settings, including for obstetric, gynecological, gastrointestinal, abdominal, vascular and echocardiography applications. Ultrasound energy is used in licensed

professional settings, such as in dental hygiene applications, and high intensity focused ultrasound is used to break up kidney stones and tumors. Ultrasound energy is also used for cosmetic surgery applications, including for liposuction and in the temporary reduction of wrinkles.

For diagnostic applications, sonography uses high frequency sound waves aided by a computer to produce images of internal structures for the assessment and diagnosis of various medical conditions. An ultrasound device is controlled by the sonographer and utilizes a transducer and a computer. The sound waves reflect or bounce off tissue with varying density. These sound wave signals are mechanically generated, controlled by the sonographer, and the image is created by moving the transducer over the target area. Ultrasound energy is measured by comparing the variance in the density of the reflections. The signals are analyzed by a computer and translated into visual images projected on a monitor screen. Images are selected by the sonographer for storage. According to the U.S. Food and Drug Administration (FDA), ultrasound procedures generally take 30 minutes to an hour to complete.

For diagnostic applications, sonography uses high frequency sound waves aided by a computer to produce images of internal structures for the assessment and diagnosis of various medical conditions. An ultrasound device is controlled by the sonographer and utilizes a transducer and a computer.

Current Regulations Among Other States

Three states currently have regulations of some form for sonography. Oregon and New Mexico license sonographers and Connecticut requires a prescription for diagnostic ultrasound procedures. In 2009, New Mexico created licensure out of concerns about the lack of minimum requirements for professional sonographers. Oregon passed a similar licensure law the following year to ensure individuals had adequate competency and to protect the public by requiring background checks on applicants.

In response to concerns about the non-medical use of ultrasound, Connecticut passed legislation in 2009 prohibiting the use of obstetrical ultrasound for non-medical purposes. Section 19a-01 of Chapter 368ll of the Connecticut Code states:

> *No person shall perform an obstetrical ultrasound procedure unless such procedure is (1) ordered by a licensed health care provider, acting within the scope of such provider's authority, and (2) for a medical or diagnostic purpose.*

The purpose of the law is to eliminate the administration of ultrasound procedures by nonmedical commercial operations for entertainment purposes.

Methods of Training and Certification Currently Available

Individuals who wish to obtain specialized education in sonography and/or to obtain validation of their skills can obtain educational and national certification through other means. West Virginia currently has three certification programs that provide sonography education and training. Accredited certification programs are offered at West Virginia University, and Mountain State University, while the United Hospital in Clarksburg offers an unaccredited program. Mountain State also offers associate and bachelor degree programs in diagnostic ultrasound. Voluntary certification is also available through two national credentialing organizations: The American Registry of Radiologic Technologists (ARRT), and the American Registry for Diagnostic Medical Sonography (ARDMS). These programs provide sufficient validation of skills for individuals who would like to obtain employment as professional sonographers.

Individuals who wish to obtain specialized education in sonography and/or to obtain validation of their skills can obtain educational and national certification through other means.

There is limited information as to the number of individuals practicing sonography in West Virginia. According to the Applicant, there are approximately 435 credentialed by ARDMS, ARRT, or Cardiovascular Credentialing International in West Virginia. The Applicant also stated that a survey of West Virginian hospitals from November 2010 indicated that there are 241 individuals performing sonography in these facilities. The data provided by the Applicant are incomplete since they do not indicate the number of sonographers working in doctor's offices or the total number of sonographers working in hospitals.

There is limited information as to the number of individuals practicing sonography in West Virginia.

The Applicant Presents Three Arguments For Licensure Of the Sonography Profession

The Applicant provided three arguments to justify licensure of sonographers:

- **Argument 1**: The lack of any state laws regulating the profession allows anyone to perform ultrasound procedures.
- **Argument 2**: Licensure would prevent the inappropriate use of ultrasound devices in the form of keepsake ultrasound businesses.
- **Argument 3**: Rampant Medicaid fraud associated with ultrasound is occurring in West Virginia, and licensure would be an adequate deterrent in the future.

The Applicant summarizes its arguments by stating:

> *The harm from Sonography is not related to physical damage created by the technology. Rather the harm occurs if / when an inexperienced and / or poorly trained individual fails to properly identify pathology and / or conditions that need medical intervention.*

Unlike other forms of medical imaging, sonography does not pose a significant risk of physical harm to the patient in the use of the technology as indicated in the Applicant's statement, nor is it the focus of the Applicant's concern. The Applicant takes issue with the sonographer's ability to competently interpret the images and accurately diagnosis any disease or other medical conditions. However, it should be noted that the above statement from the application is misleading in that sonographers are responsible only for providing images that help the physician to identify pathology or the need for medical intervention. In other words, the physician not the sonographer is responsible for providing the interpretation of the images produced from an ultrasound.

Unlike other forms of medical imaging, sonography does not pose a significant risk of physical harm to the patient in the use of the technology as indicated in the Applicant's statement, nor is it the focus of the Applicant's concern.

Response to Argument 1: The Potential For Harm Is Significantly Dependent on the Level of Physician's Oversight and Diagnosis.

According to the Applicant, licensure would prevent practitioners from misdiagnosing diseases and/or other medical conditions. However, sonographers do not have the authority to make diagnoses nor would they gain that authority with licensure. *West Virginia Code* limits that authority to the practice of medicine. The West Virginia Medical Practice Act, *West Virginia Code §30-3-4*, defines the practice of medicine as, "... *the diagnosis or treatment of, operation or prescription for, any human disease, pain, injury, deformity or other physical or mental condition*." The medical imaging professions, including sonography, are not considered practices of medicine. Sonographers do not have the authority to make diagnoses, so the potential for harm rests with the physician's diagnosis.

Sonographers do not have the authority to make diagnoses, so the potential for harm rests with the physician's diagnosis.

The Applicant is proposing training and testing as requirements for licensure, but any level of training will not negate the need for appropriate supervision of the sonographer by a physician. The licensure requirements would include:

- national certification as a diagnostic medical sonographer, registered cardiac sonographer or registered vascular sonographer;

- a baccalaureate or associate degree in one of the physical or biological sciences pertaining to the medical imaging or radiation therapy profession;
- a baccalaureate or associate degree in other disciplines of medical imaging with successful completion of courses;
- certification in another form of medical imaging; or
- a minimum score of 75 on an exam administered by the Applicant.

The Applicant's concern with the lack or a poor level of training stems from the issue that:

> *…in a large number of private physician offices and clinics, there are individuals practicing that have had* ***no formal medical training*** *beyond what a physician or nurse may have taught them to do…. [T]he varying levels of training and education creates a wide range of competency levels for Sonography, and the Board believes this lack of formal training jeopardizes the health and welfare of the general public.*

Since the physician is responsible for determining the quality of the images, interpreting the images, and for making the diagnosis, the safety of the public's health and welfare is largely dependent on the level of physician oversight of the sonographer.

Since the physician is responsible for determining the quality of the images, interpreting the images, and for making the diagnosis, the safety of the public's health and welfare is largely dependent on the level of physician oversight of the sonographer.

The Applicant indicated that creating a standard level of training would protect the public from harm, since the sonographer performs the majority of the procedure. According to the application, sonography is 90% user dependent with 10% physician oversight. The Applicant did not provide any evidence to substantiate this ratio; nevertheless, whatever the percentage of physician supervision, it is the primary factor in reducing harm to the public. The sonographer typically performs the procedure and provides the physician with printed images to review. The physician then makes his or her diagnosis based on the printed image.

The Applicant's own evidence identifies proper oversight as an adequate form of protection.

The Applicant's own evidence identifies proper oversight as an adequate form of protection. As an example for the risk created by incompetency of a sonographer, the Applicant included a news story about a North Carolina woman who received an unnecessary emergency cesarean section. After a resident physician did not locate a fetal heartbeat during an ultrasound procedure, doctors performed the operation, only to find that the woman was not actually pregnant. The Legislative Auditor obtained information from the North Carolina Board of Medicine for this

case. In the disciplinary action that followed, the North Carolina Board of Medicine issued a Letter of Concern to the two physicians involved in the incident. The Board's concern did not take issue with the resident's incompetency in performing the ultrasound procedure, but instead found he or she did not have *"the necessary experience to make proper diagnosis."* The Board went on to contribute blame to the supervisor's *"inappropriate reliance"* on the resident's diagnosis and the supervisor's "failure to conduct" the ultrasound procedure herself. In other words, although the resident physician failed to recognize that there was no fetus present from the ultrasound image, the physicians overseeing the resident created the harm by not providing adequate oversight. The Applicant's own example, therefore, supports the Legislative Auditor's contention that proper oversight is the primary safeguard for public protection.

The Legislative Auditor also identified four lawsuits in West Virginia related to sonography and every relevant case supports the need for proper supervision as the best means of protecting the public from potential harm.

The Legislative Auditor also identified four lawsuits in West Virginia related to sonography and every relevant case supports the need for proper supervision as the best means of protecting the public from potential harm.

Case #1: In *Price v. Correctional Medical Services* 2:08-00259 (2010), an inmate at Mount Olive correctional complex sued Correctional Medical Services for violating his Eighth Amendment right by providing inadequate medical care. The case is irrelevant to the Applicant's concerns because the claim was based on the company's delay of performing the ultrasound procedure rather than a failure to adequately perform or interpret the procedure.

Case #2: In *Fout-Iser v. Hahn* 220 W. Va. 673 (2007), a medical malpractice suit filed in Mineral County, a radiologist was accused of failing to provide the required standard of care to a pregnant woman complaining of abdominal pain. The radiologist was on-call but not at the hospital at the time and instructed an X-ray technician to conduct an ultrasound. The X-ray technician informed the radiologist that she was inexperienced with taking ultrasound images, but the radiologist instructed her to complete the procedure anyway. After the initial procedure was completed the images were not adequate, so the radiologist had the X-ray technician repeat the procedure. The technician then produced an additional 50 images, and the radiologist determined that a fetus was present

and alive. However, by that time the patient had been moved to a different hospital where a Cesarean section was performed, but the fetus had died as a result of placental abruption. The basis of the lawsuit and the resulting court decision all focused on the radiologist's failure to provide adequate care, not the X-ray technician's ability to produce adequate images. The radiologist should have ensured a sufficiently competent individual (including himself) performed the procedure so that the images were timely produced and the quality was adequate for diagnosis.

The basis of the lawsuit and the resulting court decision all focused on the radiologist's failure to provide adequate care, not the X-ray technician's ability to produce adequate images.

Case #3: In a second medical malpractice lawsuit, a physician once again failed to adequately diagnosis a medical condition from an ultrasound procedure. In *Rowe v. Sisters of Pallottine Missionary Society* 211 W. Va. 16 560 S.E.2d 491 (2001) a man injured his leg in a motorcycle accident and went to an emergency room at a local hospital for treatment. After nurses on the emergency room staff failed to locate a pulse in the man's leg using a portable ultrasound device, a physician conducted the procedure himself. Although the doctor had difficulty locating the pulse he claimed to have found one, diagnosed the injury as a sprained knee, and released the man with instructions to follow up with an orthopedist. The following day the man went to another hospital, and the doctors there determined that he had dislocated his knee and lacerated an artery that provides blood circulation to the lower leg. The doctor settled out of court, and the result of the lawsuit was against the hospital. The jury in the case determined that the hospital's nursing staff failed to meet their legal responsibility to advocate for the best care of their patient by questioning the doctor's diagnosis. Since the issue in the Rowe case is the nurses' failure to question the physician's diagnosis, licensure will not guarantee that sonographers in the same situation would question a physician's diagnosis.

Since the issue in the Rowe case is the nurses' failure to question the physician's diagnosis, licensure will not guarantee that sonographers in the same situation would question a physician's diagnosis.

Case #4: The final medical malpractice lawsuit presents another example of an unnecessary surgery completed as the result of a physician's misdiagnosis from an ultrasound. In *Stanley v. Chevathanart* 222 W. Va. 261; 664 S.E.2d 146

(2008), a patient sued a doctor for breaching his standard of care. The physician performed a total abdominal hysterectomy after a radiologist diagnosed the patient with having a tumor in her uterus. The woman sued the doctor claiming that he had failed to obtain her informed consent prior to the operation, because he did not provide her with all the available options for her care. This case, as in the North Carolina case, shows that the risk comes from a doctor's failure to adequately diagnosis a medical condition, not from the procedure itself.

Adequate physician oversight is the primary factor in protecting the public. The Applicant's proposed licensure would not improve the diagnosis of disease, because only the physician requesting the procedure has the ability and authority to make the diagnosis. Furthermore, all the legal evidence either supplied by the Applicant or found by the Legislative Auditor supports proper supervision as the appropriate method of public protection, since every case focuses on the physician's failure to properly diagnose. The Legislative Auditor therefore determines that licensure would not substantially reduce the potential of harm related to sonography.

Furthermore, all the legal evidence either supplied by the Applicant or found by the Legislative Auditor supports proper supervision as the appropriate method of public protection, since every case focuses on the physician's failure to properly diagnose.

Response to Argument 2: Prohibiting the Use of Ultrasound for Entertainment Purposes Can Be Done Through Legislation Without the Need for Licensure.

As part of its sunrise application, the Applicant requested that the proposed legislation also require a physician's order for all ultrasound procedures. The Applicant expressed specific concerns about the potential harm to the public because of the non-medical use of ultrasound devices for the creation of 3D and 4D ultrasound "keepsake" pictures and videos. The FDA has stated that ultrasound devices should only be used when medically necessary, under the prescription of a licensed medical provider and that keepsakes represent an unapproved uses of a medical device. While the FDA has authority to regulate the manufacture of ultrasound devices, it lacks the authority to ensure that users of this technology adhere to the agency's guidelines. As previously mentioned Connecticut is the only state to recognize this misuse of ultrasound technology and passed legislation to control it.

The U.S. Food and Drug Administration (FDA) has stated that ultrasound devices should only be used when medically necessary, under the prescription of a licensed medical provider and that keepsakes represent an unapproved uses of a medical device.

At least one keepsake boutique is currently operating in West Virginia and another is planning to open in the future. These businesses operate purely for entertainment purposes and do not require a doctor's prescription to perform ultrasound procedures on pregnant women. The Legislative Auditor recognizes any legislation requiring a medical provider's prescription for an ultrasound would negatively impact these businesses; however, these businesses' use of ultrasound devices violate the FDA's guidelines and should not be allowed to continue offering entertainment ultrasounds.

The Legislative Auditor recognizes any legislation requiring a medical provider's prescription for an ultrasound would negatively impact these businesses; however, these businesses' use of ultrasound devices violate the FDA's guidelines and should not be allowed to continue offering entertainment ultrasounds.

Since licensure only affects the professional requirements of a profession, it would have no affect on the operation of these businesses. The only way to stop the use of ultrasound for keepsakes is to restrict the use of sonography for medical purposes only. **The Legislative Auditor, therefore, recommends that the Legislature consider restricting ultrasound procedures in this state to those that are medically necessary as prescribed by a licensed practitioner.**

Response to Argument 3: Licensure Would Not Prevent Medicaid Fraud Nor Is There Sufficient Evidence to Determine If There Is a Problem With Medicaid Fraud Related to Sonography In West Virginia.

The Applicant mentioned that Medicaid fraud relating to the performance of ultrasound procedures is rampant in the state; however, the Applicant did not provide evidence to support this claim. The West Virginia Medicaid Fraud Control Unit (MFCU), within the Department of Health and Human Resources, has two ongoing investigations and a conviction in which sonography played a significant role in its theory in the case. The MFCU also stated that it supports the licensure of sonographers because it would make it easier to identify potential abuses of sonography; however, the agency did not provide any justification for this claim. The Applicant also attempted to obtain information on sonography fraud in the state from the Office of Inspection General (OIG) for the U.S. Department of Health and Human Services; however, the OIG stated that it could not release that information. Even with sufficient evidence, licensure would not necessarily be an effective method of fraud prevention, since licensure only relates to requirements to professional qualifications.

The Applicant mentioned that Medicaid fraud relating to the performance of ultrasound procedures is rampant in the state; however, the Applicant did not provide evidence to support this claim.

Licensure May Create More Costs to Society Than Benefits

The Applicant stated that "*The majority of the Sonographers already have certification of some type, so there would not be any decrease in the supply of practitioners.*" However, the Applicant also stated that "*Unfortunately, in a large number of private physician offices and clinics, there are individuals practicing that have had* ***no formal medical training*** *beyond what a physician or nurse may have taught them to do."* These are contradictory statements. If there is a large number of individuals practicing sonography in private physician offices and clinics that have no formal medical training, then licensure will prevent these individuals from performing ultrasound procedures unless they fulfill the requirements of licensure as proposed by the Applicant. It is likely that many of those individuals will be reluctant to incur the costs and educational requirements to become licensed. Therefore, the current number of individuals who are performing ultrasound procedures will decrease, particularly in private physician offices and clinics. In addition, a lower supply could lead to higher salaries for sonographers, which could strain the resources of medical facilities by increasing the cost of business. The social cost also include the costs of licensing (license and renewal fees), formal education, and continuing professional education to licensees. Physician supervision will still be needed regardless of the level of training of sonographers. It is the Legislative Auditor's opinion that physician oversight is the primary safeguard against the risk of harm, therefore, the costs associated with licensure would likely outweigh any benefits to the public.

If there is a large number of individuals practicing sonography in private physician offices and clinics that have no formal medical training, then licensure will prevent these individuals from performing ultrasound procedures unless they fulfill the requirements of licensure as proposed by the Applicant.

The responsibility for the interpretation of images ultimately is the responsibility of the physician who ordered the procedure. Sonographers would not gain this authority with licensure.

Conclusion

There is insufficient justification for licensure or any other form of state regulation of sonography at this time. The potential for harm related to sonography stems from the interpretation of the images produced during the procedure and the resulting diagnosis. The responsibility for the interpretation of images ultimately is the responsibility of the physician who ordered the procedure. Sonographers would not gain this authority with licensure. Since the potential for harm does not come from the procedure itself, and is primarily dependent on physician oversight of sonographers, licensure would only create unnecessary costs for both the health care industry and licensees. These costs would likely outweigh any additional benefits. The Applicant's concern for Medicaid fraud

Physician supervision will still be needed regardless of the level of training of sonographers. It is the Legislative Auditor's opinion that physician oversight is the primary safeguard against the risk of harm, therefore, the costs associated with licensure would likely outweigh any benefits to the public.

has insufficient evidence; moreover, licensure would not solve that issue if it exists. Finally, while the Applicant's concern over entertainment ultrasound procedures is justified, it can be addressed through legislation without the need for licensure.

Recommendations

1. *The Legislative Auditor does not recommend licensure for sonographers.*

2. *The Legislative Auditor recommends that the Legislature consider legislation that would require an order or written prescription by a licensed practitioner prior to any obstetrical ultrasound procedure being performed in West Virginia.*

Appendix A: Transmital Letter

WEST VIRGINIA LEGISLATURE

Performance Evaluation and Research Division

Building 1, Room W-314
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0610
(304) 347-4890
(304) 347-4939 FAX

John Sylvia
Director

January 6, 2012

Mr. Grady M. Bowyer, Executive Director
West Virginia Medical Imaging & Radiation Therapy Board of Examiners
P.O. Box 638
1715 Flat Top Road
Cool Ridge, WV 25825

Dear Mr. Bowyer:

This is to transmit a draft copy of the Sunrise Report on Sonographers. This report is scheduled to be presented during the January 9, 2012 interim meeting of the Joint Committee on Government Operations, and Joint Committee on Government Organizations from 4:00 to 6:00 p.m. It is expected that a representative from your agency be present at the meeting to orally respond to the report and answer any questions the committees may have.

Please provide a response via e-mail by 10:00 a.m. on January 9, 2012 in order for it to be included in the final report. Please send your response to Keith Brown (keith.brown@wvlegislature.gov), Brian Armentrout (barment@mail.wvnet.edu), and me (jsylvia@mail.wvnet.edu). After reviewing your written response, we will make any agreed upon changes to the report and provide you with a copy of those changes. If your agency intends to distribute additional material to committee members at the meeting, please contact the House Government Organization staff at 340-3192.

We request that your personnel not disclose the report to anyone not affiliated with your agency. Thank you for your cooperation.

Sincerely,

John Slyvia
Director

Joint Committee on Government and Finance

Appendix B: Agency Response

WEST VIRGINIA MEDICAL IMAGING & RADIATION THERAPY TECHNOLOGY BOARD OF EXAMINERS
1715 FLAT TOP ROAD
P.O. BOX 638
COOL RIDGE, WV 25825-0638
Telephone: (304) 787-4398 Toll Free: (877) 609-9869 Fax: (304) 787-3030
E-mail: wvrtboe@suddenlinkmail.com Web Page: www.wvrtboard.org

January 9, 2012

John Silvia, Director
West Virginia Legislature
Performance Evaluation & Research Div.
Bldg 1, Room W-314
1900 Kanawha Blvd., East
Charleston, West Virginia 25305-0610

Dear Mr. Silvia:

In response to the draft report on the regulation of Sonography in West Virginia, the West Virginia Medical Imaging & Radiation Therapy Technology Board of Examiners (hereafter, Board) would like to address this report with the following statements.

The Board **will agree** with the recommendation of legislation requiring an order or written prescription by a licensed practitioner prior to any obstetrical procedure performed in West Virginia.

The Board **strongly disagrees** that the practice of Sonography in West Virginia should not be regulated. It is very apparent that the individuals doing the analysis for this draft report do not have a medical background and mis-interpreted some of the information gathered and was presented in the Sunrise Application. The Board's reasons for disputing this report are as follows:

1. The Board believes this report would have someone believe a Sonographer is actually providing the diagnosis for the patients. The sonographer produces the images for the physician to view and interpret. To offer a diagnosis would be a violation of a Sonographer's Scope of Practice as well as a violation of the law. The proposed legislation submitted with this Sunrise Application stated in the Scope of Practice for a diagnostic medical sonographer that the individual would "document diagnostic and patient data and provide oral or written preliminary findings to the licensed practitioner **to aid** in patient diagnosis..." This statement alone states that the Sonographer would be in violation of their Scope of Practice if they generated and/or provided a diagnosis. The sonographer needs to have a knowledge base that allows them to accurately recognize and identify pathology and capture an image of that particular pathology/structure to allow the Physician to then interpret the images for diagnosis.

2. Probably 90-95% of the patients having an ultrasound examination **never** see the physician during the procedure, only the sonographer. The only information the physician typically has, is what is presented to him by the Sonographer, be it the history, images, measurements, etc. The operators **are not directly supervised by the physician**. The physician depends on the operator to have the education, experience & competency to perform the procedure correctly. If

the operator is not properly educated, trained & competent, the physicians probably will not get adequate and complete images to interpret.

Even in a hospital setting, the only time a physician would be present during the actual ultrasound study would be if/when the Sonographer **recognizes** an issue or is having difficulty finding a particular structure and calls for the Physician to be present.

3. Without some form of regulation, anyone can buy and operate ultrasound equipment. The public is led to believe their procedures are being performed by individuals who are properly trained and competent. An operator of this type of equipment can, based on their use of the transducer, **make pathology appear or disappear on the images that the physician will be viewing**. Therefore, the physician only sees what is presented to him by way of the images. This report states on page 2 that the "**images are selected by the sonographer for storage**". A majority of the licensed practitioners in a private setting do not typically see the patient in the ultrasound room, only in the examining room. In a hospital setting, the radiologist will typically only see the captured images and never the patient. The physician could very easily mis-diagnose a patient's condition due to inadequate images produced by an untrained individual performing the procedure, **thus causing harm to the patient**. This Sunrise Report states that "licensure of the sonography profession will enhance the competency of the practice". That is exactly what the Board is attempting to do - improve the practice of Sonography.

   The Board would **strongly encourage the Legislators** to contact Sonographers and physicians to inquire as to how often a physician is in the ultrasound room whenever a procedure is being performed before dismissing this Board's efforts to regulate this profession.

4. This report states that "**Voluntary** certification is available through two national credentialing organizations: The American Registry of Radiologic Technologists (ARRT) and the American Registry of Diagnostic Medical Sonography (ARDMS). These programs provide sufficient validation of skills for individuals who would like to obtain employment as professional sonographers." Emphasis is placed on the word **voluntary** in this statement because individuals may or may not choose to seek national accreditation. The individuals who do obtain certification are more than qualified to perform the ultrasound examinations. But what about the others who don't - probably the only training they have had, is on-the-job. Can you assure the public that these individuals without formal training are competent to perform ultrasound examinations?

   The Board will allow the individuals who are not credentialed by a national organization, two years to work and study to obtain the required national organization's competencies in order to sit for the credentialing examination. So, within two years, everyone performing Sonography would be required to be credentialed. This is the same process that is followed for all other modalities currently licensed by the Board. The national credentialing organizations have agreed to administer a test for the Board to individuals who do not desire to sit for the national examinations. These individuals would be recognized as state credentialed and allowed to obtain an unrestricted state license.

5. This report states on page 2 under the heading of **Current Regulations Among**

Other States that New Mexico and Oregon have passed legislation to license Sonography "**out of concern about the lack of minimum requirements for professional sonographers**". Historically, since 1978, West Virginia has led the way in the oversight of imaging modalities. Sonography is the last area of medical imaging that remains unregulated in West Virginia. The Board's goal is to ensure the expertise of all imaging modalities in an effort to assure quality diagnostic imaging for all the citizens of WV.

In looking at New Mexico and Oregon, both states also recently passed legislation licensing Magnetic Resonance Imaging (MRI) technologists. West Virginia was the very first state in the nation to require operators of MRI equipment to be credentialed. Both New Mexico & Oregon patterned their law after WV's regulations for MRI. They also used parts of our proposed legislation for Sonography that was proposed in 2006 and introduced last year in this Legislature. North Carolina is one of very few states that does not license medical imaging or radiation therapy. The Board has been asked by the North Carolina Society of Radiologic Technologists to help draft legislation for their state, which will include the licensure of Sonography, as well as the other medical imaging and radiation therapy modalities.

The Society of Diagnostic Medical Sonography (SDMS), a voluntary, professional organization of sonographers, published an article on their web site a couple of years ago, which is enclosed. This article states a lot of this Board's views on Sonography and the public trust. The U.S. Bureau of Labor Statistics also has an article on their web site concerning the training and other areas of Sonography. This article is also enclosed but fails to acknowledge legislation to license sonographers in New Mexico and Oregon that was passed in 2009.

6. The equipment currently in use will almost always capture quality images for interpretation. **This is not the issue**. The issue is that the untrained operator may not recognize pathology to capture an image. The physician is not in the imaging suite overseeing the process of scanning and would have no method to determine that the operator failed to capture important images for evaluation and diagnosis. The danger is in the ignorance of the operator, not in the quality of the images. This is **very well illustrated in case 2 and case 3** of the Sunrise Report.

   In case 2, the radiologic technologist was untrained and inexperienced to perform ultrasound and so informed the radiologist. However, the radiologist insisted the technologist perform the study. Inadequate images were produced, not once, but twice, by the untrained operator. The end result was not in the lack of supervision by the radiologist, who was not at the facility, but the **operator being untrained and inexperienced in the operation of the equipment**.

   In case 3, the physician mis-diagnosed the case because he "claimed to have found a pulse" when the nurses didn't. In this case, the physician and nurse failed to utilize the services of a credentialed, experienced sonographer. This is what causes **HARM TO THE PUBLIC - untrained operation of the equipment to obtain adequate captured or viewable images for a proper diagnosis.** Both cases demonstrate very clearly what the Board has stressed all along - that the operators need to be credentialed to ensure they are properly trained and

can produce adequate images.

7. The majority of Sonographers (in a hospital setting) already have certification of some type. Whereas the equipment and operators of this type of equipment is unregulated, an accurate number of operators in the private setting of physician's offices and clinics cannot be obtained. A physician in a private office may train someone to operate the unit without formal structured training. **These physicians have the potential to mis-diagnose pathology for these patients due to the lack of appropriate training of the operator**. As previously stated, the physician does not stand beside the operator during the procedure and relies solely on the operator to capture appropriate images for review / interpretation. If the operator fails to recognize pathology and fails to capture appropriate images, the supervising physician will not ever have an opportunity to see the pathology to make a diagnosis.

8. Under the section found on page 8 of this draft report, the Legislative Auditor states that there are contradictory statements in the Board's Application. **The Legislative Auditor mis-stated this**. There is **no contradiction** for the following reason - the board only refers to qualified, credentialed individuals as Sonographers, which is a different group from those who operate equipment in private physician offices and clinics without any formal medical imaging training.

   The Board stated that there are a "**large number of private physician offices and clinics**" where individuals performing procedures have **no formal medical imaging training**. The Legislative Auditor states that "if there are a **large number of individuals** practicing sonography that have no formal medical training, then licensure would prevent these individuals from performing ultrasound procedures unless they fulfill the requirements of licensure as proposed by the Applicant." The private physician's offices and clinics may utilize their nurses or radiologic technologists to perform ultrasound procedures. At least these individuals would have some formal medical training in anatomy and would be more able to identify pathology than individuals without any formal training, such as office managers. Any individual practicing Sonography prior to the implementation of the proposed legislation would be eligible to request an application for an Apprentice license. This would allow the individual two years to obtain their Sonography credentials, which would allow them to apply for an unrestricted Sonography license. Therefore, there would **not necessarily be any decrease in the number of individuals performing Sonography, as stated in this report**. All of the individuals who are currently performing Sonography would be eligible to take the Apprentice route towards credentialing.

   As for the increase in cost, yes, there would be some increase in cost as the individuals become trained and credentialed. Most licensees of the Board pay their own licensing fees, not the hospitals, physicians or clinics. Most of the sonographers in hospitals are already credentialed, especially if the hospital has an accredited Sonography department. This regulation of the profession of Sonography could, and probably would, lead to decreased cost for the physicians overall as the procedures could, and would, be performed in a manner that would assure the physician having adequate images to view and make an accurate diagnosis, thus **decreasing malpractice lawsuits**.

Sunrise Response
Page 5

9. There are statements in the **CONCLUSION** section which are misleading and false - "The responsibility for the interpretation of images ultimately is the responsibility of the physician who ordered the procedure." The vast majority of ordering physicians only see a report of the procedure and very rarely see the actual images.

A subsequent statement - "Sonographers would not gain this authority with licensure." - at no time did the Board imply or request that sonographers be allowed to provide interpretation of images or diagnosis of imaging procedures they are performing. In fact, it is well recognized that interpretation and diagnosis is outside the scope of practice for sonographers, as well as any medical imaging professional.

Although this Draft report was not received by the Board until 5:00 pm on Friday, January 6, 2012, I, along with two Board members, have attempted to answer and debate each statement which the Board members feel are not accurate or justified in the consideration of the Legislative Auditor's report. The Board, as a whole, feels this legislation should be enacted in order to assure the public that every effort is being made to require that their medical imaging procedures are being performed to the highest level of perfection.

I will be at the Joint Committee of Government Organization meeting on Monday, January 9, 2012 to answer any questions and discuss the Board's reasoning for this response. If there are any questions pertaining to this response, please do not hesitate to contact me by email, gradymbowyer@suddenlink.net or by phone, 304-546-4642.

Sincerely,

Grady M. Bowyer, R.T. (R)
Executive Director

GMB:
Enclosures
cc: Alice S. Belmont, Chairperson
Nancy A. Godby, Secretary

ENCLOSURE # 1

New Mexico Sonographer Licensure Law Signed

***** [Click Here] to Read our Frequently Asked Questions about the New Mexico Licensure Law *****

On April 6, 2009, New Mexico Governor Bill Richardson signed the historic bill that, for the first time in the United States, requires licensure of sonographers.

The bill adds sonographers (and MRI technologists) to the list of medical imaging professionals licensed by the State of New Mexico. Until now, anyone could perform sonograms in New Mexico. Prior to the passage of the New Mexico licensure law, virtually all other health care providers and professionals had to be licensed. As a result, the public is often surprised to learn that the person performing a medical sonogram does not have any state licensure or national certification requirements.

The original New Mexico bill stemmed from concerns expressed about the lack of minimum requirements by a SDMS member, Darla Matthew (Las Cruces, NM) to her State Representative, Jeff Steinborn. Although the SDMS opposed the original bill as written, Rep. Steinborn did a tremendous job of helping to facilitate significant revisions in the New Mexico Senate to construct a better bill. Within a few days, more than 60 amendments had been incorporated into the bill resulting in the bill's unanimous passage in the Senate. When the Senate debated the bill, two Senators mentioned the large number of calls they received from sonographers regarding the bill, a testament to the grass roots efforts.

In the past, SDMS has opposed specific efforts to create state-by-state licensure and has instead worked for federal requirements. In part, this strategy has been based on the enormous amount of work required to ensure passage of a licensure bill in each state. But ultimately, even federal requirements would not stop what is now commonly occurring...people with a weekend course (or less) in ultrasound and enough money to buy a machine, are setting up shop 'taking baby pictures' or providing 'medical' sonograms without the proper education or certification. In Oregon, a state also considering a sonographer licensure bill (HR 2245), the idea for sonographer licensure came because a sonographer whose credentials were revoked but continues to provide sonograms in Oregon.

SDMS remains concerned about a state-by-state approach resulting in significant differences in licensure between the states. The legislative process is imperfect and the best of intentions can have negative impact on sonographers. However, SDMS also recognizes that it must work toward addressing the concerns raised by the states about unlicensed health care providers. Some of the key elements of a sonographer licensure bill identified during the development of the New Mexico and Oregon sonographer bills include:

- Reasonable licensure fees State recognition of national certification examinations and continuing education to reduce bureaucratic burden on sonographers
- Representation of sonographers on the regulatory board. The regulatory board should also include:
  - Physicians that use a wide variety of imaging modalities not just radiologists
  - Members of the general public (the ultimate consumers of the medical imaging)
  - Representation of knowledgeable, experienced sonographers on any disciplinary panel considering action against a sonographer
- Reduction of barriers to sonographers who wish to move from state to state or work in more than one state

The responsibility for administering the NM sonographer licensure program would rest with the New Mexico Environment Department. Although this was not the first choice in most sonographers' minds, the Environment Department currently manages the radiologic technology licensure program so the administrative infrastructure is already in place. By ensuring the creation of an advisory council that includes representation by each medical imaging and radiation therapy modality regulated, the bill helps ensure that the Department's other areas of emphasis do not detract from sonographer licensure.

Several members have also asked why the New Mexico and Oregon licensure bills link sonography with ionizing radiation and radiologic technology, when in reality, sonography is often done outside of the radiology department. Many would advocate establishing a separate "sonographer" licensing board. However, today's practical realities in state government where severely limited resources and tough economic times dictate policy decisions, a separate licensure board is simply not viable. Radiologic technology licensure programs are in place in most states and adding another imaging modality is much more feasible than creating a new licensure board and licensing system. Another downside is that each state's radiologic technology licensure act is different and will require careful consideration of how sonography can be incorporated.

Because sonographers have never had to be licensed before, they frequently do not see or understand the distinction between state licensure and national certification. National certifications or credentials issued by voluntary organizations such as ARDMS, CCI, ARRT have little legal weight. The certification process and resulting credential are valuable tools in ensuring sonographers have met minimum education and knowledge requirements but do not really regulate anyone's ability to perform sonography. In an ideal world, no additional regulation of sonography would be required. However, as everyone knows, more and more people are taking weekend courses and buying ultrasound equipment without understanding the ramifications of using ultrasound technology (e.g., ALARA).

The NM bill will help ensure that physicians receive quality sonograms, that their treatment decisions are based on the best available information, and that those paying for sonograms will not have to pay to have the study repeated because the first person who performed it did not how to perform the study properly.

Under the bill passed by the New Mexico legislature, national credentials/certifications should provide evidence of meeting the state's standards. All sonographers who are performing these critical medical imaging services in New Mexico will be required to meet national certification standards. As a result, there would be no additional exams in New Mexico beyond the national certification exams. The bill also requires the state to recognize the continuing medical education completed for national certification renewal.

The most visible impact on New Mexico sonographers will be a license fee. However, the legislation caps the license fee at $100 per two-year license. In addition, only the New Mexico Legislature can change this cap. We expect that many employers will pay or provide reimbursement for the license fee (as they often do for other licensed health care professionals). The license fees go toward administering the licensure program including paying for investigations or disciplinary actions when necessary. With approximately 350 certified sonographers in New Mexico, it will barely cover the cost of the program...but the public safety benefits far outweigh the cost! When needed, the state agency can conduct investigations of those who fail to meet the standards or who cause harm to their patients. Ad hoc disciplinary committees will be created to review and consider disciplinary actions against sonographers. The legislation ensures that when needed these ad hoc disciplinary committees include sonographers (with similar knowledge and experience), a physician, and a neutral, public member.

Another benefit related to the New Mexico bill is that despite years of discussion about the creation of 1) ultrasound practitioner, 2) advanced practice sonographer or 3) clinical sonographer specialist, there has been little movement toward establishing an advanced level sonographer. However, the New Mexico bill includes a specific provision that requires adoption of rules and regulations related to creation of advanced levels. This is an important first step toward establishment of an advanced level sonographer.

What is next for New Mexico licensure? The process of developing administrative rules to implement the legislation will now begin. New Mexico sonographers will certainly have an opportunity to review and comment on any administrative rules under consideration by the New Mexico Environment Department. The *Medical Imaging and Radiation Therapy Advisory Council* will need to be formed as well. Once the administrative rules have been implemented, sonographers in New Mexico will need to apply for licensure and pay the license fee (student sonographers will have to register but are not required to pay a license fee). At this time, it is not known how long the implementation process will take. SDMS will be working closely with state officials and sonographers as the licensure bill is implemented and will provide updates to SDMS members as information becomes available.

What is next for sonographer licensure? Sonographer licensure can be very complex. Add to this, the complexities of other imaging modalities and you have a formula for potential problems! A thorough understanding of the ramifications of the existing state statute and any proposed licensure language is critical to ensure that the intended effects are achieved without undue burden on sonographers. SDMS expects other states will consider adoption of sonography licensure in the next few years and will be working to ensure the adoption of appropriate legislation. SDMS plans to host a webinar later this year to discuss why sonographer licensure is needed and how it could affect you. If you hear of a sonographer licensure bill in your state, please contact the SDMS as soon as possible!

*** **[Click Here] to Read our Frequently Asked Questions about the New Mexico Licensure Law** ***

SDMS would like to acknowledge and thank all the SDMS members who actively worked toward the passage of the NM licensure bill, but in particular, we would like to thank Darla Matthew, Rebecca Hall, and Kathleen Brogdon for their tireless efforts.

Thinking about licensure in your state? The FIRST step is to contact the SDMS to discuss strategies for licensure! Contact Don Kerns.

ENCLOSURE # 2

Occupational Outlook Handbook, 2010-11 Edition

Diagnostic Medical Sonographers

(PDF)

Significant Points

- Job opportunities should be favorable.
- Employment will grow as sonography becomes an increasingly attractive alternative to radiological procedures.
- Hospitals employed about 59 percent of all sonographers.
- Sonographers may receive education and training in hospitals, vocational-technical institutions, colleges or universities, or the Armed Forces.

Nature of the Work

About this section

Diagnostic imaging embraces several procedures that aid in diagnosing ailments. The most familiar procedures are the x ray and magnetic resonance imaging; however, not all imaging technologies use ionizing, radiation, or radio waves. Sonography, or ultrasonography, is the use of sound waves to generate an image for the assessment and diagnosis of various medical conditions. Sonography is commonly associated with obstetrics and the use of ultrasound imaging during pregnancy, but this technology has many other applications in the diagnosis and treatment of medical conditions throughout the body.

Diagnostic medical sonographers use special equipment to direct high frequency sound waves into areas of the patient's body. Sonographers operate the equipment, which collects reflected echoes and forms an image that may be videotaped, transmitted, or photographed for interpretation and diagnosis by a physician.

Sonographers begin by explaining the procedure to the patient and recording any medical history that may be relevant to the condition being viewed. They then select appropriate equipment settings and direct the patient to move into positions that will provide the best view. To perform the exam, sonographers use a transducer, which transmits sound waves in a cone-shaped or rectangle-shaped beam. Although techniques vary by the area being examined, sonographers usually spread a special gel on the skin to aid the transmission of sound waves.

ADDITIONAL LINKS:

CAREER GUIDE TO INDUSTRIES

CAREER ARTICLES FROM THE OOQ

EMPLOYMENT PROJECTIONS

Viewing the screen during the scan, sonographers look for subtle visual cues that contrast healthy areas with unhealthy ones. They decide whether the images are satisfactory for diagnostic purposes and select which ones to store and show to the physician. Sonographers take measurements, calculate values, and analyze the results in preliminary findings for the physicians.

In addition to working directly with patients, diagnostic medical sonographers keep patient records and adjust and maintain equipment. They also may prepare work schedules, evaluate equipment purchases, or manage a sonography or diagnostic imaging department.

Diagnostic medical sonographers may specialize in obstetric and gynecologic sonography (images of the female reproductive system), abdominal sonography (images of the liver, kidneys, gallbladder, spleen, and pancreas), neurosonography (images of the brain and other parts of the nervous system), or breast sonography. In addition, sonographers may specialize in vascular sonography or cardiac sonography. (Vascular sonographers and cardiac sonographers are covered in the *Handbook* statement on cardiovascular technologists and technicians.)

Obstetric and gynecologic sonographers specialize in the imaging of the female reproductive system. Included in the discipline is one of the more well-known uses of sonography: examining the fetus of a pregnant woman to track the baby's growth and health.

Abdominal sonographers inspect a patient's abdominal cavity to help diagnose and treat conditions primarily involving the gallbladder, bile ducts, kidneys, liver, pancreas, spleen, and male reproductive system. Abdominal sonographers also are able to scan parts of the chest, although studies of the heart using sonography usually are done by echocardiographers.

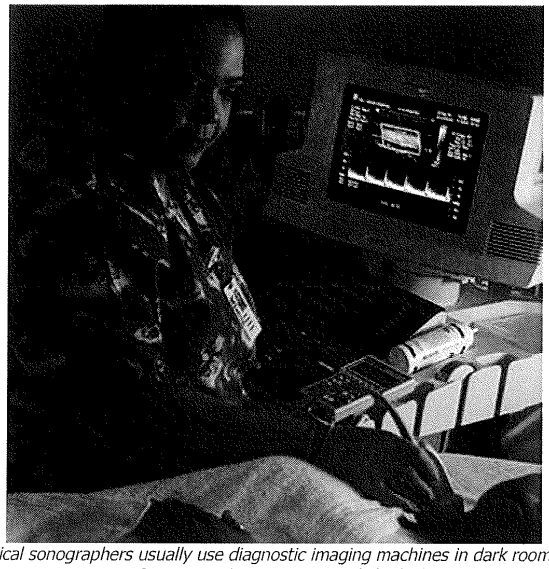
Neurosonographers focus on the nervous system, including the brain. In neonatal care, neurosonographers study and diagnose neurological and nervous system disorders in premature infants. Like other sonographers, neurosonographers operate transducers to perform the sonogram, but they use frequencies and beam shapes different from those used by obstetric and abdominal sonographers.

Breast sonographers use sonography to study diseases of the breasts. Sonography aids mammography in the detection of breast cancer. Breast sonography also is used to track tumors, monitor blood supply conditions, and assist in the accurate biopsy of breast tissue. Breast sonographers use high-frequency transducers made exclusively to study breast tissue.

Work environment. Sonographers typically work in healthcare facilities that are clean. They usually work at diagnostic imaging machines in darkened rooms, but they also may perform procedures at patients' bedsides. Sonographers may be on their feet for long periods of time and may have to lift or turn disabled patients.

Some sonographers work as contract employees and may travel to several healthcare facilities in an area. Similarly, some sonographers work with mobile imaging service providers and travel to patients and use mobile diagnostic imaging equipment to provide service in areas that otherwise would not have access to such services.

Most full-time sonographers work about 40 hours a week. Some sonographers work overtime. Also, sonographers may have evening and weekend hours when they are on call and must be ready to report to work on short notice.



Diagnostic medical sonographers usually use diagnostic imaging machines in dark rooms, but may also perform procedures at a patient's bedside.

Training, Other Qualifications, and Advancement

About this section

Diagnostic medical sonography is an occupation to which there are multiple paths of entry. Formal education in sonography, training, or a combination of these are accepted by employers. Employers do prefer sonographers who have received education from an accredited program or completed training in an accredited practice, and who are registered.

Education and training. There are several avenues for entry into the field of diagnostic medical sonography. Sonographers may train in hospitals, vocational-technical institutions, colleges or universities, or the Armed Forces. Some training programs prefer applicants with experience in other healthcare professions or high school graduates with courses in mathematics, health, and science.

Colleges and universities offer formal training in both 2-year and 4-year programs, resulting in either an associate or a bachelor's degree. Two-year programs are the most prevalent. Coursework includes classes in anatomy, physiology, instrumentation, basic physics, patient care, and medical ethics. In 2008, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited over 150 training programs. Accredited programs are offered by colleges and universities. Some hospital programs are accredited as well.

A few 1-year programs that typically result in a vocational certificate also are accepted as proper education by employers. These programs are useful usually only for workers already employed in a healthcare occupation who seek to increase their marketability by training in sonography.

Certification and other qualifications. No States require licensure in diagnostic medical sonography. However, sonographers may become credentialed by one of the professional certifying bodies. Most employers prefer to hire registered sonographers because registration provides an objective measure of an individual's professional standing. To become registered, one must first become eligible to take the examination by completing the proper education, training, or work experience. The exam typically includes a physics and instrumentation exam in a sonography specialty. Typically, sonographers must

complete a required number of continuing-education hours to maintain registration. For specific details on credentialing, contact the certifying organization.

The American Registry for Diagnostic Medical Sonography (ARDMS) certifies each person who passes the exam as a Registered Diagnostic Medical Sonographer (RDMS). This credential can be obtained for several different specialty areas like the abdomen, breast, or nervous system. The ARDMS also credentials cardiac and vascular sonographers. The American Registry of Radiologic Technologist offers credentials in breast and vascular sonography. The Cardiovascular Credentialing International credentials cardiac sonographers. (Vascular sonographers and cardiac sonographers are covered in the *Handbook* statement on cardiovascular technologists and technicians.)

Sonographers should have good communication and interpersonal skills, because they must be able to explain technical procedures and results to their patients, some of whom may be nervous. Good hand-eye coordination is particularly important to obtaining quality images. It is very important that sonographers enjoy lifelong learning, because continuing education is crucial to workers in the ever-changing field of diagnostic medicine.

Advancement. Sonographers can seek advancement by obtaining competency in more than one specialty. For example, obstetric sonographers might seek training in abdominal sonography to broaden their opportunities and increase their marketability. Sonographers also may seek multiple credentials—for example, being both a registered diagnostic medical sonographer and a registered diagnostic cardiac sonographer.

Sonographers may advance by taking supervisory, managerial, or administrative positions.

Employment

About this section

Diagnostic medical sonographers held about 50,300 jobs in 2008. About 59 percent of all sonographer jobs were in public and private hospitals. The remaining jobs were typically in offices of physicians, medical and diagnostic laboratories, and outpatient care centers.

Job Outlook

About this section

Faster than average employment growth is expected. Job opportunities should be favorable.

Employment change. Employment of diagnostic medical sonographers is expected to increase by about 18 percent through 2018—faster than the average for all occupations. As the population continues to age, there will be an increasing demand for diagnostic imaging. Additional job growth is expected as healthcare providers increasingly utilize ultrasound imaging as a safer and more cost-effective alternative to radiological procedures. Ultrasound imaging technology is expected to evolve rapidly and spawn many new sonography procedures, enabling sonographers to scan and image areas of the body where ultrasound has not traditionally been used.

Hospitals will remain the principal employer of diagnostic medical sonographers. However, employment is expected to grow more rapidly in offices of physicians and in medical and diagnostic laboratories. Health care facilities such as these are expected to increase in number because of the strong shift toward outpatient care, encouraged by third-party payers and made possible by technological advances and less expensive ultrasound equipment that permit more procedures to be performed outside of hospitals.

Job prospects. Job opportunities should be favorable. In addition to job openings from growth, some openings will arise from the need to replace sonographers who retire or leave the occupation permanently. However, job opportunities will vary by geographic area. Sonographers willing to relocate will have the best job opportunities. Sonographers with multiple specialties or multiple credentials also will have good prospects.

Projections Data

About this section

Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2008	Projected Employment, 2018	Change, 2008-18		Detailed Statistics
				Number	Percent	
Diagnostic medical sonographers	29-2032	50,300	59,500	9,200	18	[PDF] [XLS]

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

Earnings

About this section

The median annual wage of diagnostic medical sonographers was $61,980 in May 2008. The middle 50 percent of sonographers earned wages between $52,570 and $73,680 a year. The lowest 10 percent earned less than $43,600, and the highest 10 percent earned more than $83,950. Median annual wages of diagnostic medical sonographers in May 2008 were $62,340 in offices of physicians and $61,870 in general medical and surgical hospitals.

FOR THE LATEST WAGE INFORMATION:

THE ABOVE WAGE DATA ARE FROM THE OCCUPATIONAL EMPLOYMENT STATISTICS (OES) SURVEY PROGRAM, UNLESS OTHERWISE NOTED. FOR THE LATEST NATIONAL, STATE, AND LOCAL EARNINGS DATA, VISIT THE FOLLOWING PAGES:

DIAGNOSTIC MEDICAL SONOGRAPHERS

Related Occupations

About this section

Health care occupations with similar diagnostic and treatment responsibilities include:

Cardiovascular technologists and technicians

Clinical laboratory technologists and technicians

Nuclear medicine technologists

Radiologic technologists and technicians

Sources of Additional Information

About this section

DISCLAIMER:

LINKS TO NON-BLS INTERNET SITES ARE PROVIDED FOR YOUR CONVENIENCE AND DO NOT CONSTITUTE AN ENDORSEMENT.

For information on a career as a diagnostic medical sonographer, contact:

- Society of Diagnostic Medical Sonography, 2745 Dallas Pkwy., Suite 350, Plano, TX 75093-8730. Internet: http://www.sdms.org

For information on becoming a registered diagnostic medical sonographer, contact:

- American Registry for Diagnostic Medical Sonography, 51 Monroe St., Plaza East One, Rockville, MD 20850-2400. Internet: http://www.ardms.org

For certification information, contact:

- American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120-1155. Internet: http://www.arrt.org

For more information on ultrasound in medicine and accredited practices, contact:

- American Institute of Ultrasound in Medicine, 14750 Sweitzer Lane, Suite 100, Laurel, MD 20707. Internet: http://www.aium.org

For a current list of accredited education programs in diagnostic medical sonography, contact:

- Joint Review Committee on Education in Diagnostic Medical Sonography, 2025 Woodlane Dr., St. Paul, MN 55125-2998. Internet: http://www.jrcdms.org
- Commission on Accreditation of Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org

O*NET-SOC Code Coverage

About this section

GET MORE INFORMATION FROM O*NET—THE OCCUPATIONAL INFORMATION NETWORK:

O*NET PROVIDES COMPREHENSIVE INFORMATION ON KEY CHARACTERISTICS OF WORKERS AND OCCUPATIONS. FOR INFORMATION ON A SPECIFIC OCCUPATION, SELECT THE APPROPRIATE LINK BELOW. FOR MORE INFORMATION ON O*NET, VISIT THEIR HOMEPAGE.

- DIAGNOSTIC MEDICAL SONOGRAPHERS (29-2032.00)

Suggested citation: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2010-11 Edition*, Diagnostic Medical Sonographers, on the Internet at http://www.bls.gov/oco/ocos273.htm (visited *January 07, 2012*).

Last Modified Date: June 16, 2010

WEST VIRGINIA LEGISLATIVE AUDITOR
PERFORMANCE EVALUATION & RESEARCH DIVISION

Building 1, Room W-314, State Capitol Complex, Charleston, West Virginia 25305

telephone: 1-304-347-4890 | www.legis.state.wv.us /Joint/PERD/perd.cfm | fax: 1- 304-347-4939