Gestational Diabetes

Luis B. Curet MD
Diana Clokey MSRD, RPh, CDE
Jacque Naylor WIC Nutritionist
JoAnn Fuller WIC Specialist

Impact of Gestational Diabetes in the United States

Participants

University of New Mexico

    Department of Obstetrics and Gynecology

    ECHO Project

New Mexico WIC Program

WHAT IS PROJECT ECHO

- Extension for Community Health Care Outcomes

- Started in 2002 with a Hepatitis Telemedicine clinic. Currently 11 clinics.

- 250 teleconference sites in N.M.

- In 2009 received a grant from the RWJ Foundation which enabled the development for the   NM WIC GDM Initiative

Definition of Gestational Diabetes

Gestational Diabetes (GDM) is glucose intolerance of any degree diagnosed during pregnancy

Epidemiology

- Incidence of GDM in USA is 7%. New Criteria: 15-26%.
- GDM has increased across all ethnic groups
- Increase in GDM in younger women which parallels obesity epidemic.
- Incidence of obesity in U.S. women is 39%

- Maternal obesity strongly linked to excessive birth weight and numerous medical complications
- 90% of women with GDM are obese
- 31% of obese women develop diabetes

Obesity Trends* Among U.S. Adults
BRFSS, 1990, 1999, 2009

(*BMI ≥30, or about 30 lbs. overweight for 5′4″ person)

1990

1999

2009
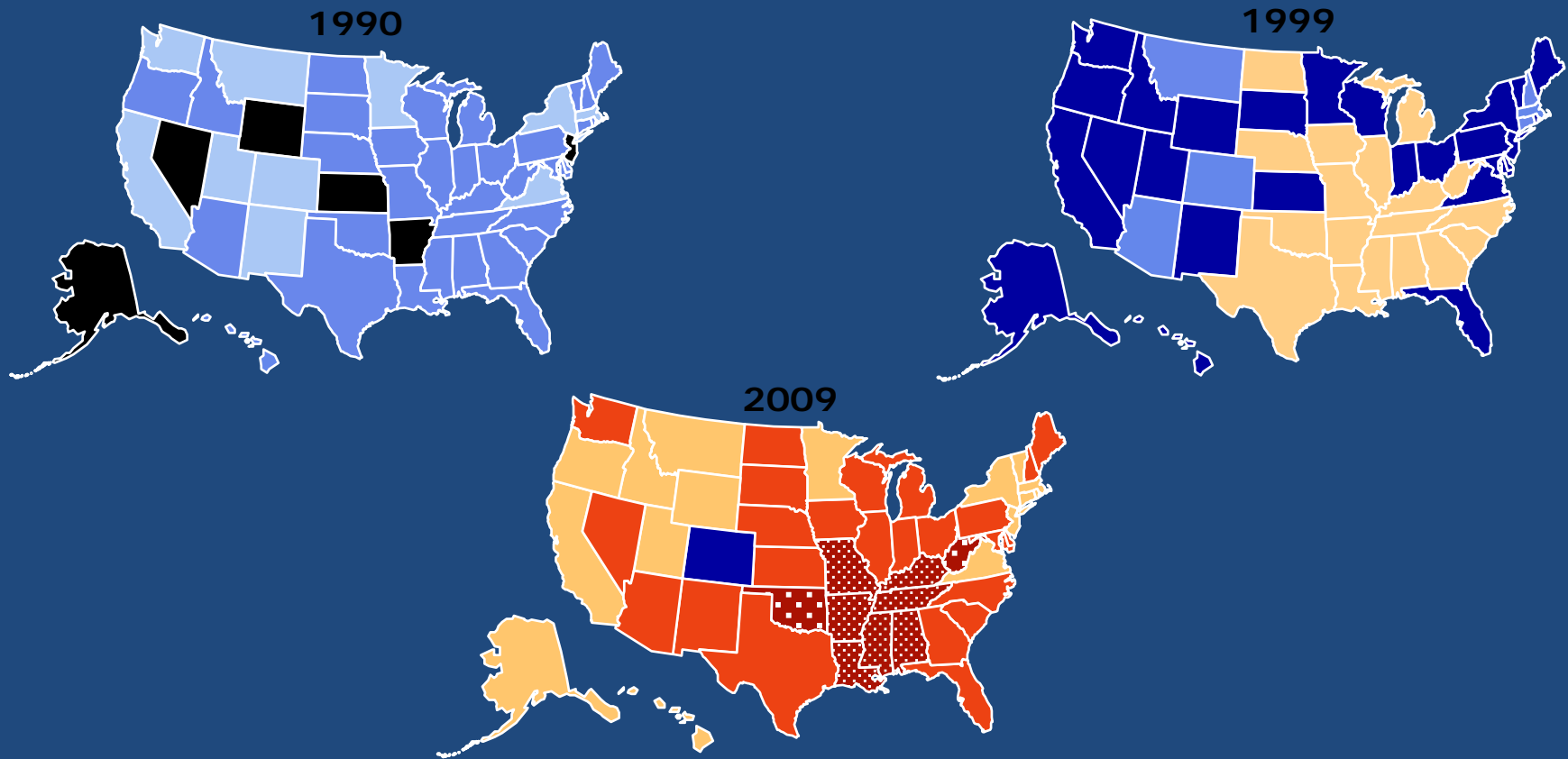
| No Data | <10% | 10%–14% | 15%–19% | 20%–24% | 25%–29% | ≥30% |

Source: Behavioral Risk Factor Surveillance System, CDC

Why do Women Develop GDM?

Obesity

Insulin resistance

Hormones

Genetics

Risk factors for GDM

Advanced maternal age (≥ 35)
Overweight/obese (2 x risk)

Ethnicity/Race

Family history (first degree relative)

History of abnormal glucose

Poor obstetric outcome

Polycystic Ovary Syndrome

Maternal birth weight > 9 lbs

CONCERNS

Intensity of medical care

Increased cost

Increased risk of developing Type 2 diabetes

　　50-60 % within 5-10 years

DIABETES EFFECT ON THE PREGNANCY

- Dystocia (difficult labor)
- Preeclampsia
- Pyelonephritis
- Pelvic trauma
- C-section

ADVERSE EFFECTS IN OFFSPRING

Conception to 8th week

NTD (4 wks)
Cardiac (5 wks)
Renal (5 wks)
GI (6 wks)
Caudal regression (3wks)

8th week to delivery

Chronic hypoxia
Intrauterine death
Hyperinsulinism
Macrosomia
Organomegaly
Shoulder dystocia
Polyhydramnios
RDS

Long term effects of GDM

- Mother

   Type 2 Diabetes

   Medical complications

- Children

   Obesity

   Abnormal glucose tolerance

POPULATION PERSPECTIVE

- Screening for high blood glucose early in pregnancy identifies younger women with glucose levels which may disrupt organogenesis and/or fetal metabolism predisposing the fetus to obesity and diabetes

- It is clear that efforts leading to early diagnosis and intervention have significant social and medical benefits.

- The need for innovative programs to prevent GDM and obesity is vital .

- The NM WIC and UNM Project ECHO initiative under the direction of Ms Diana Clokey is a beautiful example of such an innovative program

New Mexico WIC GDM Initiative

Diana Clokey MSRD, RPh, CDE
Division of Maternal-Fetal Medicine

Department of Obstetrics and Gynecology

University of New Mexico

dclokey@salud.unm.edu

Background

- Fifth largest state in the union 121, 856 sq. miles.
- State population 2.2 million
- Population distribution: WIC
  - Hispanics   46.3% (67.7%)
  - Non-Hispanic Whites   40.5% (21.4%)
  - Native Americans   9.4% (4%)
  - Blacks   2.1% (2%)
  - Asian   1.4% (1%)

- Prevalence of GDM   8.6 %

big

journeys

begin

with

small

steps

Partnering to Decrease Risk of Gestational Diabetes in New Mexico

From our inquiries we learned….

- Each region expressed a genuine interest in developing a program to address the issues of the pregnant client.

- NM WIC Nutritionists have a broad range in education. Strong desire for more education

- Desire for improved communication with providers

- Limited time frame to perform duties

Enhance vs. Expansion

- Mindful of time frame and work flow
- Enhance knowledge base
- Build upon current practices
  Hemoglobin screening:
  Direct nutrition education
  Referral to providers
- Adhere to WIC's education format.

New Mexico state officials

- DOH Chief Medical Director
- Public Health Deputy Division Director
- NM WIC Director
- Family Health Bureau Chief

Partnership between NM WIC and UNM Project ECHO

INDENTIFIED FOUR AREAS OF SUPPORT:

1. GDM assessment training for nutritionists
2. Develop education materials and tools
3. Act as a liaison between WIC and medical providers to promote WIC GDM initiative
4. Develop a system for documentation and data collection.

PLANNING PHASE

Region 4

Focus group

- 6 month pilot study July 2010 (two sites selected)

- Regional start date January 2011

- Determine training components

- Educational toolkit

- Documentation/ Data Collection

- List of regional medical providers

Training Components
(3 phases)

1. Pre- training: Assigned outside readings.

2. One day training session:

   Didactic

   Skill building

3. Post training follow-up

Educational toolkit

- Poster for the waiting room or class bulletin board.
- Training Manual
- On-line educational materials/tools
  - Desk reference charts
  - Client education handouts
  - GDM class
  - Provider referral letter

Hemoglobin A1C
In pregnancy

Hemoglobin is the substance in red blood cells that carries oxygen to the cells. Some of it attaches to glucose (sugar). Because the glucose stays attached for the life of the cell (about 3-4 months), a test to measure hemoglobin A_1C (abbreviated as $HgbA_1C$) shows what a person's average blood glucose was for that past period of time. Approximately half the score comes from the last 30 days.

How does HgbA1C compare with Average Blood Sugars and what's the risk in pregnancy?

*HgbA1C	Average Blood Sugar mg/dl	What is the risk in pregnancy?
4.0-5.6 %	69-126	Low risk of complications
5.7-6.4%	129-151	Risk for having a large baby (greater than 9 pounds)
6.5-8.4%	154-222	Increased risk of complications for mother & baby
8.5 -9.3%	225-254	Increased risk of complications for mother & baby
9.4% and higher	257 and higher	Increased risk of complications for mother & baby

* American Diabetes Association, Diabetes Care. Supplement 1, January 2010

Documentation

- Three templates were designed:

  1. GDM assessment template

  2. One-month follow up for women with
     with elevated blood sugars

  3. Post- partum template

Promoting the WIC GDM Initiative to medical providers

Lessons learned from pilot study

Super Nutritionist!

More experienced nutritionist

Assessed all pregnant women .

Tested women who were at high risk for GDM

Enrolled women in a GDM class taught by a public health RN

Developed an internal monitoring system

Imperative that WIC personnel be involved in the skilled training phase.

Lessons learned from pilot study

Less experienced nutritionist

Difficulty applying information learned

Post training should occur in 1-2 weeks

Develop a class "How to to decrease risk of developing GDM"

Develop a GDM assessment tool

My Risk for Developing Gestational Diabetes (GDM)
Assessment Card

NEW MEXICO WIC

Project ECHO

Name: _____ Date: ____ / ____ / ____

Body Mass Index: Height: _____ Pre-pregnancy Weight: _____ BMI: _____

[BMI: Underweight < 18.5, Normal = 18.5-24.9, Overweight = 25-29.9, Obese ≥ 30]

Risk Factors

☐ Prior history of GDM or glucose intolerance
☐ Pre-pregnancy BMI ≥ 30
☐ Age ≥ 35
☐ History of fetal loss
☐ Strong family history of diabetes (first degree relative)

☐ History of Polycystic Ovary Syndrome
☐ History of baby weighing ≥ 9 lbs.
☐ Ethnicity (Hispanic, Native American, Asian & African American)

My Overall Risk for Developing Gestational Diabetes is:
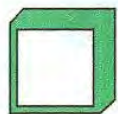
☐ **Low Risk:** you are at Low Risk for developing GDM because your BMI is between 18.5-24.9 or lower and you do not have any of the above risk factors. However, this does not mean that you will not develop GDM and you may be screened with a *Glucose Tolerance Test* when you are between 24-28 weeks pregnant.
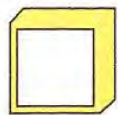
☐ **Average Risk:** you are at Average Risk of developing GDM because your BMI is greater than 25 but less than 30 or your age is greater than 25 but less than 35, or perhaps because of your ethnicity. This does not mean that you will develop GDM. However, it is recommended that you be screened with a *Glucose Tolerance Test* when you are between 24-28 weeks pregnant.

☐ **High Risk:** you are at High Risk of developing GDM because you have one or more of the risk factors, (other than ethnicity), listed above. This does not mean you will develop GDM. However it is recommended that you be screened with a *Glucose Tolerance Test* when you are between 24-28 weeks pregnant, or sooner. **It is very important that you seek early prenatal care.**

Know your A B C's ...
Action Plan for Decreasing My Risk for Developing GDM

Appropriate weight gain - How much weight you gain during pregnancy is based on your pre-pregnancy weight.   The recommended weight gain for your pregnancy is a total weight gain of _____ pounds. [First trimester 3-5 pounds, ½-1 pound per week in the 2nd and 3rd trimester]

Be active - Check with your provider before starting any exercise program

Walking for 15 to 20 minutes after each meal will help lower blood sugars

Choose foods wisely
### Make healthy food choices
- Avoid foods or drinks sweetened with sugar or honey
- Drink less fruit juice and eat more whole fruit
- Watch your portion size
- Select milk lower in fat

Choose foods high in fiber
- Decrease white flour products like white bread, tortillas, processed foods and sugar coated cereals
- Choose whole grain breads/cereals, dried beans, fresh fruits and vegetables
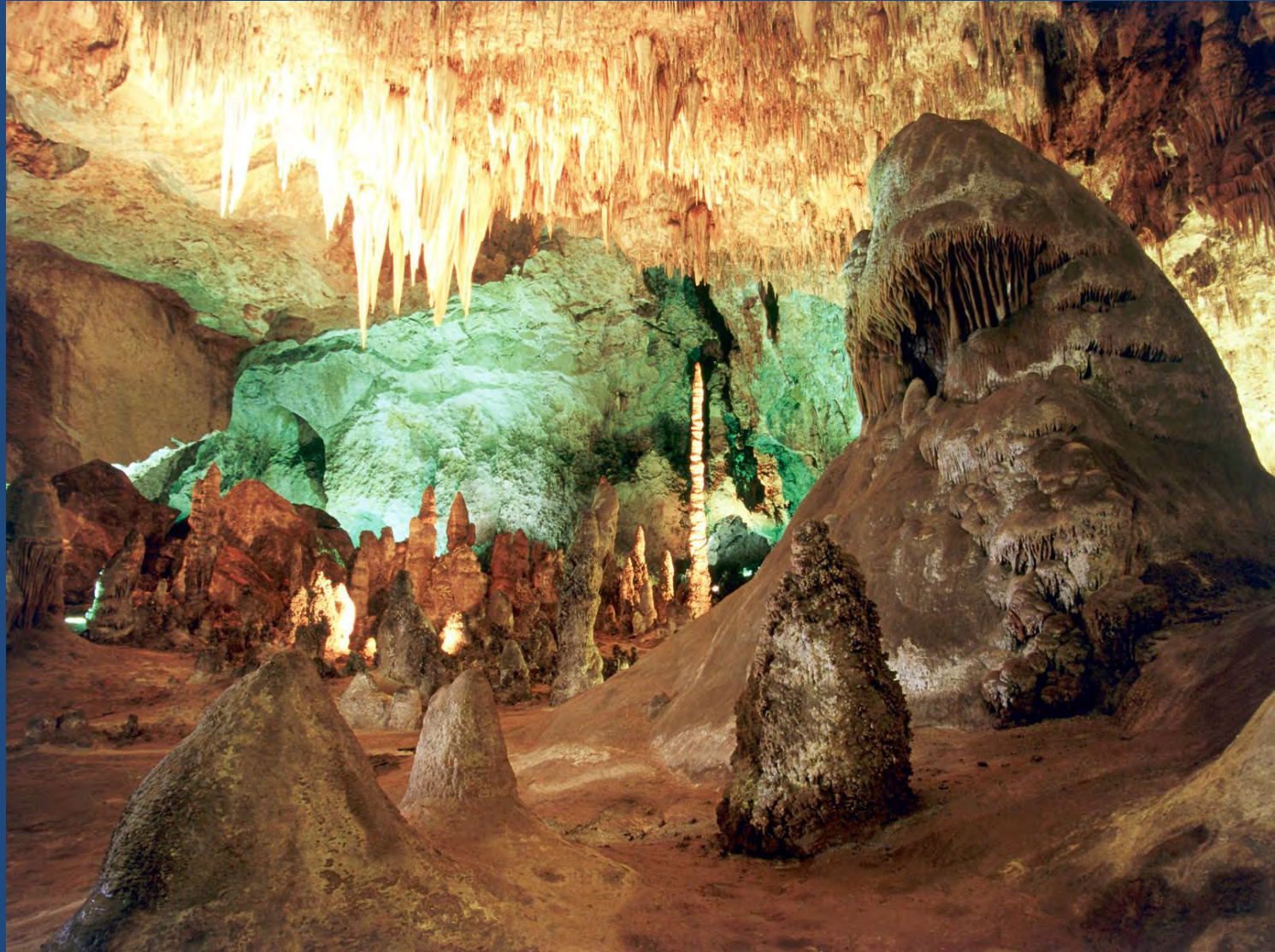
Limit fast foods
- Avoid breaded and deep fried foods such as fried chicken, fish sticks and French fries
- Select a side salad instead of fries when possible
- Choose grilled or baked foods
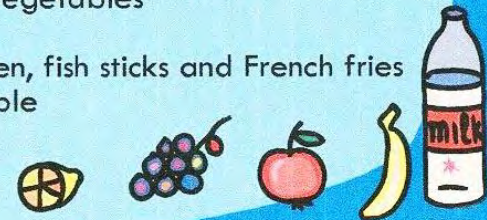
Regional Training began Jan 2011

Region 4 Carlsbad Caverns (SE)

Region 1- Shiprock (NW)

Region 2 – Santa Fe (NE)

Region 3 -International Balloon Fiesta Albuquerque

Region 5 -White Sands (SW)

Specialized Training for New Mexico W.I.C. Nutritionists in Gestational Diabetes

Sponsored by Project ECHO, Robert Wood Johnson Grant, University of New Mexico

Time	Session
8:30 - 9:00 a.m.	Sign-in
9:00 - 9:10 a.m.	Welcome & Opening Remarks by Deanna Torres
9:10 - 9:30 a.m.	W.I C. Partnership with Project ECHO
9:30 - 10:00 a.m.	Overview of Diabetes (Type 1 and Type 2)
10:00 - 10:30 a.m.	Introduction to Gestational Diabetes
10:30 - 10:45 a.m.	Break
10:45 - 11:15 a.m.	Screening for Gestational & Pre-existing Diabetes
11:15 - 12:00 p.m.	Decreasing Risks of Developing Gestational Diabetes Through Lifestyle Changes
12:00 - 1:00 p.m.	LUNCH: Putting the Plate Method into Practice
1:00 - 2:00 p.m.	Practicum: Overview of the Process of Assessing Risk for Diabetes during Pregnancy/ Glucometer
2:00 - 2:15 p.m.	Break
2:15 - 3:45 p.m.	Practicum: Documenting Risk Assessment for Gestational Diabetes Demonstration of work flow for high risk client Helpful Hints
3:45 - 4:15 p.m.	Discussion: Course Outline for Decreasing Risk for Developing GDM Class
4:15 - 4:30 p.m.	Complete Self-efficacy Form and Class Evaluation Adjourn Meeting.

Check-in

Free education materials

How does high blood sugar effect mother and baby

Break time

Decreasing risk of developing GDM through lifestyle changes

Lunchtime!
Identifying Carbohydrates

GDM assessment/counseling and documentation

Essential two week post-training follow up

Evaluation

- GDM Training Program Evaluation

    1. Pre- training readings. Quiz.

    2. GDM training program evaluation

    3. Self-assessment evaluation

    4. Two weeks post training follow- up.

Evaluation

- WIC manager/nutritionist internal monitoring system
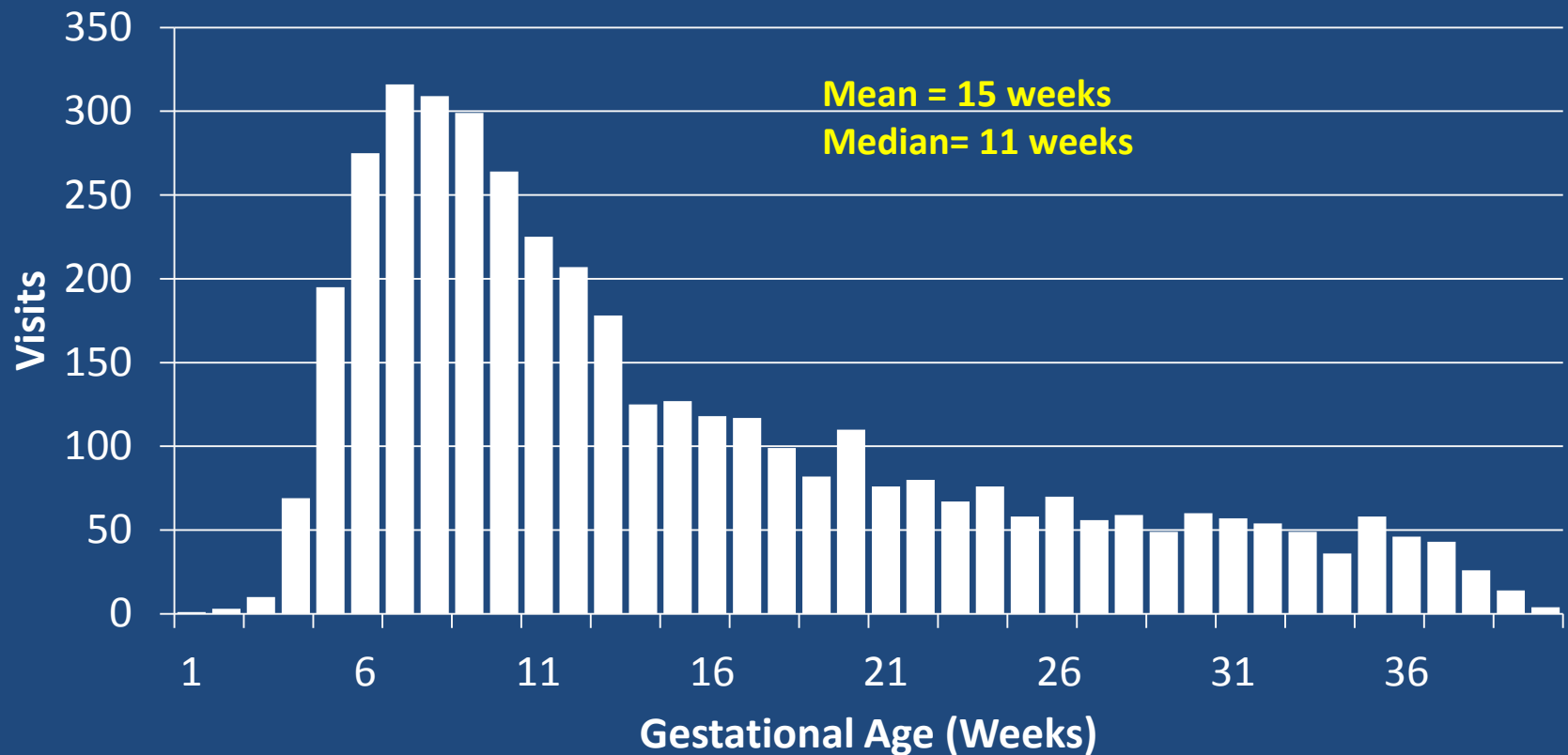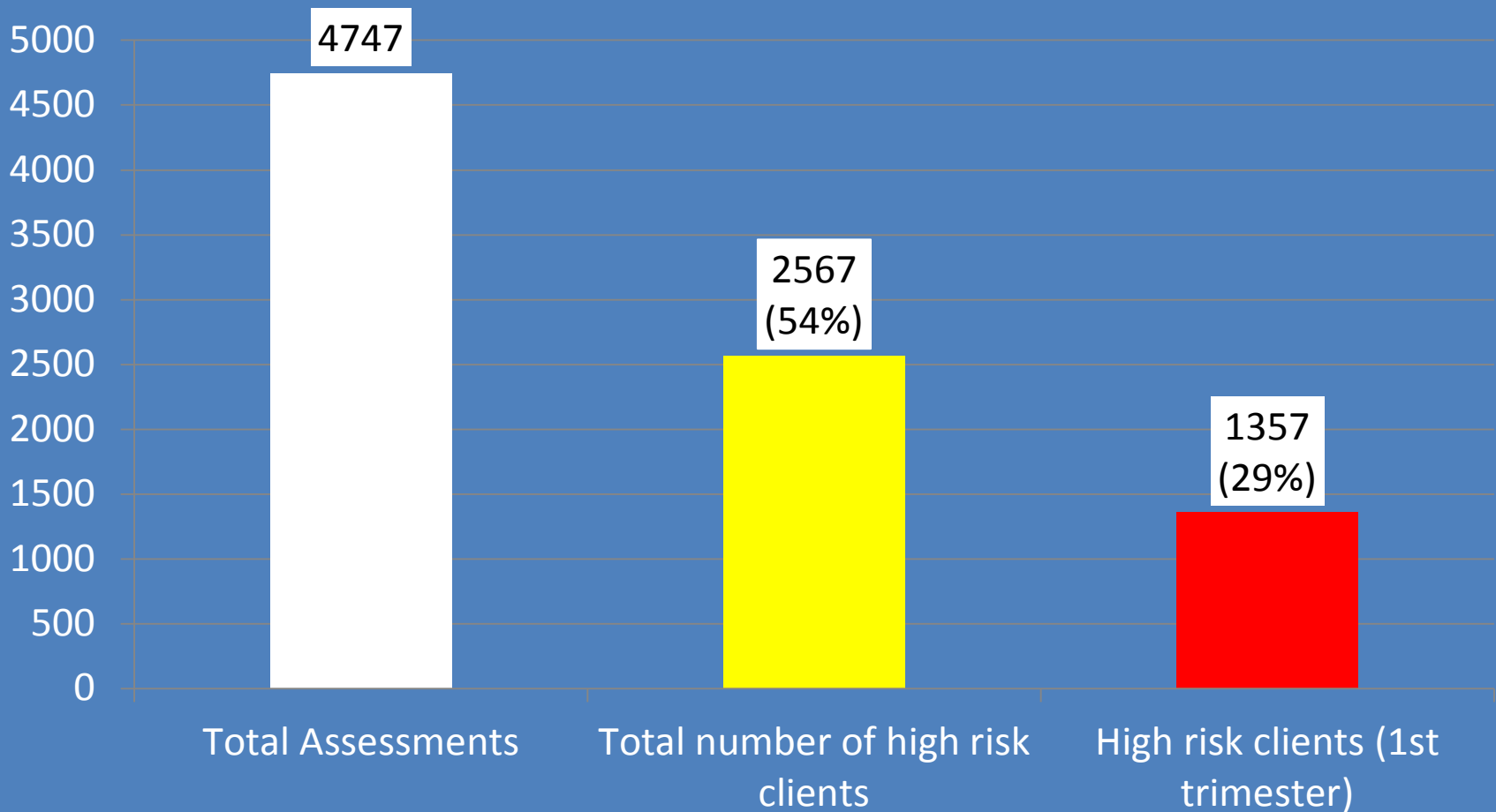- Annual review of education materials
- Review of Data

Preliminary Data

Gestational age at first visit
ALL REGIONS

Weeks Gestation

Mean = 15 weeks
Median= 11 weeks

Visits

Gestational Age (Weeks)

Pregnant women at high risk for GDM in the NM WIC population

First trimester High-risk Blood glucose test results

Region	# of glucose test	normal test (%)	abnormal test (%)	
Region 1	103	75 (73%)	28 (27%)	1:4
Region 2	141	122 (87%)	19 (13%)	1:8
Region 3	187	138 (74%)	49 (26%)	1:4
Region 4	506	425 (84%)	81 (16%)	1:6
Region 5	97	79 (81%)	18 (19%)	1:5
Total	1034	839 (81%)	195 (19%)	1:5

Sustainability

Sustainability

- Education
  - Quarterly training for new employees
  - On-line training modules (DPCP)
  - Project ECHO teleconference
- Education materials and tools
  - On-line educational materials
  - NM WIC provides GDM assessment card

Sustainability

- Glucometers (340b)
    Wavesense Pro (Aga matrix)
        CLIA (FDA) approved
        Cost per blood screen
        Support from March of Dimes
- Data
        Internal monitoring from WIC
        Support from Project ECHO
        UNM Research/Data Analysis

Special Thank you

Deanna Torres

JoAnn Fuller

Gwen Bounds

Marty Garcia

Jacque Naylor

Juan Blea, Michael Han

WIC Regional Managers
NM March of Dimes

Diabetes Prevention Control Program

Project ECHO

Wonderful journey!

Super Nutritionist !

- Jacque Naylor

Impact of GDM Training
On WIC Nutritionists

- Training provided more knowledge.

- With added specialized knowledge nutritionists were able to provide better counseling for clients.

- Tools that were developed were beneficial for nutritionists:

  Client assessment cards and pamphlets.

  Nutritionist training manual.

- Improved relationship and respect between WIC staff and local providers.

Impact of GDM Assessment On WIC Clients

- Knowledge – knowing   at what level of risk they were and learning how to decrease their risk of developing GDM.

- The Assessment Card- the card has been beneficial for the client because she leaves our office with information in her hand that the nutritionist has discussed with her.

- Awareness- we have learned that all of our pregnant clients are aware of diabetes but few know about GDM.

Sabrina

WIC Client

Performed GDM Assessment

Nutritionist determined she was high risk

Offered AIC –She tested at 6.0

Gave her referral letter to take to her doctor

Dr. saw her quickly & monitored her blood sugar level

Integrating GDM Assessment Into Clinic Workflow

- WIC nutritionist only has to ask a few extra questions. A lot of the information we are using for the assessment of risk is already being collected.

- If a blood glucose test is performed, it only takes a few seconds, it is done at the same time as the hemoglobin test. So, staff are able to use the same finger stick.

Monitoring Tool Used For Teaching Staff

- Developed a log that included:
  1. Date
  2. Name
  3. Trimester
  4. Risk Level (Low, Average or High)
  5. A1C / blood sugar test results if applicable
  6. Referral letter documentation

- Collected GDM logs monthly from Nutritionists
- Reviewed clients file including risk factors, notes and history.
- Compared information to the GDM log documentation.
- Reviewing information allowed us to implement a quality assessment to determine if staff were assessing the level of risk for GDM correctly.
- Goal was to provide additional training and support to staff.

- Questions Assessed And Determined
  1. Did health assessment match the level of GDM risk assigned?
  2. Was test offered when applicable?
  3. Was counseling appropriate for the level of risk that was determined?
  4. Was referral letter given when applicable.
  5. Was GDM class offered on nutrition education plan in the WIC application? (Clients that were given the GDM assessment at certification and attended a GDM class were able to retain the information and apply it to their lifestyle.)
  6. Was follow up scheduled when appropriate?

In Summary

- We were able to provide individual and group training for our nutritionists.

- We were able to keep consistency through eight counties.

- ❖After initial GDM training we acted as a resource and we were able to provide one on one support for nutritionists through out the state.

THANK YOU