



ANGELS



2012

ANNUAL REPORT

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On The Cover

Maggie Larrimer, whose care and wellbeing is overseen by the ANGELS program.

Leadership

Where do you see yourself in 10 years? Countless individuals pondering what will come of life in the future have uttered this question. Ten years ago, had this question been posed to me, I might have dreamed of a statewide landscape where high-risk pregnant women could receive the care they need, but never would I have dreamed it would have penetrated so deep and helped so many women in need.

Coming upon ANGELS' 10th birthday, we have a lot to celebrate. In our near decade-long partnership with Arkansas Medicaid and the Arkansas Medical Society, we have penetrated the state with evidence-based obstetrical and neonatal guidance, improved access to high-risk obstetrical care for all Arkansas women, and driven more at-risk pregnancies to deliver at advanced centers where such babies statistically stand the greatest chance for survival. What's the end result? More women served, more lives saved.

The next 10 years will see ANGELS expanding, with a very likely trend toward at-home monitoring and mobile health technologies. ANGELS will continue to be recognized as a national model for high-risk obstetrical telemedicine, and more hospitals will replicate the ANGELS model in their specialties. In the next 10 years, I hope to see the ANGELS staff meet the needs of untold numbers of women and infants, as they have so expertly done this past decade.

As evidenced through this 2012 ANGELS Annual Report, our collaborative program thrives in providing timely, evidence-based solutions and care in Arkansas. To our partners, providers and staff, I salute you for a job so exquisitely done. I think our patients would whole-heartedly agree. So as we get ready to celebrate, we know it's about the countless birthdays we've already celebrated since we began that continues to make life happen.

Sincerely,



Curtis L. Lowery, M.D.
ANGELS Medical Director



Overview

For almost ten years, ANGELS has pioneered telemedical approaches to answer Arkansas's high-risk obstetrical care needs. Growing from six to 30 telemedicine sites in a matter of a decade, ANGELS delivers

subspecialty care services to high-risk mothers and their fragile infants. The ANGELS' spark of innovation only grew

brighter with the invention of Arkansas e-Link, a new broadband super highway that provides a well-connected, state-of-the-art healthcare network to patients and providers in every county of Arkansas. ANGELS' widespread success enabled program leaders to attach a U.S. Department of Commerce grant for \$102 million to build the interconnected network that spans healthcare agencies throughout rural and urban communities in Arkansas. Thus, the ANGELS model of telemedicine care has been replicated across disciplines and agencies to connect infrastructures within health care, higher education, research, and public safety across a single, unified network. Nearing its completion in August 2013, Arkansas e-Link, like ANGELS, allows transmission of video, images, and

data to be used in patient care and continuing education for healthcare providers. It will foster closer educational partnerships with colleges and universities around the state to meet the demands of provider shortages, as well as increased patient enrollments. By expanding its reach through this initiative, ANGELS has changed the delivery of health care by bringing care even closer to the patient and their local providers, while breaking down silos of care, building diverse partnerships, and demonstrating how specialty services and educational support can strengthen any community. Arkansas's payers, providers, and patients have also benefited by interconnected communities. In effect, the ANGELS model has provided the blueprints necessary for all of the state's patients to easily access specialty health care.

The last 10 years were just the beginning, as ANGELS in future decades will only continue to pioneer new ideas in telemedicine care. The momentum behind ANGELS is realized only through the continued support and partnerships of everyone around the state, who recognize that ANGELS' dream for improved health in Arkansas could be a reality when everyone believes.

The ANGELS mission is to ensure that every woman in Arkansas at risk of having a complicated pregnancy receives the best possible perinatal care.

Leadership



Curtis Lowery, M.D.
ANGELS Medical Director



Tina L. Benton, R.N.
ANGELS Program Director



Judith McGhee, M.D., M.P.H.
Medical Director, Division of
Medical Services, AR DH



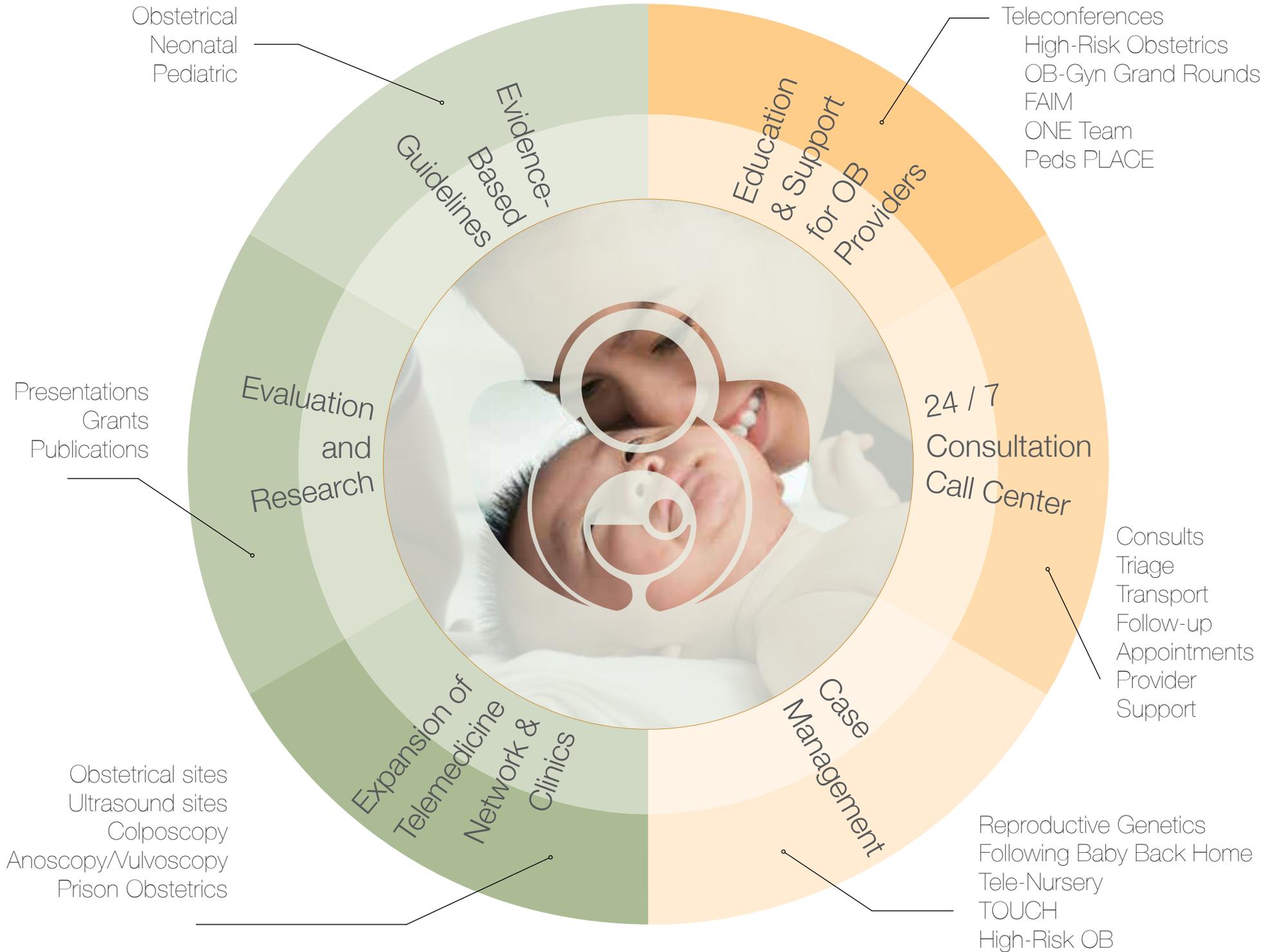
William E. Golden, M.D.
Division Director, Division of
Medical Services, AR DHS



Sheena Olson
Assistant Director, Division of
Medical Services, AR DHS



Roy Kitchen, M.B.A.
ANGELS Business
Administrator



Interactive video teleconferences, webinars, and live-streaming video provide the capability of distance learning and collaboration unheard of just a few short years ago. Physicians, nurses, other healthcare professionals, and even patients can participate from many distant sites in educational events previously offered only in an academic medical center environment.

The mission of ANGELS' continuing education is to provide

Education & Support

easily accessible evidence-based continuing education that is available to all healthcare providers in Arkansas who care for mothers and their babies.

To support these healthcare providers, ANGELS provides routinely scheduled teleconferences, such as High-Risk Obstetrics Case Conference, ONE Team Nursing Teleconference, Fetal

Anomaly Interdisciplinary Management (FAIM), Peds PLACE, and Obstetrics & Gynecology Grand Rounds. In addition to these scheduled teleconferences, ANGELS provides special continuing education events throughout the year. In 2012, ANGELS provided over 11 special events on a wide variety of topics from unexpected delivery, to review courses for nurses preparing for national certification in obstetrics, normal newborn care, high-risk newborn care, or postpartum care.

Uniform communication is key in preventing errors in the care and management of the laboring patient and the newborn. National educational programs, such as, AWHONN fetal heart monitoring courses, Sugar, Temperature, Airway, Blood pressure, Lab work, and Emotional support (STABLE), and NRP are provided to hospitals through ANGELS education outreach. These national programs have consistent terminology and allow healthcare providers to "speak the same language" no matter where the patient is being cared for in Arkansas.

Educational Team



Sarah Knder, D.N.P., A.P.N.



Erin Bush, MAIOC, B.S.N., R.N.



Adam Cherepski, ME.d.



Keith Freeman, ME.d.



Kesha James, M.A.



Amy Moses, M.S.Ed.



Barbara Smith, R.N., C.P.C.

28th Annual Perinatal Conference

The 28th Annual Conference on Perinatal Care: Update 2012 was held at the Embassy Suites Hotel in Little Rock. Attendees included 21 physicians and 164 other obstetrical and neonatal healthcare workers.

Key discussions included:

- New approaches to prevention and treatment of preterm birth
- Detection, treatment, and outcomes of infants with congenital cardiac anomalies
- Trends in perinatal medicine
- Care of selected medical problems in perinatal medicine

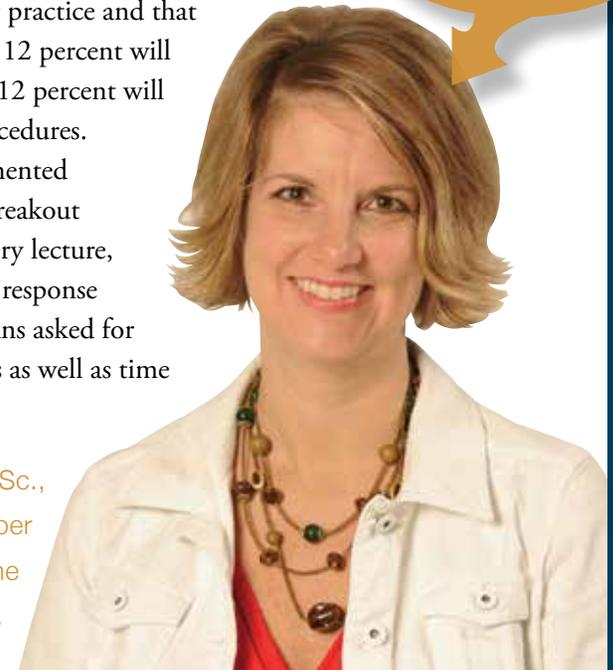
Eighty-one percent of attendees who evaluated the conference reported their knowledge and competence was increased and that their performance will improve as well as patient outcomes.

Of non-MD attendees, 60 percent felt this conference validated their current practice, and thus, no change in their practice is needed. Twenty-one percent reported that based on conference information, they will change patient management; 26 percent will revise protocols, policies, and procedures.

Of the physician attendees, 75 percent felt the conference validated their current practice and that no changes are needed. However, 12 percent will change patient management and 12 percent will revise protocols, policies, and procedures.

Suggestions that will be implemented for future conferences are more breakout sessions, utilize case studies in every lecture, and consideration of an audience response system for some lectures. Physicians asked for kinesthetic learning opportunities as well as time to network with the experts.

Stephanie Wyatt, M.N.Sc.,
A.P.N. is just one staff member
who provided education to the
2012 attendees.



ANGELS
Award for Outstanding
Service in Obstetrical
Nursing for 2012

Awards

ANGELS Women's and Children's Health Champion Award

Randy Lee, R.N., M.P.H.
Director, Center for Local Public Health
Department of Health
Little Rock, AR



ANGELS Award for Outstanding Service in Neonatal Nursing

Amanda Bondurant, R.N.C.
Washington Regional Medical Center
Fayetteville, AR



ANGELS Award for Outstanding Service in Obstetrical Nursing

Stephanie Wyatt, M.N.Sc., A.P.N.
UAMS
Little Rock, AR



Hawks-Workman Award

Nafisa Dajani, M.D.
UAMS, Obstetrics & Gynecology
Maternal Fetal Medicine
Little Rock, AR



Teleconferences Offered Each Month

Teleconference	Dial-In Number	Date	Time	Continuing Education Event
ONE Team Nursing Teleconference	068773	1st Friday	Noon - 1:00 p.m.	ONE Team – Obstetrical Nursing
	068773	2nd Friday	Noon - 1:00 p.m.	ONE Team – Neonatal Nursing
	068773	3rd Friday	Noon - 1:00 p.m.	ONE Team – Advanced Practice Nursing in Primary Care & Women’s Health; RNs welcome!
	068773	4th Friday	Noon - 1:00 p.m.	ONE Team – Pediatric Nursing – In collaboration with Arkansas Children’s Hospital
OB/GYN Grand Rounds	Call 501-686-8666 to register	Wednesday Weekly	8 - 9:00 a.m.	OB/GYN Grand Rounds
HROB Teleconference	Call 501-526-7178 to register	Thursday Weekly	7 - 8:00 a.m.	High-Risk Obstetrics Teleconference
FAIM	Call 501-686-8666 to register	4th Friday	7:30 - 8:30 a.m.	FAIM (Fetal Anomalies Interdisciplinary Management - in collaboration with Arkansas Children’s Hospital)
PedsPLACE	070231	Thursday Weekly	12:10 - 1:10 p.m.	In collaboration with Arkansas Children’s Hospital

For further information, email CDHeducation@uams.edu

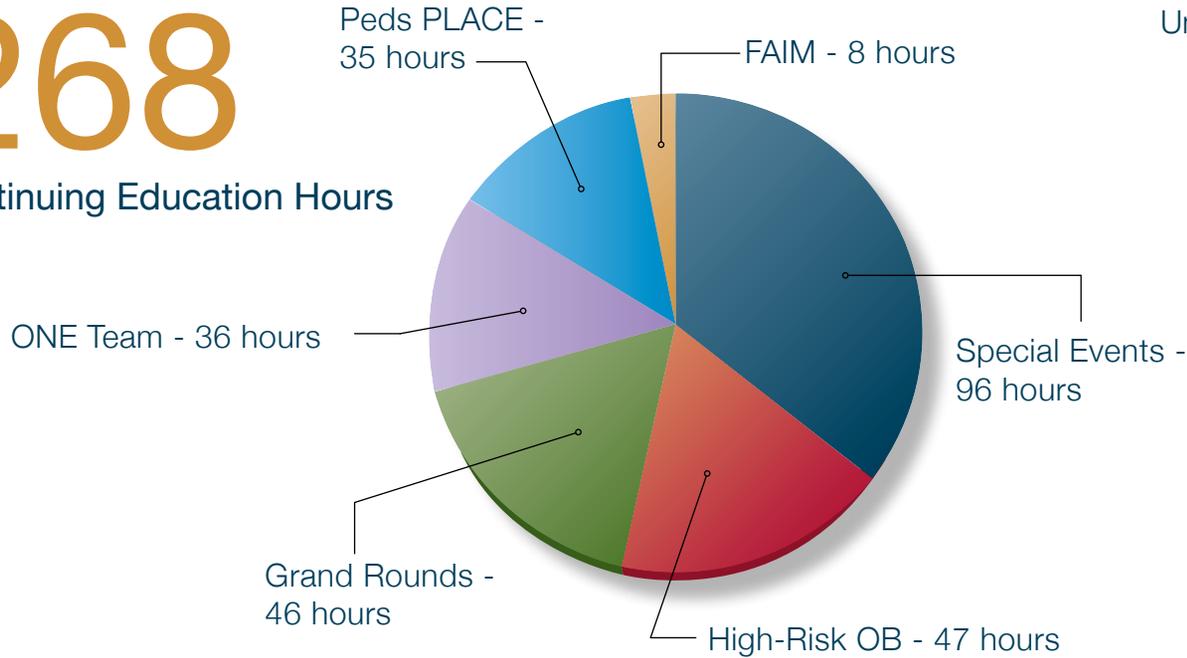
Teleconference topic schedules and ANGELS’ obstetrical, neonatal, and pediatric guidelines now just a “click” away!
<http://angels.uams.edu>



2012 Teleconferences Stats

Total
268

Continuing Education Hours



Highest attended special event via IAV
48 sites

Special Event Topics

- Breastfeeding Mini Course
- Unexpected Delivery
- Antenatal Clinic Fetal Monitoring
- AWHONN Fetal Heart Monitoring Courses
- Perinatal Conference
- Women's Health Update
- Basic Fetal Monitoring
- STABLE
- Review Course for RNs in the NICU
- Review course for RNs in the Postpartum/Nursery
- OB Emergency Drills



Sarah Rhoads Kinder,
D.N.P., Ph.D, A.P.N.





Barbara Smith, R.N., C.P.C.

Reaching out through a growing real-time, interactive video network, ANGELS continues to develop

Evidence-Based Guidelines

evidence-based guidelines with the combined expertise of physicians across Arkansas. This

collaborative forum provides healthcare providers an opportunity to define best practices for selected conditions of high-risk cases.

To date:

2,426 healthcare providers and
660 physicians from Arkansas (993 total around the world) have registered.

For 2012

216 new registrants in Arkansas
122 new healthcare providers outside of Arkansas



4,473 hits to the ANGELS
Guidelines website in 2012.

from 40 states in the US
and from

33 countries.

Outside of the US, the following countries are represented by our guidelines registrants.

- | | | |
|----------------------|----------------|----------|
| United Arab Emirates | Viet Nam | Moldova |
| Saudi Arabia | Columbia | Ireland |
| Philippines | Mexico | Taiwan |
| Albania | Indonesia | Canada |
| Egypt | Ecuador | Nigeria |
| India | Spain | Qatar |
| Azerbaijan | France | Slovakia |
| British Columbia | Australia | Ukraine |
| Ireland | Thailand | Japan |
| Germany | Turkey | Brazil |
| Italy | Lithuania | |
| | United Kingdom | |

New for 2012:
Registrants from the
Ukraine, Japan, and
Brazil

190 obstetrical, neonatal,
and pediatric guidelines
available on-line.

Consultation & Appointment Call Centers



Tammy Bowen, R.N., the new Call Center director and Sue Ramsey, R.N., one of the many highly trained nurses working the consultation call center.

611 telephone consults
with providers

Health Units and ANGELS Call Center Collaboration

Project: ANGELS Call Center providing after-hours triage for Arkansas Department of Health maternity patients

Purpose: Health Department patients utilization of emergency departments (EDs) for prenatal care when Local Health Units (LHUs) are closed is inappropriate due to the high cost associated with ED care. Extended waits at busy EDs can also deter patients from needed visits. Use of EDs to address minor problems that can be resolved via phone triage and require simple treatment is a wasteful use of already scarce health resources.

- The ANGELS Call Center (ACC) provides a place for the maternity patients of the Arkansas Department of Health (ADH) to call for help when the LHUs is not open and during clinic hours when a provider of maternity services is not available.
 - Maternity patients calling the call center speak to an experienced triage nurse to discuss medical problems or pregnancy questions. The triage nurse provides care advice and health information with the goal of reducing unnecessary ED visits.
 - Local Health Units notify their maternity patients of new after-hours service through ANGELS using fliers and verbal instruction. The patients call direct, using the ANGELS number on the flier.
 - The call center faxes patient triage results to the maternity patient's LHU and ADH Women's Health Section on the next business day.
 - Services cover all Arkansas Health Departments that provide maternity care.
- As of the end of 2012, the southwest and northwest regions of the state are all trained and receiving services.



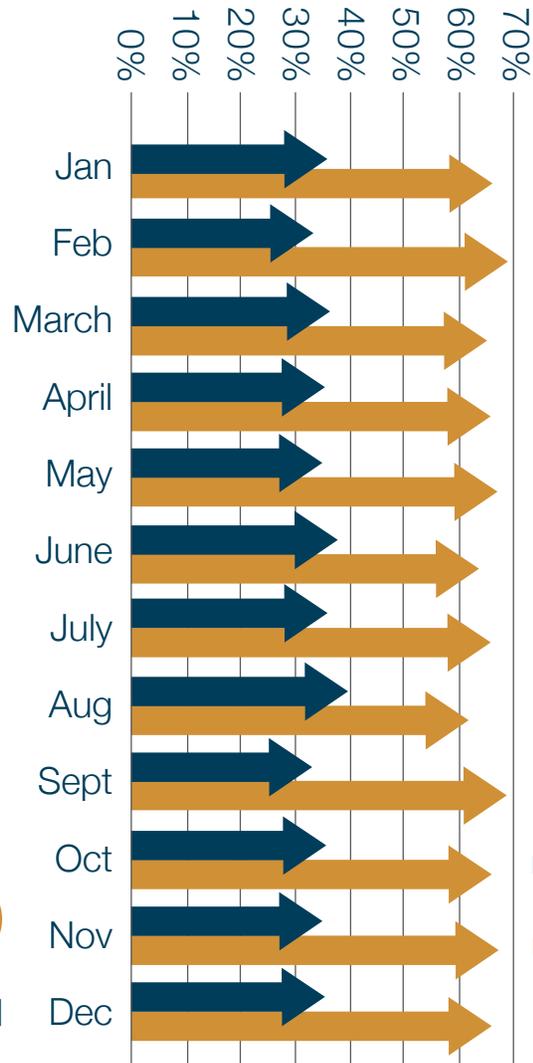
Donna Williams, R.N.

Total Urgent Care Recommendations Avoided



148,524

total number of nurse calls



Spanish Translation available

Trends in Triage Outcomes

- Total Urgent Care (sent to ED or L&D)
- Total Non-Urgent Care (Home Care, Rx cal in, Appt Rec, other)

Total 2,298

Urgent care visits avoided



Tammy Bowen

wanted to become a nurse after having her first child.

Her passion has led her to changing the lives of babies and their families in Arkansas by overseeing UAMS' ANGELS Call Center.

"I had a great nurse when I was pregnant and thought that if I could do for just one person what that nurse did for me, I would be doing something great with my life," Bowen said.

Bowen began her nursing career as a labor and delivery nurse at Baptist Memorial Medical Center in North Little Rock. She has since served as a nurse at UAMS' Myeloma Institute for Research and Therapy, and clinical services manager in UAMS Labor and Delivery. She began work in the ANGELS Call Center as a nurse project manager.

"I came to the ANGELS Call Center through fascination with telemedicine and a profound respect for Dr. Curtis Lowery and Tina Benton," she said. "Telemedicine is such a tremendous resource for healthcare delivery that I have wanted to learn more and do more with it."

Bowen now provides administrative oversight of the UAMS Physician Call Center, ANGELS Call Center, and the AR SAVES Call Center for stroke care.

Telemedicine Network and Clinics

Telemedicine is the delivery of medical care or services from a distant site. Telemedicine utilizes interactive video and audio teleconferencing technology that allows a physician at UAMS to see the patient sonogram, and/or colposcopy in real time (almost at the same speed as in person). When needed, ANGELS utilizes specialized

ultrasound equipment that digitally transfers a sonogram image to UAMS. Additionally, ANGELS uses special devices to perform colposcopies via telemedicine to allow for remote cervical examination and biopsy.

Many of the only board-certified maternal-fetal medicine specialists and genetic counselors in Arkansas are at UAMS. ANGELS brings this consultative expertise to patients and community-based physicians across the state, saving transportation cost and time.



Dr. W.C. Hitt and Gordon Low, A.P.N. on a video conference with Delia James, A.P.N.

1,629 Colposcopy exams

identified 303 women with high-grade lesions requiring treatment

and 5 diagnosed with Cancer

Colposcopy APN Team



Becca Austin, A.P.N.



Tina Butler, A.P.N.



Tesa Ivey, A.P.N.

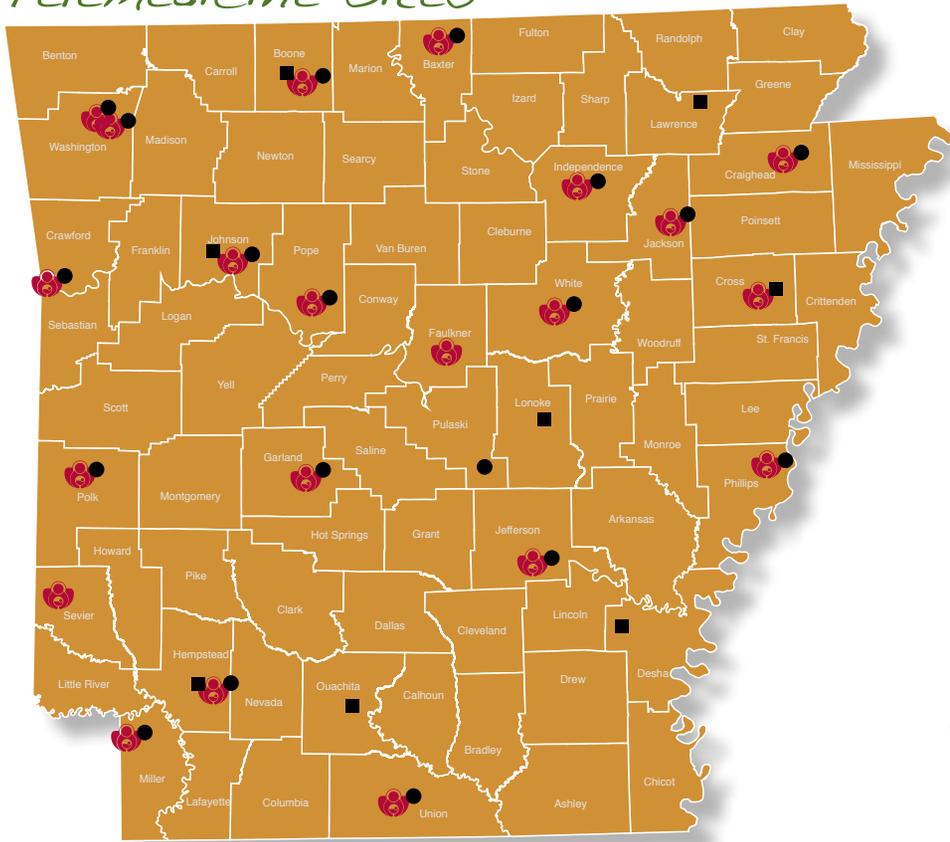


Delia James, A.P.N.



Gordon Low, A.P.N.

Telemedicine Sites



 Obstetrical sites
  Ultrasound clinics
  Colposcopy sites

Cities with Multiple Sites

- Jonesboro - Craighead CHU
Northeast AHEC
St. Bernard's Imaging Center
- Batesville - Independence County Health Dept.
White River Medical Center
- Fort Smith - Fort Smith AHEC
St. Edward's Mercy Hospital
Sebastian County Health Dept.
- Clarksville - Johnson County Health Department
Johnson Regional Medical Center
- Russellville - Millard-Henry Clinic
Pope County Health Dept.
- Texarkana - Miller County Health Dept.
Southwest AHEC

Total
5,221 telemedicine visits
 in 2012
2,062 telemedicine OB
 ultrasound visits
130 Fetal
 echocardiogram
 visits

Telemedicine Team



Rosalyn Perkins, M.N.Sc., A.P.N.



Mandi Dixon, R.D.M.S.



Stacie Ford, R.N.



Tesa Ivey, M.N.Sc., A.P.N.



Lori Heil, R.D.M.S.

UAMS/CDH HIV Telemedicine Clinic

Of the 5,300 people living with HIV infection in Arkansas, 2,800 (52 percent) were “out of care,” meaning they had not had any lab evaluation or a medical visit for their HIV infection in at least a year. Forty percent of Arkansas residents newly diagnosed with HIV either have AIDS or will have AIDS within a year, which demonstrates the need for routine HIV testing. After diagnosis, many patients in rural Arkansas may have to travel two to three hours to reach their HIV specialist. Several studies demonstrate better outcomes with this disease if the patient’s provider is close to home and if that provider has the experience gained by having at least 25 patients with HIV in their practice.

HIV specialists at UAMS have helped address these needs by seeing HIV patients via telemedicine. These patients appreciate the benefits of seeing a provider who is familiar with preventing the infections associated with the disease and being able to manage possible side effects from medications. Patients also appreciate the savings in gas money and not having to take an entire day away from their job and family to travel. UAMS infectious disease and obstetrics faculty have done telemedicine consults for pregnant patients with HIV and their delivering providers since 2010.

Without any medication or specialized care for a pregnant woman with HIV, the risk of HIV infection for the baby is about one in four. By starting HIV medications early in pregnancy, following expert guideline recommendations during delivery, and with postpartum care and medication for their baby, that risk becomes less than 2 percent. The care provided by the team of UAMS experts to these women and their infants have achieved similar excellent results. In addition, several telehealth programs have been presented by adult and pediatric infectious disease faculty to physicians, APNs, and nurses statewide to update them on guidelines to prevent HIV in the newborn and the need for HIV testing for all women during prenatal care.

UAMS infectious disease faculty also see HIV patients in UAMS’ regional clinics throughout the state with their family practice residents in attendance on site, helping them manage their newly diagnosed patients and also more complex patients who have had HIV infection for a decade or more. This



Physician Assistant Jon Allen and Dr. Keyur Vyas discuss a new medication regime for an HIV patient and her delivering provider during a telemedicine consult.

effective treatment has prevented complications of HIV disease and many of the side effects of drugs used to treat the disease.

Lifelong effective treatment with HIV medications has been shown to prevent hospitalizations and ER visits and to increase quality of life for patients living with HIV. Patients with an undetectable viral load on HIV medications who also practice safer sex are also very unlikely to infect others with HIV, protecting their loved ones from infection. Family practice residents who see their patients with these faculty experts will also take that knowledge with them when they manage HIV patients in their communities after their residencies.

An HIV telemedicine consult can be arranged by contacting ANGELS at (501) 526-7425.

Without any medication or specialized care for a pregnant woman with HIV, the risk of HIV infection for the baby is about one in four ... by starting HIV medications early in pregnancy, that risk becomes less than 2 percent.

Tele-educational Device **BRIDGES GAP** Between Pediatricians

Time and distance are no longer issues for UAMS pediatricians and private practice pediatricians in Arkansas, the country, and even the world when it comes to sharpening each other's skills thanks to Peds PLACE, a tele-educational endeavor headed by UAMS' Department of Pediatrics and UAMS' Center for Distance Health.

Peds PLACE (Physician Learning and Collaborative Education), organized by co-directors Bryan Burke, M.D., a UAMS pediatrician, and Whit Hall, M.D., a UAMS neonatologist, is a weekly teleconference powered by Jabber, a device new to UAMS with instant messaging, video, voice messaging, desktop sharing, and conferencing capabilities.

"There is no other place in the country that is doing something quite like this," Burke said. "Doctors from across the state and country can sit in the comfort of their office and talk with other pediatricians. It's like our own virtual peer group."

Since UAMS has acquired Jabber with the help of the Betty A. Lowe grant, Burke and Hall have partnered with Arkansas Children's Hospital to reach out to pediatric private practices in Arkansas cities such as Bryant, North Little Rock, Fort Smith, Hot Springs, Harrison, Texarkana, Greenbriar, and Conway to discuss new pediatric practices and hone their skills.

UAMS is working to grow Peds PLACE by connecting with all Little Rock pediatric practices, an additional North Little Rock practice, and practices in Pine Bluff, Hope, and Helena. Other practices that tune in via other live-streaming programs include Fayetteville, Jonesboro, Mountain Home, Mena, Camden, and Russellville. Practices in North Carolina, Tennessee, New York, and even Israel and Venezuela also participate.



Shannon Lewis, R.N. and Dr. Bryan Burke discuss pediatric practices with Michael Manley, R.N. via an iPad and a new tele-educational device, Jabber.

During each Peds PLACE, physicians tune in to hear a different pediatrician talk about topics based on the interest or need of the private practitioners. The topics can range from simple illnesses such as strep throat to serious conditions such as premature births and seizures.

Burke hopes to see Peds PLACE fill in the educational gaps that private pediatric practitioners may have due to the complexities of running their own offices.

"One of the difficult things about being on the front lines like these doctors is the fact that they have a more difficult time gaining access to quality continuing medical education," Burke said. "Peds PLACE allows them to stay up to date on the latest information so they can provide the best possible health care to their patients."

Even though Peds PLACE is designed to reach out to private practitioners, Burke says pediatricians at large hospitals always have something to learn from private offices.

"We learn much more from the private practices than they do from us," he said. "Knowledge flows in both directions. Peds PLACE is structured so that everyone is an equal."



Whit Hall couldn't imagine becoming a doctor when he was growing up, and especially not a neonatologist. In fact, he was set on engineering until his junior year in college when he became interested in

cardiology, which eventually led to a passion for working with children.

Hall trained in general pediatrics at Arkansas Children's Hospital and then opened a private practice in Little Rock for 13 years. After, he completed a neonatology fellowship and then became medical director of the UAMS Intensive Care Nursery, serving for 15 years. Around 2009, he decided to focus more on pediatric research and teaching.

"I love interacting with pediatric and neonatology residents. I like that they come into the nursery not knowing anything about premature babies, and after only a month, they are able to practice good neonatology," he said.

Hall serves as co-director of Peds PLACE, a weekly pediatric teleconference designed to connect pediatricians all over Arkansas. He has worked to put at least 25 telemedicine units in hospital nurseries across Arkansas, thanks to a grant from the Centers of Biomedical Research Excellence program, and the National Institute of General Medical Sciences.

"We have found that telemedicine has had a huge effect on our babies in Arkansas," he said. "Telemedicine has helped us get the right baby delivered in the right hospital."

Hall serves on the boards of the UAMS Family Home, Ronald McDonald House, and the Arkansas March of Dimes.

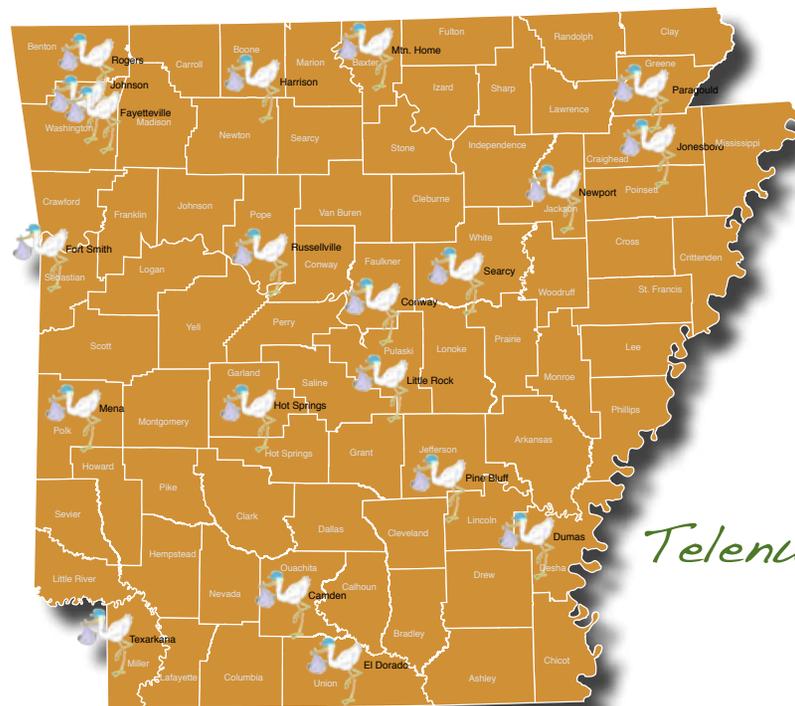
Telenursery

Telenursery is a program that has been ongoing since 2008. Telenursery occurs every Monday, Wednesday and Friday mornings for a brief census rounds at each of the 25 sites, as well as a check on availability for returning patients to their hometown hospitals. This program is led by Whit Hall, M.D., a professor of neonatology.

Telenursery also offers a variety of things: follow-ups on transferred patients, video connection with a post-partum mother at a delivering facility to her baby at Arkansas Children's Hospital, and consults by neonatologists or other pediatric sub-specialists.

Hall is able to talk directly with a referring physician about a patient. He is able to visualize the patient as well as view x-rays and make recommendations for transporting patients to UAMS versus co-managing care at the referring hospital.

A pediatric geneticist has also seen patients in nurseries using telemedicine. The specialist is able to talk with the referring physician, see the patient, recommend appropriate genetic testing, talk with families about these usually complex cases, and make follow-up visits. Others who have utilized this technology are sub-specialists in pediatric infectious disease and pediatric urology.



Telenursery Sites

ANGELS Helps DELIVER Better Births

At the North Arkansas Regional Medical Center in Harrison, ANGELS has made a difference where it counts — better outcomes for pregnant mothers and their babies.

“It’s been a god-send,” obstetrician Dawn Phelps, M.D., said. “We have a lot of high-risk pregnancies up here, and without ANGELS’ help, the outcomes would be much poorer.”

She said the region of Arkansas around Harrison has a higher prevalence of genetic health issues and morbid obesity. That sometimes means pregnancies with problems, or at least concerns.

Being able to tap into the additional genetic and medical expertise ANGELS affords means she feels she can take better care of her patients, many of whom are from low-income families.

“I have a low-income patient population, so gas money often is a problem,” Phelps said. “Driving down to Little Rock can get expensive for them.”

It saves them the cost of travel, and it saves money as well through preventive care and a better ability to anticipate and plan for complications.

“We did have one incidence with a bilateral cleft lip,” NARMC sonographer Karen Cady said. “We knew that was there before ANGELS got involved, but that’s why ANGELS became involved. It’s beneficial to the patient to be aware ahead of time, so once the baby is born, they can get the help that they need right away.”

Both Phelps and Cady said ANGELS has performed well technically, too. They encountered few if any problems with connectivity, image resolution, or audio.

“I love working with the people at UAMS,” Cady said. “They’re great to work with. They’re very helpful. If I have questions, then I sometimes can



Karen Cady, R.D.M.S.

keep them online for a few extra minutes to pick their brains a little bit about certain things I’m interested to learn.”

Vince Leist, the medical center’s CEO, said he’s very pleased with how well ANGELS has worked for pregnant mothers, infants, physicians, and staff since it began in Harrison in January 2012. He is so pleased he said he wants to step up the hospital’s involvement with the network and take even greater advantage of all its functionality.

In addition to eliminating trips for mothers, ANGELS also helps a medical center like North Arkansas Medical Center stretch limited human resources.

“Right now, we don’t have enough physicians to have an appropriately credentialed on-call team,” Leist said. “We have some med-peds folks in town, but they can’t cover it all. We’re trying hard to upgrade our nursery, and ANGELS fits right into that.”

“I love working with the people at UAMS. They’re great to work with. They’re very helpful.”

On-the-Spot **ANSWERS** Lessen Worries



Dr. John Mesko and Todd Laing, R.D.M.S.

Through ANGELS, immediate results deliver peace of mind to pregnant mothers and their families.

That's what Todd Laing, sonographer and director of radiology at Mena Regional Health System, has observed during the several years that ANGELS has been in operation there. He has worked at Mena Regional for 14 years.

"You get your results right there," Laing said. "You know that as you're scanning, they are watching. Patients can talk to the doctor or nurse practitioner during the process. They get the OK or 'Hey, we need to look further.' You get the satisfaction of knowing something that day."

Using the ANGELS telemedicine connection between Mena and Little Rock, a pregnant mother not only can save money and time by being able to consult with a UAMS maternal-fetal medicine specialist closer to home, but also being closer to home can mean less worry for her.

Laing said Little Rock and the main UAMS campus, which are 125 miles from Mena, are unfamiliar to some of the patients he has helped treat.

Navigating an unfamiliar city and large hospital complex can produce its own stress.

ANGELS has relieved hundreds of women and their families of that stress and expenses of time and money in travel.

John Mesko, M.D., and the other obstetrician in Mena deliver roughly 450 babies a year. Mesko estimated that at least a quarter of those mothers have at least one telemedicine ultrasound.

"When something suspect is seen on an ultrasound, we can clarify that by getting an ANGELS consultation done," Laing said. "They talk with someone who is a specialist and can explain to them at that time, even if there is something there, how serious it is, what the outcome will be, and what they are going to have to have done. If someone says something is wrong with your baby, it's nice to have someone there to answer questions."

That still can mean a trip to UAMS in Little Rock to receive specialized care when a mother with a high-risk pregnancy is ready to deliver. Without the screening available through ANGELS, that mother might end up giving birth at a health care facility less equipped to handle whatever the problem is, Laing said.

Having ANGELS available in rural Arkansas or in one of the state's small cities like Mena means better preplanning to have the right care in the right place when the time arrives for a mother to give birth.

"You get your results right there," ... "You know that as you're scanning, they are watching. Patients can talk to the doctor or nurse practitioner during the process. They get the OK or 'Hey, we need to look further.' You get the satisfaction of knowing something that day."

ANGELS KEEPS MOMS Close to Home

Despite having three healthy children, when she became pregnant for the fourth time, Leimomi Irvine of Texarkana, Ark., was eager to check on the health of her baby using ANGELS at UAMS Southwest in Texarkana.

One genetics counselor in Fayetteville and another at UAMS in Little Rock in early May looked at her live ultrasound and talked to her. The entire consultation took about 20-30 minutes and resulted in no bad news. It was a relief.

It was Irvine's first time to be an ANGELS patient.

"It was pretty neat how you can communicate with so many people in so many different areas," she said. "To me, it was different, but it was a good experience. I liked it."

Irvine also was glad not to have to drive to Little Rock and already has told several people about the ease and convenience of using ANGELS.

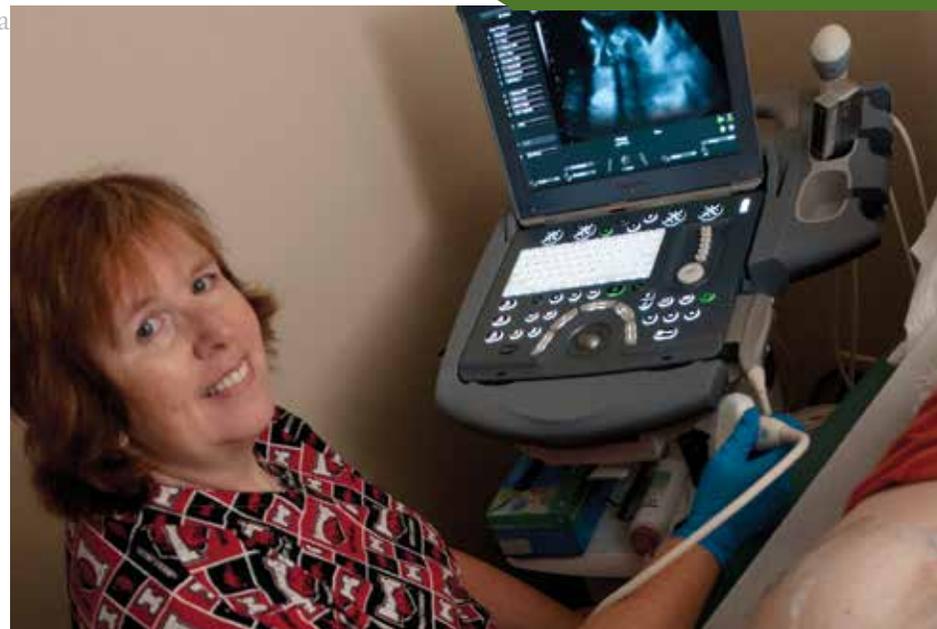
Not having to travel out of town for an in-person consultation was a major selling point for her. Patrick Evans, M.Ed., R.N., UAMS Southwest director,



Patrick Evans, M.Ed., R.N.
UAMS Southwest, Director

thinks that's also one of ANGELS' strengths.

"I think the biggest advantage for the program is keeping high-risk moms off the road," Evans said. "Being able to be managed in town is an asset to the obstetricians that practice in our communities. It is the foundation stone for where I see UAMS really making a difference around Arkansas through distance health."



Lisa Cain, R.D.M.S.

Lisa Cain, a sonographer with UAMS Southwest, has assisted with ultrasounds during ANGELS consultations almost since the start of the network more than nine years ago.

As patients have become more familiar with face-to-face video communication on cell phones and home computers in their everyday lives, they have become more comfortable with the idea of using a large, flat-screen monitor and a camera as part of a doctor's visit, she said.

Cain also has seen the relief on a pregnant mother's face once an ANGELS consultation is over.

"It's a wonderful program," she said. "I'm glad to be a part of it and offer this service here. It's not just for Medicaid patients. It's for everybody."

Evans said he has seen the satisfaction physicians, too, have with ANGELS, especially the faster decision-making process that ANGELS affords.

"Time is everything," he said. "Being expedient and facilitating a wise use of time makes really good sense. It just goes back to the fundamentals of good patient care — having a relationship with the patient and the patient having confidence in you, being able to do the right things in a timely fashion."

Case Management

Through case management methods, ANGELS has the ability to assess, plan, facilitate, and advocate for options and services to meet patients' health needs. Nurses round with the UAMS team on inpatients to gather updates and communicate this information weekly to referring physicians. Nurses coordinate physician referral appointments to UAMS OB clinics and send updates to the referring provider. Advanced practice nurses work in the OB clinics alongside physicians to manage outpatients to improve the overall experience for patient and referring provider.

Arkansas Fetal Diagnosis and Management (AFDM)

Arkansas Fetal Diagnosis and Management Program (AFDM) is a medical multidisciplinary, family-centered program designed for women who are carrying fetuses that are prenatally diagnosed with one or more major congenital anomalies or genetic/chromosome abnormalities. AFDM develops differential diagnosis, coordinates prenatal and neonatal care, and establishes treatment plans for enrolled families in collaboration with referring

On average 80+ prenatal patients at any given time

398

Total new cases admitted into the AFDM program

227

Total live deliveries at UAMS, of which

117

Newborns transferred to ACH, 120 deliveries at other locations, and 50 intrauterine fetal demises

Maternal-Fetal Medicine Team

Starting at left: Paul Wendel, M.D., Nafisa Dajani, M.D., Curtis L. Lowery, M.D., E. "Pat" Magann, M.D.

AFDM Team



Paul J. Wendel, M.D.



Ashley Ross, M.D.



Lori Gardner, R.N.



Arkansas Reproductive Genetics Team



Shannon Barringer, M.S., C.G.C.

LaJuana Whyte, R.N.

Mindy Simonson, M.S., C.G.C.

Kate Zellmer, M.S., C.G.C.

Sarah R. Green, M.S., C.G.C.

Noelle R. Danylchuk, M.S., C.G.C.

2,693

Total patient visits to the
Reproductive Genetics team

plus **2,062** visits remotely
via telemedicine

Maternal-Fetal Medicine Fellows



Adam Sandlin, M.D.



Imelda Odibo, M.D.

ANGELS Sonographers



Lisa Caine, R.D.M.S.



Mandi Dixon, R.D.M.S.



Bill Hickey, R.D.M.S.



Lynne Tate, R.D.M.S.

UAMS Sonographers



Delia James, A.P.N., serves as both a women's health nurse practitioner and a family nurse practitioner. She started working at the Arkansas Department of Health in 1980 and works three days a week at the Hempstead County Health Unit in Hope. She provides prenatal, post-partum, and intra-partum care, including family planning to adolescents and women during child-bearing years. In addition, male clients are served in both Reproductive Health and STD clinics. Peri- and post-menopausal women are served through Breast Care and Cervical Cytology Prevention (BCCCP). She provides primary health care and case management to patients alongside physicians (ADH and local) while utilizing protocols, telephone consultation, and referral.

A team approach, which includes working with public health nurses in the clinics, nutritionists, local obstetrician-gynecologists, surgeons, cardiologists, dermatologists, pediatricians, and maternal-fetal medicine specialists, allows James to follow an average OB caseload of 100 OB patients. She also sees an average of 25 reproductive health, STD, or BCCCP patients per week.

For ANGELS, James performs exams, takes biopsies and coordinates patient care a half day a week each for colposcopy and high-risk OB telemedicine clinics. She is a liaison for ANGELS with the ADH.



Delia James, A.P.N.

Outreach APN Case Management



Lisa Harmon, A.P.N.



Delia James, A.P.N.

APN Case Management Team



ANGELS' BIOGRAPHIES

Nafisa Dajani, M.D.

Nafisa Dajani has always found the challenges of medicine exciting. “The learning never stops,” Dajani said. “Helping people gives me a sense of satisfaction.”

Before joining UAMS, Dajani was in private practice in Pennsylvania. At UAMS, she is as an associate professor in the College of Medicine in the Department of Obstetrics and Gynecology. With the ANGELS program, she works in the division of maternal-fetal medicine, seeing high-risk patients in the clinic and hospital and covering labor and delivery. She evaluates pregnancies that are complicated by fetal anomalies or at risk for fetal anomalies.

Dajani also has several leadership roles at UAMS. She is in charge of the diabetes in pregnancy program and the director of the Fetal Anomalies Interdisciplinary Management (FAIM) conference, which discusses genetic syndromes and fetuses with anomalies.

Dajani loves the goals of the program. “One of the goals of ANGELS is serving the community and reaching those who need it most,” she said. “The other goal that I appreciate is the spread of knowledge that is evidence based.

The model has worked very well for Arkansas because of the people in ANGELS and their dedication.”



Lindsey Sward, M.D.



Lindsey Sward grew up in a medical household. Her father is a radiologist, and her mother is a physical therapist. Even at a young age, she was intrigued by the human body. The medical field was what she knew growing up, and she loved learning about biology, anatomy, and physiology as a student.

Sward graduated from the UAMS College of Medicine in 2009. She is a resident in the Department of Obstetrics and Gynecology working with the ANGELS program. Residents have an integral role in the program.

“A lot of times, we are the first responder to an outside physician calling ANGELS for assistance,” Sward said. In addition to taking consult calls and requests for patient transport, residents also help review the online ANGELS guidelines.

“I enjoy knowing that we provide assistance for any physician around the state that needs us,” Sward said. “It’s nice to know, as I get ready to leave UAMS and go out into the state to practice that I will be able to call ANGELS if and when I need them and have these same services available to me.”

Evaluation and Research

ANGELS continues to reach in-need women and their providers across the state. Through grants, awards, presentations and publications, ANGELS continues to be recognized for being in the forefront of care of high-risk women and education of rural providers. In the past year, ANGELS has worked diligently to contribute to the discourse regarding healthcare reform by discussing, developing, and implementing ways that telehealth and technology can put Arkansan women, their babies, and their providers on the fast track to better, more affordable care, as shown in the below accomplishments.

Articles

Manning NA, Magann EF, Rhoads SJ, Ivey TL & Williams DL. (2012). Role of Telephone Triage in Obstetrics. *Obstetrical & Gynecological Survey*, 67, 810-6.

Rhoads, S. J., Green, A.L., Lewis, S. & Rakes, L. (2012). Challenges of Implementation of a Web-camera System in the Neonatal Intensive Care Unit. *Neonatal Network*, 31, 223-28.

Grants, Presentations, and Publications



David Fletcher, M.B.A.



Sarah Rhoads, D.N.P., A.P.N.



Janet Bronstein, Ph.D.



Rachel Ott, B.A.



Laura Rakes, M.A.

Presentations on ANGELS and Telemedicine

Sarah Rhoads, DNP, PhD, APN;
Barbara Smith, RN, BSN. (2012, June) Delta Interactive Solution to Collaborate Over Video for Education and Resources (DISCOVER) Maternal Child Health (refereed presentation). AWHONN 2012 Convention, National Harbor, MD.

Sarah Rhoads, DNP, PhD, APN;
Angela Green, PhD, RN. (2012, April). Web-Cameras that Work for the NICU Nurse and Family: Evaluation of the Angel Eye Camera System. Society of Pediatric Nurses 22nd Annual Convention, Houston, TX.

John Richards, MA; Dorothy Cilenti, DrPH; Sarah Rhoads, DNP, PhD, APN. (2012, December 7) Distance Learning: Innovation with Technology. HRSA Maternal Child Health: Distance Learning – First Fridays Webinars.

Sarah Rhoads, DNP, PhD, APN. (2012, November) AETC Telehealth Training Program: Advancing training through Telehealth Technology. 2012 Ryan White HIV/AIDS Program Grantee Meeting, Washington, DC.

Sarah Rhoads, DNP, PhD, APN. (2012, October) Web-cameras: Keeping the family connected with their hospitalized neonate in the NICU. Arkansas Student Nurses Association, Little Rock, AR.

Tamara Perry, MD; Kim Miller, MCHES; Sarah Rhoads, DNP, PhD, APN. (2012, October) Telehealth—Changing health care access points and outcomes for rural Arkansans. Arkansas Student Nurses Association, Little Rock, AR.

Michael Manley, R.N. (April 2012) Arkansas Farm Bureau – Health Committee.

Curtis Lowery, MD. (May 2012) American Association of Medical Colleges – ANGELS and Healthcare Reform.

Michael Manley, R.N. (September 2012) Rural Medical Student Association.

Curtis Lowery, MD. (August 2012) 17P Grand Rounds at Health Department.

Roy Kitchen, MS. “A Non-Traditional Telemedicine Model - Providing Alternative Solutions”. 2012 American Telemedicine Association annual conference.

Roy Kitchen, MS. “Meeting Demand: Developing a Robust Telehealth Infrastructure and Paving the Way to Sustainability”. 2012 American Telemedicine Association annual conference.

Michael Manley, RN, MNsc. “Telehealth Training: Moving Past a Technology Focus to Create Patient-Centered Care”. 2012 American Telemedicine Association annual conference.

Sarah Rhoads, APN, DNP. “Facilitation of a Hospital-Based Web-Camera System: Support through an IT Help Desk”. 2012 American Telemedicine Association annual conference.

David Fletcher, MBA. “Improving Access to Care for Hispanic Patients with Limited English Proficiency by Utilizing Basic Telemedicine Tools”. 2012 American Telemedicine Association annual conference.

Terri Imus, RN. “Utilization and Training of a Statewide Trauma Image Repository”. 2012 American Telemedicine Association annual conference.

Stacie Ford, RN. “Cardiovascular Care for OB Patients via Telemedicine”. 2012 American Telemedicine Association annual conference.

Roy Kitchen, MS. “Developing Strategies – The Key to Sustainability”. 2012 American Telemedicine Association annual conference.

Roy Kitchen, MS. “Providing Rural Patients Home Town Care through Mobile Sonographers”. 2012 American Telemedicine Association annual conference.

Rosalyn Perkins, APN. “ANGELS Before and After – Improving Access to Care through Telemedicine”. 2012 American Telemedicine Association annual conference.

Curtis Lowery, MD. “Kick-starting Healthcare Reform: Telemedicine as a Tool in Uniting Providers”. 2012 American Telemedicine Association annual conference.

Julie Hall-Barrow. “Pediatric Telemedicine: Affecting Outcomes Across the Academic and Clinical Spectrum”. 2012 American Telemedicine Association annual conference.

Julie Hall-Barrow. “Telemedicine Toolkit: The Foundation for Starting a Telemedicine Program” (resubmission). 2012 American Telemedicine Association annual conference.

Bryan Burke, MD. “Tele-Education: Collaboration Between Academicians and Front Line Health Care Providers”. 2012 American Telemedicine Association annual conference.

Tammy Northcutt, RN. “Telemedicine Challenges and Lessons Learned for Call Center Nurses”. 2012 American Telemedicine Association annual conference.

Evaluation Publications

Ounpraseuth S, Gauss CH, Bronstein J, Lowery CL, Nugent R, Hall R. “Evaluating the Effect of Hospital and Insurance Type on the Risk of 1-Year Mortality of Very Low Birth Weight Infants: Controlling for Selection Bias.” *Med Care.* 2012 Apr;50(4):353-60.

Magann EF, Bronstein J, McKelvey SS, Wendel P, Smith DM, Lowery CL. “Evolving Trends in Maternal Fetal Medicine Referrals in a Rural State Using Telemedicine.” *Arch Gynecol Obstet.* 2012 Dec; 286(6):1383-92. doi: 10.1007/s00404-012-2465-5. Epub 2012 Sep 4. PMID: 22951314 (PubMed - in process).

Bronstein JM, Ounpraseuth S, Jonkman J, Fletcher D, Nugent RR, McGhee J, Lowery CL. “Use of Specialty OB Consults During High-Risk Pregnancies in a Medicaid-Covered Population: Initial Impact of the Arkansas ANGELS Intervention.” *Med Care Res Rev.* 2012 Dec; 69(6):699-720. doi: 10.1177/1077558712458157. Epub 2012 Sep 4. PMID: 22951314(Pub Med - in process).

What's New

in 2012

New Sites

- North Arkansas Regional Medical Center, Harrison (OB)
- Sparks Regional Medical Center, Fort Smith (OB)
- Ouachita County Health Unit in Camden (Colpo)
- Boone County Health Unit in Harrison (Colpo)
- Lawrence County Health Unit in Walnut Ridge (Colpo)
- Lonoke County Health Unit in Lonoke (Colpo)
- Neonatal Nursery in St. Bernards Medical Center in Jonesboro (Telenursery)

2012 National Model Replication Inquiries / Collaborations

- Loma Linda, CA
- Integris, Oklahoma City, OK
- Oregon Health Sciences (OHSU)
- Oklahoma State University
- Dr. Kotzen (OB/GYN), Palm Beach, FL
- Vanderbilt University Medical Center, Nashville, TN
- University of Alabama at Birmingham
- Western US VA System

What's New

in 2013

• **Adult Sickle Cell Clinical Program**

The UAMS Division of Hematology/Oncology within the Department of Internal Medicine, with support of Medicaid and the Arkansas Minority Commission, has partnered with the Center for Distance Health to create a statewide system of support for patients with sickle cell disease and for the physicians who care for them. Support for healthcare providers will include: treatment protocols, education opportunities, publications, 24/7 call center support for patients and family, sickle cell registry, community support services, community events, and resources for learning more about sickle cell disease.

• **Guideline Smartphone Application**

ANGELS continues to assure that the guidelines focus on essential clinical information and are organized in a systematic, logical order. The plan for the upcoming year is to enhance guideline accessibility and ease of use with the development of mobile applications for specific guidelines.

- **Post-Partum Hypertension Project** – Utilizes the smart tablet for a home monitoring device for the assessment of patients with hypertensive disorders.

Ongoing Collaboative Efforts

- **Perinatal Classification System:** A committee led by the Arkansas Department of Health to make recommendations for classifying each Arkansas hospital with a nursery and a level of neonatal care based on basic, specialty, and subspecialty services provided. The recommendations come from a broad committee, with large and small hospitals, pediatricians, neonatologists, obstetricians, maternal fetal medicine subspecialists, and family practice physicians all giving input. Other healthcare entities such as March of Dimes were also included.

- The **Arkansas State Health Alliance for Records Exchange (SHARE)** has collaborated with

ANGELS and many providers around the state to increase access to holistic patient data and health information. SHARE is a statewide health information exchange (HIE) that solves the problem of faxing or mailing paper health records.

SHARE allows primary healthcare providers, related health services professionals, and public health authorities to access and exchange with each other in real-time, electronic patient information that is secure and protected by current federal and state privacy and security laws.

- **Breastfeeding Promotion Workgroup**

The Arkansas Department of Health formed a workgroup in response to the U.S. Surgeon General's Call to Action to Support Breastfeeding (2011). ANGELS is one of the multiple agencies that are a part of the workgroup. The workgroup is piloting evidence-based strategies proposed in the Call to Action to support breastfeeding in Arkansas communities.

- **Arkansas Breastfeeding Coalition**

The Arkansas Breastfeeding Coalition was formed in 2006-2007 for the purpose of passing breastfeeding legislation. Currently the coalition's focus has moved to an education focus. ANGELS partners with the coalition to provide continuing education events to Arkansas healthcare providers.

- **"Healthy Families":** Department of Human Services, Arkansas Department of Health, Arkansas Children's Hospital, St. Bernard's Healthcare, and Shelby County Health Department in partnership provide input into "Happy Birthday Baby Book." The Book is designed to give information about providing a safe and loving home for children and promoting lifelong learning, healthy living, and quality family time.

- **The Maternal Transport Project** – This project identifies OB patients that delivered 33 weeks gestation and under in non-NICU hospitals to assess why these patients weren't transported to a higher level of care facility. The Maternal Transport Project is a collaboration with the Arkansas Foundation for Medical Care (AFMC), Arkansas Department of Health, and ANGELS.
- **17p Hydroxyprogesterone Project:** A planning collaboration between Medicaid, Arkansas Department of Health, Arkansas Foundation for Medical Care, and ANGELS, the project provides education and accessibility of 17p Hydroxyprogesterone for pregnant women who have had a previous preterm birth.
- **The South Central Telehealth Resource Center**, presents its highly-engaging telehealth training workshop "Telehealth 101." This training introduces the world of Telehealth and Telemedicine and is offered in-person, by webinar, or over interactive video. Topics covered include:
 - Exploration:** Overview of Telehealth
 - Introduction to common terminology
 - Determine how telehealth can help your institution
 - See potential applications of telehealth
 - Engineering:** Telehealth Technology
 - See how the technology works through a live demonstration
 - Identify the components that comprise a telemedicine mobile clinical cart
 - Learn about a simple telehealth network infrastructure and what is needed to connect to a telehealth network
 - Blast Off:** Creating a Project Plan
 - Review just one of many strategies to get telehealth started with an institution
 - Fueling the Rocket:** Sustainability
 - Get a bird's-eye view of various sustainability models

To schedule this course, contact us: Toll Free 855-664-3450 or Direct 501-526-6211.



ANGELS is designed to ensure every woman in Arkansas at risk of a complicated pregnancy receives the best possible perinatal care.



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