

MOMs Across the State

Delivering Team-based Care for Complex Management of Maternal Diabetes

Principal Investigators –
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Dr. Megan Schellinger, Prisma Health Upstate

S.C. Birth Outcomes Initiative (BOI) Symposium
Columbia, SC
November 8th, 2023



PRISMA HEALTH.

Session Focus

- 1) Know the incidence of diabetes in pregnancy and evolving patterns
- 2) Describe maternal and fetal risk factors associated with gestational and pre-gestational diabetes
- 3) Understand the benefit of implementing a multidisciplinary care model for the management of diabetes in pregnancy

Support for MOMs

MOMs in Control of Diabetes in Pregnancy was funded by the Blue Cross Blue Shield Foundation of South Carolina to support the goals of Diabetes Free South Carolina.

MOMs - Management of Maternal Diabetes

The MOMs programs, located in Midlands & Upstate, provide a team-based collaborative clinic model for pregnant women with diabetes including Type 1, Type 2 & Gestational.

In our 4th year, we continue to refine a replicable multi-disciplinary clinic model, evaluate our outcomes & build toward a continuum of care from preconception to postpartum and throughout the childbearing years.

MOMs Collaboration

Midlands & Upstate Funding



Midlands & Upstate Partners



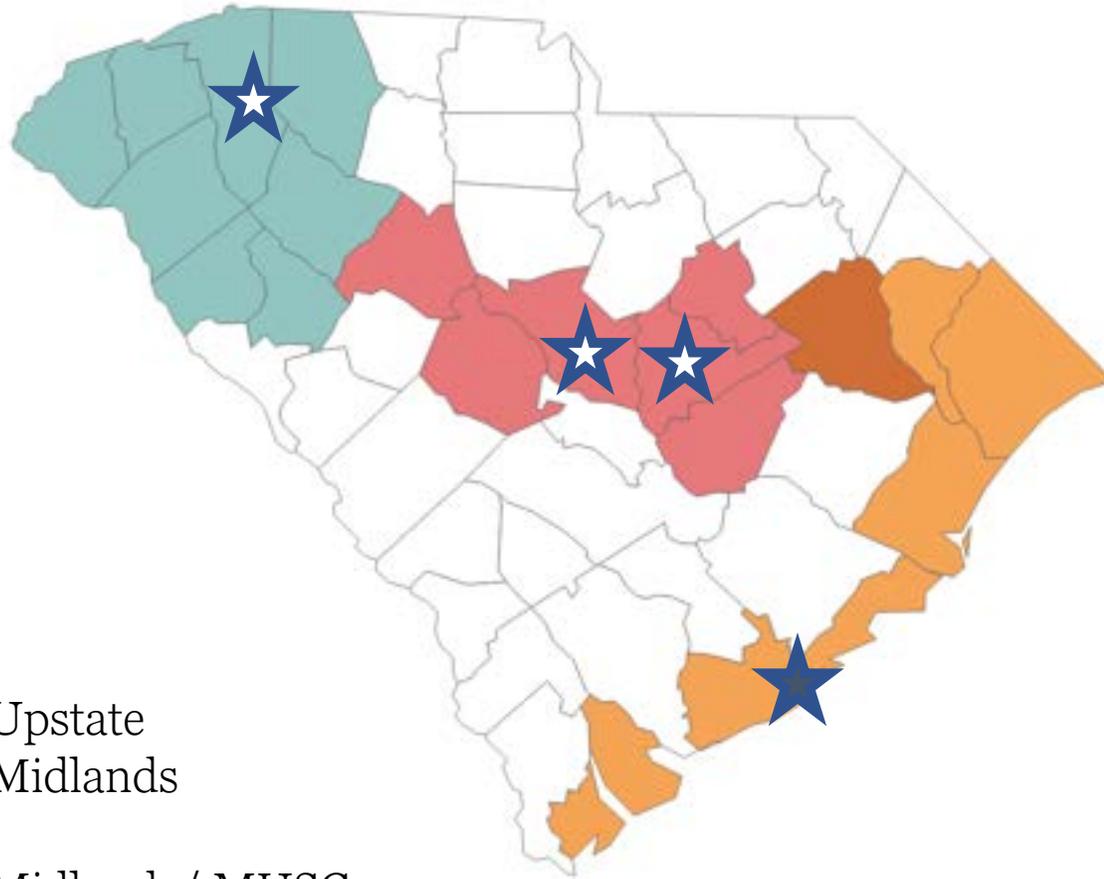
Lowcountry Funding



Lowcountry Partners



Management of Maternal Diabetes



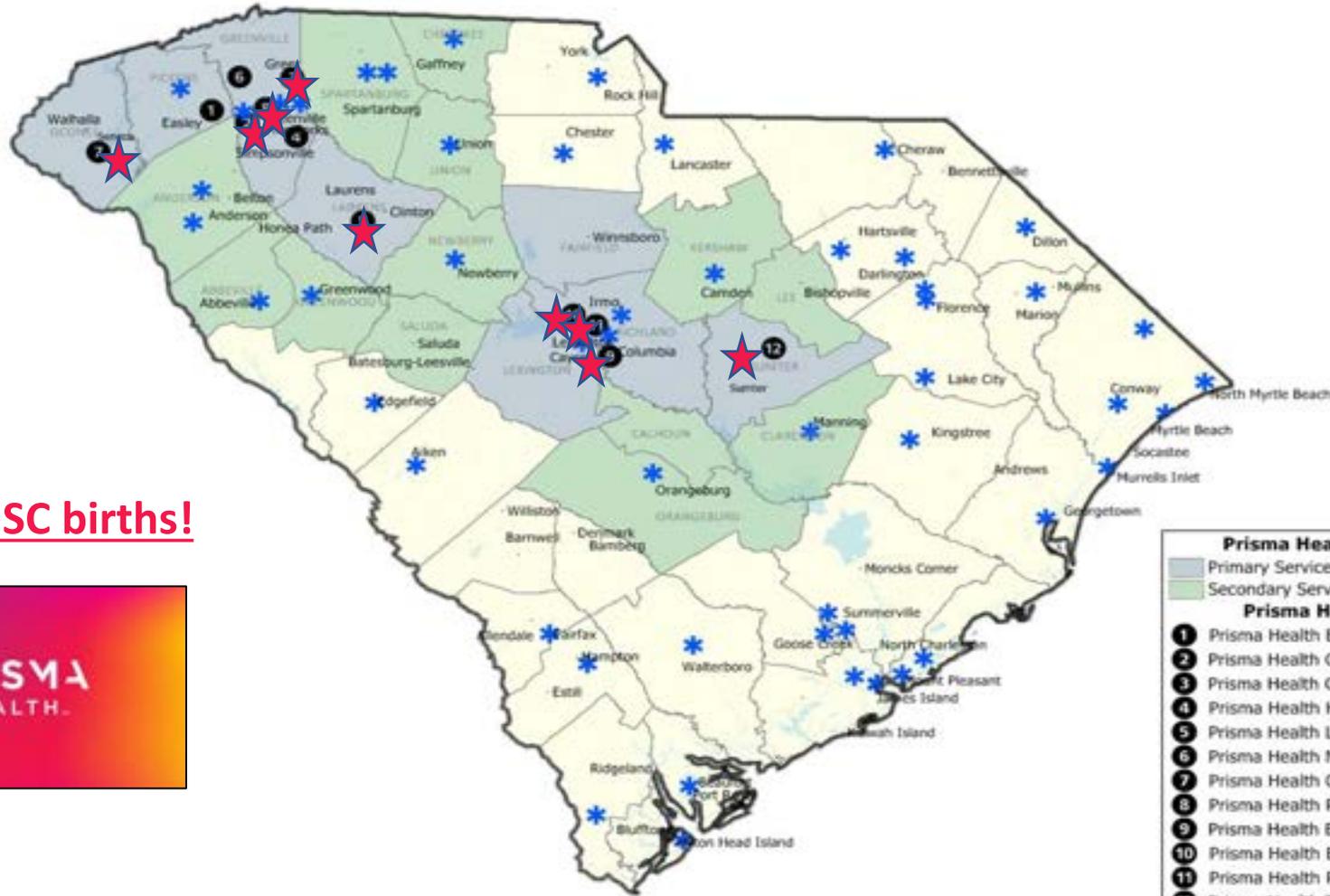
- Prisma Upstate
- Prisma Midlands
- MUSC
- Prisma Midlands/ MUSC

PRISMA
HEALTH.

MUSC
Medical University
of South Carolina

- ★ MUSC Multidisciplinary Program (est. November 2019; Telemedicine supported by Duke Endowment)
- ★ DFSC-Supported Multidisciplinary Program (Prisma Upstate, Prisma Midlands)

SC Births at Prisma Health

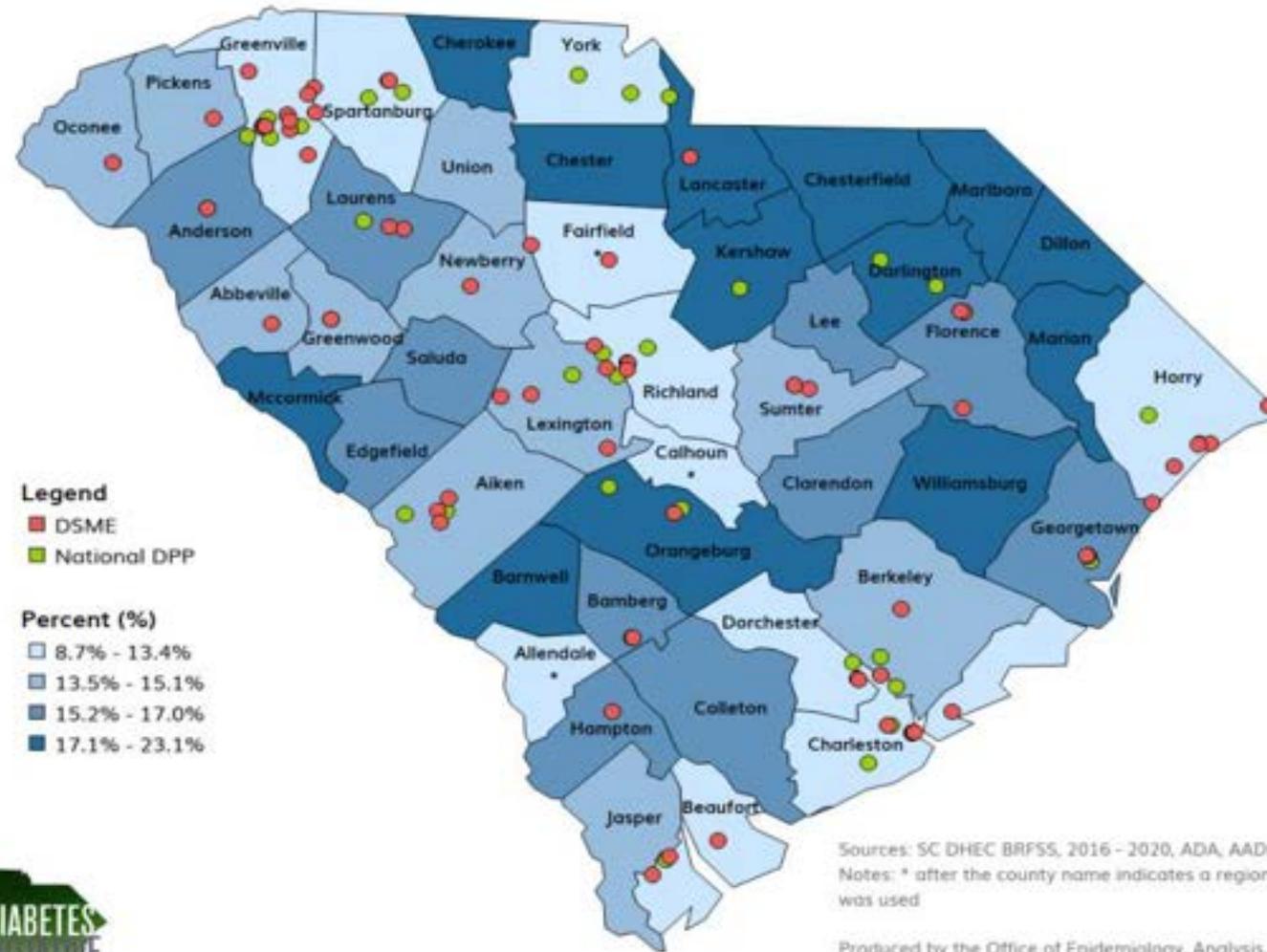


25% SC births!



Prisma Health Service Areas	
Blue	Primary Service Area
Green	Secondary Service Area
Prisma Health Hospitals	
1	Prisma Health Baptist Easley Hospital
2	Prisma Health Greenville Memorial Hospital
3	Prisma Health Greer Memorial Hospital
4	Prisma Health Hillcrest Hospital
5	Prisma Health Laurens County Hospital
6	Prisma Health North Greenville Hospital
7	Prisma Health Oconee Memorial Hospital
8	Prisma Health Patewood Hospital
9	Prisma Health Baptist Hospital
10	Prisma Health Baptist Parkridge Hospital
11	Prisma Health Richland Hospital
12	Prisma Health Tuomey Hospital
*	All Other Hospitals

Prevalence of Diabetes and Diabetes Resources



Sources: SC DHEC BRFSS, 2016 - 2020, ADA, AADE, and CDC.
 Notes: * after the county name indicates a regional estimate was used

Produced by the Office of Epidemiology, Analysis, and Data Visualization.

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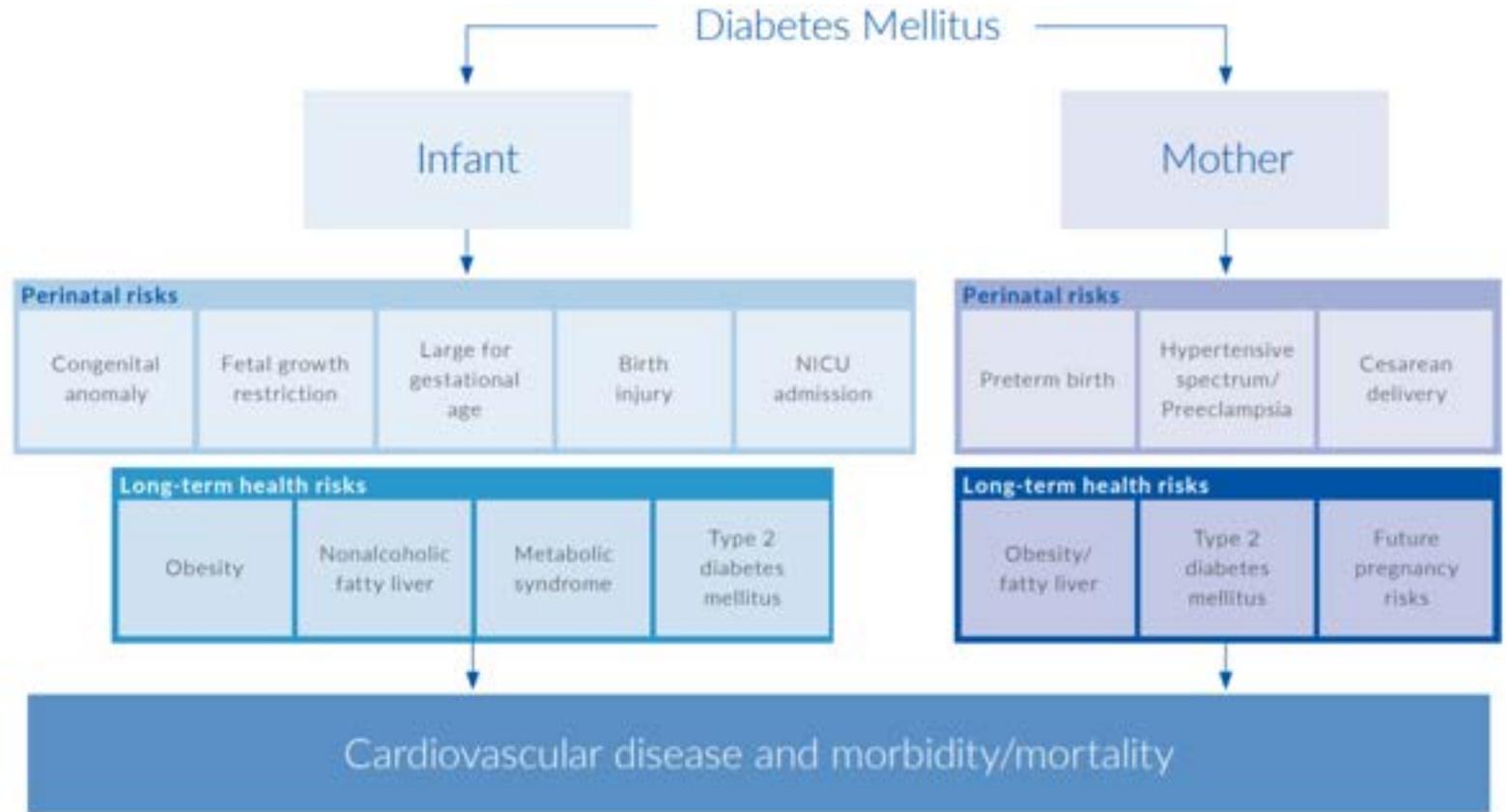
Diabetes Prevalence

- **Diabetes total:** 37.3 million people have diabetes (11.3% of the US population)
 - **Diagnosed:** 28.7 million people, including 28.5 million adults
 - **Undiagnosed:** 8.5 million people (23.0% of adults are undiagnosed)
- **Prediabetes total:** 96 million people aged 18 years or older have prediabetes (38.0% of the adult US population)
- **33%** of the US population are projected to have diabetes in 2050

Diabetes in Pregnancy Prevalence

- 7% of pregnancies in US are complicated by diabetes, and increasing
 - Type 1 increasing in Caucasian
 - Type 2 and GDM increasing
 - ~85% of diabetes in pregnancy are GDM
- Gestational diabetes/GDM rates increasing among all race and ethnicity subgroups and across all age groups
- Hispanic, African American, Native American, Asian, Pacific Islander are at increased risk

Risks of Diabetes in Pregnancy: Overview



Fetal Complications

- Macrosomia
- Shoulder dystocia
- Congenital malformations –cardiac, open neural tube defects/ONTD
- Fetal growth restriction
- Fetal demise

Neonatal Complications

- **Respiratory distress syndrome**
- **Hypoglycemia**
 - Maternal/fetal hyperglycemia
 - 50% of macrosomic babies
- **Hypocalcemia**
 - Failure of parathyroid hormone/PTH production at birth
- **Magnesium deficiency**
- **Hyperbilirubinemia**
 - 25-50% have neonatal jaundice
- **Polycythemia**
 - Increased erythropoietin
- **Cardiomyopathy**

Maternal Complications

- Renal dysfunction
- Retinopathy/neuropathy
- Heart disease/MI
- Pre-eclampsia
- Cesarean section
- Birth trauma
- Diabetic ketoacidosis/DKA (Type 1 and 2)
- Hypoglycemic coma (Type 1 and 2)
- Infections (UTI, pyelonehritis)
- Postpartum hemorrhage

Why We Care

- For too many South Carolina women, there is **poor access to health care *outside of pregnancy.***
- Patients with poor health access have historically **utilized the ED** for diabetes care and insulin access (insulin starts & titration), including admissions for Diabetic ketoacidosis DKA
- Patients come to MOMs program with a **higher burden of health inequity:**
 - No prior diabetes education
 - Limited or no access to technology with little remote patient monitoring
 - Limited insulin access
 - Food insecurity

Why are maternal and infant mortality rates in South Carolina among the highest in the developed world, and rising?

Contributing factors that must be addressed:

- Health disparities
- Poor access to care; lack of preventive care
- Lack of coordinated interdisciplinary care
- Inadequate pre-pregnancy counselling, postpartum care

Problem: Access to care

- In 2016 in SC, 3 out of 5 babies were born in a rural county
- Burdens of time, cost, energy often insurmountable for low-income women from rural communities
- High risk pregnancy requires frequent visits to multiple providers
- For women with diabetes, need for visits to multiple providers often cannot be met = “perceived as non-complaint.”
- Improvements in pre-pregnancy counselling and postpartum (inter-partum) care urgently needed

MOMs Program Aims

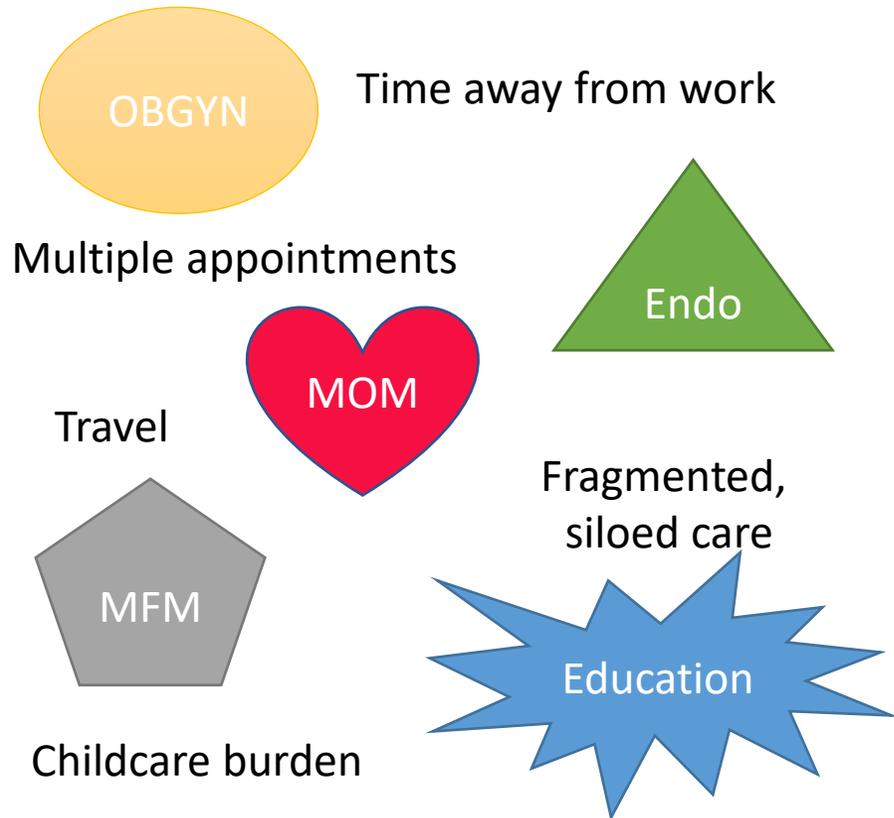
At the system-level, we aim to

1. Provide access to quality diabetes care provided by multi-disciplinary team
2. Improve glycemic control
3. Decrease maternal & fetal complications
4. Reduce triage/ER visits
5. Expand telehealth including remote patient monitoring
6. Address SDOH for a resource-poor population

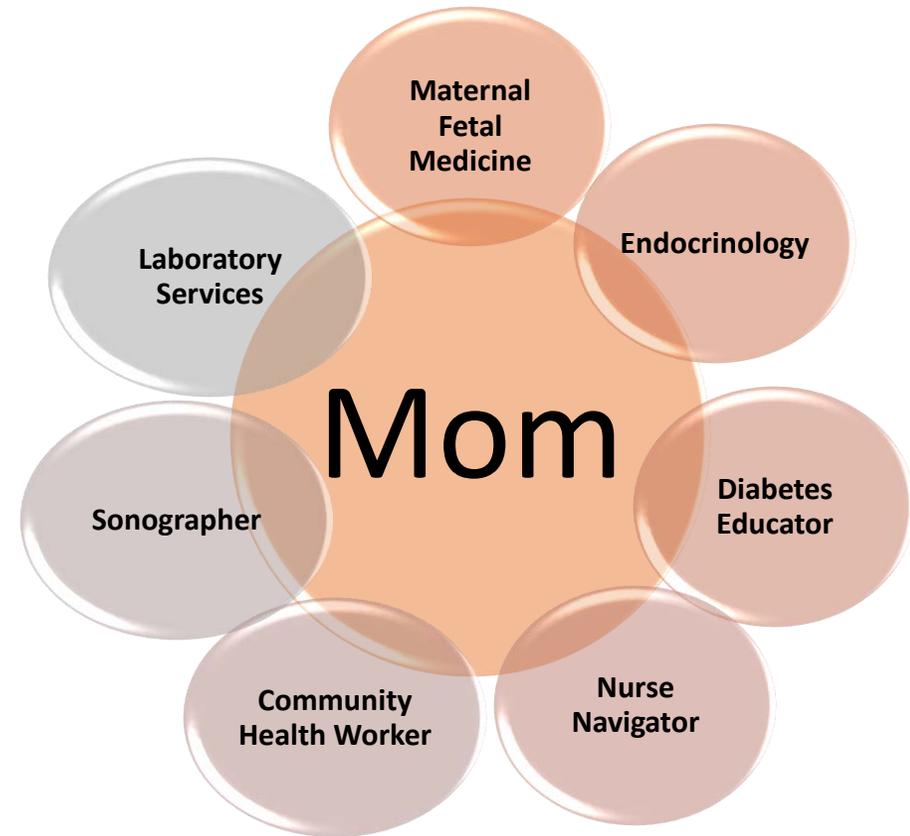
At the patient-level, we aim to

7. Improve diabetes knowledge & lifelong diabetes self-management skills
8. Increase access to diabetes medication and supplies
9. Adopt use of diabetes technology – equipment & training: continuous glucose monitors/CGMs, insulin pumps, sensors

Traditional Pregnancy Care



MOMs Team-based Approach



MOMs Midlands History

Columbia MFM

- Dr. Campbell – interest in reaching women in rural areas
- Only 10% of rural referrals attending high-risk appointment
- Bring high-risk care to the mom

Carolina Diabetes + Kidney Center

- Established 1981 by Dr. Lilavivat
- ADA accredited DSMES since 1998
- CDC accredited DPP since 2016
- Caring for diabetes in pregnancy/gdm referrals since mid 1980's

- Shared desire to increase access to care for women of child-bearing age and improve outcomes for women with diabetes in pregnancy
- Introduced in early 2020 by Dr. Lyons
- Funded June 2020
- Clinic opened in shared space in September 2020

MOMs Midlands

- A collaborative partnership between Carolina Diabetes & Kidney Center and Prisma Health
- Team-based, diabetes in pregnancy care targeted at reducing risk for mom and baby
- Physical locations in Columbia (new!) and Sumter, SC



History of Upstate MOMs Prisma Health Upstate OB/GYN Center

In 1974, the OB/GYN Center in Greenville SC was founded by Dr. Thompson Gailey to provide quality care for under-resourced women. It is one of the largest prenatal clinics in S.C. with over 2,700 deliveries in 2021.



In 2016 Dr. Megan Schellinger & Dr. Stanley Von Hofe started the 'Diabetes Clinic' with 4 patients serving pregnant women with diabetes via a collaborative model of care, combining Maternal-Fetal Medicine (MFM) & Medical Endocrinology. Dr John Bruch, championed the inclusion of Diabetes Self-Management Education and Support/DSMES & onsite pharmacist.



In 2020, 'MOMs in Control of Diabetes in Pregnancy' was funded by Blue Cross Blue Shield of SC Foundation to support the goals of Diabetes Free SC. The 2020-23 grant funded the expansion the Diabetes Clinic at Prisma Upstate's OB/GYN Center. In 2023, program received another 2 years of funding from BCBS SC Foundation.

Upstate MOMs Onsite Team

Our **onsite** multi-disciplinary MOMs team pictured at Prisma Health OBGYN Center, Greenville.



Upstate MOMs also provides **telehealth** and Remote Patient Monitoring. Our telehealth team includes Maternal Fetal Medicine/MFM, Endocrinology and DSMES/Diabetes Self-Management and Education Support.



MOMs Collective Services

- Maternal-Fetal Medicine Consult
- Endocrine Consult
- Co-management of diabetes during pregnancy and postpartum by endocrine and MFM
- Nutrition counseling by registered dietitian
- Individualized and Group DSMES
- MFM Ultrasounds
- Peer to peer consults
- Spanish interpreter services
- Fundoscopic examinations
- Individualized follow-up diabetes and obstetric care
- Glucose meter instruction
- Insulin start/injection instruction
- Insulin pump prescription and management
- Continuous blood glucose monitoring
- Remote patient monitoring
- Food Share SC Partner
- Care coordination and patient support by RN Navigator
- Transportation assistance

MOMs Patient Care Checklist

Care Item	YES	NO	Care Item	YES	NO
Initial MFM Consult			Anatomy Scan 18-20w		
Initial Endocrine Consult			Fetal Echo 22-24w		
Diabetes Educator/RDN			Serial Growth Scans		
Retinal Screening			CHW Visit		
A1c, Monthly			SDOH + Depression Screening		
Baseline 24 Hour Urine/CMP, CBC			Last Dental Exam		
Baseline ECG if >35 or cardiac risk factors are present			Patient Satisfaction Survey		
Aspirin			Diabetes Technology		

Maternal Characteristics of Midlands/Upstate MOMs 2020 – 2023*		
	n	%
TOTAL PATIENTS Delivered	1,486	100
Type 1 DM	111	8
Type 2 DM	357	24
Gestational DM	946	64
Pregestational/Suspected Type 2	72	5
RACE		
African American	422	29
Caucasian	714	48
Hispanic	272	19
Other	68	5
Unknown/refused	10	1
PREFERRED LANGUAGE**		
English	1,146	83
Spanish	226	17
Other	15	2

MOMs Services/Supplies

Combined Midlands + Upstate

- 6,391 team-based care visits
- 6,442 interactions with diabetes education – in person
- 243 fundus exams
- Over 15,000 glucose log reports reviewed
- Over 2,686 Continuous Glucose Monitors
- 217 Hygiene bags
- 1,319 CHW Interactions
- 790 Diabetes Education Bags/Toolkits
- 16 “sight saves”
- 2,257 Foodshare boxes provided
- 134 MOMs patient enrolled in a WHI program (WOW or WICO) postpartum

*programs started fall 2022, funded by BCBS

MOMs Data Collection

Data collection includes:

- Data entry into REDcap database (chart reviews) & EMR exports
- Statewide MOMs dataset on pregnancy outcomes that includes Upstate, Midlands & MUSC MOMs sites.
- Patient surveys capture the patient experience.
- Claims and hospital utilization data pulls are underway.
- **MORE COMING SOON!**

Moving Forward

- Midlands & Upstate programs has an additional 2 years of funding: 2023 - 2025
- Our work this funding cycle includes:
 - Expansion and scalability
 - Refinement of data collection
 - Collaboration between our programs and our friends at MUSC
 - Defining our MOMs program models and disseminating
 - Sourcing future funding
 - Providing quality care and loving what we do!

Closing thoughts from our teams to yours

- Build it and they will come..
- Many times our patients are viewed as non-compliant. Dr. Campbell and I challenge you to change your thinking.
- What are my patients' barriers?
 - Food
 - Water
 - Shelter
 - Hygiene supplies
 - Insulin
 - Meters, CGMs, alcohol pads, needles
 - Transportation
 - Multiple appointments across the city
 - Access with limited resources - confusing for our patients
 - Mental health
- Please take the time - it truly makes a difference in our patients lives

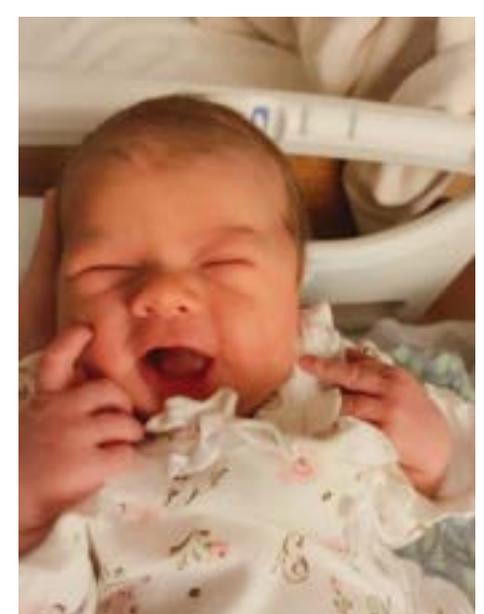
It takes a village!

Midlands

- Berry Campbell
- Usah Lilavivat
- Makala Smith
- Julia Kimsey
- Kathryn Capan
- Susan West
- Tracey Campbell
- Amanda Tindal
- Vanessa Bradford
- Aisha Culler
- Dorothy Mclean
- Tonya Seawright
- Windy Holliday
- Kim Alston
- Jihong Liu
- Sarah Catherine Mogy
- Caroline Justice

Upstate

- Megan Schellinger
- Danny Pasko
- Sharon Keiser
- Sandy Weber
- Thompson Gailey
- Neha Hudepohl
- Christine Turnbull
- Alicia Kane
- Darlene Pace
- Michelle Stancil
- Pamela Schult
- Jessica Odom
- Hannah White
- Kathryn Hunt
- Casey Fiocchi
- Kathy Fincher
- Johana Bruen
- Emily Benson
- Linda Perez-Cano
- David Londono Acevedo
- Courtney Cart
- Jessie Britt
- Patti Parker
- Alexis Kelly
- Emma Klipstein
- Christine Bell
- High-risk OB nurses
- MFM nurses



THANK YOU!



Questions?



An independent licensee of the Blue Cross Blue Shield Association

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Carolina Diabetes & Kidney Center

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