

# ANGELS



## ANNUAL REPORT



2018-2019

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Data in this report was captured between July 2018 - June 2019.

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Liam Robert Benton (first son)  
Jack Walker Benton (unborn/pregnancy)  
Diana Benton (mother)  
Photographer: Bon Rose Photography

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

**Back Row, left to right:**

*Tina L. Benton, RN, ANGELS Program Director,  
Curtis Lowery, MD, ANGELS Medical Director*

**Front row, left to right:**

*Anne Lasowski, MIS, MBA, Program Administrator, Episodes of Care, DMS/DMS Healthcare Improvement Initiative  
Tracie Hill, ANGELS Administrative Services Director*

**Not pictured:**

*Janet Mann, Director, Division of Medical Services, AR DHS, William E. Golden, MD, Division Director, Division of Medical Services, AR DHS*



*"A man watches his pear tree day after day, impatient for the ripening of the fruit. Let him attempt to force the process, and he may spoil both fruit and tree. But let him patiently wait, and the ripe pear at length falls into his lap."*

*- Abraham Lincoln*

**For many years, I have** watched the ANGELS pear tree grow. It started as a tiny tree, with so few branches it was little more than a twig comprising just a handful of people dedicated to our cause. In time, its trunk grew as the ANGELS team and services became more ingrained in the landscape of Arkansas, setting roots at sites throughout our state. Not long after, branches shot out of our ever growing foundation, creating related programs and services that balanced the ANGELS offerings. And now, we all enjoy the fruit of our efforts, as everyone works together to complete the ANGELS mission to improve the lives of Arkansas women as well as their families and providers. We did not rush it. We kept with it, and now our patience is paying off with national attention for our efforts and thousands of women, babies, and families leading healthier and better lives thanks to our persistence and patience. Thank you for making this happen over the past 16 years.

In Fiscal Year 2019, ANGELS worked hard to implement maternal safety bundles (sets of clinical rules for providing safe maternal care) at delivering hospitals across the state to improve maternal morbidity and mortality rates. ANGELS also launched a tele-lactation pilot offering at-home digital health support to over 90 breastfeeding mothers in Arkansas, empowering women to begin and continue breastfeeding. We also orchestrated the launch of three new programs: MEMS Outreach, a simulated educational session emphasizing maternal mortality safety bundles to first responders at the Metropolitan

Emergency Medical Services; Licensed Lay Midwife Outreach, which trains lay midwives to attain their bridge certificate; and the Maternal Focus Group, which gained knowledge from emergency department nurses about local needs and barriers to safe perinatal care.

Encouragingly, the 2019 ANGELS evaluation demonstrated that the program is largely accomplishing what it was created to do: supply high-risk pregnant women with subspecialty care from MFMs, with the most acute cases receiving increased access through telemedicine while being well received by both patients and providers.

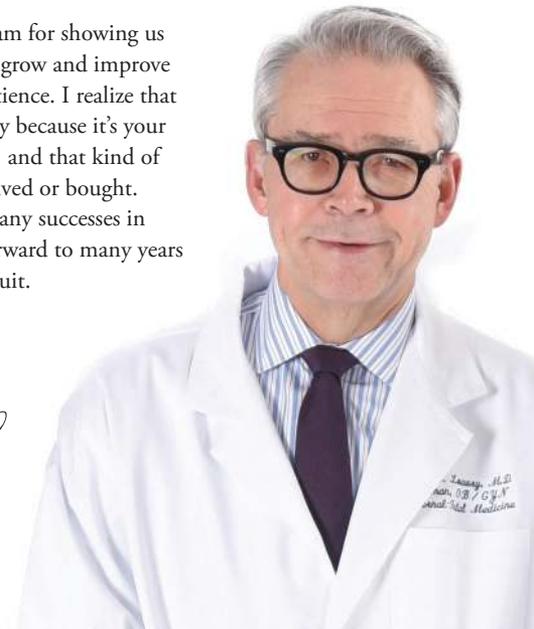
While ANGELS continued to deliver its nationally recognized, award-winning telemedicine consultations and education in 2019, we have fortified our roots by improving lives through safe practices. You will notice this trend to continue in future years, along with further integration of digital health, in support of creating the safest, most evidence-based care.

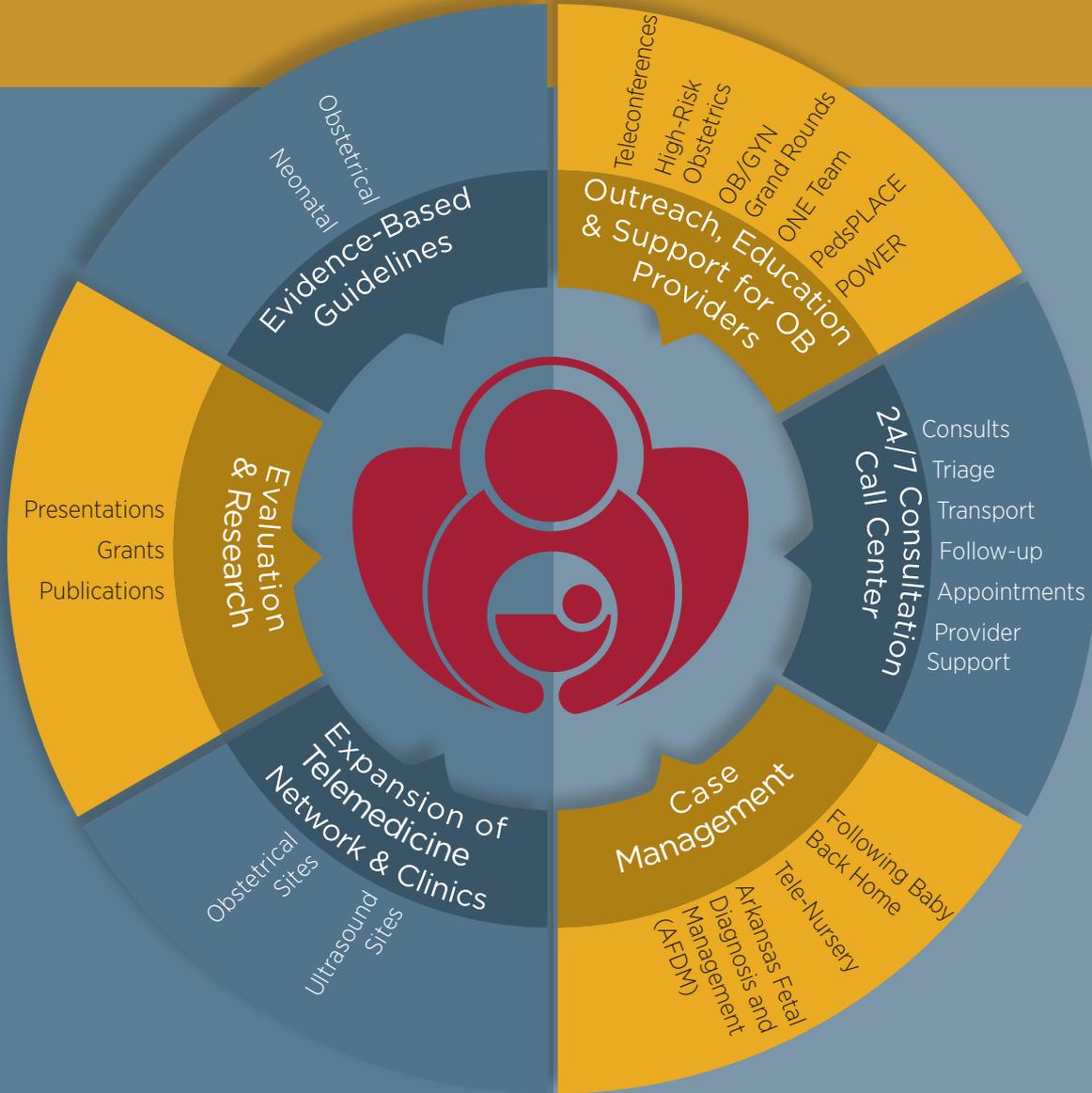
I thank our ANGELS Team for showing us all how we can continue to grow and improve through persistence and patience. I realize that you do these things not only because it's your job, but because you care... and that kind of dedication cannot be contrived or bought. Congratulations on your many successes in 2019, and let us all look forward to many years of watching our tree bear fruit.

Respectfully,



Curtis L. Lowery, MD  
Director, ANGELS





# Education & Support

The ANGELS Education Team provides educational opportunities for health care professionals in all 75 Arkansas counties through virtual teleconferences and on-site training. Educational opportunities include on-site simulation drills and the high-risk obstetrical teleconference. Health care providers obtain continuing education (CE) credits upon completion of most of the ANGELS training modules.

## Education Team

*Back row, left to right:* Margaret Glasgow, RNC-OB, Margaret Albright, Joe Schaffner, MPA, Kesha James, MA, Daniel Littleton, MEd, PMP, Brian Lee, Tina Pennington, MNSc, RNC-NIC, Rita Tuggle, Kim Mayo, MEd, MCHES  
*Front row, left to right:* Jo Ann Grace, Stanley K. Ellis, EdD, Cheryl Washington, EdD, MsED, BSN, RNC-OB, Barbara Smith  
*Not Pictured:* Donna Ezell, Kathy Ledoux, Wendy Ross, Susan Smith-Dodson, MBA, BSN, RN, Lizzie Casteel, Hari Eswaran, PhD



# Education & Support

## Healthcare Provider Statistics

Attended Live Events	6,383
Completed Enduring Materials	7,357
Accessed ANGELS Modules	2,313
<b>Total Provider Participants</b>	<b>16,053</b>

## ANGELS Education Activities

LIVE Teleconferences and Events	250
ANGELS Educational Modules Live and Archived on LearnOnDemand.org	341
Other Archived Video or Online Module	173
<b>Total ANGELS Education Activities</b>	<b>764</b>

## Top 5 Accessed ANGELS Educational Modules:

1. Breastfeeding Curriculum – Resident
2. Perinatal Bereavement
3. Breastfeeding Curriculum – Inpatient Nurse
4. Sleep and Women’s Health
5. Postpartum Hemorrhage

## Event Topics:

1. Basic Fetal Heart Monitoring
2. AWHONN Intermediate Fetal Heart Monitoring
3. AWHONN Advanced Fetal Heart Monitoring
4. AWHONN Fetal Heart Monitoring Instructor Course
5. STABLE
6. POWER
7. OB Emergency Simulation Drills
8. Breastfeeding Symposium
9. Neonatal Resuscitation Program – NRP
10. ONE Team – statewide weekly teleconference providing education by nurses and for nurses

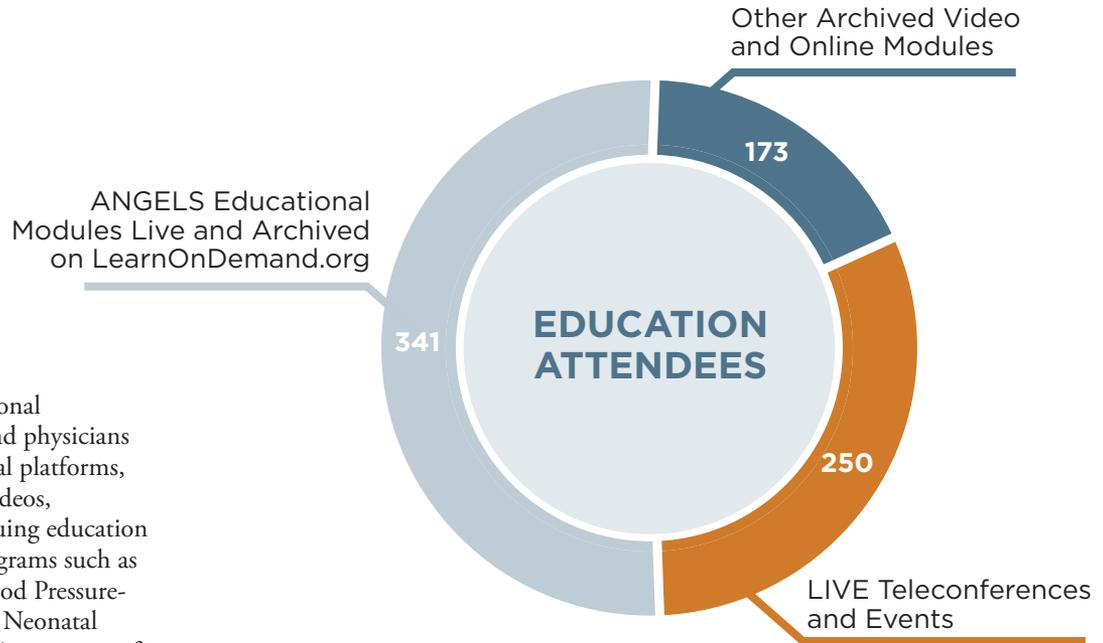
*“I love that I was able to participate online. Working night shift, I am able to participate from my home and still get a nap before going to work at night.”*

*Participant*

# 4,715

CE Hours Awarded  
for ANGELS' Education

**ANGELS offers** a variety of educational opportunities for Arkansas nurses and physicians through an abundance of educational platforms, including live sessions, interactive videos, teleconferencing, and online continuing education modules. This includes national programs such as Sugar/Safe-Temperature-Airway-Blood Pressure-Lab-Emotional Support (STABLE), Neonatal Resuscitation Program (NRP), and Association of Women's Health, Obstetric and Neonatal Nurses Fetal Heart Monitoring (AWHONN FHM), all taught by certified nurse educators. ANGELS' statewide educational offerings are listed and reflect the number of participants, accessed modules, and live education events.



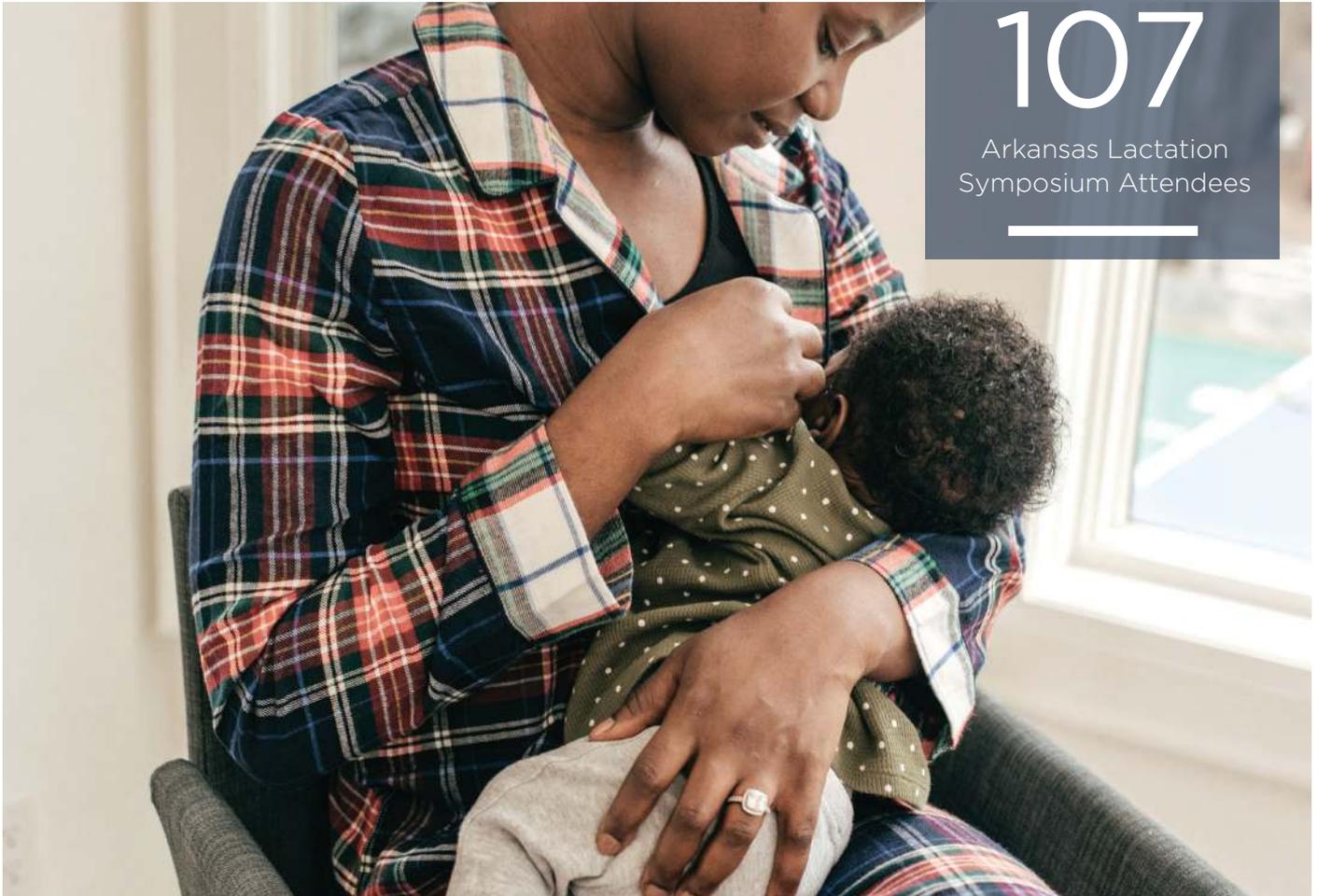
*I always learn and enjoy this conference.  
It gives me good information to use in my job.*

*Participant*

# 107

Arkansas Lactation  
Symposium Attendees

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## Breastfeeding Education

**In conjunction with** the Arkansas Breastfeeding Coalition, the ANGELS Education Team coordinated the sixth annual Lactation Symposium held in July 2018. ANGELS collaborated with the coalition over the last several years to provide the only lactation conference of its type in Arkansas. Local and national speakers presented on-site and through interactive video. Presentations included “A Father’s Role in Breastfeeding,” “Breastfeeding in a Formula Feeding World,” and “The Language We Use in Breastfeeding Promotion and Support.”

A tele-lactation pilot study launched in April 2018 provided additional support for the breastfeeding mother. Lactation consultants visited a mother with a newborn virtually three times after she was discharged from the hospital to support, assess, and educate mothers to help with sustained breastfeeding.

The first virtual visit was made within 72 hours of the mother and infant’s hospital discharge. Additional visits were conducted at one week and four weeks after discharge were completed. These virtual visits allowed lactation consultants to intervene if there were any early breastfeeding issues that otherwise might cause a mother to discontinue breastfeeding. If the mother needed further assistance, additional virtual visits were conducted, or she met with a lactation consultant in person. Virtual visits were conducted by two methods – phone only or two-way audio/video via a secure portal to the mother’s cell phone, laptop, or tablet.

The University of Arkansas for Medical Sciences and Baptist Health Medical Center conducted the pilot, which included over 90 breastfeeding women, who benefitted from the program from April 2018 to April 2019.

The ANGELS Education Team provides breastfeeding education for providers and mothers through leadership and participation in the following programs:

- Arkansas Breastfeeding Coalition
- ONE Team Series – Baby Friendly Arkansas
- Breastfeeding Promotion Taskforce
- Breastfeeding Modules on Learn On Demand
- Breastfeeding Modules on Patients Learn
- Healthy Active Arkansas – Breastfeeding Priority
- UAMS Baby Friendly Committee

# 90

90 breastfeeding women  
benefited from the  
program from April  
2018 to April 2019

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# Evidence-Based Guidelines

## Obstetrical



## Neonatal



# 107

Over 2,000 health care providers use this resource.

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Since 2003, ANGELS has bridged maternal-fetal medicine and neonatology to rural areas through technology. An integral part of this effort is evidence-based obstetrical and neonatal guidelines that define best practices, tailored specifically for Arkansas' women and babies. Annually reviewed and updated by content experts, the guidelines combine national evidence-based standards with clinical experience plus resources that are available in Arkansas. Over 2,000 health care providers use this resource.

From the beginning, guideline development has been a collaborative effort including more than 200 expert Arkansas authors from multiple disciplines, Arkansas reviewers, and out-of-state physician peer reviewers. Over 150 obstetrical and neonatal guidelines can be freely accessed 24/7 from a computer or mobile device at <https://angelsguidelines.com>. Providers are encouraged to participate in guideline development by registering on the site and submitting comments and suggestions for improvement to [idhi@uams.edu](mailto:idhi@uams.edu) or by using the 'Leave a Reply' form at the bottom of the Obstetrical and Neonatal pages for specific guidelines.

### Quick Facts About the ANGELS Guidelines

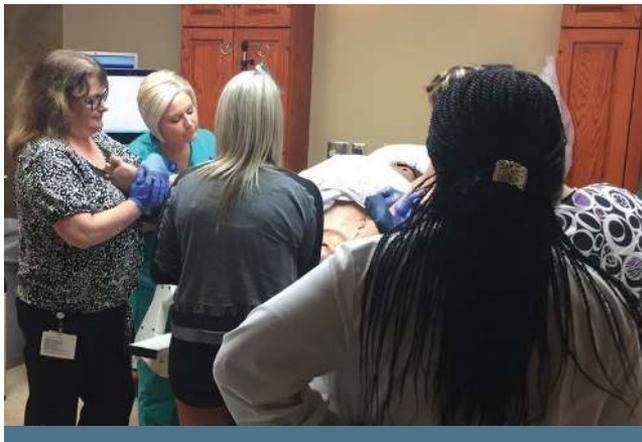
- Promote best practices for health care delivery in Arkansas based on scientific evidence and consensus.
- Offer essential, readily-accessible, well-organized clinical information as references for practicing physicians and advanced health care providers.
- Serve as quick reference and local resource for health care offices and hospitals in an easy to navigate, mobile friendly format, available anytime, anywhere.

## Guideline Outreach Efforts by the ANGELS Team

- Presented guidelines to physicians, advanced health care providers, and students via teleconferences or classes to **1,542** attendees.
- Exhibited at five conferences with **769** combined attendees, including the Arkansas Foundation for Medical Care conference in Little Rock.
- Promoted guideline information directly to providers in **29** counties during on-site training.
- Distributed guideline information to **1,205** obstetrical and neonatal health care providers and delivering hospitals via the annual report and newsletters.
- Provided weekly guideline updates through the High-Risk Obstetrics, PedsPLACE, and selected ONE Team teleconferences, with email promotion to **1,267** combined attendees.
- Distributed guideline information at the Lactation Symposium in Little Rock – **89** attendees on Day 1 and **69** attendees on Day 2.
- Promoted the ANGELS Safe Sleep guideline to the Arkansas Perinatal Forum & the Collaborative Improvement and Innovation Network.

## Outreach Efforts ANGELS Guidelines Access

- Website page views: **24,429**
  - First-time Arkansas health care professional visitors: **297**
  - Guidelines have been accessed by registrants from **65 of 75** Arkansas counties
  - While the guidelines are developed to support Arkansas' health care providers, there are registrants from **47** states and D.C. plus **34** countries
- 
- Developed an ANGELS Update feature article about the ANGELS guidelines to 407 Arkansas obstetrical and neonatal providers. The guidelines were also highlighted on the ANGELS website as part of the safe sleep promotion.
  - Encouraged guideline usage at the fall POWER workshop to all 40 on-site nursing leaders from multiple locations across Arkansas. Twenty hospitals and the Arkansas Department of Health attended in-person or by interactive video. A spring nursing leadership retreat followed with 100 nursing leadership professionals registered from hospitals and medical organizations across the state where the guidelines were promoted.



## OB Emergency Drill Simulation

The **Outreach Education Team** is comprised of specialists in both obstetrics and neonatal intensive care who travel across Arkansas to provide obstetrical simulation drills. These drills educate various health care providers regarding the management of low-frequency, high-risk obstetric and neonatal emergencies. It has been proven that mothers and babies have better outcomes when cared for by a health care team educated in such emergencies.

During the reporting period, the team presented **23** simulations at **19** hospitals that provide obstetric services and one outpatient emergency service.

# 446

Health care professionals participated in the simulations

The method of simulation varied by facility, from unannounced ‘ambush’ type simulations to scheduled simulations. At each facility, the simulation was conducted with a high-fidelity manikin in an actual patient room using the facility’s equipment. This educational scenario enabled participants to use the resources available and provided a platform to evaluate the facility’s preparedness for such emergencies.

Patient safety bundles help address emergency obstetrical situations. In working towards implementation of safety bundles for postpartum hemorrhage and severe hypertension in pregnancy, emphasis was placed on identifying areas that needed attention, such as timely recognition of emergency situations (e.g. severe blood loss or hypertensive crisis) and adherence to recommended algorithms. For more information, call 501-526-8098 or email Margaret Glasgow at [GlasgowMargaretE@uams.edu](mailto:GlasgowMargaretE@uams.edu)

## Participating Medical Facilities

- Baxter Regional Medical Center, Mountain Home
- Delta Memorial Hospital, Dumas
- Drew Memorial Hospital, Monticello
- Jefferson Regional Medical Center, Pine Bluff
- Medical Center of South Arkansas, El Dorado
- Mercy Hospital Northwest Arkansas, Rogers
- Northwest Medical Center, Springdale
- Northwest Medical Center, Bentonville
- Willow Creek Women's Hospital, Johnson
- Ouachita County Medical Center, Camden
- Physician's Specialty Hospital, Fayetteville
- Sparks Health System, Fort Smith
- University of Arkansas for Medical Sciences, Little Rock

## Healthcare Provider Statistics

M.D.s (OB/GYN, Family Practice, Emergency Medicine)	10
Nurses (C.R.N.A., A.P.R.N., C.N.M., R.N., L.P.N.)	313
Other Medical Professionals (Paramedic, Emergency Medical Technician, Respiratory Therapist, Scrub Tech, Nursing Tech, Nursing Student)	123



# Community Outreach Education

## STABLE

**STABLE is a widely** distributed and implemented neonatal education program that focuses exclusively on the post-resuscitation/pre-transport stabilization care of sick infants. STABLE stands for the six assessment and care modules in the program: **S**ugar **T**emperature **A**irway **B**lood Pressure **L**ab **E**motional Support.

First introduced to the US and Canada in 1996, STABLE has grown internationally to include instructor training and courses in more than 45 countries. Currently, there are more than 4,400 registered instructors worldwide and more than 61,383 neonatal health care providers have completed a STABLE Learner course. In 2004, it received a coveted endorsement from the March of Dimes™ for its outstanding contributions to the health of premature/sick infants.

*"I have been teaching STABLE since 2006, and I thoroughly enjoy it. It was my first step into education, which is not only my job, but my passion. I am traveling throughout Arkansas teaching STABLE to our smaller, more rural hospitals, which means I get to see my beautiful state and meet new people. Arkansas is mostly rural, and I am now able to reach the clinicians who would benefit the most from the program.*

*Tina Pennington, RN*

# 133

Total Attendees

## Participating Medical Facilities

- University of Arkansas for Medical Sciences
- Magnolia Regional Medical Center
- Conway Regional Health System
- Jefferson Regional Medical Center
- CHI St. Vincent Infirmary
- Bradley County Medical Center
- Drew Memorial Health System
- White River Medical Center
- Unity Health – Harris Medical Center
- Saline County Medical Center
- Mena Regional Health System
- Ouachita County Medical Center
- Baptist Health Medical Center – Stuttgart
- Ashley County Medical Center
- Northwest Medical Willow Creek
- Medical Center of South Arkansas
- Arkansas Methodist Medical Center

# Baby BOOTCAMP



**Baby Boot Camp** was developed in 2017 to assist new NICU nurses with understanding the basic concepts of neonatal physiology and care. In 2019, we expanded the one-day conference to a three-part series to cover the various levels of acute newborn care. All courses are offered face-to-face or interactive video. The class is designed to be an interactive learning experience and is being recorded for later use for orientation.

**Part 1: Basic Training** covered well baby transition, breastfeeding, venipuncture, common labs, screening, and hypoglycemia. This was a half-day course designed for labor/delivery nurses, post-partum, & low-risk nursery. Held on March 11, 2019, a total of 69 participants (54 interactive video (IAV), 15 in-person).

**Part 2: Infantry Training** was the original format for the annual class before its expansion. It was held on Aug. 20, 2018. Topics include fetal-to-neonatal transition, thermoregulation, fluids and electrolytes, developmental care, neonatal abstinence, and sepsis. There were a total of 70 participants (43 IAV, 27 in-person) from around the United States and Canada.

**Part 3: Special Ops:** RN certification review for RNC-NIC is planned for Jan. 31, 2020 from 7:30-3:00 (tentative). Topics will be geared toward taking the RNC-NIC exam.



## Participating Medical Facilities

- Baptist Health Medical Center -Stuttgart
- Conway Regional Health System
- Drew Memorial Health System
- Johnson County Medical Center
- Magnolia Regional Medical Center
- Mercy Hospital Northwest
- North Arkansas Regional Medical Center
- NEA Baptist Memorial Hospital

# Community Outreach Education

## R.N. Certification Review Course (R.N.C. - OB)

**ANGELS, in conjunction** with the UAMS Women and Infants Service Line, presented a one-day course designed to assist experienced RNs with content and test-taking skills to better prepare for the National Council Licensure Examination.

In the winter of 2018, the RN Certification Review Course (RNC-OB) focused on inpatient obstetric nursing. This certification is for registered nurses with specialty experience of at least 24 months with obstetric patient care in the hospital setting. All aspects of the maternal and normal newborn care dyad are covered in this certification. The RNC-OB training was offered face-to-face, through interactive video and through Cisco meeting. For more information, call 501-526-8098 or email Margaret Glasgow at GlasgowMargaretE@uams.edu

## Participating Medical Facilities

- Baptist Health Medical Center - Conway
- Baptist Health Medical Center - Little Rock
- Baptist Health Medical Center - North Little Rock
- Conway Regional Health System
- Drew Memorial Health System
- Magnolia Regional Medical Center
- Mercy Hospital Fort Smith
- Mercy Hospital Northwest Arkansas
- NEA Baptist Memorial Hospital
- Northwest Medical Center - Bentonville
- Unity Health - White County Medical Center
- Washington Regional Medical Center
- Willow Creek Women's Hospital
- University of Arkansas for Medical Sciences

82

Attendees

47

Interactive Attendees

6

Speakers

## Fetal Monitoring Courses

The Outreach Education Team offers both online and face-to-face instruction in all levels of fetal heart monitoring. Participation in these courses ensures that evidence-based care is being delivered by the nurses tending to obstetric patients in Arkansas.

An online basic fetal heart monitoring course is available at [learnondemand.org](http://learnondemand.org). This course is geared toward any discipline new to caring for obstetric patients undergoing fetal heart monitoring.

Margaret Glasgow, RNC - OB presents on-site intermediate, advanced, and instructor trainer courses that use curriculum from the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN). For more information, call 501-526-8098 or email Margaret Glasgow at [GlasgowMargaretE@uams.edu](mailto:GlasgowMargaretE@uams.edu)

11

Medical  
Facilities

18

On-Site  
Fetal Heart  
Monitoring  
Courses

105

On-Site  
Participants

231

Basic Fetal Heart  
Monitoring Online  
Module Users

## Neonatal Resuscitation Program (NRP)

The Neonatal Resuscitation Program® (NRP®) focuses on basic resuscitation skills for infants immediately following birth. While 90% of infants transition with little difficulty, NRP® focuses on the 10% that require more assistance with focus on Airway, Breathing, and Circulation (ABC). While Basic Life Support (BLS) uses the Circulation, Airway, Breathing (CAB) model, NRP® utilizes ABC as the main method of getting air into the lungs by jumpstarting the physiologic process of breathing and gas exchange.

Tina Pennington and Margaret Glasgow bring over 40 combined years of neonatal resuscitation experience into their classes, and the reviews on the NRP® national database reflect this. For more information, call 501-686-7576 or e-mail Tina Pennington at [PenningtonTinaC@uams.edu](mailto:PenningtonTinaC@uams.edu).

6

Participating  
Facilities

59

Participants

*"Instructors were  
very informative and  
knowledgeable."*

# |Community Outreach Education



## Perinatal Outcomes Workgroup through Education and Research (POWER)

The Arkansas Perinatal Outcomes Workgroup through Education and Research (POWER) meeting took place in April 2019 at the Rockefeller Institute near Petit Jean Mountain. The event, designed for hospitals offering obstetric services, included clinicians and administrators. Attendees gathered for a day of networking, education, and interactive stations aimed at improving perinatal mortality and morbidity outcomes. Curtis Lowery, MD, welcomed participants and opened the workshop. Following Lowery, several other professionals discussed the effect of biases in perinatal care and the related interventions that will be used to reduce peripartum racial and ethnic health care disparities in the 39 delivering hospitals in Arkansas.



Margaret Glasgow, RN, introduced the patient safety bundle designed to dramatically reduce this disparity and promote equitable and quality care for all Arkansas maternity patients, and a panel of nurse leaders shared their experience with system changes necessary to produce a culture of safe peripartum care. The afternoon included breakout sessions conducted by Faiza Khan, MD, demonstrating Obstetric Basic Life Support. Additionally, Tina Pennington presented the results of her 2018 correlation study between (Estimation of Blood Loss (EBL) and Quantitative Blood Loss (QBL).

ANGELS and Arkansas Foundation for Medical Care (AFMC) have continued to partner with the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) to share evidence-based educational materials to delivering hospitals, patients, and OB/GYN clinics at no cost. In addition, ANGELS uses various educational/social platforms for networking and assistance for implementation of the safety bundles.

Dr. Lowery concluded the meeting with a discussion on the future of digital health and perinatal care in Arkansas. The pilot sites are preparing to implement telemedicine consults and remote access to telehealth and specialized perinatal care for rural hospitals and EDs. The UAMS Institute for Digital Health & Innovation team demonstrated a live tele-consult during the meeting using the DX 80 camera and monitor system to connect remotely from the meeting venue to a maternal fetal medicine physician at UAMS.

# 39

Delivering  
Hospitals

*"First, just wanted to say how much I loved the POWER conference! It is always so inspiring & refreshing. Thank you for all the hard work you ladies put into helping our state work together."*

*POWER Participant*

# ANGELS Call Center



## Angels Call Center

The ANGELS Call Center facilitated a high volume of calls, including on-site and digital health clinic appointments, consults, and referrals with the Maternal Fetal Medicine Team as well as requests to transfer patients to UAMS for high-risk obstetrical care from July 2018 to June 2019.

ANGELS' extensive OB case management program continues to support and improve the care provided to high-risk obstetrical patients. Initial patient contact is made in the clinic, and then patients receive phone calls throughout pregnancy and after delivery that provide disease and condition-specific education. The call center also sends out reminders for upcoming appointments and tests. Procedures and processes are continually evaluated to maintain the most up-to-date delivery of care.

50,482

ANGELS  
Appointment  
Center Calls

161,031

ANGELS  
Call Center  
Calls

110,549

Calls were managed by the  
ANGELS Call Center in  
Fiscal Year 2018-2019



451

Arrived  
Maternal  
Transports

369

UAMS  
Maternal  
Consults

413

Urgent  
Care Visits  
Avoided with  
Telephone  
Triage

28

Calls from  
Women's  
Health ADH  
Patients

64

MFM Consult  
Coverage for  
Baptist Health,  
Little Rock (new  
contracted  
service)

1,268

Calls from  
After Hours  
Women's  
Health  
Contract  
Clinics

## Call Center DATA

Month Fiscal Year 2018-2019	Total # ANGELS Nurse Call Center	Total # Angels Appointment Center	Total # Angels Call Center Total
July	10,450	3,228	13,678
August	8,939	3,395	12,334
September	8,463	3,143	11,606
October	9,012	3,208	12,220
November	8,604	3,112	11,716
December	11,593	2,913	14,506
January	14,434	5,224	19,658
February	12,411	5,286	17,697
March	4,263	5,943	10,206
April	7,463	5,067	12,230
May	7,587	5,058	12,645
June	7,330	4,905	12,235
<b>Totals</b>	<b>110,549</b>	<b>50,482</b>	<b>161,031</b>

*\*Differences in call volume variation 2018/2019 fiscal year compared to 2017/2018 fiscal year are due to phone system changes and on-going re-mapping of automatic call distributor lines for more accurate data capture and improved reporting.*

9,906

**Nurse Triage Calls (Women's Health Clinics, ADH, and After Hours Women's Clinics)**

# Telemedicine Network and Clinics

## Telemedicine Team



Rosalyn Perkins, MNSc, APRN



Mandi Dixon, RDMS



Jeni Warrior, APRN



Stacey Johnson, APRN  
Not Pictured:  
Lori Heil, RDMS  
Sarah Green, MC, CGC



Jordan Hills  
MS, CGC

## ANGELS Sonographers



Mandi Dixon, RDMS

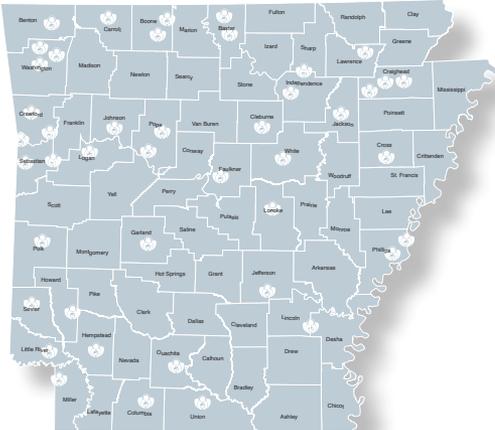


Bill Hickey, RDMS

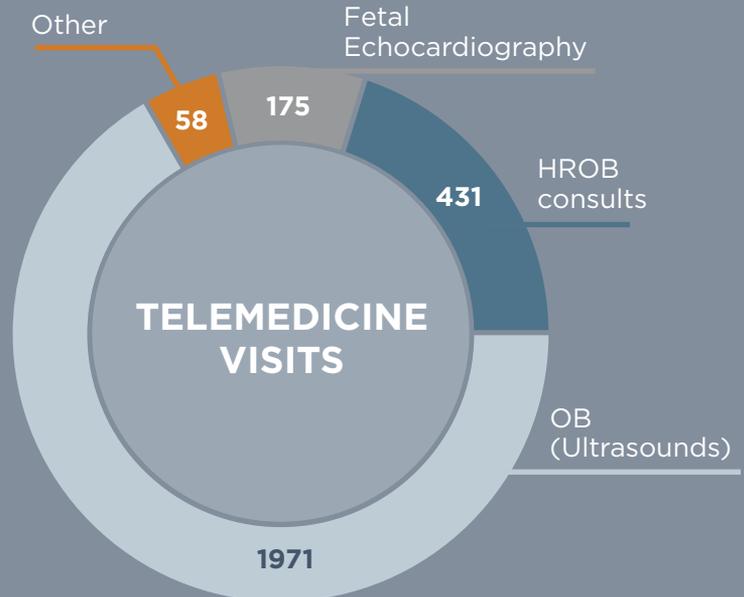


Lynne Tate, RDMS  
Not Pictured:  
Lisa Caine, RDMS

## Telemedicine Sites



**2,635**  
Total  
Telemedicine  
Visits



## Telemedicine in the Nursery

**Whit Hall, MD, is a professor** of neonatology in the UAMS College of Medicine who leads virtual census rounds three-times-a-week in 26 nursery sites statewide (including UAMS). These rounds include neonatology and subspecialty consultations, coordination of transports and back transports, follow up on neonatal and maternal transports, collaboration, and education.

134

UAMS Signed-On and Led Telenursery Virtual Rounds

490

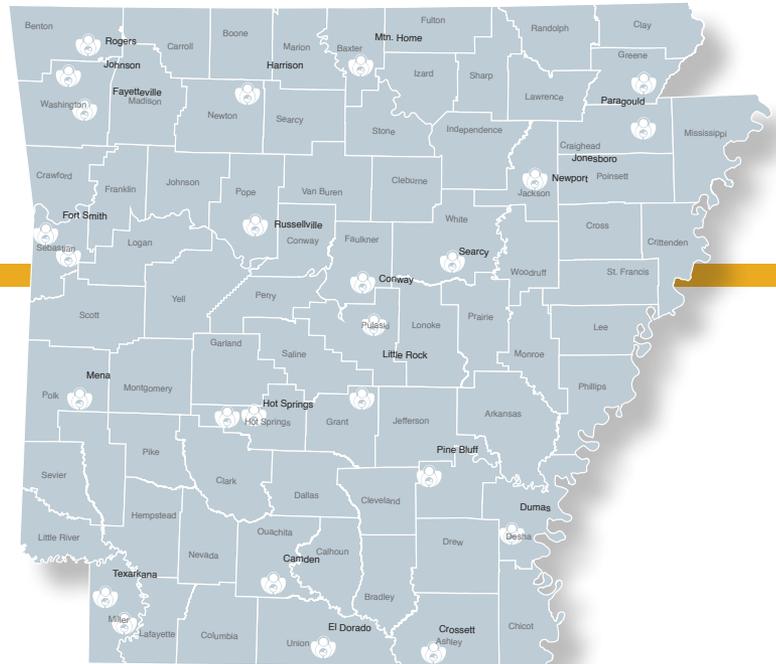
Telenursery Rounds Census Participants Between All Sites

127

Back Transports from UAMS to Referring Hospital

(not including transfer decisions made outside of telenursery rounds)

## Telenursery Sites



# Telemedicine Network and Clinics

## Women's Mental Health Team

*Left to right: Hannah Williams, MD, Megan Harris, LCSW, Amber Thomas, BA, Michael Cucciare, PhD, Bettina Knight, RN, Jessica L. Coker, MD, Shona Ray, Griffith, MD*

## Women's Mental Health

**Mental health issues during pregnancy** and the postpartum period contribute to both morbidity and mortality during the perinatal period. Pregnant and postpartum women sometimes experience depression, anxiety, and/or psychotic symptoms. Substance use disorders are also prevalent among women of reproductive age with mental health issues. In fact, Arkansas has one of the highest rates in the country of prescription opioid exposure during pregnancy. Expectant mothers with a history of mental health issues and/or illicit drug exposure represent a complex clinical challenge and often require a multi-disciplinary approach for management through delivery as well as close observation of the baby in the early neonatal period following delivery.



The ANGELS Call Center serves as a primary source of referrals to the Women's Mental Health Program (WMHP), including services provided for pregnant women with mental health issues with or without substance-use disorders. Shona Ray-Griffith, MD, and Jessica Coker, MD, have overseen the program since 2017 and expanded to include a third psychiatrist, Hannah Williams, MD, in July 2019. This coming year, the WMHP will expand its

clinical and education missions to include overseeing the Women's Inpatient Unit at the Psychiatric Research Institute and increasing digital health services across the state. The program focuses on pre-conception counseling for psychiatric disorders, medication management for general psychiatric issues during pregnancy and the postpartum period, and co-morbid management for substance-use disorders, including opioid-use disorder, during

“The Women’s Mental Health Program is excited to be expanding this year in all three academic missions – clinical, educational, and research. We have developed partnerships with the Department of Health to improve the care of pregnant women suffering with opioid use disorder in the state and are looking forward to expanding access to psychiatric services with telemedicine. We continue to strive to provide evidenced-based care that offers quality and value to the patients we serve and the physicians and providers that seek our services.”

Jessica Coker, M.D.

pregnancy and postpartum. The program collaborates with obstetrics, anesthesia, and neonatology to improve obstetrical and neonatal outcomes.

Within the WMHP, expectant or postpartum mothers who require psychotropics or those misusing/abusing illicit drugs receive comprehensive evaluations and individualized treatment plans. This includes a risk/benefit analysis of treatment options; medication management; group and individual therapy; and treatment planning for management through delivery and the postpartum period. Inpatient psychiatric services are also available for individuals who need acute management and drug detoxification.

## Primary goals of Women’s Mental Health Program/Perinatal Opiate Project

- Improve the mental health of pregnant women
- Improve access to care for pregnant women with mental illness, both with and without substance use disorders
- Reduce obstetrical and neonatal complications
- Develop evidence-based guidelines for the management of pain during pregnancy

71

Telephone  
Consultations

2,594

Clinic Visits

74

Hospital  
Consultations

## Diabetes Care in Pregnancy

**The UAMS Obstetrical Center** for Management of Hyperglycemia in Pregnancy received a four-year re-accreditation by the American Association of Diabetes Educators (AADE) in the fall of 2018. This certification ensures that the diabetes education provided is in compliance with comprehensive national standards. In the last 12 month reporting period, **264** women with diabetes were managed at the University Women's Clinic: **5%** with type 1 diabetes, **36%** with type 2 diabetes, and **59%** with gestational diabetes.

### Telemedicine Consultations

Patients can receive individualized diabetes education via digital health if time or travel restrictions prohibit a drive to UAMS. This option for co-management ensures that patients receive the same high-quality care available in a face-to-face setting. Since 2015, telemedicine diabetes consultations have been delivered via interactive video to patients at several distant sites, including county health departments and regional health centers. To find out how your patients can access diabetes education via digital health, please contact ANGELS at 1.866.273.3835.

### Improved Glycemic Control

Good glycemic control decreases the risks of adverse outcomes for mothers and babies. Glycemic control is measured by HbA1c, a lab measurement which provides a three-month "average" blood glucose level. Women with type 1 and type 2 diabetes managed by this program demonstrated improved glycemic control throughout their pregnancy.



# 264

Women with diabetes were managed at the University Women's Clinic

### Web-based Instruction on Nutrition (WIN)

The WIN program is an online, self-directed curriculum designed by the UAMS Obstetrical Diabetes Care Team including a maternal-fetal-medicine specialist, a clinical pharmacist and two registered dietitians. The program covers topics such as, gestational diabetes diagnosis and first steps (Module 1), management of diabetes in pregnancy (Module 2), and prevention of type 2 diabetes mellitus after delivery (Module 3).

WIN utilizes videos, self-paced slides, interactive activities, and includes a closed-captioning option to engage the online learner. The concepts address target blood glucose goals for pregnancy, managing blood glucose with diet and medications, carbohydrate counting, recommended carbohydrate goals for meals and snacks, portion sizes and label reading, as well as exercise guidelines. In addition, downloadable PDFs listing portion sizes for various food groups are available.

#### Type 1 Diabetes

Mean 1st trimester A1C	Mean 2nd trimester A1C	Mean 3rd trimester A1C
9.4%	6.9%	7.4%

#### Type 2 Diabetes

Mean 1st trimester A1C	Mean 2nd trimester A1C	Mean 3rd trimester A1C
8.3%	7%	6.1%

An “Ask the Expert” click-on option allows each user to contact a certified diabetes educator (CDE) with nutrition questions or website problems via email. In the spring of 2019, the registration process was streamlined to make the site more user-friendly. This course can be used in place of a conventional face-to-face diabetes class, or as a supplement and/or review of traditional education methods.

### Nutrition Education Team

*Left to right:* Nafisa Dajani, MD; Pam Prutzman, MS, RD, LD; Brooke Keathley, APRN, CDE; Denise Ragland, Pharm D, CDE; Andrea Tappe, RD, LD, CDE



# 391

New Cases  
Admitted into  
AFDM Program

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# 247

Live Deliveries  
at UAMS

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## Arkansas Fetal Diagnosis and Management (AFDM)

**Arkansas Fetal Diagnosis and Management (AFDM)** is a multidisciplinary program developed for pregnant women and their families who have been given a diagnosis of a fetus with a known congenital anomaly, genetic, or chromosomal abnormality.

The AFDM team meets regularly to discuss individualized care plans for each patient. The team is notified of scheduled deliveries with proposed plans of care. Follow-up information is also provided to referring physicians.

Centralized Antenatal Monitoring

Project (CAMP) enables patients with a compromised infant to stay in close proximity of a care center that offers specialized maternal-fetal medicine, obstetric, and neonatal services, including a neonatal intensive care nursery. Expectant mothers who may benefit from CAMP, must be approved by a UAMS maternal-fetal medicine specialist. CAMP services are funded through UAMS.

## AFDM Team



Paul J. Wendel, MD



Sara Peeples, MD



Shannon Lewis, RN, BSN



Hyelim Kim, MS, CGC



Shannon Barringer, MS, CGC

## Arkansas Reproductive Genetics Team



Shannon Barringer  
MS, CGC



Hyelim Kim  
MS, CGC



Noelle R. Danylichuk  
MS, CGC

Not Pictured:  
Sarah Green, MS, CGC  
Lindsay Ouzts, MS

3,582

Patient Visits

## Maternal-Fetal Medicine Team

*Back:* E. "Pat" Magann, MD, Paul Wendel, M.D., Adam Sandlin, MD,  
*Front:* Dawn Hughes, MD, Curtis L. Lowery, MD, Nafisa Dajani, MD



## Maternal-Fetal Medicine Fellows

*Starting at left:* Julie Whittington, MD, Abigail Ramseyer, MD, Pamela Simmons, MD



# | Case Management

## Outreach Nurses



Angie Hunton,  
MNSc, RNC-OB



Margaret Glasgow,  
RNC-OB



Tina Pennington,  
MNSc, RNC-NIC



Cheryl Washington  
EdD, RNC-OB

Not Pictured: Donna Ezell, RN



## APRN Case Management Team

**Back row, left to right:** Gordon Low APRN, Mary Devine APRN, Shannon Graham APRN, Stacey Johnson APRN

**Front row, left to right:** Crystal Marcussen APRN, Janna Michael APRN, Brooke Keathley APRN, Edwina Walhall APRN, Michele Jernigan APRN, Stephanie Strode

## RN Case Management Team

**Pictured left to right:** Judy Richard, RN, BSN, Judy Burns, RN





**Patientslearn.org** is an educational web portal that offers course modules designed to help patients learn how to manage their illnesses and conditions. The portal offers education on a variety of health topics, including women's health, high-risk pregnancy, pediatrics, and primary care.



**PatientsLearn**  
UAMSpatientslearn.org

1,034

Registered  
Users

26

ANGELS  
Interactive  
Modules

34

Counties in  
Arkansas Have  
Registered Users

## Top 3 - Most Accessed Modules

1. Labor and Delivery Virtual Tour
2. Preparing for Birth
3. Breastfeeding 101

# | A Patient's Story



# Aimee Moore

**About 24 weeks into Aimee Moore's** third pregnancy, she said she became “sore,” and was referred to UAMS perinatal genetics program due to poor fetal growth. She was diagnosed with Intrauterine Growth Restriction (IUGR), which is a “condition in which an unborn baby is smaller than it should be because it is not growing at a normal rate inside the womb.” She had no issues with her previous pregnancies, but Aimee was told she could possibly develop IUGR with any future pregnancies. Aimee said she stayed sick throughout the pregnancy and lost a lot of weight.

Co-management began between her primary obstetrics provider and UAMS Maternal Fetal Medicine providers. High-risk prenatal care was provided by her local OB provider and UAMS

*When asked about the ANGELS program, she said she was grateful and admitted she liked the “remote care better.”*

Maternal Fetal Medicine from that point up to her delivery at her local hospital in Jonesboro. Aimee was comforted knowing how much she was able to “keep up with the growth of the baby compared to what a [non-telemedicine program] could do.” Frequent ultrasounds with fetal testing were initiated such as growth ultrasounds, biophysical profile, middle cerebral artery Doppler, uterine artery Doppler, and biweekly non-stress testing. Jason Colletta, DO, (with the ANGELS telemedicine program) delivered Aimee's third child, Dax, on April 4, 2019. Though she had to

make a few trips to Little Rock, she mostly only had to travel as far as Newport. An integral facet of her care was the decreased travel cost and time saved by not having to make so many trips to UAMS in Little Rock, of which Aimee appreciated the “less gas” aspect.

Speaking to Aimee recently, she said Dax was “growing like a weed in the garden... for him to be born so small he's grown a lot already.” When asked about the ANGELS program, she said she was grateful and admitted she liked the “remote care better.”

# Evaluation and Research

To evaluate the ANGELS program and determine its effect on mothers, babies, and the health care system, the Evaluation and Research Team has created a database of claims, birth certificate records, and hospital discharge records. This year, a major initiative was to update the database faster. Before this, we had to wait for three years to have the full file of Medicaid mother and baby claims linked with birth certificate and hospital discharges. However, for Medicaid claims data only, we only had to wait for a year to have the complete file. A data collection plan was created to figure out which quality metrics can be obtained quicker and which would have to be waited for. The data that was easiest to collect was updated by the end of 2017 so that a more real-time intervention plan could be established if any abnormal trend was observed. Available date ranges for data were expanded: For infants, data is now available up to the first half of SFY 2016, and for mothers, data is now available through to the end of SFY 2017.

Trends were then analyzed from two years before the implementation of ANGELS through 14 years of the program's operations. Additionally, this year the team created and delivered online surveys to patients who had received ANGELS consults over digital health during their pregnancies. Patient satisfaction among pregnant women was assessed between January and February 2019.

The infant mortality rate in Arkansas' Medicaid-covered population improved in the years since ANGELS' implementation, with a downward trend across years before increasing in SFY 2016. The extent of the increase was mainly driven by changing demographics after the implementation

of the Medicaid Expansion in Arkansas in 2014 (so called "private option"), as the increment was less notable in the non-Medicaid population. The team also tracked preterm deliveries that occur in hospitals with the neonatal intensive care units (NICUs) these fragile babies need.

The plot shows a general increase in the portion of deliveries in NICU hospitals since ANGELS began. In FY 2016, NICU delivery levels increased to more than 70% for extremely preterm (i.e. when the child is born before 28 weeks of completed pregnancy) and more than 60% for moderately preterm (i.e. when the child is born between 33 and 36 weeks of completed pregnancy) babies.

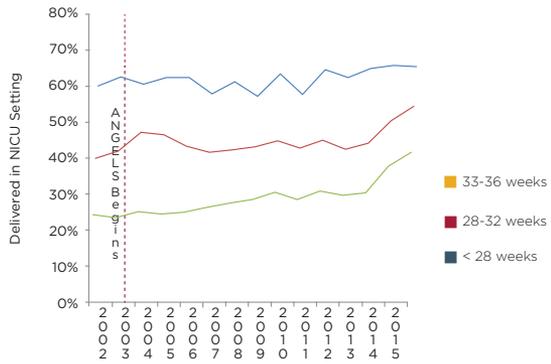
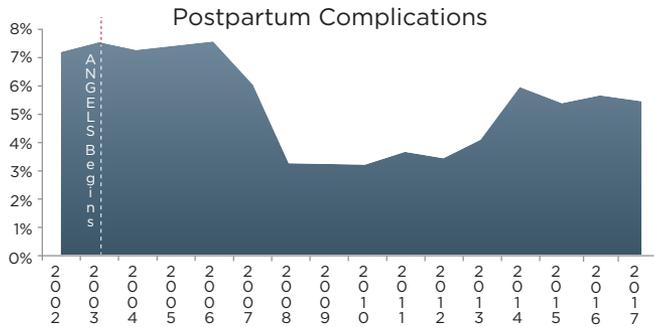
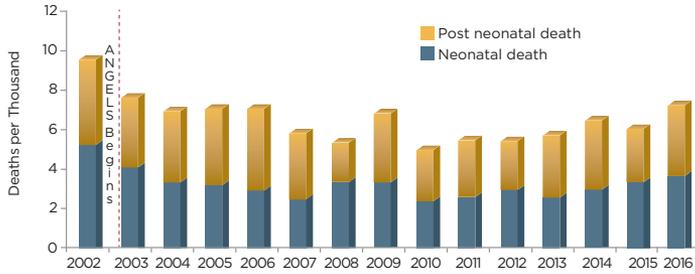
## Evaluation and Research Team

Back Row, left to right:  
Hari Eswaran, PhD, Nalin Payakachat, PhD,  
Yi-Shan Sung, PhD

Front Row, left to right, Hannah McCoy,  
Naleen Raj Bhandari, Rachel Luebke

Not Pictured:  
Rachel Ott, Songthip Ounpraseuth, PhD





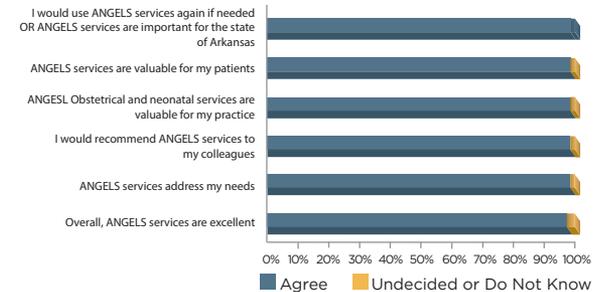
The rate of postpartum complications in Medicaid deliveries decreased significantly three years following ANGELS' implementation, with the lower rate maintained for the next six years before the spike in FY 2014. This increase appears to not have been an anomaly, as nearly the same rate was found each year from Fiscal Year (SFY) 2015 until FY 2017. The team identified postpartum hemorrhage as the primary reason, with more than 40% of the total complications attributed to this in SFY 2016 and SFY 2017.

In the effort to determine patient satisfaction, the team collected 39 completed surveys from patients who received ANGELS digital health consults and found that respondents highly rated telehealth providers and visits. All respondents reported that they were happy with their digital health appointments, and about 94% of respondents stated that their digital health provider always explained things in a way that they understood. Almost 90% of the respondents agreed that scheduling the digital health appointment was easy. The most frequently indicated reasons why respondents chose ANGELS telehealth services were that they were not required "to travel to the digital health appointment" (70%) and "they did not have to find someone to take care of their kid(s)" (21%). ANGELS digital health services allow patients to receive care nearby their residential areas. More than 80% of the respondents traveled less than 30 miles to attend the digital health appointments instead of commuting farther to in-person clinic visits at the UAMS main campus in Little Rock. A shorter travel time on average saved each patient \$75 to \$150. ANGELS digital health services are convenient and contribute to cost savings for patients due to lower travel costs, less need for childcare, and reduced absences from work.

# Evaluation and Research

	n (%)			
	Total	Medicaid (n=24)	Commercial (n=44)	Other (n=18)
<b><i>Telehealth made it easier for me to see doctor or other specialists</i></b>				
Agree	79 (91.8)	23 (95.8)	41 (93.2)	15 (83.3)
Undecided or Do not Know	6 (7.0)	1 (4.2)	2 (4.5)	3 (16.7)
Disagree	1 (1.2)	0	1 (2.3)	0
<b><i>Telehealth saved me time traveling to a hospital or specialist clinic</i></b>				
Agree	83 (96.5)	24 (100)	42 (95.5)	17 (94.4)
Undecided or Do not Know	2 (2.3)	0	2 (4.5)	0
Disagree	1 (1.2)	0	0	1 (5.6)
<b><i>I think it is important that Arkansas has a telehealth program like ANGELS to serve pregnant women</i></b>				
Agree	86 (100)	24 (100)	44 (100)	18 (100)
Undecided or Do not Know	0	0	0	0
Disagree	0	0	0	0
<b><i>I would be happy to use telehealth again if I needed care from a specialist</i></b>				
Agree	82 (95.3)	22 (91.7)	43 (97.7)	17 (94.4)
Undecided or Do not Know	4 (4.7)	2 (8.3)	1 (2.3)	1 (5.6)
Disagree	0	0	0	0
<b><i>Overall, I am satisfied with the ANGELS telehealth system</i></b>				
Agree	85 (98.8)	24 (100)	43 (97.7)	18 (100)
Undecided or Do not Know	1 (1.2)	0	1 (2.3)	0
Disagree	0	0	0	0

Based on the responses of the 84 providers who have used ANGELS services and completed a survey, it appears that the provider community supports ANGELS and believes it helps their practices. All of them agreed to the statement: *“I would use ANGELS services again if needed OR ANGELS services are important for the state of Arkansas.”* 97.6 percent of providers reported that ANGELS services are excellent.



## Dr. Jodi Turano

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As a young girl, Jodi Turano, DO, dreamed of being a physician. “I always knew I wanted to be a doctor, ever since I was seven.” When she came of age and enrolled in medical school, she found her passion in obstetrics and gynecology. “[I] just fell in love with OB,” said Turano. “It’s a little bit of medicine, a little bit of surgery... so it was kind of the right fit for me.”

Turano has worked at the NEA Baptist Women’s Clinic in Jonesboro since November 2017. At the clinic, she takes care of women from adolescence through adulthood and from menopause to post-menopause. When she first started to refer high-risk pregnancy patients out, it was to a long-distance location, and according to Jodi, this site “didn’t have good correspondence.” When she began referring patients to the ANGELS program, the

correspondence issue went away and a great relationship formed. Some of her patients have to drive to Little Rock, but most are able to be seen at St. Bernards through telemedicine. She sees the great convenience this provides her patients. For example, they do not have to drive two hours for a ten-minute consultation.

Turano sends all high-risk patients to ANGELS. In one particular case, she referred a patient whose child had a “lagging head.” “Because of ANGELS, we were able to get her in quick,” Turano said. “They wanted to be sure if she was going to deliver that there weren’t going to be any issues.” And thankfully there weren’t. The mother and child both are healthy, but the ANGELS program was aware of the issue and ready to act in the event of any problems during delivery.

Turano is a fan of ANGELS. “I really think it’s a great program. It definitely helps many patients that cannot financially get to Little Rock, to get to an MFM doctor. It helps the high-risk population in that they still get the appropriate care, but they don’t have to travel so far.” Turano knows it’s a stressful event to have a high-risk pregnancy, so any type of relief like saving gas and time is a huge comfort to her and her patients.



## MEMS Outreach

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**MEMS is a non-profit ambulatory service** that covers 2,400 square miles in the central Arkansas area. Staff members at MEMS, mostly EMTs and paramedics, have education hours they must obtain in order to recertify. The UAMS Institute for Digital Health & Innovation's ANGELS program collaborated with MEMS in order to create an educational course specific to obstetrics and emergency deliveries.

## Maternal Focus Group

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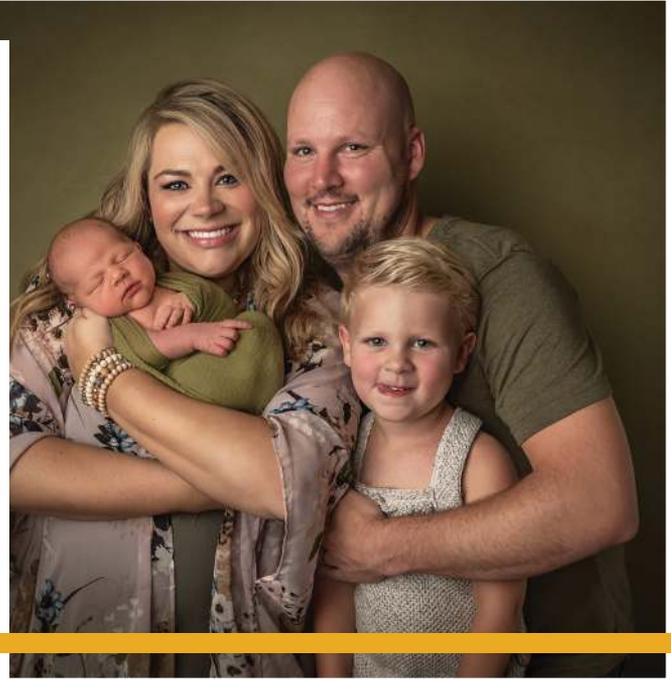
**Using the same successful model** as the Arkansas Stroke Assistance through Virtual Emergency Support (AR SAVES) program, and in an effort to decrease maternal mortality, ANGELS is facilitating a statewide focus group to discuss local needs and barriers to safe perinatal care. The introductory meeting was held in October 2018, and focus groups convened in 2019 (January, March, and April). Focus group participants included Emergency Department (ED) nurses from nine hospitals. Many needs and barriers were identified including the need for simulation, teleconsulting, teleconsulting, safety bundle education, public education regarding which hospitals are delivering/non-delivering, and a desire for OB specialist teleconsults in EDs.

### New Employees

- Joe Schaffner, MPA - assistant director of outreach
- Angie Hunton, RN, MSN - nurse project manager
- Stanley K. Ellis, EdD - director of education
- Rita Tuggle, BA - instructional development specialist
- Cheryl Washington, EdD, RNC-OB - assistant director of education

### New Telemedicine Clinics

- Ashley County Medical Center (1015 Unity Rd, Crossett, AR, 71635)
- Magnolia Regional Medical Center (101 Hospital Dr, Magnolia, AR, 71753)



# The Benton Family

with their  
newest  
addition,  
Jack.



University of Arkansas for Medical Sciences  
4301 W. Markham St., #518  
Little Rock, AR 72205  
<http://angels.uams.edu>