



Gestational Diabetes Collaborative Better Data Better Care



*State and Tribal
Organization Impact Report
2009-2014*



**NATIONAL ASSOCIATION OF
CHRONIC DISEASE DIRECTORS**
Promoting Health. Preventing Disease.

This report was developed by
Joan Ware, BSN, MSPH and Adeline Yerkes, BSN, MPH

Women's Health Consultants
with the National Association of Chronic Disease Directors

With the assistance of the
9 states and 4 tribal organizations comprising the *Gestational
Diabetes Collaborative: Better Data Better Care*

**If you require this document in an alternative format, such as large
print or a colored background, please contact NACDD's
Communication & Member Services Department at (770) 458-7400.**

This publication was supported by Grant/Cooperative Agreement Number U58DP002759-01 from the Centers for Disease Control and Prevention (CDC). "Contractor acknowledges the contribution of the National Association of Chronic Disease Directors (NACDD) to this publication. Its contents are solely the responsibility of the authors and do not necessarily reflect the view of the CDC or NACDD." NACDD and CDC also shall have the right to obtain, reproduce, publish or otherwise use any data first developed or produced by the Contractor pursuant to this Agreement.

Table of Contents

Executive Summary.....	1
Purpose of the Report	11
Gestational Diabetes, the Problem.....	12
Project Background.....	14
Overview of the GDC: Better Data Better Care	
• Formation of the Project.....	15
• Dissemination and Communication.....	16
• Selection Criteria.....	18
• Strategic Focus Areas.....	19
State and Tribal Organization Reports.....	21
• State and Tribal Organizations Seals.....	22
• Table of States and Tribal Organizations.....	24
Arkansas Department of Health’s GDM Collaborative.....	25
Florida Department of Health’s GDM Collaborative.....	29
Idaho Department of Health’s GDM Collaborative.....	33
Missouri Department of Health GDM Collaborative.....	37
North Carolina Department of Health’s GDM Collaborative.....	41
Ohio Department of Health’s GDM Collaborative.....	46
Oklahoma Department of Health’s GDM Collaborative.....	51
Utah Department of Health’s GDM Collaborative.....	56

West Virginia Department of Health’s GDM Collaborative.....61

Alaska Native Health Consortium’s GDM Collaborative.....67

Chickasaw Nation’s GDM Collaborative.....71

Choctaw Nation’s GDM Collaborative.....77

Utah Navajo Health System’s GDM Collaborative.....80

References and Appendix

- References.....84
- Table of Strategic Focus Areas and References.....89
- Table of State and Tribal Organizations Products.....94

Executive Summary

Gestational diabetes (GDM) affects 7%–14% of pregnancies, 240,000 women annually, in the United States¹. Women with GDM have up to a 70% chance of developing type 2 diabetes in the decades following the pregnancy. Yet only about 50% of women with GDM receive a postpartum visit and even less are screened for diabetes. Various factors influence low levels of testing². These factors include: gaps in surveillance systems, errors in documenting GDM care, lack of awareness about the association between GDM and increased risk for type 2 diabetes.

The Centers for Disease Control and Prevention (CDC) Divisions of Diabetes Translation and Reproductive Health partnered with the National Association of Chronic Disease Directors (NACDD) to establish a multistate collaborative to identify gaps in GDM data, conduct quality improvement strategies/interventions to improve documentation, increase postpartum glucose testing, and increase education about GDM. The partnership, *Gestational Diabetes Collaborative Better Data Better Care* was formed in 2009 with nine states and four tribal organizations. The Collaborative recognized the many challenges of this effort and prioritized those challenges that they felt they could address:

- Making gestational diabetes a priority issue for both Maternal Child Health (MCH) and Chronic Disease (CD) Programs
- Incorporating this initiative into an already full plate of other state/tribal programs and initiatives
- Enhancing the collaborative efforts between CD and MCH programs
- Collecting and analyzing the needed data resources
- Understanding that the weight gain/obesity prior to pregnancy and following the pregnancy places the woman and her offspring at a seven fold risk for developing type 2 diabetes
- Recognizing and capitalizing on a captive target audience for the National Diabetes Prevention Program (DPP) activities

Based on knowledge gained from a previous data validation project and review of the literature, the Collaborative used a consensus process to establish goals and strategic focus areas for intervention. The Collaborative goals were to: foster collaboration, improve GDM surveillance, develop interventions to improve care and prevent or delay type 2 diabetes through postpartum glucose testing, follow-up, and lifestyle coaching. The strategic focus areas included:

- data quality and clinical care improvements
- provider and consumer education

The Collaborative communicated by quarterly conference calls to share with one another their activities. Quarterly webinars provided updated GDM information and a website was established to disseminate materials and products.

Data Quality Improvement Strategies

Collaborative partners developed internal teams utilizing health department data to develop a data document detailing prevalence data. All Collaborative partners conducted a data source inventory, collected data from a variety of sources available within their sphere, and the states published a GDM Prevalence Report. The data sources utilized included: Behavioral Risk Factor Surveillance System (BRFSS), Pregnancy Risk Assessment Monitoring System (PRAMS), hospital discharge, maternity prenatal clinic records and other sources. Some states had access to Medicaid data.

From the data developed, Collaborative partners developed action plans to further improve data, change clinical care systems, health systems, policy or provide educational opportunities/resources.

By utilizing existing surveillance data, the Collaborative conducted data quality improvement strategies to improve and change policies and health systems. Two states implemented strategies to improve the accuracy of GDM diagnosis on the birth certificate. To improve data documentation, one state added fields to electronic birth certificates to indicate a diagnosis of GDM, resulting in a 30% increase reported over the study period. Two states working with staff from vital records, hospital quality improvement and birth certificate data entry staff, provided trainings to clerks on using the new system and how important accuracy in translation is for patient care. Once the clerks felt like contributing members of the team they were anxious to participate.

To assess knowledge, attitudes and practices of healthcare providers and women with GDM, four states and one tribal organization conducted surveys or focus groups. Less than 1/3 of providers were aware of the high risk of type 2 for

women with GDM and lacked the knowledge, policies and tools to adequately provide quality care. Data achievements included:

- All collaborative states and tribal organizations now use 2003 electronic Birth Certificates form, so that there is uniformity in being able to report types of diabetes during pregnancy.
- One state collaborative showed a 30% increase in GDM reporting on birth certificates by providing a modified maternal worksheet and training for hospital medical records personnel.
- Three tribal organization partners assessed electronic medical records utilized in their Women's Clinics and determined a need to develop GDM templates to capture needed clinical information and enhanced diagnostic and treatment policies to provide and improve care.

Lesson learned from the data quality improvement interventions included:

- Less than 1/3 of providers were aware of the high risk of type 2 for women with GDM.
- Providers lacked the knowledge, policies and tools to adequately provide quality care.
- While certified diabetes educators provide excellent information about GDM, their services are not readily available to high-risk populations like women on Medicaid.
- One state conducted postpartum focus groups among women who had GDM in three high-risk populations to determine their needs. Results reflected little consensus on messaging types or information.
- Another state conducted a follow-up survey of women receiving postpartum information packets to determine effectiveness and patient satisfaction with the packets. The packets helped remind need for postpartum check-up, glucose screen and need for convenient appointment schedules.
- One tribal organization collaborated with a major university on conducting focus groups concerning risks, health beliefs, barriers/facilitators and specific interventions among postpartum native women with GDM and cardio-metabolic disparities. The survey results revealed the need for simple text messaging and a strong support network.

- State projects often do not have direct access to data and lack of epidemiology or statistical staff makes it difficult to obtain or interpret data.
- Data on GDM in ethnic and racial populations such as American Indians are scarce.
- Interpretations of the data vary greatly by the source. All but one of the state partners had access to PRAMS data, yet only two added GDM questions to the core questionnaire, and only three states were able to add questions to the BRFSS data set.
- Data collected by states are not easily accessible to providers and the public.
- Data on postpartum visits and glucose testing are not available, and if collected not readily accessible.

Clinical Care Quality Improvement Strategies

Collaborating with partners, states and tribal organizations addressed clinical care within health systems particularly the need to improve postpartum visits with the glucose screen and lifestyle behavioral education.

One state collaborative implemented a variety of strategies to increase postpartum visits, including resource development and health system changes. Partnering with university hospital system's prenatal clinic, the Collaborative demonstrated that changing and standardizing the clinic processes for identification and care for women with GDM improved screening, documentation and follow-up for GDM. Postpartum visits increased from 50% to 89% and postpartum glucose testing orders increased from 10% to 39% after the first year.

One of the tribal organizations conducted a needs assessment of staff, environmental, policy and continuing education needs. The results indicated that their staff capacity was inadequate to meet the patient caseload. When additional healthcare professionals were added to the team to enhance patient care, compliance increased.

Another strategy to increase postpartum visits and glucose screen testing involved sending a reminder. States sent postcards, information packets and magnets to mothers with live births and GDM. One state was able to evaluate their project and this effort resulted in a 35% increase in testing.

Tribal health systems partnering with diabetes programs and women's clinics conducted reviews of existing programs, revised policies and procedures and developed electronic medical record templates to include GDM plus reminders systems to improve care. These system changes resulted in added staffing capacity, culturally appropriate messages and improved patient compliance. There was a 10% increase of postpartum visits made with glucose screens.

Clinical care quality improvement achievements included:

- Two states and four tribal organizations enhanced diagnostic, treatment and follow-up policies.
- One state piloted a telemedicine gestational diabetes self-management education program.
- Four tribal organizations added postpartum and type 2 diabetes prevention education components to the clinical protocol.
- MCH newborn home visiting programs provided counseling on blood glucose screening or lifestyle interventions in two states to postpartum women with GDM.
- Two tribal organizations interfaced with wellness programs for postpartum lifestyle interventions.
- One tribal nation improved their policies, procedures and institutionalized practices for the GDM program by developing a follow-up care plan for women with GDM, which included postpartum screening and diabetes prevention education. As a result of these improvements, the tribal nation has seen women maintain tight control of A1C levels, with a reduction, from 6.1% to 5.9% over a one-year period, 2014-2015.
- Postpartum follow-up reminder cards or packets were disseminated by four states.
- One state was able to demonstrate an increase in postpartum blood glucose screening; rates of self-reported postpartum blood sugar testing increased by 35%, from a pre-intervention baseline of 35.8% in 2009 to a post-intervention outcome of 48.5% in 2010 ($p < .05$).

Lessons Learned included:

- Integrated team approach for GDM care and education resulted in a decreased time interval to achieve glucose control during pregnancy (7.3

weeks to 3.8 weeks) and an increase in reports of positive lifestyle behaviors.

- Modified EMR templates increased provider awareness of GDM screening and follow-up from prenatal through annual visits.
- Postpartum reminders enhanced postpartum visits and glucose screening by 30-35%.
- Home visiting programs were strong resources for providing education/information for women with GDM during prenatal and postpartum periods.
- Although, a consensus on diagnosis of GDM was determined at the National Institutes of Health (NIH) Consensus Conference to utilize the Carpenter and Coustan (two-step) methodology, Collaborative providers working with high-risk populations continue using the American Diabetes Association (one step) criteria to insure compliance.
- Lack of provider/patient recognition that GDM complications are not temporary medical problems is difficult to overcome for patient/provider action.
- There is a need for greater opportunities/access to diabetes prevention programs to reduce or delay of type 2 diabetes among women with GDM and their offspring.

Provider and Consumer Education Strategies

Collaborative teams developed a variety of provider education opportunities to improve knowledge, attitudes and practices. Provider surveys acknowledged the gap in knowledge and highlighted the professionals who would gain most from provider education.

Achievements in professional education included:

- Three states and four tribal organizations developed user-friendly state consensus guidelines and/or GDM guidelines for screening, diagnosis and follow-up.
- Five states provided professional webinars/video conferencing opportunities.
- Seven states partnered to provide public/professional education summits.

State and tribal organization internal workgroups developed and distributed GDM messages for women in a variety of different media venues.

Patient/public education achievements included:

- All states and tribal organizations developed culturally and literacy appropriate patient brochures, fact sheets, media messaging or magnets.
- State websites provided patient education resources.

Lessons learned included:

Simple, short and consistent messaging is needed for women. Postpartum visit reminders with educational messages enhance and improve postpartum visit compliance.

States and tribal organizations through their willingness to collaborate were able to generate creative systems and policy change, tools, products and educational opportunities in a very short time frame with little financial support. Throughout the five years of the project, states and tribal organizations verbalized the key to their success was collaboration. State collaborations were able to generate \$5.50 per every dollar of funding provided by NACDD and CDC. Tribal organization collaborations generated \$1.00 per every dollar of funding provided by NACDD and CDC.

This project has also had national accomplishments with increased national partners, increased knowledge about gestational diabetes and increased data indicators. National outcomes include the following:

- Consultants served on policy building committees with United States Public Health Service (USPHS) Office on Women's Health and Health Resources and Services Administration (HRSA).
- Consultants served on data/surveillance committees with Council of State and Territorial Epidemiologists (CSTE), CDC and Association of Maternal & Child Health Programs (AMCHP).
- Gestational diabetes is now included as a 2014 CSTE/Chronic Disease Indicator and is a part of the AMCHP Maternal Child Health Indicators.

- Posters and presentations disseminated the initiative's processes and accomplishments with Sweet Success and the International Study Group on Pregnancy and Diabetes Group.
- The initiative built an interactive Gestational Diabetes website containing a current digital library, state and tribal organization tools and products, current national and international guidelines and standards.

<http://www.chronicdisease.org/?page=00GDMHomePage>

- Project developed a Gestational Diabetes Network of over 700 interested participants and produced 13 webinars.
- Disseminated the outcomes of this initiative in peer-reviewed articles and over twenty presentations at national conferences
- Increased visibility of NACDD and the *Gestational Diabetes Collaborative Better Data Better Care* with an GDM interactive website and a National Network on Professional Education

References:

1. National Institutes of Health Consensus Development Conference Statement: Diagnosing Gestational Diabetes Mellitus, March 4-6, 2013
2. Owens-Gary M, Ware JL. Interventions to Increase Access to Care and Quality of Care for Women With Gestational Diabetes. *Diabetes Spectrum* 2012; Volume 25:26-28.

In summary, the *Gestational Diabetes Collaborative Better Data Better Care* accomplished measurable outcomes for the Collaborative goals. The following table demonstrates these outcomes.

Table: Collaborative Goals, Charge and Measureable Outcomes

Collaborative Goals	Charge to States and Tribes	Measurable Outcomes
Foster Collaboration	Form partnerships to enhance collaboration and capacity among programs	<p>1. Pre-and post-assessments of MCH and CD staff capacity to collaborate on the GDM project in 4 states showed <i>significant</i> ($p > 0.05$) improvement in 7 of 9 categories and in overall capacity measurement. Categories showing improvement included: Coordination, Policy, GDM Knowledge, Data, Staffing, Leadership and Administrative Systems (support). Networking and Funding were not significantly improved.</p> <p>2. Final summaries collected from states indicated maternal child health and chronic disease collaboration was made possible through this project.</p> <p>3. State collaborations were able to generate \$5.50 per every dollar of funding provided by NACDD and CDC. Tribal organization collaborations generated \$1.00 per every dollar of funding provided by NACDD and CDC.</p>
Improve GDM surveillance	Identify, catalogue and validate available GDM data and determine issues requiring action	<p>1. All states (and tribal organizations) inventoried available data sources for GDM, developed and disseminated a GDM data document and developed interventions to improve surveillance.</p> <p>2. GDM is now indicated on EMR and birth certificates, and in some states GDM diagnosis documented on birth certificates improved by 30-35%.</p> <p>3. GDM is now a CSTE chronic disease indicator for both diabetes and maternal and child health.</p> <p>4. States/tribal organizations conducted 5 provider surveys, a WIC client point-in-time survey and 3 focus group projects to establish baseline data to be used in developing interventions and evaluation.</p>

Table: Collaborative Goals, Charge and Measureable Outcomes (cont.)

Collaborative Goals	Charge to States and Tribes	Measureable Outcomes
Develop interventions to improve care	Address and resolve gaps in the quality of GDM prevalence data and clinical care.	<p>Over one-hundred strategies were implemented by the Collaborative partners to address provider, clinical and consumer issues. Each Collaborative provided professional and consumer programs; clinical tools, staff training; support for policy changes and new partnerships to leverage resources.</p> <ol style="list-style-type: none"> 1. Integrated team approach for GDM care and education resulted in a decreased time interval to achieve glucose control during pregnancy (7.3 weeks to 3.8 weeks) and an increase in reports of positive lifestyle behaviors 2. Changing and standardizing the clinic processes for identification and care for women with GDM improved screening, documentation and follow-up for GDM to almost 100% and postpartum visits increased from 50% to 89% and postpartum glucose testing orders increased from 10% to 39% after the first year.
Prevent or delay type 2 diabetes through postpartum glucose testing, follow-up and lifestyle coaching	Develop interventions to improve access and increase postpartum follow-up, management and education	<p>Five years is not long enough to determine prevention or delay of type 2 DM due to improved GDM management. However, the Collaboratives improved postpartum testing and follow-up.</p> <ol style="list-style-type: none"> 1. Postpartum mail-out projects resulted in a 35% increase in glucose testing. 2. Tribal clinical system changes increased postpartum clinic visits with glucose screens by 10%. 3. Rates of self-reported postpartum blood glucose testing in one state increased by 35%, from a pre-intervention baseline of 35.8% in 2009 to a post-intervention out-come of 48.5% in 2010 ($p < .05$).

Purpose of the Report

The *Gestational Diabetes Collaborative Better Data Better Care States and Tribal Organizations Project Report* documents the evidence – based state/tribal quality improvement initiatives, the intervention steps taken, accomplishments and lessons learned.

The Collaborative shares the report with state departments of health or tribal organizations staff who could adopt, adapt and/or replicate these efforts. The document provides a comprehensive overview of the process for developing and implementing a collaborative effort by state Chronic Disease and Maternal Child Health Programs or tribal Comprehensive Diabetes Centers and Women’s Clinics. This report emphasizes collaborative efforts utilizing both internal and external partners in developing evidence-based quality improvement initiatives including the following:

- Surveillance and accuracy of data
- Healthcare provider knowledge and practices
- Patient knowledge and behaviors
- Health/clinical systems to provide comprehensive care for women with gestational diabetes to prevent/delay type 2 diabetes



The contents provide the reader with an overview of the importance and challenges of gestational diabetes (GDM) regarding:

- Increased incidence and prevalence
- Increased risk of developing type 2 diabetes for both the woman and her offspring
- Should no longer be considered a short-term pregnancy related condition but a pre-diabetes state needing lifestyle interventions and long-term follow-up.

The authors of this report celebrate the accomplishments and lessons learned by our state and tribal partners. Their collaborative efforts with partners allowed creatively thoughtful products and programming. A companion impact report has also been published.

The Problem of Diabetes

Prevalence of diabetes (type 1, type 2 and GDM) is increasing and as of today affects 2 out of every 5 Americans. For women, the average risk for a 20 year old woman is increasing from 27% in the 1980s to 40% in 2012¹. Besides the increased prevalence, the cost of diabetes is rising at a higher rate than overall medical costs: \$245 billion in 2012 for all types of diabetes and GDM costs \$636 million annually.²

Gestational Diabetes

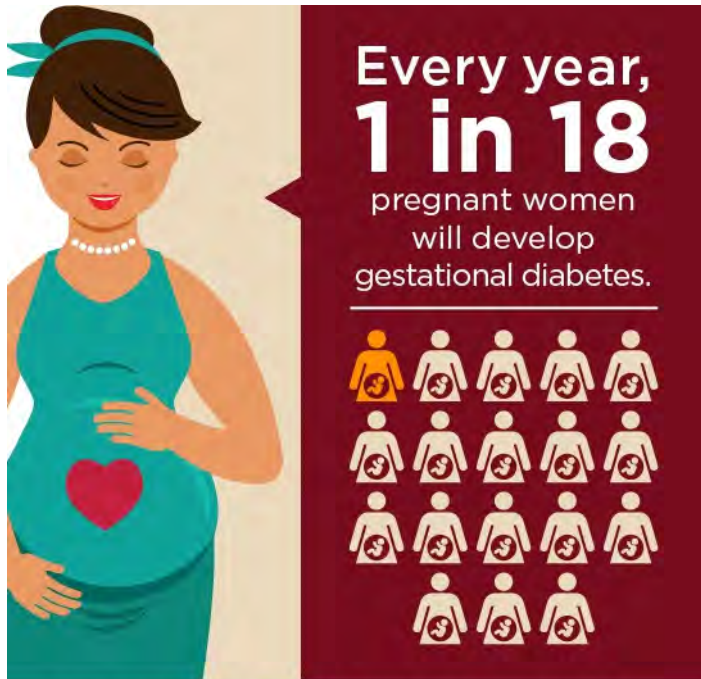
Pregnancy can predict and sometimes exacerbates risk and future chronic diseases such as GDM and subsequently obesity, type 2 diabetes, hypertension or heart disease.³

Gestational diabetes mellitus (GDM) is a condition of carbohydrate intolerance of varying severity that begins or is first recognized during pregnancy, and is one of the most common complications of pregnancy. GDM, in some cases, is actually type 2 diabetes that has not previously been diagnosed. For some women the glucose intolerance disappears soon after delivery, but for 30% of women with GDM following delivery, glucose intolerance remains and the woman is diagnosed with either type 1 or type 2 diabetes. The prevalence of GDM varies because of different screening and diagnostic criteria, populations, races, ethnicities, ages and body compositions. The March 2013 NIH Consensus Development Conference Statement on Diagnosing Gestational Diabetes estimates the prevalence rate of 6-7% occurs in all pregnancies with a live birth.⁴

Today, gestational diabetes is not merely a pregnancy complication but a lifetime challenge for the mother and the child. Diabetes, due to the increasing prevalence of metabolic syndrome, is increasing in all demographics including reproductive age. Since 2012, the Standards of Medical Care in Diabetes calls for women with risk factors to be screened for undiagnosed type 2 diabetes at the first prenatal visit. GDM is defined as 'diabetes diagnosed during pregnancy that is not clearly overt diabetes and presents additional need for screening and diagnostic procedures.'³



GDM presents a lifetime challenge to the health of the mother and her offspring³



Every year,
1 in 18
pregnant women
will develop
gestational diabetes.



SOURCE: VanDorsten JP, Dodson WC, Espeland MA, Grobman WA, Guise JM, Mercer BM, Minkoff HL, Poindexter B, Prosser LA, Sawaya GF, Scott JR, Silver RM, Smith L, Thomas A, Tita ATN. National Institutes of Health Consensus Development Conference Statement: Diagnosing Gestational Diabetes Mellitus. NIH Consens State Sci Statements. 2013 March 4-6; 29(1): 1-30.



Every year, up to
24,000
women with
gestational diabetes
will develop
type 2 diabetes
after pregnancy.



SOURCE: Centers for Disease Control and Prevention. National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.

- Prevalence rates range from 7%-14%, with anticipated growth up to 18%⁵
- Currently affects over 240,000 pregnancies annually⁴
- Based on the percentage of women receiving postpartum testing only 24,000 will be actually diagnosed with diabetes in a given year⁴
- Women with GDM have a Relative Risk of 7.4 of developing type 2 diabetes in the next decade⁵
- Women with both GDM and Pre-Eclampsia are even more at risk—Are 18 times more likely to develop hypertension and early heart disease^{6,7}
- Long term adverse health outcomes for both mother and offspring⁸
- Studies show type 2 diabetes can be prevented or delayed by long-term follow-up care and risk factor reduction⁹

Project Background

The Women's Health Council, National Association Chronic Disease Directors (NACDD), guided by its leadership team, had a strong interest in women's issues and has addressed gaps in programming, services or policies since 1995. The Council's leadership team was composed of 8 state members who represented various NACDD disease related councils, as well as, cross-cutting affiliates as nutrition, health education and epidemiology, the Director of the US Public Health and Human Services Office on Women's Health and the CDC Director of Women's Health.

In 2003, the Council began investigating the issues related to diabetes and women. At this time, the Council reached out to the Division of Diabetes Translation to join this collaborative partnership.

The *Gestational Diabetes Collaborative Better Data Better Care* was developed in 2009 following a two-year data validation project. Five states conducted the validation project by assessing the quality of GDM data from Birth Certificates, Pregnancy Risk Assessment Monitoring System (PRAMS), Hospital Discharge Data, and Medical Records. Cross comparisons were made using 2004 GDM data. The results in the table below became problem areas/issues to be addressed by the *Gestational Diabetes Collaborative Better Data Better Care*.

Table 1: Issues and Strategic Focus of the Gestational Diabetes Collaborative

Care Issues/Data Deficiencies	Strategic Focus
Lack of documentation for GDM testing/results and diagnosis and follow-up	Data Quality Improvement Strategies
GDM documentation inconsistent in medical records, discharge data, birth certificates	Data Quality Improvement Strategy, Clinical Quality Improvement Strategy
Women may not be tested (and diagnosed) appropriately for GDM; fewer than half received postpartum glucose screening; elevated screening levels may not receive follow-up and risk or lifestyle behavioral education	Clinical Quality Improvement Strategy
Linkages between obstetric care and primary care are often missing	Provider Education and Clinical, Quality Improvement Strategies
Fewer women with a history of GDM receive an intervention for weight management or physical activity from their provider than women without diabetes.	Consumer/Patient Education Strategies

Formation/History of the ; YghUjcbU`8 JUVYhYg`7c`UVcfUj Y. Better Data Better Care

NACDD in collaboration with national partners CDC Divisions of Diabetes Translation and Reproductive Health, Association of Maternal Child Health Programs, nine state health departments and four tribal organizations formed the *Gestational Diabetes Collaborative: Better Data Better Care* between 2009 and 2010. The Collaborative through a consensus process established goals and strategic focus areas for interventions based on the knowledge gained from the Data Validation Project and review of the literature. The Collaborative communicated by quarterly conference calls to share with one another their activities. Quarterly webinars provided updated GDM information and a website was established to disseminate materials and products. The CDC Division of Diabetes Translation funded NACDD to develop this Collaborative and its activities. States involved in the Collaborative were selected by application from very specific criteria and contracted to accomplish the goals of the Collaborative as described in the following table.

Table 2: Collaborative Goals and Charge to the participating members

Collaborative Goals	Charge to the multi-state and tribal collaborative
Foster collaboration	Form a state/tribal partnership between essential diabetes and women’s health program partners to enhance collaboration among public /clinical health programs
Improve GDM surveillance	Assess state/tribal GDM data by identifying, cataloguing and validating routinely collected GDM data to define gaps or issues needing action
Develop interventions to improve care	Develop annual action plans which address activities to identify and resolve gaps in the quality of GDM prevalence data and clinical care
Prevent or delay type 2 diabetes through postpartum glucose testing, follow-up, and lifestyle coaching	Develop interventions to improve access and increase postpartum follow-up, management and education

GDM Collaborative Communication and Dissemination

Activities and products were communicated and disseminated through the NACDD GDM website.

<http://www.chronicdisease.org/?page=00GDMHomePage>



The website was designed by utilizing a hub format. The hub allows the website viewer to click on the area containing the desired information. The hub categories include:

- Gestational Diabetes Guidelines and Care Standards
- Partnerships
- Data, Resources and Tools
- Digital Library of Evidence Based Journal Articles and Literature
- Events and Webinars
- Glossary of Terms

HUB 1: Gestational Diabetes Guidelines and Care Standards—Guidelines and Care Standards includes links to international, national, state and organizational recommendations on screening, diagnosing, managing/treating and postpartum follow-up for women with Gestational Diabetes.

HUB 2: Resources and Tools—Resources and Tools include gestational diabetes clinical materials, tools, updates, links, and other information helpful for healthcare and public health practitioners. The hub contains the products developed by the Collaborative partners. The topical areas are: General and Comprehensive, Preventive and Prenatal Screening, Diagnosis, Treatment and Management, Postpartum, Educational and Quality Improvement Resources.

HUB 3: Digital Library of Evidence Based Journal Articles and Literature—The Digital Library contains links to gestational diabetes articles on the following topical areas: Prevention and Prenatal Care, Screening and Diagnosis, Care and Treatment, Postpartum, Reimbursement, Economic Impact; Health Disparities

and Public Health. This library also includes archived articles, articles published prior to 2008 and landmark articles.

HUB 4: Data—This Hub contains epidemiological information, data, and statistics related to gestational diabetes and related factors.

HUB 5 Partnerships—Partnerships include the Collaborative, the Network and links to other Women’s Health partners

HUB: 6 Events and Webinars—The events hub is a link to upcoming webinars, conferences, meetings, and conference calls. Archived webinars are in this hub.

Hub 7: Glossary of Terms



Selection Criteria

The participating states were selected from a specific set of criteria including:

- Had PRAMS Data for 2004, 2005
- Demonstrated interest, support and previous background in GDM
- Had the capacity for linkages of birth certificate and PRAMS data
- Had access or linkages to hospital discharge data
- Had access to MCH or chronic disease epidemiologist and/or data analyst
- Provided evidence of a working relationship between MCH and Chronic Disease Directors including written support
- Could develop a project team composed of a member of the NACDD Women's Health Council, staff from the Diabetes Prevention and Control Program, Maternal Child Health Program and PRAMS Surveillance Team
- Have at least one of the following risk factors:
 - Higher than US birth rate¹⁰
 - Higher than US prevalence of DM in women¹¹
 - Higher than US prevalence of GDM¹²
 - Lower SES than US as measured by - High school graduates, Below poverty level, Rural or lower access to health care, Higher than US percent of females with no form of health care coverage, Higher than US percent of females of color, Higher than US prevalence of female overweight/obesity¹³
- Designate project team member(s) to serve on the Collaborative Advisory Committee
- Submit timely progress reports

NACDD contracted with each of the partner states and tribes to document their scope of work by submitting an annual action plan and quarterly activity reports. At the conclusion of this Project each partner submitted their products for dissemination on the website, participated in two webinars presenting their key accomplishments and submitted two final reports based on prescribed templates. This report is based on these two final reports.

Gestational Diabetes Strategies

Strategic Focus Area A: Data Quality Improvement

1. Improve GDM/diabetes surveillance in prenatal clinics, hospital charts, birth certificates and hospital discharge data as demonstrated by the Data Validation Project.^{14,15,16}
2. Encourage data system change in clinics.¹⁷ For example:
 - Better documentation of prenatal and postpartum care
 - GDM chart identifier system
 - Postpartum visit checklist
3. Conduct marketing research to determine enablers and barriers for interventions which address needs or wants of women with GDM.¹⁸ For example qualitative research, focus groups, interviews, surveys, Text4Baby and others

Strategic Focus Area B: Clinical Quality Improvement

1. Increase access to preconception and inter-conception counseling and other services, especially for high-risk women. Emphasize importance of minimizing risk before pregnancy.^{19,20}
2. Encourage system changes in clinics.^{21,22} For example:
 - Provide prenatal/postpartum protocols and training for staff
 - Provide educational materials in all exam rooms
 - Develop standing orders for postpartum glucose testing
 - Provide lab services provided onsite at clinic
3. Improve discharge planning for women with GDM. Examples: Discharge planning checklists include GDM instructions, provide Lab slip for 6 week postpartum glucose test, referrals for weight management or other risk reduction behavior coaching.^{23,24,25}

4. Promote postpartum testing, for example: mail-out reminders, incentives for completed visits.^{23,24,25,26}
5. Develop methods to bridge the gap between OB-GYN and primary care. Examples: Encourage OB-GYN referrals of women back to primary care providers for follow-up. Develop a form letter OB providers can use for referral such as one used by the Sweet Success Program. Encourage all medical intake forms to include GDM.^{23,27}

Strategic Focus Area C: Provider Education

1. Ensure providers awareness of practice standards and GDM issues of care through webinars, grand rounds, symposiums, on-line continuing education, etc.^{28,29,30,31}
2. Develop partnerships including healthcare providers to deliver consistent messages about GDM risk and follow-up in a variety of venues. (WIC, Immunizations, Family Planning, etc.)³¹
3. Ensure healthcare provider input in clinical protocols and protocols is consistent with practice standards³²

Strategic Focus Area D: Consumer Education

1. Increase awareness of GDM complications and long-term risks in women with GDM.^{33,34,35}
2. Refer women with GDM to appropriate Diabetes Management Services or Resources during prenatal period. Counseling is needed for appropriate weight gain during pregnancy and glucose control. Make available educational materials for consumers and providers.^{36,37,38,39,40}
3. Recommend use of "Text4Baby," a free text message for pregnant women and during first year following the birth. Provides helpful simple short messages.^{41,42}

<https://www.text4baby.org/>

4. Stress risk of type 2 diabetes for mother and offspring (before delivery).^{37,43}

State and Tribal Organization Reports

A former chronic disease program manager comments: “I wish that I would have such a tool— my job would have been so much easier.”

As a former state chronic disease director commented: “This document is great and provides the guidance, lessons learned and replicable tools to plan and implement a GDM program.”



This next section describes the activities and accomplishments of the nine states and four tribal organizations comprising the Collaborative. The section begins with a table of the organizations, years funded and their strategic focus(es), followed by a descriptive narrative about each state and tribal organization.

Collaborating States

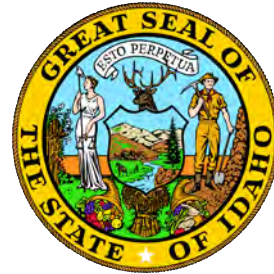
Arkansas



Florida



Idaho



Missouri



North Carolina



Ohio



Oklahoma



West Virginia



Utah



Collaborating Tribal Organizations

Alaska Native Health Consortium



Chickasaw Nation



Choctaw Nation



Utah Navajo Health System



State or Tribal Organization	Years Program Funded	Strategic Focus Areas
Arkansas Department of Health	2011-2014	Data Quality Improvement Clinical Care Improvement Provider & Consumer Education
Florida Department of Health	2011-2014	Data Quality Improvement Provider Education Consumer Education
Idaho Department of Health and Welfare	2012-2014	Data Quality Improvement Provider Education Consumer Education
Missouri Department of Health and Senior Services	2010-2014	Data Quality Improvement Provider Education Consumer Education
North Carolina Department of Health and Human Services	2008-2014	Data Quality Improvement Clinical Care Improvement Provider & Consumer Education
Ohio Department of Health	2010-2014	Data Quality Improvement Provider Education Consumer Education
Oklahoma State Department of Health	2008, 2010-2014	Data Quality Improvement Clinical Care Improvement Provider & Consumer Education
Utah Department of Health	2008-2014	Data Quality Improvement Clinical Care Improvement Provider & Consumer Education
West Virginia Department Health and Human Resources	2008-2014	Data Quality Improvement Clinical Care Improvement Provider & Consumer Education
Alaska Native Health Consortium	2012-2014	Data Quality Improvement Clinical Care Improvement Consumer Education
Chickasaw Nation	2009-2014	Data Quality Improvement Clinical Care Improvement
Choctaw Nation	2012-2014	Data Quality Improvement Clinical Care Improvement
Utah Navajo Health System, Inc.	2011-2014	Clinical Care Improvement Provider Education



Arkansas Department of Health GDM Collaborative 2011-2014

Strategic Focus:
Quality Data
Clinical Care Improvement
Provider/ Consumer Education

Goals of the Arkansas GDM Collaborative Team

- Enhance the validity of GDM data and expand surveillance.
- Increase postpartum and on-going diabetes testing and follow -up among women with GDM.
- Determine present knowledge, attitudes and practices among both the providers who serve women with GDM and women with GDM to facilitate positive knowledge and behavior changes.
- Identify or develop resources/programs that effectively address diabetes management, diet and physical activity interventions for women with GDM or history of GDM.
- Encourage system changes in clinics

Target Population: Women with GDM, women with GDM who attend maternity clinics administered by the Arkansas Health Department and who reside in underserved provider and health education areas, department nurse practitioners who serve as GDM care providers and community hospitals.

Essential Partners

Chronic Disease (CD) Diabetes Prevention and Control
Maternal and Child Health (MCH) CD and MCH Epi
Vital Records PRAMS
Regional Nurse Practitioners WIC
Behavior Risk Factor Surveillance System (BRFSS)
University Medical Center Telemedicine Unit
Community Health Systems
Hospital/Community Diabetes Educators

Program Planning Steps

The Arkansas Collaborative collected and analyzed data from several sources to determine the needs/gaps in care.

- Data from their PRAMS system displayed the burden of the GDM for Arkansas.
- Arkansas Health Department administered Maternity Clinic System data revealed a need to better document comprehensive data.
- Conducted an internal web-based capacity assessment of collaboration between chronic disease and MCH programs; staff GDM knowledge and skills and agency resources. This assessment demonstrated a need for revised protocols and procedures.
- Regional health department MCH and Chronic Disease Programs staff conducted an internal web-based needs assessment of community health provider staffing, policies, procedures, continuing education services and resources demonstrating underserved areas for both providers and educators.

From this data, the Collaborative chose their quality improvement strategies. These data were utilized to determine their needs and formalize annual action plans. These data were also utilized to educate their regional staff about GDM.

Key Components

- Between 2012 and 2013, an internal work group composed of staff from the Diabetes Prevention and Control Program, MCH Programs, and regional Nurse Practitioners began to review policies, protocols and procedures for regional maternity clinics. In 2013, regional maternity clinics implemented the American Diabetes Association (ADA) criteria for GDM Diagnosis.
- Opportunities enabled the Collaborative members to educate nurse practitioners, health educators, OB/GYN clinic staff, medical students and residents.
- The Collaborative explored avenues to provide services to underserved patients. The Arkansas Health Department developed a contractual agreement with “ANGELS”, a telemedicine unit with University of Arkansas Medical Center to provide diabetes self-management education.
- A telemedicine Gestational Diabetes Self-Management Class was piloted from February 13, 2014 -July 9, 2014 in eight underserved counties. Thirty-eight participants, 18 English-speaking and 20 Spanish-speaking women, completed the telemedicine class. The Collaborative will conduct an evaluation of this pilot before implementing the project to all underserved areas.
- Members of the internal workgroup participated with other members of the Arkansas Department of Health in exploring electronic health records that capture demographic, health services, develop referral patterns and clinic scheduling.

Required Resources

- **Staff:** Core team included PRAMS data analyst, MCH Medical Director, MCH staff including regional nurse practitioners, chronic disease staff, WIC nutritionist and contract diabetes educator. These staff members developed the GDM class. Regional nurse practitioners provided maternity care. Chronic disease staff coordinated activities, meetings and information dissemination. A linguist translated documents in Spanish.
- **Funding:** CDC support to NACDD provided a contract under \$30,000. Arkansas Department of Health and partners provided generous in-kind contributions and leveraged contract dollars 3:1.
- **Other:** Access to PRAMS linked data sets, support from the Informatics and Health Equity staff.

Challenges

1. Due to the rural nature of Arkansas, there are areas of the state which are medically underserved lacking physicians to provide prenatal care and delivery services for low-income pregnant women as well as a lack of appropriate healthcare professionals for diabetes management services provided by certified diabetes educators.
2. Developing an acceptable contractual agreement between the Health Department and the University of Arkansas Medical College delayed the start-up of the telemedicine effort and so the collection of data on birth outcomes is unavailable.
3. The length of time needed to explore various electronic health records, which provide comprehensive demographic and clinical data, as well as referral systems delayed the ability to adequately measure the telemedicine effort. This electronic record was planned to serve as the evaluation tool of the telemedicine intervention.

Lessons Learned

- For system change to occur, all partners needed to be identified and at the table from the beginning of the process. Our internal workgroup had not identified all of the needed partners.
- Postpartum care is not occurring due to the referral gap between OB-GYN and Family Practice physicians following delivery, which demonstrates a continuing need for education of providers.
- There is a lack of evidence as to the benefit of diabetes self-management education for pregnant women with GDM, therefore, more research is needed in this area.

Accomplishments/Impact

- A physician champion, Dr. David Grimes, continues to be a powerful force to reach and educate OB-GYN and other providers, on current evidenced-based guidelines for screening, diagnosis and treatment of GDM.
- Presentations were made to the University of Arkansas Medical System (UAMS) Grand Rounds with an emphasis on postpartum visits. The information included glucose testing, risk counseling and preconception care beginning during the prenatal period and again at the postpartum visit. GDM is now on the professional education agenda starting with a GDM presentation made at the 20th annual diabetes conference at UAMS.
- Diabetes telemedicine education was piloted for women attending prenatal visits in eight rural counties with limited to no services. During a six month period 38 women, 18 English speaking and 20 Spanish speaking, completed the telemedicine class. From the women's response to the class it was determined to continue the telemedicine education offering. An evaluation of this effort is planned after the funding of this project.
- 171 Spanish speaking pregnant women were provided with information on Text4Baby, breastfeeding and need for well women services including postpartum visit with glucose screening. 91 of these women enrolled in Text4Baby.
- Greenway Systems, an electronic health record system, was purchased to assist in documenting clinical care and referrals.

Products (See Appendix)

The gestational diabetes data from PRAMS was analyzed and published in a PRAMS report: Gestational Diabetes Mellitus in Arkansas Women Who Had Live Births: PRAMS, 2006 - 2010, October 2012.

<http://www.chronicdisease.org/?page=39StatsDataStats>

GESTATIONAL DIABETES MELLITUS



Gestational Diabetes Mellitus in Arkansas Women Who Had Live Births: PRAMS, 2006 - 2010

What is Gestational Diabetes Mellitus?

Gestational Diabetes Mellitus (GDM) is a type of diabetes that begins and ends during pregnancy. GDM is similar to Type 1 or Type 2 diabetes, it is a condition where your body has a hard time breaking down and processing high levels of blood sugar.

How common is GDM?

According to data from the Arkansas PRAMS survey for 2006 – 2010, about 10% of women who had a live birth in Arkansas had GDM. The CDC estimates that in 2010 GDM affected between 2-10% of all pregnancies in the United States.¹

The American Diabetes Association has come up with new guidelines for determining if women have GDM. Because of these new guidelines, the percent of women who are diagnosed with GDM is likely to double.²

What are some risk factors for GDM?

- Being 30 years of age or older;
- Overweight (BMI= 25-29.9) or Obesity (BMI 30 and over) before pregnancy;
- Smoking;
- Excessive weight gain during pregnancy;
- Being Black or Hispanic;
- Family history of Type 2 diabetes or GDM;
- GDM during a previous pregnancy;
- Previous baby that weighed more than 9 lbs when born.

For the last five years, more than 10% of Arkansas mothers who had a live birth reported having Gestational Diabetes Mellitus (GDM). This is one of the highest rates in the nation.

Having GDM puts the woman and her baby at a lifelong risk for developing Type 2 diabetes. Almost 60% of mothers with GDM will later develop Type 2 diabetes.

A Diabetes Self-Management Education (DSME) course can help keep the mother and baby healthier and also save a great deal of money.

Arkansas mothers most likely to have GDM were:

- Hispanic;
- Thirty-five years of age and older;
- Obese (BMI 30 or greater);
- Less educated.



Florida Department of Health GDM Collaborative 2011-2014

**Strategic Focus:
Data Quality Improvement
Provider and Consumer Education**

Goals of the Florida GDM Collaborative Team

- Promote GDM awareness and provide education, information, and outreach to all women of childbearing age
- Promote postpartum follow-up care and screening
- Inform providers of the rising prevalence of GDM
- Assess and enhance data collection, reporting, and accuracy of GDM data.

Target Population

Women with GDM, GDM care providers, hospitals and community clinics.

Program Planning Steps

- Internal workgroup members, particularly those from the MCH Practice Analysis Unit collected and analyzed data from birth certificates, PRAMS, BRFSS, Florida In-Patient Data System and Florida Health Department Services.
- From initial review of data, Collaborative determined a need for the development of consistent GDM messaging for both providers and women with GDM.
- Internal workgroups were formed to develop draft products for the Collaborative members to review, approve and adopt. Products were: a data book, a fact sheet and a patient/provider message which was translated in several languages.
- Consultant was delegated by the Collaborative to develop and give presentations to raise awareness of the issues.

Essential Partners

Chronic Disease (CD)	Diabetes Prevention/Control Program
Chronic Disease Epidemiology	Vital Records
MCH Programs	PRAMS
MCH Epidemiology	Reproductive Health/Perinatal
BRFSS	WIC
Office of Minority Health	Diabetes Association
Diabetes Advisory Council	Nursing Associations
Community Health Centers	University Medical Center
Rural Health	Agency for Health Care Administration
Florida Commission on Status of Women	

Key Components

- The internal workgroup developed and distributed GDM messages for women. Messages were developed in English and translated to Spanish, Haitian, and Vietnamese. The WIC Program utilized these messages when developing their postpartum nutrition education brochure. The Florida Commission on the Status of Women developed a fact sheet on gestational diabetes utilizing the developed messages.
- Stakeholders and internal workgroup members stressed consistent messaging about GDM for use in all products and media developed.
- In order to more accurately estimate the prevalence of GDM in Florida, the Collaborative developed and received approval for additional GDM related questions for BRFSS and PRAMS. Funding was not available to add the questions to the surveys.
- Staff updated the Screening for Gestational Diabetes and Postpartum Services section of the Maternal Technical Assistance Guidelines (TAG) used by county health departments.
- A presentation was given to increase awareness of GDM issues to the Pregnancy Associated Mortality Review (PAMR) Team. Members include Florida American Congress of Obstetricians and Gynecologists (ACOG), Florida Association of Healthy Start Coalitions, certified nurse midwives, University of South Florida College of Public Health, and Department of Health MCH team.
- The Florida Governor utilized the developed messages when giving a presentation on diabetes with emphasized on GDM.

Resources

- **Staff:** Internal Workgroups composed of Diabetes Prevention and Control, MCH, WIC, Chronic Disease and MCH epidemiologists, WIC, Rural Health and PRAMS data analyst. Chronic disease staff with assistance of the contracted consultant coordinated activities, meetings and information dissemination
- Contract was developed with Consultant to coordinate the GDM Collaborative.
- **Funding:** CDC support to NACDD provided under \$20,000 support. Florida Department of Health and partners provided generous in-kind contributions and leveraged contract dollars 2:1.
- **Other:** Access to PRAMS linked data sets, support from the Informatics and Health Information staff

Challenges

Inadequate Funding:

The Florida Department of Health capacity assessment identified funding as an issue in reducing type 2 diabetes among women with a history of GDM. Specifically, funding was (and is still) inadequate for GDM initiatives, staff training, medical supplies or promotional activities. While both MCH and CD leaders recognize the importance of GDM program integration efforts, they do not have dedicated staff to facilitate this type of integration. Through the GDM Collaborative funding, a variety of activities were completed that placed Florida in a situation to implement promising practices that could improve outcomes. Although initial activities were completed, funding wasn't available to implement the next step. For example: Discharge planning processes, including all accompanying materials were collected from other Collaborative states. The internal workgroup and external stakeholders intended to implement a pilot project to test these activities and materials in Florida but funding was not available.

Stakeholder engagement:

There was much enthusiasm among stakeholders to implement Collaborative activities; however, it was difficult to keep them engaged in order to participate in a pilot project or to utilize GDM messages.

Lessons Learned

- Quantifiable data regarding whether or not women diagnosed with GDM receive a postpartum visit and/or blood glucose screening is inadequate in Florida. The importance of these data cannot be overemphasized.
- Exploring avenues for creating and utilizing checklists for healthcare providers that include information about postpartum screening for blood glucose for women diagnosed with GDM would be beneficial.
- Current BRFSS and PRAMS GDM data is limited in Florida. Expanded questions could be beneficial in addressing the GDM data challenges.
- Data from two additional administrative sources - linked birth certificate and hospital discharge and Medicaid data will further enrich the overall representation of GDM prevalence in Florida.

Accomplishments and Products (See Appendix)

- Gestational Diabetes in Florida. (Citation: Womack LS, Phillips G, Tutwiler M, (2012). Gestational Diabetes in Florida: Tallahassee, Florida: Florida Department of Health.)

<http://www.chronicdisease.org/?page=39StatsDataStats>

- Revised and Updated Screening for Gestational Diabetes and Postpartum Services (TAG) for county health department use
- Gestational Diabetes Follow-Up Instructions
- GDM messages developed in English and translated to Spanish, Haitian and Vietnamese.
- 2012 Fact Sheet on Florida Commission on Status of Women's Website
"Gestational Diabetes: Facts Every Woman Should Know"

<http://fcsww.net/wp-content/uploads/2015/02/finalapprovedGDM.pdf>





Idaho Department of Health and Welfare

GDM Collaborative

2011-2014

Strategic focus:
Data Quality Improvement
Provider and Consumer Education

Goals

- Enhance accessibility of GDM data and expand surveillance
- Determine provider GDM knowledge, attitudes and practices
- Identify or develop resources/programs that address prediabetes management for women with GDM/history of GDM

Target populations: Women with GDM and GDM care providers

Program Planning Steps:

Idaho's Collaborative established partnerships with the medical community to generate input and support for GDM interventions. After developing an action plan, the Collaborative conducted an assessment of knowledge, attitudes and practices of certified diabetes educators. Results were used to develop educational resources and patient education tools, and address gaps in services where policy changes could improve care.

Essential Partners

Chronic Disease
Chronic Disease Epidemiologist
Diabetes Prevention and Control Program
Maternal Child Health Program
Pregnancy Risk Assessment Tracking System (PRATS) Analyst
Maternal Child Health Program Epidemiologist
BRFSS
WIC
Vital Records
Medicaid
Diabetes Educators
Nursing Association
Hospitals
Physicians
St. Luke's Health System and Saint Alphonsus Health System

Key Components

- In 2012 the Collaborative created a GDM epi-profile which is updated annually, using Idaho BRFSS, PRATS, birth certificate and Medicaid data. A distribution plan was created to reach healthcare providers with the data.
- Additional GDM specific questions were added to the PRATS 2013 survey questionnaire.
- Eighty-three Idaho certified diabetes educators (CDEs) were surveyed to determine GDM knowledge, attitudes and practices. The survey was administered in electronic and paper formats with a response rate of 28%.
- Bookmarks and magnets with educational messages in English and Spanish were developed for women who had GDM or a baby weighing 9 lbs. or more. Bookmarks were distributed to WIC clients throughout Idaho. Bookmarks are available for healthcare professionals and individuals to order free of charge.
- Refrigerator picture magnets with healthy weight before, during, and after pregnancy messaging were created. Information included prediabetes risk factors and a link to the Idaho Diabetes Prevention and Control Program website where women can take a prediabetes risk assessment and connect to the National Diabetes Prevention Program (DPP) class information in Idaho.

Required Resources

- **Staff:** Data analysts, MCH and chronic disease staff. Chronic disease staff coordinated activities, meetings and information dissemination. (.3FTE)
- **Funding:** CDC support to NACDD provided \$20,000 support. Idaho Department of Health and Welfare and its partners generous in-kind contributions doubled the Collaborative resources.
- **Other:** Strong partnerships with physicians, diabetes educators and WIC.



Challenges

1. The CD epidemiologist relationship with Vital Stats and Medicaid was necessary to obtain data for the profile. It was important to develop the relationship. There was staff turnover in Vital Stats which impacted the amount of time it took to receive data
2. The Idaho Department of Health implemented a new survey policy requiring use of Key Survey for all assessments. Submitting necessary paper work and working with the IT department to abide by the new policy added additional time for completion of the project, as well as the additional time to learn the new survey tool.
3. We would have liked a higher response rate (28%) from CDEs. In the future we will look at contracting to conduct assessments with healthcare providers and building in incentives for completion of surveys.
4. We had hoped to work with Vital Stats to mail educational packets directly to women who had history of GDM indicated on birth certificate data. We were not able to get approval for this activity. Instead we worked with MCH to mail a GDM magnet to Medicaid Pregnancy recipients. At least 43% of births in Idaho have Medicaid as a primary source of payment, and 12% of women covered by Idaho Medicaid were diagnosed with GDM in 2012, making this an acceptable alternative to reach a high-risk population. Also, the Idaho Immunizations program works with Vital Stats to mail out information to every new mother in Idaho. We hope to partner with the Immunizations program in the future to include GDM and prediabetes educational materials.

Lessons Learned

There are no other programs or organizations in Idaho compiling data from BRFSS, PRATS, Medicaid and birth certificate data related to GDM and risk factors for prediabetes and diabetes. Providers want to have these data readily available and they were happy to receive the profiles and thankful for our efforts.

Evaluation/Impact

- GDM data epi-profile has been distributed to approximately 350 healthcare providers responsible for caring for women during pregnancy.
- The CDEs survey included just over 84 questions and addressed various diabetes education topics. CDEs were asked about different activities they may conduct to help encourage women diagnosed with GDM to obtain a postpartum glucose test. Only 21% conduct a phone call to remind patient of a postpartum test and 58% provide educational materials to reinforce the need for a postpartum glucose test. The majority of CDEs (16 of 19) indicated they do not track their GDM patients to verify they received a postpartum glucose test. The services of CDEs are provided mostly to insured women, and high risk women, such as those on Medicaid, usually do not have access to a CDE.

Evaluation/Impact (cont.)

- Results of the survey are being used to identify future objectives for increasing awareness about GDM testing, referral to Diabetes Self Management Education and Training (DSME/T) Programs and follow-up care for high-risk women. In addition, results are being used to guide further assessment of DSME/T Programs and primary care providers in Idaho.
- Regional WIC clinics ordered and distributed 755 English bookmarks and 1900 Spanish bookmarks during 2012 – 2013.
- Magnets were distributed in April 2014 to approximately 5,000 Medicaid pregnancy beneficiaries with a MCH informational letter informing women about Text4Baby. Magnets were again distributed to Medicaid pregnancy beneficiaries in the fall of 2014 and to 4,200 new mothers with the 2015 PRATS survey questionnaire.
- The GDM Collaborative sponsored two continuing education conferences for health professionals: 2013 Gestational Diabetes Conference: “Getting on the Same Page” and 2014 Idaho Perinatal Projects Conference.

Products (See Appendix)

- GDM bookmark English & Spanish
- GDM picture magnet
- GDM Idaho epi-profile

The image shows a page from a document titled "IDAHO DIABETES DATA" dated October 2011. The page is titled "Gestational Diabetes Mellitus" and is published by the Idaho Diabetes Prevention & Control Program. It contains several sections of text and bullet points:

- What is Gestational Diabetes Mellitus?¹**
 - Gestational diabetes mellitus (GDM), otherwise known as gestational diabetes, is high blood sugar that is first diagnosed during pregnancy. This is different than women who have already been diagnosed with diabetes and become pregnant.
 - Without treatment, GDM can increase the risk of:
 - miscarriage or preterm birth
 - pre-eclampsia for the mother (a dangerous increase in blood pressure)
 - prolonged yellowing of the baby's skin and eyes (jaundice)
 - large-sized babies (macrosomia)
 - delivery complications due to the larger size of the baby
 - obesity and developing diabetes later in life for the baby
- What are the risk factors for developing Gestational Diabetes?¹**
 - Gestational diabetes is more common in:
 - African American, Hispanic and American Indian women
 - overweight and obese women
 - women with a family history of diabetes
 - women older than 25
 - women who had gestational diabetes in a past pregnancy
 - women who had a stillbirth or previous baby weighing over 9 pounds
- Who is at risk for developing type 2 diabetes after Gestational Diabetes?²**
 - Immediately after pregnancy, 5% to 10% of women with GDM are found to have diabetes, usually type 2.²
 - GDM typically goes away after giving birth, but women who had gestational diabetes have a 35% to 60% chance of developing type 2 diabetes within the next 10 to 20 years.²
 - Women who have had GDM are 7 times more likely to develop type 2 diabetes than women who have not had GDM in pregnancy.³
 - Non-Caucasian and Hispanic women with a history of GDM appear to be at particularly high risk for developing type 2 diabetes.⁴
 - The children of pregnancies affected by GDM may be at increased risk for obesity and type 2 diabetes compared to other children.^{5,6}

Changes by the American Diabetes Association to screening guidelines for Gestational Diabetes will reduce health risks to mothers and babies.

Under the new diagnostic criteria, as many as 18% of pregnancies may be identified with Gestational Diabetes.²

See back for changes in guidelines.

Page 1



Missouri Department of Health and Senior Services GDM Collaborative 2010-2014

Strategic Focus:
Data Quality Improvement
Provider and Consumer Education

Goals of Collaborative

- Enhance validity of GDM data and expand surveillance.
- Determine present knowledge, attitudes and practices of providers who serve women with GDM and facilitate positive changes of knowledge and behaviors.
- Determine present knowledge, attitudes and practices of women with GDM and facilitate positive changes of knowledge and behaviors.

Program Planning Steps: Missouri identified and engaged partners around the issues of GDM. The Collaborative created a GDM epi-profile for Missouri, identifying and assessing additional data sources for usefulness for the profile, developing fact sheets, and determining the training objectives needed to consistently document a GDM diagnosis on birth certificates. The Collaborative developed Missouri Census Guide on Pregnancy and Diabetes Mellitus and promoted web-based continuing education training for providers to encourage proper care for women with GDM. Education to women with GDM was provided through home visits and public awareness campaigns.

Target populations: Women with GDM, GDM care providers and hospitals.

Key Components

- GDM Collaborative included essential partners (28 people participating, 13 from the Department of Health) to assist in the identification of sources, assessment and analysis of GDM data.
- Available GDM data from birth certificates, PRAMS and WIC were used to establish a baseline for maternal demographics and prevalence of GDM and GDM affected live-births in Missouri.
- The Collaborative developed Missouri Census Guide on Pregnancy and Diabetes Mellitus, several educational resources for providers and Text4baby and other messages for patients and the general public.

Essential Partners

Chronic Disease	Diabetes Prevention and Control
Maternal and Child Health	Vital Records
Health Promotion	PRAMS
MCH Epi	Medicaid
WIC	Immunizations
Hospital Association	Managed Care
Primary Care	Nursing Association

Required Resources

Staff: Data analyst, MCH and chronic disease representatives. Chronic disease staff coordinated activities, meetings and information dissemination. (.25FTE)

Funding: CDC support to NACDD provided under \$30,000. Missouri Department of Health and Senior Services and its partners provided additional support with their resources to leverage funding dollar 2 to 1.

Other: State law prohibited using birth certificate information to send education materials directly to patients, so a viable relationship was needed with high volume delivery hospitals, WIC clinics and physician offices to provide educational materials and information to women whose pregnancies were affected by GDM.

Challenges

- Small sample size may have made it difficult to confirm birth certificate data as an area needing improvement or identify training needs.
- Access to various programs' data was limited, and it was difficult to effect changes on objective data alone.
- Providers do not always understand "effective" follow-up.
- Women with GDM are in denial about the long term effects on their health.

Lessons Learned

- Data quality is difficult to measure from the analysis of data itself. Quality has been measured through observation or collection methodologies.
- Providers who treat women with GDM think they provide follow-up even when the woman does not perceive it happening. Follow-up needs to be planned and obvious and more than just advice to have their glucose checked.
- When blood glucose levels of women with GDM return to “normal” after delivery, they often think they are “cured” but they need to understand their lifetime risks of early type 2 diabetes and other chronic diseases.

Accomplishments/Impacts

- Established baseline for maternal demographics and prevalence of GDM and GDM affected live-births in Missouri
- Missouri Census Guide on Pregnancy and Diabetes Mellitus distributed to 397 providers statewide and available on video for CEU/CMEs.
- Missouri Medicaid agreed to pay for follow-up A1C or blood glucose test if medically necessary due to GDM.
- WIC developed an online GDM Nutrition Education Module.
- Added GDM messages to Text4baby to educate women with GDM to discuss lifetime risks with their providers.
- Two educational brochures and a Fact Sheet on GDM are available through the DHSS warehouse and disseminated to healthcare providers and the general public. Stakeholders committed to increasing awareness of GDM diagnosis, treatment, care and follow-up through their respective networks.



Products (See Appendix)

Link to various GDM resources on Missouri Department of Health and Senior Services website

<http://health.mo.gov/living/healthcondiseases/chronic/diabetes/index.php>

- One-page patient and general public fact sheet, describing GDM, treatment, risks and prognosis, emphasizing postpartum testing and follow-up.
- Missouri Consensus Guide on Pregnancy and Diabetes - A comprehensive guide in easy-to-access table format, describing preconception counseling, screening procedures, therapeutic management, prenatal surveillance and education, delivery, postpartum follow-up and child follow-up.
- Gestational Diabetes during Pregnancy - A description of maternal demographics and prevalence of GDM and GDM affected live-births in Missouri.

<http://health.mo.gov/data/prams/pdf/gestationaldiabetes.pdf>

Gestational Diabetes

Fact Sheet, Missouri, 2009-2010

- The prevalence of gestational diabetes mellitus (GDM) in Missouri estimated from the Pregnancy Risk Assessment and Monitoring System (PRAMS) was 6.8 percent during 2009 and 2010, significantly higher than 5.0 percent estimated from the 2010 Missouri birth-certificate data. The prevalence estimates from PRAMS are higher than those from the birth certificate data for all socio-demographic groups (Table 1).
- Both data sources show the prevalence of GDM increases with maternal age. Hispanic and other racial women have a higher prevalence than non-Hispanic-white and African-American/Black women, and married women have a slightly higher prevalence than unmarried. Women who delivered macrosomic babies have a higher prevalence than those who delivered low or normal birth weight babies (Table 1).
- The PRAMS data show that women with less than a high school education have a higher prevalence than those with a higher education level. Women not in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) have a slightly higher prevalence than those in the program, and women with other health insurances have a slightly higher prevalence than those who are in Medicaid or have no insurance. However, the prevalence estimates from the birth certificate data do not differ significantly among the four educational groups, or between the women who participated in the public assistance programs and those who are not in the programs (Table 1).
- In 2010, 452 GDM mothers, 12.3 percent of all in Missouri (3,670), came from St. Louis County, but none lived in Lewis or Carter County (Table 2).
- In 2010, the Cox South Medical Center in Springfield delivered the babies of 320 GDM mothers, the most among Missouri hospitals, followed by the St John's Mercy Medical Center in Creve Coeur (205, Table 3).

Table 1 Prevalence of gestational diabetes Mellitus (GDM) in Missouri, 2009-2010

	PRAMS, 2009-2010		Birth Certificate, 2010 ^a	
	Number ^b	Percent (95% CI)	Number ^c	Percent (95% CI)
Missouri all	216	6.8 (5.7 - 7.9)	3,670	5.0 (4.9 - 5.1)
Age 18 - 24 years	44	3.6 (2.4 - 4.8)	747	2.9 (2.7 - 3.1)
25 - 34 years	136	8.5 (6.8 - 10.2)	2,169	5.6 (5.4 - 5.8)
35 years and over	36	9.9 (6.0 - 13.8)	723	9.4 (8.7 - 10.0)
Race Non-Hispanic White	162	6.3 (5.2 - 7.5)	2,739	4.9 (4.7 - 5.1)
Non-Hispanic Black	18	5.7 (2.4 - 9.0)	456	4.1 (3.8 - 4.5)
Hispanic	18	10.7 (4.7 - 16.7)	291	6.9 (6.2 - 7.7)
Other	18	14.7 (6.5 - 22.8)	181	7.1 (6.1 - 8.1)
Education Less than high school	36	9.0 (5.7 - 12.4)	544	4.2 (3.9 - 4.5)
High school graduate	52	6.2 (4.3 - 8.2)	857	4.8 (4.5 - 5.1)
Some college	56	6.4 (4.4 - 8.5)	1,313	5.8 (5.5 - 6.1)
College graduate	72	6.5 (4.7 - 8.3)	939	4.7 (4.4 - 5.0)
Married Yes	144	7.0 (5.7 - 8.4)	2,446	5.6 (5.4 - 5.8)
No	72	6.5 (4.7 - 8.3)	1,214	4.1 (3.8 - 4.3)
Birth weight Low (< 2,500 grams)	59	8.6 (6.4 - 10.8)	357	5.9 (5.3 - 6.5)
Normal (2,500 - 3,999 grams)	133	6.0 (4.9 - 7.2)	2,909	4.7 (4.5 - 4.9)
Macrosomic (≥ 4,000 grams)	24	13.0 (7.7 - 18.3)	404	6.7 (6.1 - 7.4)
WIC Yes	99	6.9 (5.3 - 8.5)	2,081 ^d	5.0 (4.7 - 5.2) ^d
No	115	8.6 (5.1 - 8.1)	1,589 ^d	5.0 (4.7 - 5.2) ^d
Health insurance Medicaid	101	6.8 (5.2 - 8.3)	/	/
Other insurances	112	7.1 (5.5 - 8.7)	/	/
No insurance	2	3.4 (0.0 - 8.2)	/	/

^aData Source: Missouri Vital Statistics - Births, include only women who live and delivered in Missouri

^bNumber of respondents with GDM. ^cNumber of women with GDM.

^dWomen who participated in Medicaid, Food Stamp, or Special Supplemental Nutrition Program for Women, Infants and Children (WIC).



North Carolina Department of Health and Human Services GDM Collaborative 2008-2014

Strategic Focus:
Data Quality Improvement
Clinical Care Improvement
Provider and Consumer Education

Goals of the North Carolina GDM Collaborative Team

- Enhance validity GDM data and expand surveillance
- Determine provider and patient GDM knowledge, attitudes and practices
- Increase postpartum and on-going diabetes testing and follow-up among women with GDM
- Identify or develop resources/programs that effectively address diabetes management, diet and physical activity intervention for women with GDM/history of GDM
- Encourage system changes in clinics

Target Populations

Women with GDM, GDM health care providers, hospitals and county health departments

Essential Partners

Chronic Disease	Diabetes Prevention and Control Program
PRAMS	Reproductive Health Service
Perinatal Health	Center for Health Statistics
WIC	County Health Department Maternity Clinics
Nutrition Services	
Sweet Success	North Carolina Diabetes Educators
North Carolina Medicaid Agency	North Carolina Nursing Association
Utah and West Virginia GDM Collaborative Partners	

Key Components

The North Carolina Collaborative partners planned their quality improvement interventions using their initial data validation assessment and its results to direct their activities—data quality improvement, clinical care improvement for county health department clinics and provider education

- Data improvement began by validating agreement between PRAMS core questions and birth certificate data. A percentage of medical charts were abstracted. Next step was to compare this data with PRAMS and NC birth certificate data to determine the prevalence of GDM and determine the gaps in data collection and accuracy.
- The quality data improvement processes continued by determining data collection and accuracy gaps and sources of error in translation from medical records to birth certificates by comparing Medicaid claims to birth certificate data.
- The results of these two data assessments were developed into birth certificate training sessions for hospital clerks. Hospitals were encouraged to specify chart location for maternal diagnosis of GDM to assist hospital clerks in improving data accuracy.

The Collaborative focused its provider education improvement activities on three different audiences:

- For health care providers, a GDM webinar was provided for 200 providers to increase awareness and knowledge of GDM. The North Carolina Collaborative partnered with Sweet Success to provide the webinar expert speakers so that emphasis was on appropriate screening, diagnosis, management during pregnancy and postpartum screening and preconception counseling.
- Women’s Health Branch and Diabetes Prevention and Control Branch collaborated to provide a GDM webinar for 75 NC certified diabetes educators in the statewide Diabetes Education Recognition Program (DERP).
- A GDM video conference was provided statewide to increase all health care providers awareness.
- The Collaborative conducted planning and provided partial funding for a health provider training on “centering” which can support GDM patients. “Centering” is a model of group health care, changing how people experience their care. Health assessment, education, and support are provided in a group facilitated by a care provider.
- Designed a healthcare provider fact sheet on GDM postpartum testing which contains a follow-up algorithm.

Key Components (cont.)

- A local health department was enlisted to test American Diabetes Association (ADA) vs ACOG recommendations for GDM screening and treatment followed by a “Lessons Learned” presentation at a Women’s Health Branch (WHB) Maternal Health Videoconference.
- A local health department conducted pilot testing of integrated services to improve gestational diabetes management during the pregnancy. The integrated team approach included WIC, OB care managers and GDM clinic staff in a local health department.
- Two local health departments partnered with WIC to screen GDM patients postpartum and the DERP to educate patients with a positive diabetes screen on healthy behavior changes to prevent type 2 diabetes.
- The Collaborative initiated a number of patient education activities
 - focus tested and developed English and Spanish language GDM patient education materials, to include a fact sheet and a magnet (adapted from Utah)
 - purchased a bilingual GDM specific photonovella for patient education
 - reprinted a GDM My Plate eating plan handout (adapted from CA Sweet Success)

Resources

- **Staff:** Internal Workgroups composed of Diabetes Prevention and Control, Women’s Health, WIC, Center for Health Statistics epidemiologists and PRAMS data analyst. The chronic disease staff coordinated activities, meetings and information dissemination.
- **Funding:** CDC support to NACDD provided under \$50,000 support. North Carolina Department of Health and Human Services and partners provided generous in-kind contributions and leveraged contract dollars 4 to 1.
- **Other:** Access to PRAMS linked data sets access to Medicaid claims data, support from the Informatics and Health Information staff

Challenges

The major challenge for the North Carolina GDM Collaborative was maintaining the internal partners due to staffing changes and agency re-organization. There was no one person able to commit the amount of time needed to lead and coordinate all of the needed activities. The leadership for the internal workgroup changed several time which made it difficult to keep the group functioning effectively.

Accomplishments/ Impacts/Evaluation

1. The quality date improvement project provided the following results: in 2011, over half (55.7%) of all North Carolina resident live births (N=67,080) were paid by Medicaid. Among resident Medicaid births, 3,927 (5.9%) had gestational diabetes recorded on the birth certificate. Among births with GDM listed on the birth certificate, we were able to match approximately 85% to Medicaid paid claims with a diagnosis of GDM; with 15% not matching Medicaid claims records. Based on matched Medicaid claims for GDM alone, we found that 12.9% of all North Carolina births occurred to mothers with paid claims for GDM (n=8,662). Their conclusions were: the majority of birth records reporting GDM (85%) had valid Medicaid claims documenting GDM. However, this examination discovered that if we utilized birth certificate data alone, we would significantly underestimate the prevalence of GDM in the Medicaid population in North Carolina (12.9% using paid Medicaid claims match vs. only 5.9% using birth certificate checkbox data alone). These Medicaid claims results are similar to GDM estimates we find among Medicaid recipients from the North Carolina Pregnancy Risk Assessment Monitoring System survey data (10.8%). [Cite: http://www.schs.state.nc.us/schs/prams/2011/PG_GDB2.html]
2. The clinical quality improvement process resulted in county health departments adopting the ADA GDM screening and diagnostic guidelines. The ADA guidelines or one-step testing were determined to be patient centered, more convenient, done in office lab with rapid turn-around-time for results and woman diagnosed during the visit. The diabetes screening and diagnostic testing combined with the 28-week visit allowed for 3rd trimester education on GDM management, depression/violence/drug abuse screening, as well as all blood work done in one visit (HIV, Syphilis, CBC)
3. Developed two products to aid health care professionals: Updated and reprinted the NC Women with Diabetes fact sheet to promote awareness of the health risks of GDM and the GDM postpartum screening fact sheet.
4. The integrated team approach for GDM education piloted by a county health department reported a decreased time interval to achieve glucose control (from 7.3 weeks to 3.8 weeks) and an increase in reports of positive lifestyle changes after motivational interviewing (from 20% to 80%).
5. 17 participants working in seven distinct sites received “Centering” facilitation skills training for pregnancy resulting in establishment of the centering model in Greensboro, NC.
6. Focus testing of patient materials resulted in Spanish materials designed as a refrigerator magnet.

Lessons Learned

- There is wide variation in reported GDM prevalence among different populations, as well as the lack of consistency in diagnostic methods and definitions for GDM. So standardizing the definition, reporting, and diagnostic methods used would make the data consistent no matter which population is described.
- Reportedly, about 80% of women go to the family planning clinic instead of the maternity clinic for their postpartum visit; reportedly only 40% of women return for a postpartum visit, but almost 100% return to WIC for services in the postpartum period, therefore, we chose to train Centering facilitation skills for integrating a team approach.
- The GDM collaborative team was not sustainable despite the funding since all members except one left their positions, could no longer participate due to change in CDC programming and leadership was not present to maintain continued recruitment of members or sustain the collaborative.

Products (See Appendix)

- English and Spanish language GDM fact sheet
- English and Spanish language GDM information magnet
- Bilingual GDM specific photonovella
- GDM My Plate eating plan handout
- NC Women with Diabetes
- Postpartum clinic visit checklist for health care providers

<http://www.chronicdisease.org/?page=30ResourcesTools>





Ohio Department of Health GDM Collaborative 2010-2014

**Strategic Focus:
Data Quality Improvement
Provider and Consumer Education**

Goals of Collaborative

- Improve preventive healthcare provision in Ohio in accordance with national guidelines
- Increase the public's knowledge about gestational diabetes to reduce risks and increase access to preventive care
- Improve the understanding of the epidemiology of gestational diabetes in Ohio by increasing the availability, use and dissemination of public health data.

Target populations: Women with GDM, especially the Medicaid population and GDM care providers

Essential Partners

Chronic Disease (CD)	WIC
Diabetes Prevention and Control	Medicaid
Maternal and Child Health (MCH)	Health Promotion
CD and MCH Epi	
Vital Records	
PRAMS	
BRFSS	

Required Resources

Staff: Epidemiologists and statisticians collected and analyzed data for the data book plus designed and implemented surveys and focus groups. MCH and chronic disease staff and a part-time project manager coordinated activities, meetings and information dissemination. (2.5 FTE)

Funding: CDC support to NACDD provided under \$28,000. Ohio Department of Health and partners provided generous in-kind contributions of approximately \$500,000.

Other: Access to Medicaid, BRFSS data and PRAMS linked data sets, Emory University, Government Resource Center (GRC)

Challenges

- Getting responses back from professionals, to which there is not yet a solution.
- Getting physicians to see enough value in the online course to take it. In spite of great effort and offering a free CME, only 24 physicians have taken the course.
- The company contracted to conduct the focus groups did not really understand the purpose of the project, and conducted and analyzed the focus groups more like marketing focus groups, which ended up being a significant limitation. Many hours were spent transcribing and translating the focus group recordings, and the data are now being analyzed by a specialist from Emory University, taking the results a step further than the original report
- The Collaborative began researching other GDM QI projects, such as West Virginia and California, and quickly realized that, to some extent, the group was going to have to chart our own course so released a Request for Proposal (RFP) for a vendor with strong GDM content and QI background. The GRC was the successful applicant. Their assembled team of SME's have been impressive in their design of systems, provider messaging and patient messaging.

Lessons Learned

- Know the audience you are targeting whether it is a professional public health audience or more of a general public audience.
- It's challenging to predict what providers have the time/inclination to attend so use marketing strategies to promote resources and learning opportunities.
- Providers do not know the basic importance of GDM follow up.
- Ensure your contractors and vendors (e.g. focus group consultants) are expert, appropriate and understand your project needs before engaging them.

Key Components

The Division of Family and Community Health Services, Office of Healthy Ohio, and the State Epidemiology Office formed the Ohio GDM collaborative team. The group included Ohio Medicaid as an additional partner and was selected to participate in the national GDM learning collaborative. The team developed a collaborative action plan to identify and address major GDM issues. Working together, the team has pooled resources, skills and enthusiasm to do more for Ohioans than any one program could accomplish alone.

- Using Behavioral Risk Factor Surveillance System (BRFSS) data, Pregnancy Risk Assessment Monitoring System (PRAMS) data and 4 other public health data sources the Ohio Collaborative created and disseminated Ohio's first complete GDM Data book. This descriptive report outlines what is known and not known about the burden of GDM and its risk factors in Ohio, is available online and covers the years 2006-2008. The data book is currently being updated.
- In 2011 the team completed a survey of 8500 internal medicine, OB, family doctors and nurse midwives regarding GDM knowledge, attitudes and practices. Response rate was approximately 40%. Idaho, Utah and West Virginia used this survey as a model for similar provider surveys. Survey results were very telling and used to create necessary next steps to educate and inform providers. Currently the Collaborative is in the beginning stages of a follow up survey.
- Using survey results the Ohio Collaborative created an hour-long webinar for public health and other healthcare professionals to enhance GDM awareness, knowledge and the importance of the postpartum visits and glucose screening.
- Ohio completed a series of 15 statewide focus groups with women, ages 18 to 45 years old, who had been diagnosed with diabetes during pregnancy within the last ten years. The groups were separated by ethnicity and spread throughout different Ohio counties, targeting Appalachian, African American and Hispanic Women. The discussion guide addressed the following issues:
 - What do women know about the long term implications of having GDM?
 - What do they see as possible barriers to having postpartum visit and screening?
 - What educational messages do they respond to best
- The Collaborative implemented a large quality improvement (QI) project with a two part outcome goal: Improve the postpartum visit occurrence and improve the ongoing screening for type 2 diabetes among women with a history of GDM. Currently, 16 sites enrolled representing all major areas of our state and variety of types. It's notable that each site approached has readily agreed to participate. It seems that those participating realize the gap in knowledge in GDM. While not completed, the QI project has run very smoothly, thanks in part to partners at the Government Resource Center who have subcontracted with an impressive list of state/nationally known clinicians/researchers and QI experts (Subject Matter Experts - SMEs) and the Arizona based Health Services Advisory Group (HSAG).

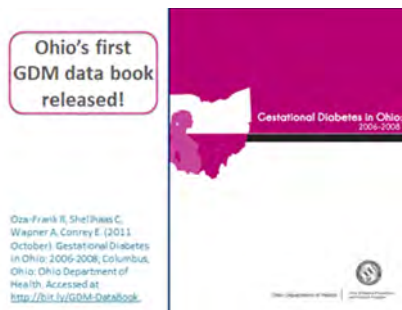
Evaluation/Impact/Accomplishments

- The data book is widely accessed by public health professionals in Ohio and beyond. An updated version is due to be published in 2015.
- Evaluation of strategies directed to provider education and awareness will be accomplished through a follow-up survey of providers' GDM awareness, knowledge and practices to be implemented in 2015-2016. Results from the follow-up survey will be compared to baseline survey results such as:
 - Less than forty percent of the providers responding could correctly identify the level of risk of type 2 diabetes associated with GDM, which is greater than 40% of women who will develop type 2 diabetes without intervention.
 - Less than 50% (range 44%-19% depending on specialty) of Ohio providers reported glucose testing of women with GDM at the postpartum visit, less than 60% (range 62% to 20%) reported additional screening every 3-5 years.
 - Less than 21% of all providers made nutrition referrals for weight management to women who were overweight and obese.
- Using survey results, the Ohio Collaborative created an hour-long webinar for public health and other healthcare professionals to enhance GDM awareness, knowledge, and the importance of the postpartum visit and screening. Currently over 600 individuals have taken the national online course, including 24 physicians. Continuing education units (CEs) and continuing medical education credits (CME's) are offered to participants. Recently, the Collaborative targeted Ohio Family Physicians and hopes to expand the reach to other non-specialty providers.
- The following preliminary results from the focus groups were used to develop strategies to improve postpartum services for high-risk women with GDM diagnoses:
 - The majority of the respondents, regardless of race/ethnicity, were not aware of their ability to prevent or delay onset of type 2 diabetes by their lifestyle choices (eating habits and/or level of physical activities). Women aware of type 2 diabetes but as yet unaffected either ignored the risks or felt unable to prevent them. Most of the respondents perceived having limited capacity to balance their lifestyle by addressing the ongoing difficulty of breaking bad eating habits and usual routines as key issues.
 - Almost all of the women had a postpartum visit 6 weeks after delivery. All but a few made the appointment before they left the hospital after delivering their babies. Many of the women were unsure if they were tested for diabetes at the postpartum visit. Almost none of the doctors told the mothers that they needed to tell their baby's health care provider about their GDM diagnosis. They did not make the connection to their illness and the potential diabetes risk for their child in the future.

Evaluation/Impact/Accomplishments(cont.)

- Managing to have a proper diet and to be physically active was difficult for the women due to expense and availability of resources in the neighborhoods from which they lived. Information about GDM and type 2 diabetes is needed and could come from a variety of sources, such as the internet, radio, television, doctors and nurses, flyers and pamphlets, community services and others.
- Results from these surveys have been used to develop professional education programs and Websites for providers.
- To date, more than 5,000 women have received the GDM postpartum information packet. Rates of self-reported postpartum blood glucose testing increased by 35%, from a pre-intervention baseline of 35.8% in 2009 to a post-intervention outcome of 48.5% in 2010. ($p < .05$).

Products (See Appendix)



Ohio's Gestational Diabetes Data Book

http://www.odh.ohio.gov/~media/ODH/ASSETS/Files/cfhs/child%20and%20family%20health%20services/ohiogdm_databook_oct_2011.ashx

This data book summarizes existing information about GDM, identifies gaps in knowledge and outlines the ODH Collaborative Team's activities in primary data collection. It should be noted that there is no one best source to obtain GDM prevalence data for Ohio. Each has its own

strengths and limitations.

Women's Health Update, a newsletter focusing on women and gestational diabetes.

http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/ohio_women's_update_2011_-_G.pdf

Postpartum Posters in English and Spanish

http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Ohio_GDM_posters.pdf



Oklahoma State Health Department GDM Collaborative 2008, 2010-2014

Strategic focus
Quality Data Improvement
Clinical Care Improvement
Provider and Consumer Education

Goals of Collaborative

- Enhance validity GDM data and expand surveillance
- Increase provider and patient GDM knowledge, attitudes and practices
- Increase postpartum and on-going diabetes testing and follow-up among women with GDM
- Mentor tribal health programs to improve GDM care for women

Essential Partners

Chronic Disease (CD)

WIC

Diabetes Prevention and Control

CD and MCH Epi

Maternal and Child Health (MCH)

Vital Records

PRAMS

Children First (Home Visiting Program)

Chickasaw Nation

Choctaw Nation

Oklahoma University Health Sciences Center (OUHSC) OB-GYN
Quality Improvement Department

OUHSC Harold Hamm Diabetes Research Center

Oklahoma Health Care Authority (Medicaid Agency)

Oklahoma Commission on the Status of Women

Planning Steps

The Oklahoma GDM Collaborative partnership was built upon a long standing relationship between Chronic Disease and Maternal Child Health Services working together to improve health for women. The Oklahoma GDM Collaborative was developed in 2008 to conduct the GDM data validation project. The partnership was extended to include external partners: Health Care Authority (Oklahoma's Medicaid agency), Oklahoma Commission on the Status of Women, Oklahoma Hospital Association and the Oklahoma University Health Sciences Center (OUHSC). The partners developed their action plan based on deficiencies identified by the validation study.

Key Components

- The data quality improvement plan utilized PRAMS data as a way to document a current snapshot of GDM in the state. The PRAMS coordinator, MCH and CD epidemiologists lead the partnering effort to collect and analyze the GDM data. This leadership brought together the appropriate people to select the data elements for preparing outcomes. The partners included PRAMS coordinator, MCH epidemiologist, MCH program staff, CD epidemiologist, diabetes program staff, vital statistics staff, and other health department staff plus external GDM experts from the Harold Hamm Diabetes Research Center. The partners first determined the audience and then the needed outcomes. Primary audience was healthcare providers and secondary audiences were policy makers and the public. The document was determined to focus on needed policy changes and be educational. The PRAMSgram was completed February 2012.
- The provider education improvement plan focused on wide dissemination of GDM information. Various team members developed the materials including:
 - Videoconference on GDM for Women's Health Nurse Practitioners and Midwives (55 attended), 2010
 - GDM presentations and reports annually for Oklahoma Perinatal Coalition
 - GDM presentation for annual Osteopathic Conference, 2010
 - GDM poster (based on the PRAMS document) presented at the Annual Oklahoma Public Health Association Meeting, the Spring and Fall Diabetes Updates sponsored by the Harold Hamm Diabetes Center and the Women's Health Summit
 - Articles in Oklahoma Health Care Authority, Oklahoma Primary Care Association and Oklahoma Nurses Associations Newsletters, 2012
 - GDM presentation for the Combined National Women's Health - Minority Health Bi-annual meeting sponsored by DHHS, July 2011
 - Tear-off Postpartum/GDM Message and the "Before and After GDM" documents disseminated to healthcare providers to augment patient education

Key Components (cont.)

- The clinical care improvement strategy focused on improving postpartum visits for all women and targeted women with chronic disease complications during the pregnancy.
 - The Collaborative decided to replicate activities of both Utah and North Carolina to increase postpartum visits by disseminating a postcard with postpartum/GDM message to women. Once vital statistics received the electronic birth certificate (2013-2014) and determined the birth was a live birth, a postcard was mailed. During this two-year period, 110,000 postcards were mailed.
 - To expand reach, a second tool, tear-off postpartum/GDM message sheet utilizing the same messaging as the postcard was developed. This tool was disseminated to county health departments and WIC providers to be placed in waiting rooms.
 - A third messaging tool primarily aimed at the women with GDM was the “Before and After GDM” fact sheet. This tool was replicated from a product developed by North Carolina. The fact sheet was disseminated as a follow-up to the postcard and was sent to 3540 provider practices including federally qualified health centers, free community clinics, tribal health centers and university high risk clinics.
- The tribal mentorship was extended to all of the tribal nations who supported diabetes clinics or programs. The Chickasaw and Choctaw Nations demonstrated an interest. The Diabetes Prevention and Control Program manager assisted the two tribal nations in obtaining a contract from NACDD. (see their reports in the tribal section of the document.)
- The public/patient education plan included partnering with the Oklahoma Commission on the Status of Women and the OUHSC Harold Hamm Research Center to plan and implement the Women’s Health Summit: WISE CHOICES: SOLUTIONS TO OBESITY AND DIABETES IN WOMEN. Women from across the state were invited to attend the one-day educational program.
- A knowledge, attitudes and practices (KAP) provider survey was developed to be disseminated to physicians and midlevel healthcare providers. Survey was adapted from the Utah provider survey. The survey was not conducted due to the number of surveys from other state entities being disseminated at the time. Both of the state medical associations and the hospital association requested that the survey not be implemented until 2015, but by then, the financial support of the project had ended.

Resources:

1. **Staff:** Internal Workgroups composed of Diabetes Prevention and Control, Women’s Health, WIC, Center for Health Statistics, epidemiologists, PRAMS data analyst and chronic disease staff. Women’s Health staff coordinated activities, meetings and information dissemination.
2. **Funding:** CDC support to NACDD provided under \$50,000. Oklahoma State Department of Health and partners provided generous in-kind contributions and leveraged contract dollars 3 to 1.

Challenges

1. The development and partnership of the PRAMSgram was successful but determining true reach was not accomplished. The inability to determine who and how many received the document could not be concluded as the materials were distributed to a number of partners to disseminate through their outreach channels.
2. The ability to evaluate the effect of the postcard and the “Before and After Baby” by utilizing PRAMS data was not accomplished due to project funding ending. The evaluation was to compare baseline of 2012 PRAMS data to 2014 data using the postpartum visit question. At the time of this report 2012 PRAMS data is not available to states.
3. The GDM Collaborative no longer functions after 2014 due to the funding ceasing and other Chronic Disease Program priorities. Although, various maternal health quality improvement activities continue such as the Infant and Maternal Mortality Collaborative Learning Network. This quality improvement activity shares many of the same partners and works to improve postpartum visits.

Lessons Learned

- Need to develop a commitment early in the process from partners that they will provide feedback on their distribution/dissemination efforts.
- When collaborating with both internal and external partners, the process for approval for documents to be disseminated or distributed took an inordinate amount of time, causing a late implementation date: hence, project was unable to evaluate effort.
- Collaboration was the key ingredient for this project. All of the partners were enthusiastic about the project and provided subject matter experts, resources and ideas.

Accomplishments/Impact

- The PRAMSgram: "Gestational Diabetes Among Oklahoma Mothers" was published Spring, 2012 and 4,000 copies were disseminated through the Collaborative partners and their networks.
- Gestational diabetes as a topic was on the agenda for both the Spring and Fall Diabetes Updates sponsored by the OUHSC Harold Hamm Diabetes Research Center Health Sciences Center. This topic had not occurred as an agenda topic prior to 2010. GDM was an agenda topic in 2012 and 2014.
- Tear-off postpartum/GDM message and the “Before and After Baby” documents were disseminated to 3540 provider practices healthcare providers to augment patient education.

Accomplishments/Impact (cont.)

- Postpartum reminder postcards were mailed to 11,565 women with a live birth.
- A Women's Health Summit: WISE CHOICES: SOLUTIONS TO OBESITY AND DIABETES IN WOMEN was conducted in 2012. During the summit, there were three facilitated topic discussions and GDM was one of the topics. The Challenge for the Facilitated Discussion was on increasing awareness of Gestational Diabetes — Focus: How to communicate to women the increased risk of acquiring type 2 diabetes as a result of being diagnosed with gestational diabetes?
 - The recommendations were: “Educate the public, policy makers and health care providers through a variety of communication channels on the outcomes of the diabetes epidemic”
 - Use sound bits like “One child in three born today will develop diabetes.”
 - Develop fact sheets to educate pregnant women about GDM. “Before and After Baby” fact sheet was developed based on this recommendation.

Products (See Appendix)

- PRAMSGram: *Gestational Diabetes Among Oklahoma Mothers*, February 2012
- “Before and After Baby” Factsheet
- Postpartum Postcard
- Postpartum Tear Off Sheet





Utah Department of Health 2008-2014

Strategic Focus:

Data Quality Improvement
Clinical Care Improvement
Provider and Consumer Education

Goals of Collaborative

- Enhance validity GDM data and expand surveillance
- Determine provider GDM knowledge, attitudes and practices
- Increase postpartum follow-up visits and glucose testing in women with GDM

Target populations: Women with GDM, GDM care providers, hospitals and American Indian tribal clinic settings.

Essential Partners

Chronic Disease (CD)

Diabetes Prevention and Control

Maternal and Child Health (MCH)

Office of Vital Records

BRFSS

Nurse Practitioner Intern

CD and MCH Epi

PRAMS

Hospital CI Staff

Program Planning Steps

Utah participated in a five-state project to validate the quality of GDM data comparing medical records with birth certificate and PRAMS data. Project results identified issues for improvement to enhance accessibility, quality and dissemination of GDM information and improve care. After engaging appropriate partners to develop an action plan, the Collaborative conducted a survey of knowledge, attitudes and practices of GDM care providers. The Collaborative developed or identified educational resources to close the gaps in provider awareness; identified areas where policy changes could improve care and offered quality improvement training to hospital data entry staff to improve GDM documentation on hospital records and birth certificates. Education to women with GDM (as documented on birth certificates) on the importance of follow-up and lifestyle modification was provided through mail-out packets of materials and reminders about the postpartum visit and glucose testing within 2 weeks of a live birth. Key informant interviews with 8 American Indian tribal entities identified clinical staff needs around GDM testing and follow-up and strategies are being identified to address these needs.

Key Components

- To improve the accuracy of GDM documentation in hospital records and translation to birth certificates, the Utah GDM Team added a new field and “drop-down box” for electronic birth certificates to prompt hospital clerks to verify and document GDM diagnosis. Working with staff from the Office of Vital Records, hospital quality improvement and birth certificate data entry staff, the Team provided classes to the clerks on using the new system and how important accuracy in translation is for patient care. Once the clerks felt like contributing members of the team they were anxious to participate. Working with vital records staff provided the perfect entry to the hospital staffs.
- One-hundred-sixty-eight (168) providers of GDM services (OB-GYN), certified diabetes educators (CDE), certified nurse midwives (CNM), family practice and other physicians were surveyed to determine GDM knowledge, attitudes and practices. The survey was a mail-out and response rate was 50%, (which some researchers consider “high” for physicians/healthcare providers.)
- In 2010, the Utah Department of Health (UDOH) developed an information packet for women who had GDM, alerting them of the increased risk of diabetes for themselves and their newborns. The packet included a card for recording the postpartum appointment time and a list of questions to ask the provider during the visit. Women with GDM, identified through birth certificate records, were sent an information packet within two weeks of delivery. The Office of Vital Records was an enabling partner providing the necessary contact information.

Required Resources

Staff: Data analysts, MCH and chronic disease staff. Chronic disease staff coordinated activities, meetings and information dissemination. (.4FTE)

Funding: CDC support to NACDD provided under \$50,000 support. State Department of Health and partners provided generous in-kind contributions and leveraged contract dollars 5:1.

Other: Access to PRAMS linked data sets, authority and/or approval to review hospital medical records, support from Bureau of Vital Records staff.

Challenges

- The challenge for any intervention is finding the right person to “champion” your proposed intervention. For system changes, working with the hospital quality improvement staff was very important. The staff were not aware of the data and once they were included in the intervention and understood how important their contributions were, they were receptive.
- The high turn-over in data entry positions required almost constant training programs. The Office of Vital Records staff work closely with hospital records and data entry, so their support and introductions were essential. Web-based learning or telemedicine is being explored.
- Low response rate was the major challenge for the provider survey. This is well documented in the epidemiology literature, without effective solutions. Another challenge is disseminating the results to impact the provider. The Utah Medical Association and other professional provider groups were very helpful in providing contact information and adding support. The chronic disease epidemiologists were also vital to the development and analysis of the survey.
- Challenges to the mail-out intervention included: mailing and production costs, obtaining the data and contact information from the hospitals and designing a method of evaluation for the project. Another challenge was overcoming the data discrepancies in diagnosis. Occasionally the packets would be received by women who did not know they had GDM or were identified with GDM in error. To address this issue, a study of causes of discrepancies was done to correct these errors.

Lessons Learned

- Women with GDM who do not obtain postpartum testing will not know if their blood sugar levels have returned to normal. They experience a missed opportunity for early detection of undiagnosed diabetes. At the very least, they will not be aware that their blood sugar may still be elevated, putting them at exceptionally high risk for type 2 diabetes.
- Efforts to resolve the low rates of postpartum testing require a multi-faceted approach involving policy and system changes. However, a simple intervention such as distributing educational materials has been shown to be effective and holds promise as part of a comprehensive approach to increasing the rates.
- For this project, the biggest lesson learned is the importance of collaboration. We had excellent collaboration from Maternal Child Health and Chronic Disease Bureaus, as well as the Office of Vital Statistics. By involving everyone in discussions, we were able to develop better strategies and have better “buy-in” from all parties. Everyone involved in this project participated with enthusiasm and support.

Evaluation/Accomplishments

Evaluation of most projects was accomplished through establishing baseline data, implementing the intervention, and comparing follow-up results to the baseline. To evaluate interventions prompted by provider and tribal survey results, the baseline survey results will be compared to surveys conducted post-intervention, and differences in knowledge, attitudes, and practices will be noted. We expect to see an increase in postpartum testing as reported by the providers when the follow-up surveys are conducted

- Comparison of sample birth certificate data from March-July, 2012 to March-July, 2013 found almost a 30% increase in the reporting of GDM for these five months (2012: 742 women, 2013: 947 women). The project continues to show improvement in GDM diagnosis reported on Utah birth certificates.
- The surveys showed less than forty percent of the providers responding could correctly identify the level of risk of type 2 diabetes associated with GDM, which is over 40% of women who will develop T2DM without intervention. Only 19.5% of Utah providers reported testing glucose of women with GDM at postpartum visits “all of the time.” Only about 35% screen women with a history of GDM annually, with an additional 17% screening every 3-5 years.
- Of special interest were the many provider comments expressing concerns about the costs of testing supplies, and several commented about improving their practices after completing the survey. For example, “Because we defer prenatal and postnatal care to OB-GYN, we probably do not pay close enough attention to this condition. We should be more attentive with screening for it.”

Evaluation/Accomplishments (cont.)

- To date, more than 5,000 women have received the GDM information packet postpartum. Rates of self-reported postpartum blood glucose testing increased by 35%, from a pre-intervention baseline of 35.8% in 2009 to a post-intervention outcome of 48.5% in 2010. ($p < .05$).
- To assess the impact of these materials, the Maternal and Infant Health Program conducted a 20-question survey of women who were sent the materials in 2013. Chi-square tests for significance were performed using Epilnfo 7. The survey was mailed to 2,100 women and 312 have completed it to date (15% response rate). One quarter of respondents indicated they did not remember receiving the mailing. The postpartum testing rate was significantly higher among women who recalled the mailing than those who did not (59.3% vs 43.2%). Nearly one-third (32.8%) said the materials influenced their decision to have a postpartum blood sugar test. Three-fourths (74.6%) of respondents said they thought the information was useful; 55.6% said they felt very informed about their risk for developing type 2 diabetes after receiving the materials, and 87.7% agreed that it was a good idea or the Department of Health to send information to mothers. Among women who were not tested, the reasons cited include: 1) their health care provider did not prescribe the test (52.1%); 2) they didn't know they were supposed to be tested (26.4%); 3) they had no money or insurance coverage for the test (15%); and 4) they chose not to be tested (14.3%). Only 12.5% of women said their health care provider talked with them about being screened before becoming pregnant again.

Products (See Appendix)

The contents of postpartum mail-out packet shown below the refrigerator magnet, postpartum reminder card and GDM information card can be downloaded and reproduced from the NACDD Website and are available in English and Spanish.


<http://www.chronicdisease.org/?page=36PostpartumRes>

What does it mean to have Gestational Diabetes?

- Having gestational diabetes means your blood sugar levels were higher than normal during pregnancy.
- At least half of all women with gestational diabetes develop type 2 diabetes later in life. Type 2 diabetes is the most common type of diabetes and can be prevented with lifestyle changes.
- Your child has a higher than normal chance of developing diabetes.
- It is important to have your blood sugar levels tested after pregnancy to make sure they have returned to normal.

For more information go to:
http://ndep.nih.gov/media/NeverTooEarly_Tipsheet.pdf

If you don't have a postpartum provider and need a referral, call the Baby Your Baby Hotline at 1-800-826-9662



You had Gestational Diabetes during pregnancy...

...you and your child have a lifelong risk for getting type 2 diabetes.

You can lower your risk for type 2 diabetes by choosing a healthy lifestyle.

It is important that you schedule and keep your appointment for a postpartum checkup 6 to 12 weeks after delivery. Be sure the doctor tests your blood sugar level during this visit.


My Postpartum Appointments:

Date	Time

Put the enclosed magnet on your refrigerator for helpful tips.

Questions for my doctor:

- What is my blood sugar level now?
- What is my risk for diabetes?
- What can I do today to lower my risk for diabetes?
- What can I do today to avoid gestational diabetes in future pregnancies?



TAKE ACTION NOW
TO PREVENT DIABETES!

- Make and keep your appointment** for your postpartum checkup 6 to 12 weeks after delivery.
- Get tested** for diabetes at your postpartum checkup, then every 1 to 2 years.
- Breastfeed** your baby. It may lower your child's risk for type 2 diabetes.
- Talk to your doctor** if you plan to become pregnant again in the future.
- Try to get back to the weight you were before your pregnancy, within 6 to 12 months after your baby is born.** Then, if you still weigh too much, work to lose at least 5 to 7 percent (10 to 14 pounds if you weigh 200 pounds) of your body weight slowly, over time, and keep it off.
- Make healthy food choices** such as fruits and vegetables, fish, lean meats, dry beans and peas, whole grains, and low-fat or skim milk and cheese. **Make water your drink of choice.**
- Eat smaller portions of healthy foods** to help you reach and stay at a healthy weight.
- Be active at least 30 minutes, 5 days per week** to help burn calories and lose weight.





West Virginia Department of Health and Human Services West Virginia GDM Collaborative 2008-2014

**Strategic Focus:
Data Quality Improvement
Clinical Care Improvement
Provider and Consumer Education**

Goals

- Improve management of gestational diabetes (GDM) by:
 - increasing awareness of GDM among patients and providers
 - improving testing and following care for high risk women
- Enhance availability, use and dissemination of GDM data
- Determine provider GDM knowledge, attitudes and practices
- Increase postpartum follow-up visits and glucose testing in women with GDM

Target populations: Women with GDM, GDM care providers

Essential Partners

Chronic Disease (CD)
Diabetes Prevention and Control
Maternal and Child Health (MCH) WIC
CD and MCH Epi Vital Records
PRAMS Perinatal
Immunizations
Right From the Start Home Visiting
Charleston Area Medical Center

Program Planning Steps

The Divisions of Perinatal and Women's Health and Health Promotion and Chronic Disease established a GDM Collaborative of twenty-five internal and external partners to develop an action plan to address the issues identified through their participation in the GDM Data Validation Project. The leadership of the Center for Health Services & Outcomes Research, Charleston Area Medical Center (CAMC) contributed significantly to the successes of the Collaborative. After collection of baseline data, the plan was implemented and evaluation is currently being completed.

Key Components

- To improve accuracy of documentation of GDM on the birth certificate, the Office of Maternal, Child and Family Health and the Center for Health Statistics partnered to provide a webinar on how to complete the new electronic birth certificate implemented 1/1/2014, the importance of the data and how the data from the birth certificate are used.
- To assess the practice of obstetric providers, a survey was sent to members of West Virginia (WV) Chapter of ACOG and certified nurse midwives via an emailed Survey Monkey in February 2014. Questions were asked regarding postpartum treatment and follow up of women with a history of GDM. This questionnaire was based on the surveys developed by the Departments of Health in Ohio and Utah.
- Surveys indicated additional provider education was needed. Working with hospital partners, the Collaborative developed a GDM care webinar for providers: "Connect to Care," and have made it available online and DVD. A speaker on GDM follow-up care was provided at the WV Academy of Family Physicians in summer 2014.
- The Collaborative implemented a variety of strategies to increase postpartum visits, including resource development and health system changes. Partnering with CAMC prenatal clinic, the Collaborative demonstrated that changing and standardizing the clinic processes for identification and care for women with GDM improved screening, documentation and follow-up for GDM. These processes included:
 - providing GDM education for all clinic staff regarding GDM screening guidelines, the diagnosis algorithm, follow-up and postpartum care, marking and labeling charts appropriately, pulling charts and using a postpartum checklist
 - standardizing clinic procedures for screening and documenting GDM
 - providing type 2 diabetes risk education during prenatal visits
 - scheduling postpartum visits with glucose testing orders before discharge
 - performing glucose testing in the clinic during the postpartum visit
 - referring women with GDM to the clinic's Diabetes Center for education classes that focused on nutrition, self-monitoring and physical activity

Key Components (cont.)

- To support clinical efforts to improve GDM prenatal education and increase postpartum visits and glucose testing, GDM information packets were provided to maternity care providers. The packet included ACOG postpartum reminder tear-off sheet. Education was provided to home care staff on how to educate women with GDM on the importance of follow-up during their one-on-one home visits. A DVD was also provided to the home care staff to aid in postpartum education for women with GDM.
- To assess GDM follow-up in the high-risk WIC population, the Collaborative conducted a point-in-time survey of 5852 WIC participants in 57 offices.
- West Virginia's newborn home visiting program, *Right From the Start*, added GDM to the nursing protocol

Required Resources

Staff: Perinatal and chronic disease staff; epidemiology and statistical support from the CAMC Research Center (1.5 FTE)

Funding: CDC support to NACDD provided over \$28,000 support. West Virginia Department of Health and Human Service and partners provided in-kind contributions of approximately \$50,000

Other: Access to PRAMS linked data sets, WIC District Managers

Challenges

- It was difficult to obtain email addresses for maternity care providers to conduct the web-based survey. Provider participation was limited.
- It is difficult to obtain provider participation

Lessons Learned

- Comments and general responses from hospital staff/clerks indicated the training on how to complete the birth certificate was very much appreciated. Knowing how important the birth certificate information is and what it is used for made a difference in staff attitudes.
- Home visitation is a strong resource for providing education/information to high-risk prenatal clients
- Collaboration with any program that touches a woman with GDM is essential to increase awareness and the need for follow-up care. For example: Education in the WIC offices reminds women to follow-up if they were diagnosed with GDM, and a presentation at the WV Academy of Family Practice provides education on postpartum follow-up of women with GDM.

Lessons Learned

- Many of the providers know that there is an increased risk of type 2 diabetes in women with GDM. However, not all are consistently following up all patients with a history of GDM. Perhaps they are thinking that the woman will return to her medical home, internist or family physician and because of her history of GDM, she will be tested and followed there, emphasizing the care gap between obstetric and primary care and demonstrating the need for better referral practices

Evaluation/Impact

- The Collaborative validated GDM prevalence data from the 2011 WIC Client and PRAMS surveys. Comparison of prevalence of self-reported GDM by WIC clients who completed a PRAMS survey showed the PRAMS data very closely matched the 2011 WIC survey data.
- Thirty-five (35) providers completed the Provider Practice Survey. When asked how many women would likely progress to type 2 diabetes within 2 years of delivery, the answers were anywhere between 10-60%. When asked if patients were tested for glucose during the 6 weeks checkup, 34% stated less than half; 16% did not know if their patients were tested for glucose; and 50% stated between half and all patients were tested. One-fourth of providers reported documenting discussing the increased risk of type 2 diabetes at the 6 week postpartum visit. To assure that women with a GDM history obtained a postpartum blood glucose test, 17% had e-alerts on patient charts, 54% explained the importance to the patient and 20% provided educational materials
- WIC survey showed that 85.8% of participants had been tested for GDM during the prenatal period and 9.4% had a diagnosis of GDM, but only 44% of participants with GDM received a postpartum glucose screen.
- Using survey results, the West Virginia Collaborative created an hour long webinar for public health and other healthcare professionals to enhance GDM awareness, knowledge and the importance of the postpartum visit and screening. Currently over 600 individuals have taken the online course, including 24 physicians. CE's and CME's are offered to participants.
- In the CAMC high risk prenatal clinic, postpartum visits increased from 50% to 89% and postpartum glucose testing orders increased from 10% to 39% after the first year .The team continues to monitor the processes with a focus on sustaining changes and if necessary modifying when necessary, The Collaborative developed a clinical practice improvement toolkit based on these positive outcomes.
- Results from these projects have been used to develop professional education programs and websites for providers and patients.

Products (See Appendix)

- West Virginia Prenatal Risk Screening Instrument
- West Virginia Reminder Postcard
- Questions for Women with Infants around 6 Months Old Survey
- Improving Care for Women with Gestational Diabetes By Improving the Process: A Toolkit







ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

Alaska Native Tribal Health Consortium (ANTHC)[2012-2014] and Southcentral Foundation [2010- 2012]

Strategic Focus:

Data Quality Improvement
Clinical Care Improvement
Consumer Education

Goals of the GDM Collaborative Team

- Enhance validity GDM data and expand surveillance
- Enhance clinical management of GDM
- Identify or develop resources that effectively address diabetes management, diet and physical activity interventions for women with GDM

Target Populations: Consortium partner healthcare providers and the Alaskan Native women

Essential Partners

Alaska Area Indian Health Service (IHS)

OB/GYN Physicians

Epidemiology Center

Alaska Native Tribal Health Consortium (ANTHC)

Health Education

Nurse Practitioners

Hospital and Clinics

Medical Records

SouthCentral Foundation

OB/GYN Clinics

Pediatric Clinics

Health and Wellness Center

Alaska State Department of Health

Diabetes Prevention and Control Program

Maternal Child Health Program

WIC

Health Statistics (Chronic Disease and MCH Epidemiology)

Program Planning Steps

In partnership with the State of Alaska, the ANTHC, Southcentral Foundation and the Diabetes Registry, an action plan was developed and implemented to conduct data and clinical intervention projects.

Key Components

Projects included:

- Collection of BRFSS GDM prevalence data by Alaskan Tribal Region and comparison of years 2008-2010 to 2009-2011
 - Coordination efforts with the Alaska Native Medical Center to improve documentation in the electronic medical records
 - Review and revision of GDM clinical guidelines
 - Development of a culturally appropriate women's health guide utilizing traditional healing practices.
1. The Collaborative enlisted the support of the State Health Department MCH epidemiologist and the chronic disease epidemiology staff along with the Alaska Indian Health Service (IHS) Diabetes Registry to assist with exploring PRAMS data, BRFSS data and key elements of the Diabetes Registry to demonstrate GDM prevalence within the tribal regions.
 2. The Alaska Native Medical Center physicians and nurse practitioners reviewed the current protocol for screening, diagnosing, managing and the follow-up for GDM. The team determined that GDM was underreported or undocumented on their electronic medical records.
 3. The team revised the clinical protocol and GDM guidelines to utilize the American Diabetes Association 1 step method for GDM screening and diagnosis. The clinical protocol and guidelines were pilot tested to determine increase in prevalence and clinical staff impact.
 4. The Health Education team conducted an observational survey of pregnant women attending Women's Clinic to determine how they spent their time waiting for their appointment and whether they read pregnancy related materials or popular magazines. This team determined that women read "Peoples" magazine which is based on an infographic method. The team developed an educational guide based on the method.

Required Resources

Staff: Epidemiologists and statisticians collected and analyzed data to determine prevalence and documentation changes. Women's Clinic physicians, midwives and nurse practitioners and diabetes educators determined clinical protocols and guidelines. The designated project manager coordinated activities, meetings and information dissemination. (2.5 FTE)

Funding: CDC support to NACDD provided under \$20,000 support. The Foundation, Consortium and Alaska Medical Center along with other partners provided in-kind contributions of approximately 2:1.

Other: Access to Diabetes Registry, BRFSS data and Alaska IHS Area Epidemiological Center

Challenges

- Several regional area clinics think it will cost too much to implement the new ADA criteria so they have stayed with the two-step criteria. In the more remote regional areas with significant geographic and environmental barriers, a second test, as well as follow-up testing, is very difficult.
- SouthCentral Foundation lacked adequate staff to complete the contract tasks, so the contractor was changed to the Alaskan Tribal Health Consortium. While the Consortium had the staff to develop and evaluate the education component of the contract, changing contractors delayed the development of the infographic guide. No evaluation of the guide was possible due to end of funding period.

Lessons Learned

- Evaluating a clinical care pilot is important to determine appropriate and improved services for women even though all healthcare providers may not agree. The team will continue evaluating the data from the Diabetes Registry to determine outcomes. The team plans to investigate each regional clinic to compare the data between the ACOG and ADA screening/diagnostic screening criteria to see if there is unmet need. If there is need to change from the ACOG to the ADA diagnostic protocol, the regional areas will be informed.

Impact/Accomplishments

- GDM clinical guidelines were developed and made available to OB/GYN healthcare providers for GDM diagnosis, treatment and follow-up. These guidelines are posted on the Alaska Native Medical Center intranet for accessibility to all healthcare providers.
- GDM prevalence data for Alaskan Native/American Indian and the white population were collected and compared for 2008-2010 and then again for 2009- 2011. The Alaskan Native women's GDM rate increased from 3.3 to 4.2, but the white women's GDM rate remained the same 1.8 and was lower.
- The Alaska Area IHS Area Epidemiological Center tracks diabetes through their Diabetes Registry. During the plot project of testing ADA one-step protocol for screening and diagnosing GDM , the registry had a four fold increase due to the new criteria plus increased documentation of the screening and diagnostic processes. This increased accountability allows for the opportunity for referral to the Wellness Center for counseling and intervention on healthy lifestyle behaviors to prevent type 2 diabetes in the women with GDM as well as their offspring.
- The Alaska Native Tribal Health Consortium led the team to design a culturally appropriate infographic booklet (also has website capability). The infographic, Nuta'aq Unguwaq "New Life" – Alutiiq, is a guide to cultural traditions and wellness before, during and after pregnancy with a detailed focus on gestational diabetes and nutrition. The nutrition aspect focuses on traditional Alaskan Native foods as well as healthy options as well as healthy non-traditional foods. This guide creates a desire for healthy food options and physical activities. The guide can have a positive impact on Alaska Native/American Indian health outcomes for the entire life spectrum. It also has a positive impact on Native peoples' connectivity with their culture and environment.

Next Steps: The Collaborative will continue to meet and improve services. The Guide is being evaluated by women with GDM patients and other women.

Products (See Appendix)

- The infographic information guide, Nuta'aq Unguwaq "New Life" – Alutiiq
- Alaska Native Medical Center - PROBLEM: Diabetes Mellitus in Pregnancy (outpatient management) Assessment Tool
- ANMC OB/GYN Service Diabetes Mellitus in Pregnancy Screening and Management Protocol Guidelines





the
**Chickasaw
Nation**

Chickasaw Nation 2009-2014

**Strategic Focus:
Data Quality Improvement
Clinical Care Improvement
Consumer Education**

Goals for the GDM Collaborative Team

- Enhance the validity of GDM data and expand surveillance.
- Increase postpartum and on-going diabetes testing and follow-up among women with GDM.
- Determine present knowledge, attitudes and practices women with GDM and facilitate positive changes of knowledge and behaviors among women with GDM
- Encourage system changes in clinics

Target Populations: Women with GDM and the Chickasaw Nation Medical Center healthcare providers

Essential Partners

Diabetes Clinic Team which includes Diabetes Program Manager, Physician, Physician's Assistant, Nurse Case Managers, Nurse Diabetes Educators, Nutrition Diabetes Educator and Wellness and Fitness Specialist

Women's Clinic Team which includes OB/GYN Physicians, Midwives, Women's Health Nurse Practitioners

WIC

Medical Records

Information Technology

Pediatrics

Behavioral Health

Oklahoma State Department of Health Diabetes Prevention and Control Program

Boston University Nurse Researcher

Program Planning Steps

The GDM Collaborative internal team comprised of the Comprehensive Diabetes Center and the Women's Clinic began the project by establishing a desired primary and secondary outcome. The desired primary outcome was to determine continuity of gestational diabetes care during and post-pregnancy by reviewing medical records to document the following:

- glucose screen at 24-26 weeks and if abnormal follow-up diagnostic work-up
- diabetes management if confirmed diagnosis
- postpartum and well woman's annual care which includes a blood glucose screen and lifestyle education at postpartum and annually thereafter

The desired secondary outcome was to improve systems of care for women with gestational diabetes and to prevent or delay type 2 diabetes by

- collaborating with internal partners
- improving electronic medical record GDM documentation
- improving postpartum visits with diabetes screen

Key Components

The Data Quality Improvement project was conducted by collecting and analyzing 2001-2008 GDM data:

1. Staff compared Resource and Patient Management System (RPMS) and State Vital Records using ICD-9 condition code 648.8.
2. Medical record data were extracted on 4% of all pregnancies during time frame. The abstracting tool utilized was adapted from the GDM Collaborative Data Validation Project. Data elements collected included the initial glucose screen at 24 weeks and if abnormal was a Oral Glucose Tolerance Test (OGTT) obtained with documented results.
3. Medical record data were then extracted on 15% of all pregnancies with a positive 648.8 diagnosis. The data elements collected included confirming prenatal screen, the OGTT performed and was the woman referred to the Diabetes Center for diabetes management. The postpartum data collected included postpartum visit with glucose screening and follow-up lifestyle behavioral counseling.

The clinical care improvement project was conducted in two different tracks: talking circles (focus groups) of postpartum women with GDM as one track and systems review of their Women's Clinic and Diabetes Center as track two.

1. The talking circles included postpartum focus groups to determine postpartum approaches to reduce cardio-metabolic risk among women with previous GDM. The focus group criteria included 19-45 years of age, self-identified as American Indian, prior or current GDM diagnosis (confirmed with chart review), health care received at the Chickasaw Nation and within 10 years of most recent GDM diagnosis. This research was conducted by a nurse researcher at Boston University.

Key Components (cont.)

2. The second track was a review of gestational diabetes protocols and electronic medical record (EMR) key elements to document care. Nurse practitioners, midwives, health educators, nurse case managers and diabetes educators reviewed the EMR for completeness and potential gaps in documentation.
3. The Collaborative was increased to include membership with WIC, Information Technology, Nursing Administration and Pediatrics so that all services related to the woman and her child could be explored.
4. It was determined that there was a need for a comprehensive diabetes registry which included GDM to document cases and to provide a mechanism for long term follow-up.

Required Resources

Staff: Nurse case managers, nurse practitioners, medical records personnel and clinical informatics staff conducted medical record abstracting for collection and analysis of data to determine prevalence and completeness of GDM comprehensive care. Women's Clinic physicians, midwives and nurse practitioners and diabetes educators reviewed and determined clinical protocols and electronic medical template changes plus developed guidelines to assist staff with implementation (2.5 FTE)

Funding: CDC support to NACDD provided under \$30,000 support. The Chickasaw Nation Medical Center staff contributed in-kind contributions of 3:1.

Other: Access to Diabetes Registry, RMPS and medical center data

Challenges

- One consistent barrier is the need for retraining due to staff turnover and reassignment. This is time consuming and creates time lapses between the retraining and efficient delivery of services.
- Another barrier is the loss of communication with the patients and distance/ transportation issues. Not all patients maintain their health care with the Chickasaw Nation Department of Health after delivery and may use another facilities closer to their home or return to their tribal clinic for postpartum care. Many patients do not keep their current address and phone numbers updated in our EHR system, so we lose contact with them.
- Transportation may also be a barrier for some. They may not have any transportation, or the distance is too far for them to travel.

Lessons Learned

For this project, the biggest lesson learned is the importance of collaboration. With Women's Clinic, Clinical Informatics and the Comprehensive Diabetes Center working together we were able to change the clinical system and improve access and quality of care for the women with GDM.

Impact/Accomplishments

- Data validation of the abstracted records reflected:
 - 87.3% of women, 24-26 weeks pregnant, received the one hour glucose screen and if positive were given a OGTT
 - 7.9% of women, 24-36 weeks pregnant, had a random blood glucose test to determine status of blood glucose levels
 - 100% of women with GDM were referred and if attended received diabetes management by the Diabetes Center
 - 75% of women obtained a postpartum visit, although of this group only 15% had the postpartum glucose screen and there was no documentation of education of risk reduction for type 2 diabetes or lifestyle behaviors
- Focus Group Results
 - What do you think your risk or chance is for getting diabetes over the next ten years?
 - 50% thought they had a moderate risk
 - 33% thought they had a high risk
 - If you don't change your lifestyle behaviors, such as diet or exercise, what is your risk or chance of getting diabetes over the next ten years?
 - 45% thought they had a high chance
 - 45% thought they had a moderate chance
 - Quote from one woman: "I could do a lot of things to help delay [type 2 diabetes], maybe prevent it. Maybe I'm wrong and I just need to work harder...but I think it's one of those things that we're just genetically unlucky."
- The Collaborative members united to develop a strong partnership within the Chickasaw Nation Medical Center System to make change: Diabetes Center, Women's clinic, OB, Pediatrics, WIC, & Information Technology.
 - Increased knowledge among medical providers
 - The need to improve the number of postpartum visits
 - The need to improve postpartum and annual diabetes screening
 - Improved medical provider practice

Impact/Accomplishments (cont.)

- EHR templates being upgraded to include the last A1c and/or blood glucose values entered at each visit.
 - Pop-up reminders to perform an annual A1c on each type of clinical visit for women
- The internal partners developed a GDM registry.
 - Used for data collection and long-term tracking tool, such as, mailing invitations for health promotion events and annual well woman visits
- Revised clinical system (protocols, clinical flow procedures and referral patterns for the GDM program in 2014).
 - During the prenatal period, women with GDM will continue to be referred diabetes education and medical management
 - Diabetes Center staff are notified when patient is admitted for delivery so that an on-site visit can be made to the maternity suite
 - Clinical Informatics programmed the EHR to send electronic referrals to diabetes staff at delivery and postpartum visit
 - During the postpartum period, the diabetes center staff will conduct a follow-up visit on the same day as the postpartum visit and will provide the diabetes screen
 - If patient's blood glucose levels are normal, the woman is released
 - If patient's blood glucose levels are elevated, the woman receives continued care with diabetes center staff or referrals are sent to home clinic
 - For the annual visit follow-up, all patients are given a one year follow up appointment to receive a glucose screening, needs assessment and a medical consultation and if needed referred to the Diabetes Prevention Program
- As a result of these institutionalized improvements, the Chickasaw Nation has seen women maintain tight control of A1C levels, with a slight reduction, from 6.1% to 5.9% over a one-year period, 2014-2015.
- Diabetes Prevention Program provides education as requested by patient or staff referral.
- Community Opportunities are offered such as the "Mommy and Me Conferences." These conferences are held quarterly and are open to all women for education on child rearing, healthy lifestyles for the whole family, benefits of breast feeding, cooking demonstrations or other programs as requested by the women participating.

Next Steps: The Collaborative continues to meet and improve the system. Projects currently in progress include: the establishment of obtaining the "Baby Friendly" certification for the Chickasaw Nation Medical Center. Project is in the dissemination phase and partnering with the Chickasaw Nation WIC department to provide GDM information for the "MOMents" smart phone app.

Products (See Appendix)

**Gestational Diabetes
 Abstracting tool**

Gestational Diabetes Verification Collaboration
 Chickasaw Nation/Carl Albert Hospital Chart Review
 Gestational Diabetes Testing and Diagnosis

Birth Certificate # _____ Date of Abstract: ___/___/___
 Mother's Name: _____ Abstractor's Name: _____
 Last First Middle _____ Primary Language (Specify if other than English): _____
 Mother's Date of Birth: Child's Date of Birth:
 Was this a multiple birth (e.g. twins?) Yes No
 RPMS # _____

<p>Diagnosis of Diabetes Before Pregnancy: Non-Insulin-Dependent: Yes <input type="checkbox"/> No <input type="checkbox"/> Insulin-Dependent: Yes <input type="checkbox"/> No <input type="checkbox"/> ICD-9 Codes (check if present) 250.0 <input type="checkbox"/> ICD-9 Codes (check if present) 648.0 <input type="checkbox"/></p> <p>1-hr Glucose Challenge Test (GCT): Documented: Yes <input type="checkbox"/> No <input type="checkbox"/> OR Gestation Week: <input type="text"/> <input type="text"/> Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Were values documented? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, what were the values: Fasting _____ 1-hr _____ mg/dL Referred for OGTT <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/></p>	<p>Previous History of GDM Diagnosis: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>3-hr Oral Glucose Tolerance Test (OGTT): Documented: Yes <input type="checkbox"/> No <input type="checkbox"/> OR Gestation Week: <input type="text"/> <input type="text"/> Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Were values documented? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, what were the values? Fasting _____ 1-hr _____ 2-hr _____ 3-hr _____ mg/dL Referred to the Diabetes Center <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>Other Glucose Tests: Documented: Yes <input type="checkbox"/> No <input type="checkbox"/> Please fill in all that apply: Fasting Blood Sugar: _____ (value) Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> A1C Exam _____ (value) Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 2-hr. OGTT: _____ (values) Fasting _____ 1-hr _____ 2-hr _____ Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Other test (list type and values): _____ Date test was administered: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	





Choctaw Nation 2012-2014

Strategic Focus:
Data Quality Improvement
Clinical Care Improvement

Goals of the GDM Collaborative

- Enhance the validity of GDM data and expand surveillance
- Increase postpartum and on-going diabetes testing and follow-up among women with GDM
- Encourage system changes in clinics

Target Populations: Women with GDM and Choctaw Nation healthcare providers

Essential Partners

Diabetes and Wellness Center

Women's Clinic

Quality Improvement

Indian Health Service, Oklahoma City Area

Health Promotion

Choctaw Nation Physicians, Nurse Practitioners,
Midwives and Diabetes Educators

Program Planning Steps

The Diabetes and Wellness Center invited the Women's Clinic staff to meet about forming a collaborative partnership to improve the quality of services for women with GDM. The Collaborative was established and an action plan developed. The first tasks were an assessment of clinical services to women with GDM and medical record chart reviews to determine the completeness and accuracy of GDM documentation.

Program Planning Steps (cont.)

- Performed chart audits to ensure GDM patients received appropriate screening and follow-up. The reviews reflected the following:
 - No consistent protocol for documenting key data elements in the medical records related to postpartum follow-up care for women with GDM
 - Women with GDM were not receiving follow-up glucose screening during the postpartum visit
 - Women with GDM were not receiving diabetes management during the pregnancy nor risk education or lifestyle behavioral education postpartum
 - No collaboration existed between Women's Clinic staff and the Diabetes Wellness Center to ensure women with GDM or other types of diabetes had quality diabetes care, management and education
- The results of this assessment allowed the Collaborative partners to revise their action plan to determine the appropriate data and clinical care improvement interventions.

Key Components

- Conducted meetings with OB case manager, dietitians, mid-level practitioners and diabetes educators to determine professional role and current GDM processes.
- Reviewed, revised and developed policies related to screening, diagnostic procedures, management and follow-up for women with GDM
- Diabetes Wellness Center began receiving consults from OB at the time of delivery to ensure patients received follow-up screening and counseling with dietician and/or diabetes education
- Developed a GDM template in EHR to capture needed information and ensure the client is receiving appropriate care and follow-up.
- Developed an educational packet of materials for women with GDM which is provided at delivery discharge

Required Resources

Staff: Nurse case managers, nurse practitioners, medical records personnel and clinical informatics staff conduct chart audits each quarter. Women's Clinic physicians, midwives, nurse practitioners and diabetes educators reviewed and determined clinical protocols, electronic medical template changes and guidelines to assist staff with implementation (2.5 FTE)

Funding: CDC support to NACDD provided under \$20,000 support. The Choctaw Nation Medical Center staff contributed in-kind contributions of 2:1.

Other: Access to Diabetes Registry, RMPS and medical center data

Challenges

There was a change in key staffing for this collaborative (OB case manager staff) which resulted in retraining a temporary case manager and at times delayed the weekly staffing of GDM patients.

Lessons Learned

For this project, the biggest lesson learned is the importance of collaboration. With Women's Clinic, Clinical Quality Improvement and the Diabetes and Wellness Center working together we were able to change the clinical system and improve access and quality of care for the women with GDM.

- Patients were not getting appropriate GDM follow-up prior to our collaborative efforts
 - Prior to initiating consults; patients were not getting scheduled for follow-up.
 - There was no formal GDM follow-up program in place.
 - It was important to understand the patient's perspective.
 - There needed to be from the beginning either on paper or in EHR a list of indicators to ensure nothing was missed on GDM patients coordinated and integrated care.

Impact/Accomplishments

- Chart reviews were performed by Diabetes and Wellness Center case managers/educators. Quarterly, a 10% sample is audited for completeness and appropriateness of care. The chart reviews continue with feedback to both partners.
- Follow-up appointments are made at Diabetes Wellness Center six weeks after delivery for follow-up glucose screens and education.
- The assessments identified issues in current clinical processes, and revisions were made as needed to change the system.
- Information obtained will aid in the development of GDM program processes.
- GDM electronic medical record template was developed.

Next Steps: Diabetes Wellness Center dietician interviewing GDM patients noted current knowledge and attitudes of GDM. This information is being used in the development of a specific GDM educational program.

Products (See Appendix)

No specific products developed that can be shared as EMR template is an internal document.



Utah Navajo Health System

2011-2014

Strategic focus:
Clinical Care Improvement
Provider Education

Goals for the Collaborative

- Enhance validity GDM data and expand surveillance
- Determine provider GDM knowledge, attitudes and practices
- Increase postpartum follow-up visits and glucose testing in women with GDM

Target Populations: Women with GDM and healthcare providers who provide services for the Utah Navajo population

Essential Partners

Diabetes Program

Women's Clinic

Clinical Staff as Diabetes Educators, Behavioral Health,
Pharmacy, Social Work

Information Technology staff

Sweet Success

Utah Tribal Health Advisory

Utah State Department of Health

- Diabetes Prevention and Control
- Maternal Child Health
- Tribal Liaison

Planning Steps

The staff had observed that American Indian women seeking health care through the Utah Navajo Health System have an excess risk of GDM. At one Utah site 16% of pregnant women were diagnosed with GDM (four times the rate for the state). The Utah Indian Health Advisory Board (UIHAB) received this data and selected GDM as one of its focus areas for quality improvement for 2013.

Planning Steps (cont.)

The first step in this process was to conduct a needs assessment, using qualitative information, to identify gaps in care for American Indian/Alaska Native women who are diagnosed with GDM. From February to June 2013, health care professionals from five of seven American Indian tribes or centers across the state were interviewed to obtain a general assessment of the gaps in care for GDM; the challenges/barriers faced by the American Indian community and the availability of health care programs for treating women with GDM. Information on demographics and characteristics, community health issues/needs, challenges and activities within the tribes were also collected.

Staff returned to the Utah Tribal Health Advisory Board with the assessment results for support in gaining additional resources to address the needs and challenges

The Diabetes Program met with the Utah Health Department Diabetes and Control Program, the Tribal Liaison and Maternal Child Health Program to discuss current limitations of the Utah Navajo Health System staffing, programming and patient access based on the needs assessment. From this discussion, a draft action plan was developed to implement quality improvement activities to address the gaps.

Key Components

- The staff assessment captured the following elements:
 - Current program staffing—roles and responsibilities, skills and educational assets
 - Patient population demographics
 - Program environment—staffing patterns, staff continuing education and training, policies and procedures
 - Clinical environment- clinic flow, structure, accessibility, clinical use of technology (EMR) and needed data elements
- Assessment conclusions regarding GDM care for these tribal women:
 - Inadequate transportation for patients
 - Lack of resources
 - Need to overcome some cultural biases
 - With more resources, sites would be able to offer education, create individualized exercise and nutrition programs and provide basic health care needs for all tribal women with GDM
 - Current program staffing was inadequate to meet caseload and lacked certain key professionals to form a multidisciplinary team
- Patient population demand was greater than available resources
- Lacked standing orders for GDM screening and diagnosis, diabetes management when diagnosed with GDM or for pre-existing type 2 diabetes

Key Components (cont.)

- Program environment and staff were receptive to revise the whole scope of GDM care and implement necessary changes to improve care.
- Clinical environment/structure was capable of handling changes with the addition of OB providers and other educational, behavioral and clinical professionals to provide for the care, management and education of women with GDM.
- Clinical environment/structure was capable of making adjustments for needed EMR to contain specific GMD data elements.
- UNHS Diabetes and Women's Health Staff collaborated with their Clinical Informatics Division to create locations in the electronic health records (EHR) system where providers and clinical staff could document patient education, follow-up and postpartum appointments. Previously there had not been a place in the patient chart where this could be documented so care could be monitored and data extracted from the EHR.
- UNHS Administrative staff provided leadership in recruiting additional professional staff to add to the Women's Health and Diabetes Program staff.
- Clinical staff worked with providers to increase postpartum follow-up and ongoing testing among women with GDM. Specifically, a greater effort was made to emphasize the importance of follow-up for the women and not just their newborns. Additionally, an effort was made to schedule follow up appointments for the women at the same time as the follow up appointments were made for the newborns.
- Collaborating with Sweet Success for healthcare provider continuing education for pregnancy and diabetes.

Required Resources

Staff: Nurse, social worker, nurse diabetes educator, information technology, staff nurse, practitioners, medical records personnel, Women's clinic physicians (2.5 FTE)

Funding: CDC support to NACDD provided under \$20,000 support. The Utah Navajo Health System and Utah Department of Health staff contributed in-kind contributions of 2:1.

Challenges

- One challenge was just getting mothers to understand that their health is equally as important as the health of their newborns. If they are not healthy it will be challenging for them to properly care for their babies. If we could help mothers understand this they were more likely to be compliant with follow up recommendations.
- Another challenge was finding the time to work with the UNHS Database Administrator who is continually swamped with projects and database improvements. Demonstrating patience and understanding of these multiple demands and explaining how the data could be used was helpful.

Lessons Learned

- Collaborating enables projects to be accomplished, but must have patience and understand competing priorities within a health care system
- Helping women understand that it is all right to put their own health as a priority not just the infant

Accomplishments/Impact

- Receiving the support from the Utah Indian Health Advisory Board to address GDM and to support the needed changes to improve the delivery and quality of services for women to improve their health.
- Improving the EMR location for charting GDM teaching and documenting follow-up served as a reminder to provide and document services, resulting in improved patient care.
- Improving EHR documentation also improved the process for education and follow up with mothers, increasing their compliance with postpartum visits.
- Increasing postpartum visit compliance by 10%.
- Increasing the healthcare providers from 4 FTE to 11.5 FTE including 3 of the professionals becoming certified diabetes educators.
- Adding pharmacy to the diabetes team for the first time.
- Providing for behavioral health assessments and referrals, a new service.
- Obtaining standing orders for GDM screening and diagnosing, GDM management during the pregnancy and glucose screening and lifestyle education at postpartum.

Next steps

- Developing patient specific informational packet including: BMI info, GDM info, nutrition info, IUD/Deprovera/daily pill information.
 - Including nutrition information from dietician in OB class materials.
 - Improving postpartum education materials.
 - Collaborating with local hospital to include more specific GDM information for mother at discharge.
 - Reinforce importance of 6 week follow-up for woman with GDM.
- Including new postpartum tracking component with currently monitored GDM measures.

Products (See Appendix)

No specific products developed that can be shared as EMR template is an internal document.

References and Appendix



References

1. Gregg, E, Sood, M; *The Lancet Diabetes & Endocrinology*, online Aug. 13, 2014
2. American Diabetes Assoc. Economic Costs of Diabetes in the U.S. in 2012. *Diabetes Care*; 2013. <http://care.diabetesjournals.org/lookup/suppl/doi:10.2337/dcl12-2625>
3. American Diabetes Association in Diabetes—2015, *Diabetes Care*. Supplement , #77.
4. National Institutes of Health Consensus Development Conference
Statement: Diagnosing Gestational Diabetes Mellitus, March 4-6, 2013
5. Barclay, L. Lifetime Risk for Type 2 Diabetes Increased in Women With Gestational Diabetes. *Lancet*. 2009;1738-1740
6. Lawrence JM, Chen W, Black MH, Sacks DA, Hsu JW. Prevalence and timing of postpartum glucose testing and sustained glucose dysregulation after gestational diabetes mellitus. *Diabetes Care* 33:569-576, 2010
7. Kessous,R , Shoham-Vardi I, Pariente, G, Sherf M, Sheiner E. An association between gestational diabetes mellitus and long-term maternal cardiovascular morbidity. *Heart* 2013;99:1118–1121
8. Bellamy L, Casas JP, Hingorani AD, Williams D. Type 2 diabetes after gestational diabetes: a systematic review and meta-analysis. *Lancet* 2009;37:1773-9
9. Dietz P, England L. Presentation at Association of Maternal and Child Health Programs Annual Conference, 2009. Gestational Diabetes Mellitus: Beyond Pregnancy: Integrating Maternal and Child Health and Chronic Disease
10. Birth rate Live Births/1,000 estimated population, National Center for Health Statistics, National Vital Statistics Reports, Vol 53: Nov 2004
11. CDC. Behavioral Risk Factor Surveillance Survey (BRFSS) 2006
12. CDC Pregnancy Risk Assessment Monitoring System (PRAMS) 2006
13. US Census 2006
14. Owens-Gary, M, Ware, J. Interventions to Increase Access to Care and Quality of Care for Women with Gestational Diabetes. *Diabetes Spectrum* Volume 25, Number 1, 2012
15. Devlin HM, Desai J, Walaaszek A. Reviewing Performance of Birth Certificate and Hospital Discharge Data to Identify Births Complicated by Maternal Diabetes. *Maternal Child Health J* 2008; DOI 10.1007/s10995-008-0390-9

References (Cont.)

16. Hosler A, Nayak SG, Radigan AM. Agreement Between Self-Report and Birth Certificate for Gestational Diabetes Mellitus: New York State PRAMS. *Matern Child Health J* 2009; DOI 10.1007/s10995-009-0529-3
17. Jones-Vessey KA. Revisions to the North Carolina Birth Certificate and Their Impact on Tracking Maternal and Infant Health Data. Statistical Primer (North Carolina State Center for Health Statistics) 2012; No. 19.
18. Swan W, Kilmartin G, Liaw S-T. Assessment of Readiness to Prevent Type 2 Diabetes in a Population of Rural women with a History of Gestational Diabetes. *Rural and Remote Health* 2007; 7:802 Online. Available from <http://www.rrh.org.au>
19. Getahun D, Fassett MJ, Jacobsen SJ. Gestational diabetes: risk of recurrence in subsequent pregnancies. *American Journal of Obstetrics & Gynecology* 2010: 467.e1-467.e6
20. Tripathi A, Rankin J, Aarvold J, Chandler C, Bell R. Preconception counseling in women with diabetes: A population study in the North of England. *Diabetes Care* 2010;33:586-589
21. Vesco KK, Dietz PM, Bulkley J, Bruce FC, et al. A System-Based Intervention to Improve Postpartum Diabetes Screening Among Women with Gestational Diabetes. *Am J Obstet Gynecol* 2012; 4:283e1-6
22. Kaaja R, Greer IA. Manifestations of Chronic Disease During Pregnancy. *JAMA* 2005; 294:2751-2757
23. Russell MA, Phipps MG, Olson CL, Welch HG, Carpenter MW. Rates of postpartum glucose testing after gestational diabetes mellitus. *Obstet Gynecol* 2006; 108:1456-62.
24. Ko JY, Dietz PM, Conrey EJ, Shellhaas C, et al. Strategies Associated with Higher Postpartum Glucose Tolerance Screening Rates for Gestational Diabetes Patients. *J Womens Health (Larchmt)* 2013; 22:681-686.
25. Dietz PM, Vesco KK, Callaghan WM, Bachman DJ, et al. Postpartum Screening for Diabetes After a Gestational Diabetes Mellitus Affected Pregnancy. *Obstet Gynecol* 2008; 112: 868-74
26. Heatley E, Middleton P, Hague W, Crowther C. The DIAMIND Study: Postpartum SMS Reminders to Women Who Have Had Gestational Diabetes Mellitus to Test for Type 2 Diabetes: A Randomised Controlled Trial Study Protocol 2013; 13:92

References (cont.)

27. CDAPP- Postpartum-Rec-AffiliatetoOBProvider.pdf. Available at <http://www.cdappsweetsuccess.org/Resources/FreeProviderProfessionalMaterials.aspx>
28. Ko JY, Conrey EJ, Shellhaas C, Farr SL, Robbins CL. Gestational Diabetes Mellitus and Postpartum Care Practices of Nurse-Midwives. *J Midwifery Womens Health* 2013; 58:33-40
29. Zera CA, Bates DW, Stuebe AM, Ecker JL, Seely EW. Diabetes Screening Reminder for Women with Prior Gestational Diabetes. *Obstetrics and Gynecology* 2015
30. Cassandra E. Henderson CE, Kavookjian J, Leitstein H, McKoy JM, Murage WJ, Lipman R. Window of Opportunity: Postpartum Screening of Women with Gestational Diabetes for Early Detection of Prediabetes and Type 2 Diabetes. *The Open Diabetes Journal* 2012;5: 25-28
31. Shenson D, Benson B, Harris A. Expanding the delivery of preventive services through community collaboration: the SPARC model *Prev Chronic Dis* 2008;(1):A20.
32. Cabana MD¹, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PA, Rubin HR. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA* 1999: Oct 20;282(15):1458-65
33. Schaefer-Graf UM, Klavehn S, Hartmann R. How Do We Reduce the Number of cases of Missed Postpartum Diabetes in Women with Recent Gestational Diabetes Mellitus? *Diabetes Care* 2009; 32:1960-1964
34. England LJ, Dietz PM, Njoroge T, Callaghan WM, et al. Preventing Type 2 Diabetes: Public Health Implications for women with a History of Gestational Diabetes Mellitus. *American Journal of Obstetrics & Gynecology* 2009; 200:365e1-365.e8
35. Clark HD, Van Walraven C, Code C, Karovitch A, Keely E. Did Publication of a Clinical Practice Guideline Recommendation to Screen for Type 2 Diabetes in Women with Gestational Diabetes Change Practice? *Diabetes Care* 2003; 26:265-268
36. Gabbe SG, Landon MB, Warren-Boulton E. Promoting health after gestational diabetes: a national diabetes education program call to action. January 2012, *Obstetrics & Gynecology*; 119:171-176
37. Kolu P, Raitanen j, Rissanen p, Luoto R. Health Care Costs Associated with Gestational Diabetes Mellitus Among High-Risk Women—Results From a Randomized Trial. *BMC Pregnancy Childbirth* 2012; doi: 0.1186/1471-2393-12-71
38. Kim C, McEwen LN, Kerr EA, Piette JD, Chames MC, Ferrara A, Herman WH. Preventive Counseling Among Women with History of GDM. *Diabetes Care* 30:2489j-2495, 2007

References (cont.)

38. Crowther CA, Hague WM, Middleton PF, et al. The IDEAL Study: Investigation of Dietary Advice and Lifestyle for Women with Borderline Gestational Diabetes: A Randomised Controlled Trial-Study Protocol. *BMC Pregnancy Childbirth* 2012; 12:106
39. Krukowski RA, Bursac Z, McGehee MA, West D. Exploring Potential Health Disparities in Excessive Gestational Weight Gain. *J of Womens Health* 2013; DOI:10.1089/jwh.2012-3998
40. Tobias DK, Hu FB, Chavarro J, et al. Healthful Dietary Patterns and Type 2 Diabetes Mellitus Risk Among Women with a History of Gestational Diabetes Mellitus. *Arch Intern Med* 2012; 172:1566-1572
41. Whittaker R, Matoff-Stepp S, Meehan J, Kendrick J, Jordan E, Stange P, Cash A, Meyer P, Baitty J, Johnson P, Ratzan S, Rhee K. Text4baby: development and implementation of a national text messaging health information service. *Am J Public Health*. 2012 Dec;102(12):2207-13. doi:10.2105/AJPH.2012.300736. Epub 2012 Oct 18.
42. Gazmararian JA, Elon L, Yang B, Graham M, Parker R. Text4baby program: an opportunity to reach underserved pregnant and postpartum women? *Matern Child Health J*. 2014 Jan;18(1):223-32. doi: 10.1007/s10995-013-1258-1.
43. Anderson JE, Ebrahim S, Floyd L, Atrash H. Prevalence of Risk Factors for Adverse Pregnancy Outcomes During Pregnancy and the Preconception Period—United States, 2002-2004. *Matern Child Health J* 2006; 10:S101-S106

Data Quality Improvement Strategies Table and Related References

Surveillance	<p>*Devlin HM, Desai J, Walaaszek A. Reviewing Performance of Birth Certificate and Hospital Discharge Data to Identify Births Complicated by Maternal Diabetes. <i>Matern Child Health J</i> 2008; DOI 10.1007/s10995-008-0390-9</p> <p>*Hosler A, Nayak SG, Radigan AM. Agreement Between Self-Report and Birth Certificate for Gestational Diabetes Mellitus: New York State PRAMS. <i>Matern Child Health J</i> 2009; DOI 10.1007/s10995-009-0529-3</p> <p>*U. S. Congress. Gestational Diabetes Act of 2011. (GEDI Act) House Bill 2194 introduced in the Health Sub-Committee of House Committee on Energy and Commerce, and Senate Bill 1221 introduced in Senate Committee on Health Education, Labor and Pensions. 2011.</p> <p>*Lydon-Rochelle MT, Hold VL, Cardenas V, et al. The Reporting of Pre-existing Maternal Medical Conditions and Complications of Pregnancy on Birth Certificates and in Hospital Discharge Data. <i>Am J Obstet Gynecol</i> 2005; 193:125-34</p> <p>*Roohan RJ, Josberger RE, Acar J, et al. Validation of Birth Certificate Data in New York State. <i>Journal of Community Health</i> 2003; 38: 335-46</p>
Data System Changes in vital statistics/clinics/hospitals	<p>*Jones-Vessey KA. Revisions to the North Carolina Birth Certificate and Their Impact on Tracking Maternal and Infant Health Data. <i>Statistical Primer (North Carolina State Center for Health Statistics)</i> 2012; No. 19.</p> <p>*Desisto CL, Kim SY, Sharma AJ. Prevalence Estimates of Gestational Diabetes Mellitus in the United States, Pregnancy Risk Assessment Monitoring System (PRAMS) 2007-2010. <i>Prev Chronic Dis</i> 2014; 11:130415. DOI: http://dx.doi.org/10.5888/pcd11.130414</p>
Marketing Research	<p>*Swan W, Kilmartin G, Liaw S-T. Assessment of Readiness to Prevent Type 2 Diabetes in a Population of Rural women with a History of Gestational Diabetes. <i>Rural and Remote Health</i> 2007; 7:802 Online. Available from http://www.rrh.org.au</p>
Bridge gap between OB-gyn and Primary Care	<p>*Russell MA, Phipps MG, Olson CL, et al. Rates of Postpartum Glucose Testing After Gestational Diabetes Mellitus. <i>Obstetrics and Gynecology</i> 2006; 108:1456-1462</p>

Clinical Quality Improvement Strategies Table and Related Reference

Preconception	<p>*Getahun D, Fassett MJ, Jacobsen SJ. Gestational diabetes: risk of recurrence in subsequent pregnancies. <i>American Journal of Obstetrics & Gynecology</i> 2010: 467.e1-467.e6</p> <p>*Kim C, McEwen LN, Kerr EA, et al. Preventive Counseling Among Women with Histories of Gestational Diabetes Mellitus. <i>Diabetes Care</i> 2007; 30:2489-2495.</p>
---------------	--

Clinical Quality Improvement Strategies Table and Related References

Clinical System Changes	<p>*Vesco KK, Dietz PM, Bulkley J, Bruce FC, et al. A System-Based Intervention to Improve Postpartum Diabetes Screening Among Women with Gestational Diabetes. <i>Am J Obstet Gynecol</i> 2012; 4:283e1-6</p> <p>*Kaaja R, Greer IA. Manifestations of Chronic Disease During Pregnancy. <i>JAMA</i> 2005; 294:2751-2757</p> <p>*Owens-Gary MD, Ware J. Interventions to Increase Access to Care and Quality of Care for Women with Gestational Diabetes. <i>Diabetes Spectrum</i> 2012; 25:26-28,</p>
Discharge Planning	<p>*Family Caregiver Alliance. Hospital Discharge Planning. https://caregiver.org/</p>
Promote postpartum testing	<p>*Ko JY, Dietz PM, Conrey EJ, Shellhaas C, et al. Strategies Associated with Higher Postpartum Glucose Tolerance Screening Rates for Gestational Diabetes Patients. <i>J Womens Health (Larchmt)</i> 2013; 22:681-686.</p> <p>*Dietz PM, Vesco KK, Callaghan WM, Bachman DJ, et al. Postpartum Screening for Diabetes After a Gestational Diabetes Mellitus Affected Pregnancy. <i>Obstet Gynecol</i> 2008; 112: 868-74</p> <p>*Heatley E, Middleton P, Hague W, Crowther C. The DIA-MIND Study: Postpartum SMS Reminders to Women Who Have Had Gestational Diabetes Mellitus to Test for Type 2 Diabetes: A Randomized Controlled Trial Study Protocol 2013; 13:92</p> <p>*Oregon Public Health Division, Department of Human Services. Postpartum Screening of Gestational Diabetics: Delaying Onset of Diabetes. <i>CD Summary</i> 2009; 58:11. http://oregon.gov/dhs/ph/cdsummary</p> <p>**Russell MA, Phipps MG, Olson CL, et al. Rates of Postpartum Glucose Testing after Gestational Diabetes Mellitus. <i>Obstetrics & Gynecology</i> 2006; 108:1456-1462</p>
Bridge gap between OB-GYN and Primary Care	<p>*Russell MA, Phipps MG, Olson CL, et al. Rates of Postpartum Glucose Testing After Gestational Diabetes Mellitus. <i>Obstetrics and Gynecology</i> 2006; 108:1456-1462</p> <p>*Paez KA, Eggleston EM, Griffey SJ, et al. Understanding Why Some Women with a History of Gestational Diabetes Do Not Get Tested for Diabetes. <i>Women's Health Issues Journal</i> 2014; 24: e373-e379</p>

Provider Education Strategies Table and Related References

<p>Provider awareness</p>	<p>*Ko JY, Conrey EJ, Shellhaas C, Farr SL, Robbins CL. Gestational Diabetes Mellitus and Postpartum Care Practices of Nurse-Midwives. <i>J Midwifery Women Health</i> 2013; 58:33-40.</p> <p>*Zera CA, Bates DW, Stuebe AM, Ecker JL, Seely EW. Diabetes Screening Reminder for Women with Prior Gestational Diabetes. <i>Obstetrics and Gynecology</i> 2015:1-6</p> <p>*Ferrara A. Increasing Prevalence of Gestational Diabetes Mellitus: A Public Health Perspective. <i>Diabetes Care</i> 2007; 30:S141-S144</p> <p>*Metzger BE, Buchanan TA, Coustan DR, et al. Summary and Recommendations of the fifth International Workshop-Conference on Gestational Diabetes Mellitus. <i>Diabetes Care</i> 2007; 30:S251-S260.</p> <p>*Hunsberger MI, Donatelle RJ, Lindsay K, Rosenberg KD. Physician Care Patterns and Adherence to Postpartum Glucose Testing after Gestational Diabetes Mellitus in Oregon. <i>PLOS ONE (Public Library of Science)</i> 2012; 10:e47052 pg1-6. www.plosone.org</p>
<p>Partnerships consistent</p>	<p>Shenson D, Benson B, Harris A. Expanding the delivery of preventive services through community collaboration: the SPARC model. <i>Prev Chronic Dis</i> 2008;5 (1):A20</p>
<p>Input of Providers</p>	<p>Cabana MD1, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PA, Rubin HR. . Why don't physicians follow clinical practice guidelines? A framework for improvement. <i>JAMA</i>. 1999 Oct 20;282(15):1458-65</p>

Consumer Education Strategies Table and Related References

<p>Increase awareness</p>	<p>*Schaefer-Graf UM, Klavehn S, Hartmann R. How Do We Reduce the Number of Cases of Missed Postpartum Diabetes in Women with Recent Gestational Diabetes Mellitus? <i>Diabetes Care</i> 2009; 32:1960-1964.</p> <p>*England LJ, Dietz PM, Njoroge T, Callaghan WM, et al. Preventing Type 2 Diabetes: Public Health Implications for women with a History of Gestational Diabetes Mellitus. <i>American Journal of Obstetrics & Gynecology</i> 2009; 200:365 e1-365.e8.</p>
---------------------------	--

Consumer Education Strategies

Increase awareness	<p>*Clark HD, Van Walraven C, Code C, Karovitch A, Keely E. Did Publication of a Clinical Practice Guideline Recommendation to Screen for Type 2 Diabetes in Women with Gestational Diabetes Change Practice? <i>Diabetes Care</i> 2003; 26:265-268</p> <p>*Jones EJ, Roche CC, Appel SJ. A Review of the Health Beliefs and Lifestyle Behaviors of Women with Previous Gestational Diabetes. <i>J. Obstet Gynecol Neonatal Nurs</i> 2009; 5:516-26</p> <p>*Kim C, McEwen LN, Piette JD, et al. Risk Perception for Diabetes Among Women with Histories of Gestational Diabetes. <i>Diabetes Care</i> 2007; 30:228-224</p>
Refer women to appropriate services for counseling	<p>*Gabbe SG, Landon MB, Warren-Boulton E. Promoting health after gestation diabetes: a national diabetes education program call to action. <i>January 2012, Obstetrics & Gynecology</i>; 119:171-176</p> <p>*Kolu P, Raitanen j, Rissanen p, Luoto R. Health Care Costs Associated with Gestational Diabetes Mellitus Among High-Risk Women—Results From a Randomized Trial. <i>BMC Pregnancy Childbirth</i> 2012; doi: 0.1186/1471-2393-12-71.71</p> <p>*Crowther CA, Hague WM, Middleton PF, et al. The IDEAL Study: Investigation of Dietary Advice and Lifestyle for Women with Borderline Gestational Diabetes: A Randomized Controlled Trial-Study Protocol. <i>BMC Pregnancy Childbirth</i> 2012; 12:106</p> <p>*Krukowski RA, Bursac Z, McGehee MA, West D. Exploring Potential Health Disparities in Excessive Gestational Weight Gain. <i>J of Womens Health</i> 2013; DOI: 10. 1089/jwh.2012-3998</p> <p>Tobias DK, Hu FB, Chavarro J, et al. Healthful Dietary Patterns and Type 2 Diabetes Mellitus Risk Among Women with a History of Gestational Diabetes Mellitus. <i>Arch Intern Med</i> 2012; 172:1566-1572</p> <p>*Gabbe SG, Landon MB, Warren-Boulton E. Promoting Health After Gestational Diabetes: A National Diabetes Education Program Call to Action. <i>Obstetrics & Gynecology</i> 2012; 119:171-176</p> <p>*Yun S, Kabeer NH, Zhu B-P, Rrownson RC. Modifiable Risk Factors for Developing Diabetes Among Women with Previous Gestational Diabetes. <i>Prev Chronic Dis</i> 2007; Available from: http://www.cdc.gov/ped/issues/2007/jan/06_0028.htm</p>

Consumer Education Strategies Table and Related References

Stress risk of type 2 before delivery

*Anderson JE, Ebrahim S, Floyd L, Atrash H. Prevalence of Risk Factors for Adverse Pregnancy Outcomes During Pregnancy and the Preconception Period—United States, 2002-2004. *Matern Child Health J* 2006; 10:S101-S106.

*Ratner RE. Prevention of Type 2 Diabetes in Women with Previous Gestational Diabetes. *Diabetes Care* 2007. 30:S242-S246.

*Malcolm J. Through the Looking Glass: Gestational Diabetes as a Predictor of Maternal and Offspring Long-term Health. *Diabetes Metab Res Rev* 2012; 28:307-311

State Product Table			
State	Product	Category	Description
Arkansas	PRAMS Report: <i>Gestational Diabetes Mellitus in Arkansas Women Who Had Live Births: PRAMS, 2006 - 2010, October 2012.</i>	Data Report	Analysis of gestational diabetes (GDM) data from PRAMS respondents 2006-2010, published in a PRAMS Report. Report defines GDM, identifies high risk populations and provides access to education resources, as well as state data
http://www.chronicdisease.org/?page=39StatsDataStats			
Florida	GDM Report <i>Gestational Diabetes in Florida, 2012</i>	Data Report	Comprehensive report describing GDM burden, risk factors, screening and diagnosis, postpartum care and complications
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Florida GDM Data report fina.pdf			
Florida	<i>Gestational Diabetes Follow-up Instructions</i>	Provider Tool	Form to be distributed to women after a GDM delivery, as a reminder for postpartum glucose test and follow-up visit
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Postpartum follow up flier .pdf			
Florida	2012 Fact Sheet <i>Gestational Diabetes: Facts Every Woman Needs to Know</i>	Consumer Fact Sheet	Colorful, two-sided fact sheet describing GDM, risks, actions to prevent type 2 DM and outreach resources available in Florida
http://fcs.w.net/wp-content/uploads/2015/02/finalapprovedGDM.pdf			
Idaho	Bookmark English	Consumer Education	Two-sided, colored bookmark describes risk of type 2 diabetes for women with GDM, and lists preventive actions .
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Idaho Eng PP Risk Bookmark.pdf			
Idaho	Bookmark Spanish	Consumer Education Spanish	Same bookmark, in Spanish
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/			

State Product Table (cont.)

State	Product	Category	Description
Idaho	Map <i>Births to Mothers With Gestational Diabetes, by Idaho County</i>	Data Map	Map of GDM prevalence by Idaho county
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Gest diab cty.pdf			
Idaho	Epi-profile <i>Idaho Diabetes Data: Gestational Diabetes Mellitus</i>	Data Report	Four-page report describing GDM prevalence, risk factors, resources, and clinical practice updates.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/GDM IdahoData 2011.pdf			
Missouri	Fact Sheet <i>Gestational Diabetes Mellitus</i>	Consumer Fact Sheet	One-page patient and general public Fact Sheet, describing GDM, treatment, risks and prognosis, emphasizing postpartum testing and follow-up.
http://health.mo.gov/living/healthcondiseases/chronic/diabetes/pdf/GDMInfoSheet.pdf			
Missouri	GDM Guidelines <i>Missouri Consensus Guide on Pregnancy and Diabetes -</i>	Provider Guidelines	A comprehensive guide in easy-to-access table format, describing pre-conception counseling, screening procedures, therapeutic management, prenatal surveillance and education, delivery, postpartum follow-up and child follow-up.
http://health.mo.gov/living/healthcondiseases/chronic/diabetes/pdf/ConsensusGuideOnPregnancyandDiabetes.pdf			
Missouri	Epi-Profile <i>Gestational Diabetes During Pregnancy 2009-2011</i>	Data Report	A description of maternal demographics and prevalence of GDM and GDM affected live-births in Missouri
http://health.mo.gov/data/prams/pdf/gestationaldiabetes.pdf			
Missouri	Wise Woman Assessment Form	Patient Form	Includes the question : Have you ever been told by a doctor, nurse or other health professional that you had gestational diabetes?
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Missouri DOG WW Assessment f.pdf			

State Product Table (cont.)

State	Product	Category	Description
Missouri and North Carolina	Algorithm <i>Guidelines for Diagnosis of Hyperglycemia in Pregnancy – 2011</i>	Guidelines	An algorithm developed and distributed by Sweet Success as a tool for providers.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/MO-CDAPP-HyperglycemiaAlgori.pdf			
North Carolina	Gestational Diabetes: Me and My Baby	Consumer Fact Sheet	Two-page, colorful handout describing actions a mother can take during prenatal and postpartum periods to ensure a healthy outcome for herself and her infant.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/NC_Fact_Sheet_for_Consumers.pdf			
North Carolina	Gestational Diabetes: Me and My Baby in Spanish	Consumer Fact Sheet	Two-page, colorful handout describing actions a mother can take during prenatal and postpartum periods to ensure a healthy outcome for herself and her infant.
http://www.diabetesnc.com/downloads/gestationalfactsheetspanish.pdf			
North Carolina	Magnet Moms.....Take Action Now to Prevent Diabetes	Consumer Refrigerator Magnet English	Lists important actions for women who had GDM to take postpartum to prevent type 2 diabetes. Magnet also available in Spanish.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/NC_GDM_Diabetes_Magnet_2011_.pdf			
North Carolina	Fact Sheet/CheckList for Providers <i>Gestational Diabetes (GDM) Postpartum Testing</i>	Provider Fact Sheet	Provides prevalence data, ACOG current diagnostic and postpartum care. Guidelines are in a “decision-tree “ format.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/NC_Fact_Sheet_for_Providers.pdf			
North Carolina	Fact Sheet <i>Women and Diabetes 2012</i>	Consumer or Provider Fact Sheet	Provides prevalence and risks for diabetes, and GDM.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Women_and_Diabetes_Factsheet.pdf			

State Product Table (cont.)

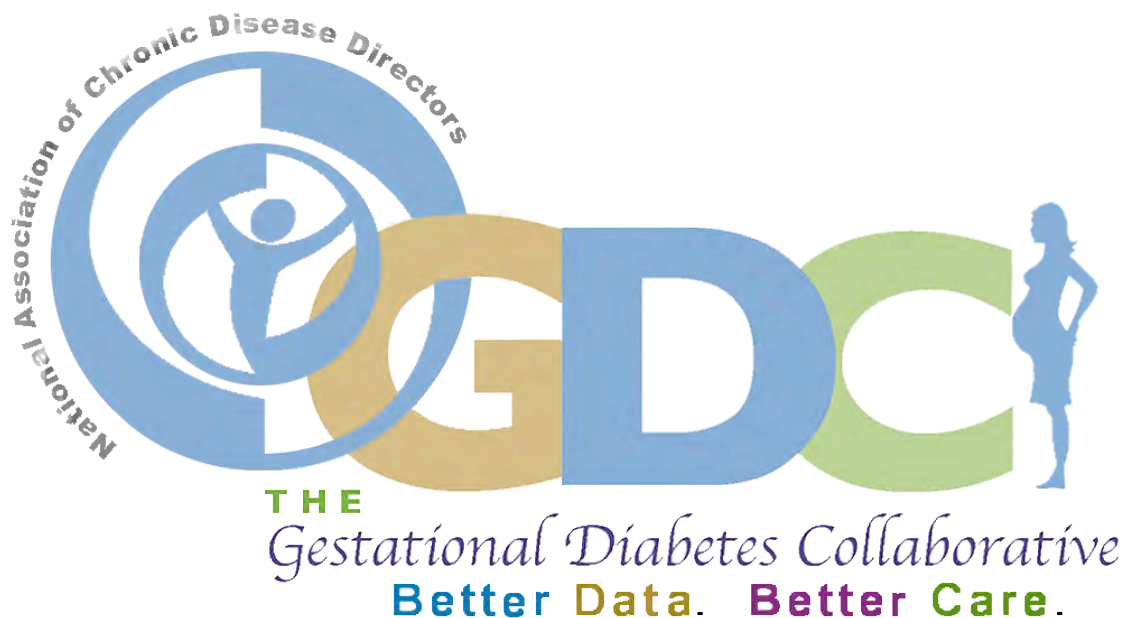
State	Product	Category	Description
Ohio	Prevalence/burden Report Gestational Diabetes in Ohio: 2006-2008.	Data Surveillance	This data book summarizes existing information about GDM, identifies gaps in knowledge and out-lines the ODH Collaborative Team's activities in primary data collection. It should be noted that there is no one best source to obtain GDM prevalence data for Ohio. Each has its own strengths and limitations.
http://www.odh.ohio.gov/~media/ODH/ASSETS/Files/cfhs/child%20and%20family%20health%20services/ohiogdm_databook_oct_2011.ashx			
Ohio	Women's Health Update Update Focus: <i>Women and Gestational Diabetes</i> 2011	Consumer/ Provider Newsletter	Newsletter contains articles about gestational diabetes and what women's health professionals, families and communities can do to protect women and children from preventable health complications. Provides information and resources to promote health.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/ohio_women's_update_2011_-_G.pdf			
Ohio	4 colorful posters for postpartum education, targeting: Hispanic, African American, and Caucasian women.	Consumer Education	Posters read: "When I was Pregnant I found out I Had Diabetes. Now, I am at risk for diabetes for the rest of my life. So are my children." Provides information on how to prevent type 2 diabetes and lists Ohio resources.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Ohio_GDM_posters.pdf			
Ohio	Collaborative Fact Sheet <i>The Ohio Gestational Diabetes Mellitus (GDM) Collaboration: Working to Prevent or Delay Type 2 Diabetes among Women with a History of Gestational Diabetes</i>	Provider/ Health Profes- sional Fact Sheet	A two-page fact sheet describing GDM prevalence, issues, role and accomplishments of the Collaborative and future directions of the project.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Ohio_GDM_Collaboration_Pamph.pdf			
Oklahoma	Postpartum postcard "After and Between Pregnancy: Talk to your healthcare provider to stay healthy"	Postpartum Reminder Postcard	A postcard sent to all households with a live birth to remind the woman of her post partum visit and what to discuss with healthcare provider
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_CouncilGDM/			

State Product Table (cont.)

State	Product	Category	Description
Okla-homa	PRAMSGRAM <i>Gestational Diabetes Among Oklahoma Mothers</i>	Data Report	GDM prevalence and burden report, with recommendations for improving care.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/PramsGram_DIABETES_FEB_2012.pdf			
Okla-homa	Fact Sheet Gestational Diabetes, Me & My Baby	Consumer Fact Sheet	Fact sheet addressing prenatal and postpartum care for women with GDM.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Gestational_Diabetes_Before.pdf			
Okla-homa	Postpartum tear off fact sheet “After and Between Pregnancy: Talk to your healthcare provider to stay healthy”	Consumer Postpartum Fact Sheet	A fact sheet to remind the woman of her postpartum visit and what to discuss with healthcare provider. Disseminated to healthcare providers to distribute.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/pdf			
Utah	<i>Postpartum magnet English Take Action Now to Prevent Diabetes</i>	Consumer education	The contents of Utah’s postpartum mail -out packet include: the refrigerator magnet in English and Spanish, listing actions to prevent T2DM after a GDM delivery. All items may be downloaded and reproduced from the NACDD Website .
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Utah_GDM_pp_Magnet_in_Englis.pdf			
Utah	Postpartum magnet Spanish ACTUÉ AHORA PARA PREVENIR LA DIABETES	Consumer education	The contents of Utah’s postpartum mail -out packet include: the refrigerator magnet in English and Spanish, listing actions to prevent T2DM after a GDM delivery. All items may be downloaded and reproduced from the NACDD Website .
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Utah_Refringerator_Magnet_in.pdf			
Utah	Postpartum Reminder Card English <i>You Had Gestational Diabetes During Pregnancy...</i>	Consumer education	Very colorful postpartum visit/glucose testing reminder card, with suggested questions for provider, and information on risks of GDM.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens_Health_Council_GDM/Utah_PP_Reminder_Card_in_Eng.pdf			

State Product Table (cont.)

State	Product	Category	Description
Utah	Postpartum Reminder Card Spanish <i>Usted tuvo diabetes gestacional durante el embarazo.</i>	Consumer Education	Very colorful postpartum visit/glucose testing reminder card, with suggested questions for provider, and information on risks of GDM.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Utah GDM pp testing reminder.pdf			
Utah	Data Report <i>Utah Health Status Update: Gestational Diabetes</i>	Data and Surveillance	One of the first data reports by a Collaborative project to focus on gestational diabetes prevalence and risk.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/Utah Health Status Update Ge.pdf			
West Virginia	Clinical Care Toolkit <i>Improving Care for Women with Gestational Diabetes by Improving the Process</i>	Clinical Systems Improvement	A step-by-step guide to continuing improvement. The clinic used the Rapid Cycle Improvement Model, also known as the PDSA Model (Plan, Do, Study, Act). This guide describes the PDSA Model, demonstrates how West Virginia implemented the Model and how others can replicate this model for system changes
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/West VirginiaToolkit Rev1228.pdf			
West Virginia	Prenatal Assessment Form <i>West Virginia Prenatal Risk Assessment Instrument</i>	Clinical Systems Improvement	Form includes multiple prenatal risks, including gestational diabetes.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/West Virginia Pre-Natal Asse.pdf			
West Virginia	WIC Survey Questions 2012	Data and Surveillance	The WV Diabetes Prevention and Control Program developed this 10 question, point-in-time survey to learn more about gaps in postpartum care in women with gestational diabetes in the WIC population.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/West Virginia GDM Survey of .pdf			
West Virginia	Postpartum Reminder Handout <i>If You Had Diabetes or High Blood Sugar While You Were Pregnant...</i>	Consumer Education	2-sided handout detailing importance and rationale for obtaining a postpartum glucose on one side, and infant immunizations on the reverse.
http://c.ymcdn.com/sites/chronicdisease.site-ym.com/resource/resmgr/Womens Health Council GDM/WV Postpartum reminder card .pdf			



National Association of Chronic Disease Directors

2200 Century Parkway

Suite 250

Atlanta, Georgia 30345

<http://www.chronicdisease.org>