Lesson Title:
The Nurse’s Role In Diabetes and You

Objective:
1. Participants will verbalize three fundamental principles of diabetes in a healthy patient.
2. Participants will verbalize ways that the nurse is involved in diabetic care.
3. Participants will identify own risk factors for diabetes.
4. Participants will obtain blood sugar levels and discuss meaning of blood sugar results.

Skill Development:
1. Review and discuss Shania Thompson case study related to diabetes and the nurses’ role in care (include places where nurse works with diabetes).
2. Complete self test related to risk for diabetes.
3. Use blood glucose meters to obtain blood glucose levels on each other.
4. Verbalize the difference between high and low blood sugars.

MI Standards/Day School Connection:

General Knowledge Needed/Taught:
1. Basic understanding of Type 1 and Type 2 diabetes.
2. The nurse’s role in diabetes management
4. Proper use of the glucose meters.

Opening Instruction:
1. What will you learn in the next 8 sessions?
   a. The fundamentals of diabetes and the nurse’s role in caring for the diabetic patient across the life span.
   b. Several learning activities will be used to increase your knowledge and comfort with diabetes management from the nurse’s perspective

Supplies/Equipment/Resource:
1. Self test and scoring sheet for diabetes risk.
2. Glucose meters, alcohol wipes, band-aids, glucose test strips to accommodate meters, lancets, gloves.
3. A/V set up with internet connection and projector capabilities

Guided Practice Activities:
1. Video related to Type 1 and Type 2: Kidshealth.org
2. Case study (Shania Thompson) to demonstrate Type 1 and Type 2 diabetes in an adult and the
C2 Pipeline Lesson Plan
Date: First session
Special/Field trip: Y or N

<table>
<thead>
<tr>
<th>Nurse’s role.</th>
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<tr>
<td>4. Glucose meter demonstration and participant return demonstration on fellow participants</td>
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</table>

**Closure/Reflection:**
1. Participants will each verbalize one thing that they learned without repeating information (may work in group if desired).
2. Assignment: Divide into three groups, each group take one article and be responsible for reading it and discussion of this article in session 2.


**Assessment/Notes:**

**Grant Alignment** (circle or highlight all that apply):
School of Medicine               School of Social Work               Honors College
College of Pharm/Health Science   College of Nursing                 College of Engineering
STEM: Engineering                 Health Care Career
<table>
<thead>
<tr>
<th><strong>Lesson Title:</strong></th>
<th>The Nurse’s Role in Type 1 Diabetes and the Child and Family</th>
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</table>
| **Objective:**   | 1. Participants will verbalize how the nurse functions in relationship to type 1 diabetes and the child and family.  
|                  | 2. The participants will verbalize how type 1 diabetes affects the pancreas (physical).  
|                  | 3. The participants will verbalize how type 1 diabetes affects the psychosocial adjustment of a child (psychosocial/cultural/spiritual).  
|                  | 4. Participants will choose appropriate foods for children with type 1 diabetes. |
| **Skill Development:** | 1. Investigate how a pancreas functions and where it is located in the body.  
|                  | 2. Identify “kid friendly” foods for a child with type 1 diabetes. |
| **MI Standards/Day School Connection:** | |
| **General Knowledge Needed/Taught:** | 1. Type 1 diabetes and the child and family.  
|                  | 2. The nurse’s role in facilitating the child and family’s management of diabetes type 1.  
|                  | 4. Knowledge of “kid-friendly” foods appropriate for type 1 diabetics. |
| **Opening Instruction:** | 1. What will you learn?  
|                  | a. Type 1 diabetes and how it affects the child and family.  
|                  | b. What is the role of the nurse in helping the child and family manage type 1 diabetes  
|                  | c. What is the role of the pancreas in type 1 diabetes  
|                  | d. What are some “kid-friendly” foods that would be appropriate food choices for the type 1 diabetic  
|                  | 2. What will you do today?  
|                  | a. Dissect or examine a pancreas  
|                  | b. Choose appropriate type 1 diabetic foods for a child |
| **Supplies/Equipment/Resource:** | 1. Sheep pancreases and dissection kits or model of pancreas for demonstration purposes  
|                  | 2. Sample plastic foods (five of each) of a wide variety to demonstrate: fruits and vegetables, milk, French fries, McDonald’s foods, Kentucky Fried Chicken, taco bell etc., peanut butter, bread, bagels, Twinkies®, meats, soda pop, macaroni and cheese, hot dogs, hamburgers, grilled cheese, chicken, bologna, cookies, cupcakes, candy, popsicles, pancakes, waffles, syrup, orange juice, butter, margarine (see also session 4 for other foods). |
| **Guided Practice Activities:** | 1. Review article from previous day’s homework assignment.  
|                  | 2. Brief discussion of type 1 diabetes and how it affects children and families. |
### C2 Pipeline Lesson Plan

**Date:** Second session [ ]

**Special/Field trip:** Y or N

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<tr>
<td>3.</td>
<td>Discussion of type 1 diabetes and how the nurse can support children and families.</td>
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<tr>
<td>4.</td>
<td>Dissect and explore the physical aspects of the pancreas (or model)</td>
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**Closure/Reflection:**

1. Participants will each verbalize one thing that they learned today without repeating information (may work in group if desired).
2. Participants will design page of coloring book that the nurse could use to teach a child about a basic concept related to type 1 diabetes (may work alone or with one other participant).

**Assessment/Notes:**

**Grant Alignment** (circle or highlight all that apply):

- School of Medicine
- School of Social Work
- Honors College
- College of Pharm/Health Science
- **College of Nursing**
- College of Engineering
- STEM: Engineering
- Health Care Career

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**C2 Pipeline Lesson Plan**  
**Date:** Third session  
**Special/Field trip:** Y or N  

<table>
<thead>
<tr>
<th>Lesson Title:</th>
<th>The Nurse’s Role in Diabetes and the Teen</th>
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</table>
| Objective:   | 1. Participants will verbalize how the nurse functions in relationship to diabetes and the teen.  
               2. The participants will verbalize how type 2 diabetes affects the pancreas (physical).  
               3. The participants will verbalize how type 2 diabetes affects the psychosocial adjustment of a teen (psychosocial/cultural/spiritual).  
               4. Participants will discuss various forms of insulin delivery and different injection sites. |
| Skill Development: | 1. Learn to draw up insulin and verbalize different body sites for injection of insulin.  
                              2. Identify teen friendly foods for a teen with type 2 diabetes. |
| MI Standards/Day School Connection: | |
| General Knowledge Needed/Taught: | 1. Knowledge of nurse’s role diabetes type 2 and the teen population.  
                               2. Knowledge of insulin, how it is used, and how it is given. |
| Opening Instruction: | |
| Supplies/Equipment/Resource: | 1. Insulin syringes, alcohol wipes, saline vials, oranges, insulin pump and pens for demonstration |
| Guided Practice Activities: | 1. Review coloring pages from previous day’s homework assignment and put into coloring book.  
                                  2. Brief discussion of type 2 diabetes and how it affects teens.  
                                  3. Discussion of type 2 diabetes and how the nurse can support teens.  
                                  4. Draw up and give insulin injections into orange - all different injection sites |
| Closure/Reflection: | 1. Participants will each verbalize one thing that they learned today without repeating information (may work in group if desired).  
                                 2. Participants will identify a teen in the news that has diabetes and list two or three psychological concerns that this teen might be concerned about and how the nurse might help the teen with these concerns (may work alone or with one other participant). |
| Assessment/Notes: | |

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C2 Pipeline Lesson Plan

Date: Third session

Special/ Field trip: Y or N

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Lesson Title:  
The Nurse’s Role in Diabetes and the Young Adult

Objectives:  
1. Participants will verbalize how the nurse functions in relationship to diabetes and the young adult.  
2. Participants will verbalize how young adults can manage type 2 diabetes with lifestyle choices (psychological, physical, cultural, and spiritual).  
3. Participants will identify community resources for young adults with diabetes.  
4. Participants will recognize that management of diabetes type 2 is possible with oral medications.

Skill Development:  
1. Discover community resources for the young adult with type 2 diabetes

MI Standards/Day School Connection:  

General Knowledge Needed/Taught:  
1. Knowledge of the nurse’s role with diabetes type 2 and the young adult.  
2. Knowledge of lifestyle choices of the young adult and how they affect diabetes management.  
3. Familiarity with how to identify community resources.

Opening Instructions:  
1. What will you learn?  
   a. Type 2 diabetes and case study (Robert Hernandez) and how it affects the young adult.  
   b. What is the role of the nurse in helping the young adult manage type 2 diabetes  
   c. How do lifestyle choices affect the young adult and diabetes  
   d. How do you address alcohol use, relationships, exercise, foods, and oral medications in diabetes management  
2. What will you do today?  
   a. Discuss case study of young adult  
   b. Discover appropriate community and online resources for the young adult with diabetes.  
   c. Plan a day’s worth of food choices, using the play foods, for a young adult celebrating their 21st birthday.  

Supplies/Equipment/Resource:  
1. Laptops or internet access  
2. Additional plastic foods (other than session 2): wine bottle, beer bottle, steak, baked potato, salad, salad dressing (variety), breads, birthday cake, ice cream, soup

Guided Practice Activities:  
1. Discuss the previous day’s homework assignment (teen with diabetes from the news).  
2. Brief discussion of type 2 diabetes and how it affects young adult, incorporate a young adult case study (alcohol, exercise, revealing diabetes to date, relationships, how to manage blood sugar levels...including oral medications).  
3. Discussion of type 2 diabetes and how the nurse can support the young adult.  
4. Use the computer to discover community resources appropriate for the young adult with
C2 Pipeline Lesson Plan

Date: Fourth session

Special/ Field trip: Y or N

diabetes type 2.
5. Plan a day in the life of a young adult with type 2 diabetes who is celebrating their 21st birthday (include exercise, diet, party plans, etc.)
6. Mini test with students self grading and faculty reviewing answers with group.

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<tr>
<td>1. Participants will review powerpoint (Kendricks below) related to diabetes and pregnancy and websites (provided below) in anticipation of session 5 activities.</td>
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2. Mini evaluation of knowledge with 10 item test over content if first four sessions.

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**Lesson Title:**
The Nurse’s Role In Diabetes and the Pregnant Women

**Objective:**
1. Participants will verbalize three fundamental principles of diabetes in a pregnant patient.
2. Participants will verbalize special considerations that a nurse working with a pregnant diabetic client might consider (gestational diabetes risk, insulin and meds, exercise importance, diet importance, risk factors and family history, prevention, and family involvement).
3. Participants will join in a discussion regarding materials related to gestational diabetes and pregnancy as assigned last session.
4. Participants will become familiar with role of nurse in setting in the home environment.

**Skill Development:** None

**MI Standards/Day School Connection:**

**General Knowledge Needed/Taught:**
1. Basic understanding of how diabetes can affect a pregnant woman, her baby, and her family.
2. The nurse’s role in helping the pregnant woman and her family have a positive outcome with diabetes as it affects her pregnancy.

**Opening Instruction:**
1. What will you learn today?
   a. Review materials (websites and powerpoint) and emphasize the basic principles of diabetes and pregnancy.
   b. Learn diet, activity, and resources for the pregnant women with diabetes through group work in response to a scenario.

**Supplies/Equipment/Resource:**
1. Computers
2. Access to internet
3. Plastic foods and drinks
4. Scenario developed to illustrate diabetic pregnant women and challenges presented
5. Video developed in Nursing simulation laboratory depicting home visit post delivery of diabetic mother and baby *(needs to be developed in Sim lab)*

**Guided Practice Activities:**
1. Review of case study (Ruth Ann) related to woman with gestational diabetes
2. Video of a nurse doing home visit post delivery of diabetic mother and baby
3. Based on a short scenario, divide into several small (4-5 person) groups and use computers to:
   a. One group: determine the caloric needs of a mother/baby in the seventh month of pregnancy and design a day of food and drink for them.
   b. One group: determine daily activities (other activities besides eating) for this mother which would be the most important considerations for her and her baby’s health.
   c. One group: determine the actions that the mother will take after she has delivered the baby in order to keep both the baby and herself healthy.
   d. One group: determine resources (both online and outside of the home) that the mother

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<th>Date: Fifth session_</th>
<th>Special/ Field trip: Y or N</th>
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- can use for support during her pregnancy and after she delivers. Be sure to identify specific reasons why these resources might be helpful to her or her baby.

4. Explore the following websites for information on the above ideas;

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Lesson Title:  
The Nurse’s Role In Diabetes and the Adult Middle Aged Person

Objective:  
1. Participants will verbalize the difference between hyperglycemia and hypoglycemia  
2. Participants will verbalize three complications of uncontrolled diabetes in a middle aged person (wound healing, blindness, renal failure, cardiovascular complications, neuropathy)  
3. Participants will verbalize ways that the nurse helps the middle aged patient and their family manage their diabetes.

Skill Development:  
1. Demonstrate use of monofilament and foot testing on each other.  
2. Demonstrate the use of a hand mirror for assessing feet in the diabetic

MI Standards/Day School Connection: 

General Knowledge Needed/Taught:  
1. Basic understanding of difference between hyperglycemia and hypoglycemia  
2. Basic description of complications possible in middle aged diabetic and pictures to illustrate.  
3. The nurse’s role in helping the middle aged adult avoid or manage complications  
4. Proper use of monofilaments for diabetic foot testing  
5. Use of mirror for daily foot assessment for diabetics

Opening Instruction:  
1. What will you learn in this session?  
   a. The potential complications of diabetes and ways to assess for them.  
   b. How to use instruments to detect complications.  
   c. Simulate a complication of diabetes

Supplies/Equipment/Resource:  
1. Retractable monofilament testing devices (20)  
2. Goggles to simulate blindness  
3. Hand mirrors for teaching (20 small)

Guided Practice Activities:  
1. Use a monofilament to assess neuropathy on each other.  
2. Teach each other how to use the mirror to assess bottom of feet (role play this).  
3. Use goggles to simulate retinopathy  
4. Use computers to find images of complications of diabetes in adults.

Closure/Reflection:  
1. Participants will each verbalize one thing that they learned without repeating information (may work in group if desired).  
2. Assignment: Write a letter to someone you know with diabetes in which you express your concerns for them about diabetes and its complications. Be ready to share this with the class in session 7.
C2 Pipeline Lesson Plan
Date: Sixth session
Special/ Field trip: Y or N

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**Grant Alignment** (circle or highlight all that apply):
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- College of Engineering
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- Health Care Career

The C2 Pipeline is a Wayne State University, College of Nursing Program
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### Lesson Title:
The Nurse’s Role In Helping Patients with Uncontrolled Diabetes

### Objective:
1. Participants will verbalize what could happen if diabetes is not controlled.
2. Participants will verbalize ways that the nurse is involved in helping the patient with manage complications of advanced diabetes including amputation.
3. Participants will identify the psychological challenges that patients may have as they face advanced diabetes.

### Skill Development:
1. Learn some communication techniques to use with challenging situations.

### MI Standards/Day School Connection:

### General Knowledge Needed/Taught:
1. Knowledge of communication techniques used with older adults who may be dealing with challenges.
2. Knowledge related to what diabetic complications may lead to amputation.

### Opening Instruction:
1. What will you learn in this session?
   a. Communication techniques that are useful in dealing with those facing challenges.
   b. The complications of diabetes that may lead to amputation.
   d. Volunteer to share letters written previous evening.

### Supplies/Equipment/Resource:
1. Case study of James Apple
2. Wheelchair
3. Diabetic interview form

### Guided Practice Activities:
1. Role play the case study (James Apple) of a nurse dealing with an angry patient with diabetes, as taught in this session. (Volunteer student could be James and teacher could be nurse who demonstrated good communication techniques.)
2. Each group will find three resources for diabetic amputees and provide rationale for why they are good resources.
3. Develop a cross word puzzle in your group, using all of the diabetic terminology you have learned in the last seven weeks. There will be a prize for the group that creates the best puzzle.

### Closure/Reflection:
1. Participants will each verbalize one thing that they learned without repeating information (may work in group if desired).
2. Assignment: Interview someone who has diabetes. If possible, find a pregnant woman, a peer, or a child. If you do not know of someone, ask your parents or grandparents if there is someone they know that you could interview. Be prepared to report on your interview without using any names.

### Assessment/Notes:
C2 Pipeline Lesson Plan
Date: Seventh session
Special/ Field trip: Y or N

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**Lesson Title:**
Bringing it all together

**Objective:**
1. Participants will demonstrate care of diabetics across the lifespan (child, teen, young adult, pregnant woman, middle aged adult, older adult.)
2. Participants will verbalize ways that the nurse can help the patient in a variety of diabetic situations across the lifespan.

**Skill Development:**

**MI Standards/Day School Connection:**

**General Knowledge Needed/Taught:**
1. Review cross word puzzles and give prizes (3-4).
2. Be familiar with content covered in the last seven sessions and be ready to discuss.

**Opening Instruction:**
1. What will you learn in this session
2. How the nurse helps the diabetic throughout the lifespan.

**Supplies/Equipment/Resource:**
1. Seven patient situations, one for each phase of the lifespan as discussed over the last seven sessions.
2. Prizes for cross word puzzles (book store), enough for each person in the winning group (3-5).
3. Mini exam for sessions 5-8.

**Guided Practice Activities:**
1. Working in a group, pull a patient situation out of a bucket and with your group, develop a plan that the nurse might use to help this individual manage their diabetes. Include things like foods, activities, prevention, special teaching, medications, and psychological concerns. Report back to group.

**Closure/Reflection:**
1. Participants will each verbalize one thing that they learned from the program and how they can utilize this in their interdisciplinary group.
2. Participants will identify what they liked about the program and what they would change.

**Assessment/Notes:**
1. Exam covering sessions 5-8. The exam will be self graded and reviewed as a whole class.

**Grant Alignment** (circle or highlight all that apply):
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- School of Social Work
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Session 1: Case Study of Shania Thompson:

Shania Thompson is a 46 year old woman. Recently she attended a health fair and took home a flyer related to diabetes. Ms. Thompson has a sister with diabetes and wants to learn more about it. She wonders if she might have diabetes or if her children might be at risk for diabetes. Help Ms. Thompson determine if she might be at risk for diabetes and why. Also suggest to Ms. Thompson what things she could do to help decrease her risk for diabetes. Here is some more information about Ms. Thompson.

Ms. Thompson is an African American woman who is a single mother of a 24 year old son and a 16 year old daughter. They both live with her. She works about 20 hours a week as a school secretary. She also has a part time job, helping an older man in her apartment complex get up in the morning and ready for bed at night. She sometimes makes his meals for him. Ms. Thompson’s daily activity consists of helping the man that she takes care of get up and out of a chair a few times a day and she also has to walk up and down the two flights of stairs to her apartment 2-3 times a day. Ms. Thompson eats a diet that includes 3-4 meals a week at a fast food restaurant; at home she eats whatever she has time to cook. Often she will buy foods that are easy to make, frozen, or already cooked. Her children like her to keep coca cola and potato chips in the house and sometimes, this is what they all have for dinner. Ms. Thompson is on a restricted income so eating healthy is a challenge. Ms. Thompson is 5’ 5” tall and weighs 190 lbs. Ms. Thompson’s son is not overweight but her daughter is. Ms. Thompson also has high blood pressure and she takes one pill that controls this well. Otherwise she is healthy.

Working in small groups, pretend that you are a nurse and help Ms. Thompson:

1. Do you think that Ms. Thompson is at risk for diabetes? Explain your answer.

2. What risk factors do you think a nurse might identify as risk factors of diabetes for Ms. Thompson or her family.

3. What are some suggestions that a nurse might give to Ms. Thompson to help her decrease her risk for diabetes (list at least three).
School Nurse Perceptions of Barriers and Supports for Children With Diabetes
Laura Nabors, Amanda Troillett, Tiffany Nash, Barbara Masiulis

ABSTRACT: Adolescents with type 1 diabetes are likely attending most middle and high schools. These youth often do not receive the support needed to manage their diabetes during or after school. Nurses (n = 110) from 3 states responded to a survey examining perceptions of barriers to and supports for diabetes management during school and after school activities. Results indicated that adolescents need more support at school. Support could be facilitated by education of school staff; improved communication among youth, parents, school nurses, teachers, and physicians; and more communication from adolescents to others about what they need to manage well in school. Open-ended questions allowed nurses to provide recommendations for supporting youth and ideas for addressing barriers to management at school. Future studies should address ways to enable adolescents to communicate about their diabetes and ways to educate the school team. (J Sch Health. 2005;75(4):119-124)

Adolescents with diabetes often need support because it is stressful for them to manage their illness.1,2 Moreover, approximately 30% of adolescents with diabetes may have significant difficulties following their medical regimen.3 Support from school staff is essential for many of these youth.4-6 This paper presents school nurses’ perceptions about supports for and barriers to diabetes management for adolescents at school.

Diabetes is a common illness in children. Type 1 diabetes occurs in about 1 in every 700 youth and is most commonly diagnosed during adolescence.7 As such, a school is likely to have a child with type 1 diabetes at some point in time.8 Most of these children require medical planning at school. A position statement by the American Diabetes Association titled “Care of Children With Diabetes in the School and Daycare Setting” provides guidelines for writing health care plans to support children and adolescents with diabetes at school.9

Adolescents in poor control are at risk for long-term health problems.9 Information about barriers to implementing health care plans for youth with chronic illnesses is needed.10 Reducing barriers to and improving support for adolescents with type 1 diabetes may improve regimen adherence and health outcomes.2,11

School nurses are resident experts at medical care in schools. However, a literature search revealed only 1 study where researchers examined nurses’ views of how to support children with special health care needs at school.12 For this study, researchers surveyed 43 school nurses about the challenges and requirements of having children with different types of special needs in school. After reviewing study results, 3 themes summarized nurses’ views of supports for these children. The 3 themes focused on education, communication, and administrative and policy support. First, the school team needs information and education to best serve these youth. Second, communication among school staff, the child’s health care team, parents, and the child enhances self-management. Third, administrative and policy support for youth with special needs provides a critical framework to ensure that their needs are met at school. Nurses reported that educating school staff about chronic conditions, such as diabetes, was one of their job responsibilities. However, studies examining nurses’ perceptions of how to assist youth with diabetes are lacking.

SURVEY PLANNING
This survey examined nurses’ perceptions of how to support adolescents with type 1 diabetes at school. In addition, nurses recorded their thoughts about the barriers faced by adolescents trying to manage their diabetes at school. Nurses also provided ideas about the roles that school nurses can play in assisting these youth, including information about whether they had been involved in developing written care plans for students with diabetes.

Participants
Researchers surveyed 110 school nurses from 3 states (Maine, Kansas, and Maryland). Nurses were female (n = 109; only 1 participant failed to record this information). Participants provided data about age, most were in their 40s (86%), and ages ranged from 20s to 60s. Fifty percent held a bachelor’s degree, while 34% were registered nurses and 11% also had a master’s degree. Participants had been in nursing from 2 to 44 years (mean = 22 years 1 month; SD = 9 years 2 months) and had worked in schools from 6 months to 32 years (mean = 8 years 6 months; SD = 6 years 3 months). Eighty-seven percent reported a child with type 1 diabetes at their school. Thirty-one percent of the nurses worked in middle schools, 38% worked in high schools, and 31% worked in both middle
and high schools. Most (75%) returned the survey by mail, and 25% returned it via e-mail. A university-based institutional review board approved this project.

Instrument

Nurses recorded demographic information and their perceptions of supports and barriers for teenagers with diabetes in school settings (open-ended/free-response questions) on a 2-page survey. Demographic information included questions about years employed as a nurse and a school nurse, level of experience working with a child with diabetes, level of education, and experience developing care plans for youth with type 1 diabetes.

Nurses responded to statements assessing their opinions of different statements about type 1 diabetes for adolescents. They recorded their level of agreement with each statement on 5-point, Likert-type scales (1 indicated “no agreement” and 5 indicated “very high agreement”). Statements assessed views of teenagers’ knowledge about their diabetes, teenagers’ ability to communicate about their diabetes with teachers and friends, whether teenagers with type 1 diabetes need more support at school, and whether teachers and coaches need to become more knowledgeable about working with these students.

In the last section, nurses wrote answers to free-response items about what needs to be done to support adolescents with type 1 diabetes at school, barriers at school, and ideas to improve support for these adolescents during after-school activities. In addition, nurses recorded their thoughts about barriers faced by adolescents trying to manage their disease at school, and indicated whether they had been involved in developing written care plans for students with diabetes.

Procedures

The first author received permission from state nursing associations to contact groups of nurses via mail or e-mail. Informed consent statements and study information were included on the survey. If a participant decided to participate, then she returned the survey to the first author by e-mail or mail. No names were on the surveys. Surveys were sent as attachments, and the e-mail was deleted as soon as a copy of the survey was printed. After this, the first author mailed the nurses a gift certificate (under $5) as a token of appreciation for their participation. E-mails and note cards with information about participants’ addresses were destroyed as soon as gift certificates were mailed to participants.

The first, second, and third authors reviewed transcripts of the nurses’ responses to open-ended questions about supports, barriers, and ideas for improving things during after-school activities. They used a content-coding process, whereby memos were recorded and reviewed to uncover relevant themes.12,14 Authors reviewed transcripts independently and in a group. Following the tenets of a “Grounded Theory” approach, common themes were recorded when all 3 recorders agreed that a theme represented the story unfolding in the data.13 Disagreements were resolved by consensus.

SURVEY FINDINGS

Nurses reported that their experience working with children who have diabetes was adequate (54%) or high (30%). Ninety-two percent had developed written health care plans for a child with diabetes. Nurses who worked for more years as a “school nurse” were more apt to report that they had developed care plans for youth with diabetes (r = .22, p = .025).

Ninety-seven percent reported that after-school leaders and coaches should become more knowledgeable about diabetes. Most (57%) were not available to help after school, and 73% did not believe that after-school activities should be included in written health care plans. Participants with more years of experience as a school nurse were more likely to state that care plans should address after-school activities than those with less experience (r = .25, p = .012).

Table 1 shows the means, modes, and percent of nurses in agreement with statements on the survey. Nurses reported that adolescents, teachers, and school staff needed to improve their knowledge about diabetes. Most thought that adolescents needed to improve their communication about their diabetes with friends and teachers. Ninety-eight percent agreed that adolescents with diabetes needed more support at school. Moreover, nurses who felt knowledgeable about diabetes were more likely to report that adolescents with diabetes needed more support at school than nurses who did not feel they were knowledgeable (r = .30, p = .002).

Table 2 through 4 present themes uncovered using content coding of written answers to questions about supports, barriers, and supports needed during after-school activities. Four themes emerged for improving support for adolescents with diabetes at school. Themes included improving communication among everyone who could potentially help the adolescent at school, educating nurses and school staff, and improving parental involvement in school planning (Table 2). Improving support for adolescents was the fourth theme, which included comments about providing support so that adolescents could test, have snacks, and

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
<th>Mode</th>
<th>Percentage in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teenagers need more support at school</td>
<td>4.00</td>
<td>1.00</td>
<td>5</td>
<td>98</td>
</tr>
<tr>
<td>Teenagers need to improve their knowledge</td>
<td>3.80</td>
<td>1.08</td>
<td>5</td>
<td>89</td>
</tr>
<tr>
<td>Teenagers communicate well with teachers</td>
<td>2.38</td>
<td>0.81</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Teenagers communicate well with friends</td>
<td>2.38</td>
<td>0.85</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Teachers and school staff need to improve knowledge</td>
<td>3.70</td>
<td>1.01</td>
<td>3</td>
<td>89</td>
</tr>
</tbody>
</table>
receive medical care as needed. Developing written care plans based on a communication process involving youth, the medical team, parents, teachers, and nurses and then disseminating to all involved was recommended in order to facilitate comprehensive management. Nurses also indicated that care plans needed regular updates with input from the child’s medical team or physician.

Table 3 presents barriers to adherence at school. Five themes emerged: issues for teens, issues for school staff, communication, food management, and education. Respondents shared that teenagers need to be honest with staff, as some adolescents do not adhere to the diet and do not seek support in doing this. One poignant example was:

Not being able to go out with the crowd and eat (ie, eat foods high in carbohydrates or sweets) separates them from their friends and causes rebellion and depression. I have seen this firsthand too many times and even had one of my former students die this year at age 18 because of refusal to adhere to the regimen. It was very devastating for me, as he had so much to live for and was a great kid but hated being diabetic.

Comments about school issues included ensuring that nurses are available on site for medical consultation, teachers and coaches are comfortable about working with youth with type 1 diabetes, and school staff have a good understanding of what to do if highs or lows occur. Communication again emerged as a theme. Nurses mentioned that some youth need to be encouraged to communicate about their diabetes, and they are uncomfortable with others knowing about their diabetes. Finally, ensuring that snacks and appropriate foods are available and that coaches and teachers have knowledge about disease management can reduce barriers to good control at school (Table 3).

Many listed suggestions for improving diabetes management in this area (Table 4). Nurses reported that planning for management during “out of town” trips is critical. Further, all adults working with the adolescent (eg, bus drivers, trainers, parent volunteers) should have some education about disease management. Ready “access” (theme 2) to snacks and testing kits as well as appropriate medical supervision again were cited as necessary supports. Creating a feedback loop for communication, so that everyone involved learns about the best care plan for the adolescent, also was an idea for improving diabetes management during after-school activities.

SURVEY IMPLICATIONS

Nurses in this survey believed that adolescents with diabetes need more support at school. They also reported that several barriers exist that make it difficult for adolescents to manage their diabetes, such as not being able to do what they need to do when they need to do it (eg, testing, having a snack). Nurses who had more knowledge about diabetes and had worked in schools for longer

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**Table 2**

**Actions to Support Youth at School**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Supporting Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>“Good communication between parent, school nurse, and the primary care provider so information is up-to-date, accurate, and in the best interest of the student.”</td>
</tr>
<tr>
<td></td>
<td>“Communication between school nurse and physician increased and kept open.”</td>
</tr>
<tr>
<td></td>
<td>“504 health plans with yearly meetings with teachers, parent, and student about supporting the student and (for gathering) individual information on the student.”</td>
</tr>
<tr>
<td></td>
<td>“The school nurse needs to write a care plan involving the students, parents, teachers, and coaches as well as including communication to and from the doctor and keeping a list of pertinent phone numbers readily available in case of emergency.”</td>
</tr>
<tr>
<td>Support</td>
<td>“Students need to have access to (kits to) test blood sugars at all times and to test ketones if necessary. Students need to have access to snacks and water at all times.”</td>
</tr>
<tr>
<td></td>
<td>“A school nurse in the building 100% of the time would also be incredibly helpful. It is very difficult for me to monitor and assist my diabetic students when I am in another building across town.”</td>
</tr>
<tr>
<td></td>
<td>“Children need to be able to carry their bags in school so they can carry their testing equipment and snacks.”</td>
</tr>
<tr>
<td>Education</td>
<td>“Teachers and staff need more education about Type 1 Diabetes. They do not understand the complications of the disease and they are afraid to help the students properly manage it.”</td>
</tr>
<tr>
<td></td>
<td>“Educate teachers to recognize the highs and lows.”</td>
</tr>
<tr>
<td></td>
<td>“Adequate time and resources to train staff.”</td>
</tr>
<tr>
<td></td>
<td>“Educational support for the nurses ... continuing education. And updating of procedures with introduction to new ideas.”</td>
</tr>
<tr>
<td>Parental Involvement</td>
<td>“Have a good relationship with students’ parents.”</td>
</tr>
<tr>
<td></td>
<td>“School support staff need to figure out ways to get the parents of these teens more involved and more knowledgeable.”</td>
</tr>
<tr>
<td></td>
<td>“Parental support is vital. If the parent doesn’t support the measures the school is taking, it is very difficult to assist a student with diabetes.”</td>
</tr>
</tbody>
</table>
periods of time were more likely to indicate that teenagers need support both at school and during after-school activities. Results are consistent with adolescents’ reports about needing support to successfully manage their diabetes at school.4

Results from content coding revealed themes similar to those described by Esperat and colleagues.12 For example, the critical nature of communication among youth, the medical team, parents, and school staff was a key theme for both studies. Improving education for school staff also was a similar theme for both studies. Nurses reported that they needed to be available on site to help youth with diabetes when management issues arose and that lack of nurse staffing can impede progress in supporting these youth at school.

Sponsoring continuing education programs has been an avenue for improving support for youth with diabetes at school.5 The National Diabetes Education Program has developed a guide for school personnel, titled, “Helping the Student With Diabetes Succeed: A Guide for School Personnel.” These guidelines are available at http://ndep.nih.gov/materials/pubs/schoolguide.pdf. An in-depth reference for assisting school nurses in developing comprehensive diabetes management for students with diabetes at school is the “Pediatric Education for Diabetes in Schools, National Version, 2003.” This reference was developed by the Pediatric Adolescent Diabetes Research Education (PADRE) Foundation (www.padrefoundation.org) in collaboration with the National Association of School Nurses. It is available at www.pedsonline.org (see Tools for Schools). It provides helpful tools for educating school staff about diabetes, developing individualized care plans, and identifying resources for managing diabetes in the school setting. Nurses may benefit from continuing education courses about diabetes management for youth. These classes may be especially helpful if ideas for counseling these youth are reviewed. Discussing ways to provide counseling to youth who are depressed or worried about appearing different from their peers and teaching youth how to share information about their diabetes are essential topics for continuing education sessions.

Butler and Lawlor proposed that it takes support from key players in the lives of children to help them manage their diabetes. Because adolescents spend “most of their waking hours at school … (these) person must become part of the ‘village’ in caring for students with diabetes.”15(p27) Similar to other documents from the American Diabetes Association,4 these authors recommended developing written action plans to ensure that adolescents with diabetes get the care and support they need at school. Evidence from the current study shows that written plans are common when school nurses are involved. Meetings for developing and updating care plans afford opportunities to enhance communication and education when all stakeholders can provide input for the plan and provide ideas for revising it. This allows the group to function as a multidisciplinary team providing information and feedback to all involved in assisting the adolescent with managing his or her diabetes.2

### Table 3

<table>
<thead>
<tr>
<th>Theme</th>
<th>Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues for Teens</td>
<td><em>Teenagers learn quickly ways to manipulate the system with their diabetes, such as drinking a juice so blood glucose will be high and they can miss a test.</em></td>
</tr>
<tr>
<td></td>
<td><em>Adolescent attitudes about not wanting to be ‘singled out’ as different from their peers.</em></td>
</tr>
<tr>
<td>School Issues</td>
<td><em>I am the only nurse for five buildings so I am not always in the building when questions arise.</em></td>
</tr>
<tr>
<td></td>
<td><em>Some teachers do not understand why it is necessary to send students to the nurse and provide a buddy.</em></td>
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<tr>
<td></td>
<td><em>Teachers and coaches are nervous about potential problems on field trips, athletic events … it causes a lot of stress.</em></td>
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<tr>
<td></td>
<td><em>Lack of qualified substitutes and no RN in building at times.</em></td>
</tr>
<tr>
<td>Communication</td>
<td><em>Lack of communication between Type 1 diabetic students and their peers (they don’t want anyone to know).</em></td>
</tr>
<tr>
<td></td>
<td><em>Parents, let alone the teen, not communicating with teachers or health staff directly.</em></td>
</tr>
<tr>
<td>Food Issues</td>
<td><em>The food supply (lunches/snacks) made available for students are frequently high in carbohydrates and fat content with little alternative choices available.</em></td>
</tr>
<tr>
<td></td>
<td><em>The over-abundance of sweets provided at schools before, during, and after school.</em></td>
</tr>
<tr>
<td></td>
<td><em>Getting lunch menus and the nutritional values of foods to help these kids plan what they want to eat ahead of time so they can navigate the lunch lines as readily as their friends.</em></td>
</tr>
<tr>
<td>Education</td>
<td><em>Ignorance of disease process from parents and or other guardians.</em></td>
</tr>
<tr>
<td></td>
<td><em>There should be some school education made available to the school body as a whole so the understanding of diabetes is more clear.</em></td>
</tr>
<tr>
<td></td>
<td><em>Lack of education and knowledge by teachers and staff.</em></td>
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</table>
When surveys for this study were distributed, 38 nurses in elementary school programs returned the questionnaires. A post hoc analysis indicated that their responses were similar to those of the nurses working in middle and high school settings. Like the other sample, these nurses commented on the importance of teacher education and communication. Several talked about encouraging adolescents to communicate with others even though they might “stand out” from their peer group. Their responses indicating agreement or disagreement with the statements about diabetes also were consistent with the larger sample. For example, 83% agreed that teenagers need more support to manage their diabetes at school. Ninety-five percent reported agreement with the idea that teachers and school staff need to improve knowledge about diabetes, whereas 89% of the middle and high school teachers agreed with this statement. Similar to middle and high school nurses, most (79%) elementary school nurses thought teenagers need to work on communication with teachers and friends. Thus, analyses of data for this ad hoc sample validate conclusions made after analyzing data for the larger sample.

Several factors limited the external validity of study findings. This was a sample of convenience consisting of volunteers from 3 states. Surveying a larger group across the country may have provided different results. If a larger group of nurses were surveyed, results about use of written care plans may not have been so positive. In future studies, it may be valuable to develop survey questions to increase knowledge about when written plans are needed and what needs to be documented in the plans. Individual interviews may provide more information and allow interviewers to ask questions about how to resolve barriers to successful diabetes management.

CONCLUSIONS

Results indicated that nurses with more experience in schools and those with more knowledge about diabetes management were more likely to indicate that there needs to be more support for adolescents to manage their diabetes at school. Adolescents’ functioning in community settings, like schools, contributes to their quality of life as well as long-term health outcomes.

Continued pursuit of ideas and plans for assisting adolescents to improve adherence to their diabetes regimen at school remains essential. Also, incorporating ideas for after school into planning may provide more support for the adolescent. Having yearly or biyearly meetings of medical providers, school personnel, youth, and their parents to identify barriers to optimal adherence at school and ways to overcome these barriers is recommended. Further, identifying a point person, such as the school nurse, to monitor the success of the plan and ensure that it is updated may improve tracking of disease management and identify a “support person” for adolescents to

<table>
<thead>
<tr>
<th>Theme</th>
<th>Quotations</th>
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</thead>
<tbody>
<tr>
<td>Educate Leaders</td>
<td>“Coaches need to be trained to recognize problems.”</td>
</tr>
<tr>
<td></td>
<td>“Adequate training for teachers, staff, and coaches. Planning for out-of-town problems.”</td>
</tr>
<tr>
<td></td>
<td>“It would help if the school as a whole had some training as to what diabetes is and how to help manage it.”</td>
</tr>
<tr>
<td></td>
<td>“Training for coaches, bus drivers, and trainers.”</td>
</tr>
<tr>
<td>Medical Management Care</td>
<td>“After-school testing and snacks available and allowance to carry testing supplies.”</td>
</tr>
<tr>
<td></td>
<td>“A care plan for emergencies with all needed supplies.”</td>
</tr>
<tr>
<td></td>
<td>“Someone they can go to who understands their needs and challenges and can help with management.”</td>
</tr>
<tr>
<td></td>
<td>“Medical supervision, food availability, knowledge of symptoms to observe for, family support, guidelines for treatment per physician.”</td>
</tr>
<tr>
<td>Communication</td>
<td>“Diabetic student needs to feel comfortable with after-school staff so they can openly communicate with them if a problem should arise.”</td>
</tr>
<tr>
<td></td>
<td>“Regular appointments with healthcare providers and written communication with school nurse regarding management needs for school to follow.”</td>
</tr>
<tr>
<td></td>
<td>“Structured, written plans with involvement of all adults.”</td>
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<tr>
<td></td>
<td>“Regularly scheduled meetings with all involved; nurses, teachers, coaches, and parents all need the same information and opportunities to ask questions.”</td>
</tr>
<tr>
<td></td>
<td>“More information from the doctor to the school nurse so that she may be able to provide individualized care for the student.”</td>
</tr>
<tr>
<td>Parental Involvement</td>
<td>“School support staff need to figure out ways to get the parents of these teens more involved and more knowledgeable.”</td>
</tr>
<tr>
<td></td>
<td>“Supportive parents who attend the games. The school nurse has no role in the students’ nonschool-related recreation activities—that is the parents’ job.”</td>
</tr>
</tbody>
</table>
seek counsel from when disease management becomes difficult.

References
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Structured diabetes education for children and adolescents


Abstract

The implementation of structured diabetes education for children and adolescents with type 1 diabetes has gained momentum in the past few years. This article reviews government policy in respect of structured diabetes education, evidence about such programmes for children and adolescents, and problems of methodological inadequacy of past research in this area.

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Keywords

Adolescents, children, diabetes, glycaemic control, self-care, structured education, type 1 diabetes

Review

All articles are subject to external double-blind peer review and checked for plagiarism using automated software.

Online

Guidelines on writing for publication are available at www.nursing-standard.co.uk. For related articles visit the archive and search using the keywords above.

TYPE 1 DIABETES requires constant monitoring and manipulation of diet, insulin therapy and exercise if optimal glycaemic control is to be achieved. Effective self-care is an essential requirement for people diagnosed with type 1 diabetes and must be underpinned by knowledge of diabetes and the effect that diet, insulin and exercise may have on an individual’s glycaemic control. A scoping exercise to identify the gaps and priorities for organisation and delivery of diabetes services (NHS Diabetes 2010) recognised ‘the need to develop effective models of self-care support’ for people diagnosed with diabetes. The complexity of diabetes management is recognised (Department of Health (DH) Diabetes Policy Team 2007, Stinson et al 2009), as is the need to provide a healthcare environment in which healthcare professionals and patients collaborate to achieve the best possible outcomes (DH and Diabetes UK 2005). The benefits of improved glycaemic control are well documented (Diabetes Control and Complications Trial Research Group 1993), and many diabetes centres use intensive insulin therapy in an effort to delay the onset of long-term complications such as retinopathy, neuropathy and nephropathy (Murphy et al 2006).

The management of diabetes in children and adolescents has proved difficult. Figures suggest that only 16.2% of children and young people are managing to achieve a glycated haemoglobin (HbA1c) of less than 7.5% (59mmol/mol) (National Diabetes Audit 2010). The life expectancy of people with type 1 diabetes is reduced on average by 15 years (National Institute for Health and Clinical Excellence (NICE) 2009), and those diagnosed before the age of 15 have substantially worse retinopathy and neuropathy than those who develop diabetes in later life (Murphy et al 2006).

The UK is reported as having the lowest number of children attaining optimal glycaemic control in Europe (DH and Diabetes UK 2005). This suggests that diabetes care and services for young people are failing to deliver the necessary support. As adolescents progress towards adulthood, they are expected to assume greater responsibility for their diabetes care in an effort to foster independence and autonomy (Sawyer and Aroni 2005). However, it has been suggested that adolescents do not receive the education required to achieve this (Barlow and Ellard 2004). Lack of access to appropriate services, limited availability of trained professionals, high costs and diagnosis at a young age when parents, rather than children, are educated about the condition have been cited as barriers to effective education of adolescents in diabetes care (Barlow and Ellard 2004).

As adolescents age, the number of insulin injections per day is often increased from two or three to four; this form of intensified insulin
therapy is also known as basal bolus or multiple daily injections. Such increases are in recognition of adolescents' erratic lifestyle and eating patterns. Transfer to a multiple daily injection regimen enables more flexibility, allowing adolescents to delay injections to coincide with meal times, or to increase or decrease the amount of insulin in conjunction with their carbohydrate intake on a meal-by-meal basis. Multiple daily injection regimens intensify insulin management with the ultimate aim of better glycaemic control and improved quality of life.

Evidence from the Hvidere Study Group suggests that multiple daily injections have limited success (Danne et al 2001), unless implemented in parallel with structured diabetes education (Mühlhauser et al 1987, Grey et al 2000). Although many people with type 1 diabetes manage their condition by means of a multiple daily injection regimen, few feel sufficiently confident to alter their insulin dose to achieve greater glycaemic control (Audit Commission 2000). Therefore, there is a need to instigate diabetes education programmes that offer adolescents the opportunity to develop their knowledge, skills and confidence to become proficient in diabetes self-care.

Policy changes

In 2001, the DH published the National Service Framework for Diabetes: Standards. The document contained 12 standards related to the delivery of diabetes care and services in England. The ultimate aim of these standards was to ensure consistent, equitable, high-quality care for everyone who has diabetes. In particular, Standard 3 advocated partnership and sharing of decision making between patients and healthcare professionals. Inherent in this is the need to provide adequate high-quality structured education so that people with diabetes feel sufficiently empowered to engage with healthcare professionals and manage their condition effectively. Several policy documents published by NICE (2003, 2004) and the DH (2001, 2004) have supported the need for effective diabetes education.

NICE (2003) conducted a health technology appraisal on the use of patient education models for diabetes. Although this appraisal was not specific for any particular patient group, it supported the National Service Framework for Diabetes: Standards (DH 2001) recommendation that structured diabetes education should be made available to everyone with diabetes. NICE (2003) defined structured diabetes education as: 'A planned and graded programme that is comprehensive in scope, flexible in content, responsive to an individual's clinical and psychological needs, and adaptable to his or her educational and cultural background'.

The DH (2004) highlighted the need to offer timely access and advice to all children and young people, ensuring their social, educational and emotional needs are met during periods of illness. Subsequently, NICE (2004) in its guidance on the diagnosis and management of children and young people with diabetes, stipulated the need to deliver educational content on the basis of a young person's age, maturity, culture, wishes and existing knowledge. In spite of these policy recommendations, tried and tested structured education programmes tailored to the needs of adolescents in the UK are lacking (DH and Diabetes UK 2005).

In its technology appraisal, NICE (2003) stated that insufficient evidence is available to recommend any one specific type of education. However, the following guiding principles should be used:
- Programmes should reflect established principles of adult learning.
- Education should be in a group setting unless contraindicated.
- Programmes should be delivered by trained healthcare professionals and accessible to all.
- A variety of techniques should be used to ensure active learning.
- Each education team should have a minimum of a diabetes specialist nurse and a dietician.

The DH and Diabetes UK (2005) have further developed these principles, requiring all structured education programmes to have a patient-centred philosophy, a structured curriculum and trained educators, and to be quality assured and audited.

Dose adjustment for normal eating

The NICE (2003) health technology appraisal advocated the Dose Adjustment For Normal Eating (DAFNE) programme as one possible solution for educating people with type 1 diabetes. DAFNE is a five-day flexible intensive insulin treatment programme aimed at adults with type 1 diabetes (DAFNE Study Group 2002). The DAFNE programme was tested using a randomised controlled trial (RCT) in which 169 adults were assigned to either an intervention or delayed intervention group. Those in the intervention group engaged in a five-day education programme that taught them the skills to adjust their insulin dose in accordance with their carbohydrate intake, exercise and daily activities. Those allocated to the delayed intervention group...
were provided with the same programme of education six months later.

The primary outcome measures of the DAFNE programme were HbA1c and self-reported quality of life. Psychological wellbeing and treatment satisfaction were also measured through the use of validated questionnaires. The DAFNE Study Group (2002) reported a significant difference in both HbA1c and quality of life between the intervention and delayed intervention groups at six months, equating to a 1% reduction in HbA1c values. There were also significant differences in psychological wellbeing and satisfaction with treatment. These differences were maintained at 12 months. A rise in HbA1c at 12 months was noted, but those in the intervention group continued to report improved control.

Although the DAFNE programme supports the view that structured education is an effective means of helping people with type 1 diabetes to manage their condition, caution must be exercised. The DAFNE Study Group (2002) initially sent letters to 1,016 people with diabetes. Of these, only 423 individuals responded and subsequently 138 people agreed to take part in the research study. Therefore, only 14% of those eligible were willing to participate in the developed programme of education. This highlights a potential problem that programmes such as DAFNE become accepted as routine diabetes care.

One potential reason for the lack of interest or willingness to participate might have been the need to attend a programme on five consecutive days. Work, childcare and family constraints may have prevented people from engaging in the DAFNE programme. Furthermore, the study excluded people with an HbA1c of less than 7.5% (59mmol/L/mol) or greater than 12% (108mmol/L/mol), and those with a duration of diabetes of less than two years or with advanced complications (DAFNE Study Group 2002).

Since its development, the DAFNE programme may now be accessed by adults with a diagnosis of type 1 diabetes of at least six months' duration. In light of the issues identified, caution must be exercised when generalising the study findings to the wider population. One of the fundamental values that underpins all care in the NHS is equal access for all. Alternative structured diabetes education programmes need to be developed to meet the needs of the wider population with diabetes. In addition, the DAFNE programme was established and developed specifically for the needs of adults with type 1 diabetes and should not be accepted automatically as suitable for children and adolescents just because they have the same condition.

Educational needs of children and adolescents

Management of diabetes in children and adolescents is fundamentally different from and more complex than that in adults (DH Diabetes Policy Team 2007, Christie et al 2009). Care should be taken to ensure involvement of the family while providing the young person with the opportunity to develop independence and confidence in managing his or her condition. Psychological, social and emotional needs of the adolescent should be considered for any care intervention to be successful. During this phase of their life, adolescents will encounter social constraints involving friends, family and school (Christie et al 2009), so any structured diabetes education programme needs to consider normal adolescent development and related social, emotional and physical effects.

Although the DAFNE programme in its present format may not be suitable for adolescents with type 1 diabetes, components such as increased dietary freedom and greater independence may appeal to this age group. The DAFNE programme needs to be repackaged using the principles of adolescent education available through the Office for Standards in Education (OFSTED).

OFSTED is a government department that was established in 1992, with the aim of improving the provision of education and care for children and learners in England (Kyriacou 1998). It is responsible for the inspection and regulation of quality standards in education. Box 1 shows the guiding principles offered by OFSTED that should be followed when developing quality teaching practice for children and young people.

Recognising that learning styles differ significantly among children and adolescents is important, and the use of a variety of teaching styles is essential (Knowles et al 2006). This

<table>
<thead>
<tr>
<th>BOX 1</th>
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<tbody>
<tr>
<td><strong>Guiding principles for good teaching practice for children and young people</strong></td>
</tr>
<tr>
<td>• Lessons should be purposeful and convey high expectations.</td>
</tr>
<tr>
<td>• Pupils should be given some opportunities to organise their work.</td>
</tr>
<tr>
<td>• Lessons should stimulate and sustain pupils' interest and be perceived by pupils to be relevant and challenging.</td>
</tr>
<tr>
<td>• Lessons should be matched to pupils' abilities and learning needs.</td>
</tr>
<tr>
<td>• Pupils' language should be developed and extended (teachers' questioning skills are important).</td>
</tr>
<tr>
<td>• A variety of learning activities should be used.</td>
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<tr>
<td>• Good control should be based on skilful management of pupils' involvement in the lesson and mutual respect.</td>
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</table>

(Adapted from Kyriacou 1998)
may help to ensure engagement of all members of any adolescent group. Activities used should be enjoyable and challenging to ensure that each adolescent remains motivated. Establishing and maintaining motivation among adolescents is a key component of effective diabetes management (Viner et al 2003). Any proposed programme of education should be planned, allow for sufficient breaks and offer an opportunity for adolescents to socialise with their peers.

**Previous psycho-educational programmes for children and adolescents**

Over the past decade, several systematic reviews have been done to establish the effectiveness and validity of psycho-educational interventions for young people with type 1 diabetes (Hampson et al 2001, Murphy et al 2006, Couch et al 2008). Each of these reviews has highlighted a lack of empirical evidence to support the long-term benefits of structured education for adolescents. Interventions are described as being ‘educational’, with the aim of teaching diabetes skills and knowledge; ‘psychosocial’, using problem solving, coping skills and family therapy; or ‘psychotherapeutic’, combining knowledge, skills and self-efficacy (Murphy et al 2006).

**Review by Hampson et al (2001)**

Hampson et al (2001) reviewed 62 studies for young people with type 1 diabetes. Most of these studies (68%) took place in the United States (US), and only 48% of authors provided an explicit theoretical rationale for their intervention. The minority (41%) of the studies were RCTs, of which none were based in the UK. In light of differences in culture and healthcare services between the UK and US, any programme showing potential benefit would need to be tested formally in the UK’s adolescent population to ensure its transferability. The mean number of participants in all studies reviewed was 53.8, and more than half of the studies had fewer than 40 participants. Small sample size and non-randomisation in most of the studies mean that generalisation of results to the wider population is not possible, even if the intervention may have been deemed successful.

Hampson et al (2001) found poor description of interventions, location and identity of the interventionist in more than half the studies reviewed. Use of a variety of outcome measures such as HbA1c in 39 interventions, psychosocial measures in 20 interventions and diabetes self-management behaviours in nine interventions made comparing the effectiveness of interventions difficult. Follow up was limited, with no long-term data (that is, more than one year) being available for most of the studies reviewed.

**Review by Murphy et al (2006)**

In an effort to establish if the methodological shortcomings reported by Hampson et al (2001) had been addressed, Murphy et al (2006) reviewed articles published between January 1999 and January 2005. They identified 27 articles describing the evaluation of 24 psycho-educational interventions. RCTs accounted for 13 (54%) of the studies reviewed. Only one of these was done in the UK, with most RCTs still emanating from the US (Murphy et al 2006). The problem of transferability and cultural difference has not yet been satisfactorily overcome. The mean number of participants involved in each study had increased from 53.8 (Hampson et al 2001) to 80 (Murphy et al 2006). However, Murphy et al (2006) still concluded that no adequately powered RCTs addressed the issues of feasibility, effectiveness and consistency of delivering psycho-educational interventions to children and young people with type 1 diabetes.

Despite an increase in the number of studies offering a clear description of the intervention, half still fell short of this requirement. Even if these studies showed metabolic or psychological improvements, replicating them for further validation would not be possible. The continued use of a wide variety of outcome measures was evident, making comparison between studies difficult (Murphy et al 2006). HbA1c was the most common outcome measure, used in 20 of the studies reviewed. The need for longer follow up advocated by Hampson et al (2001) was recognised, with 37% of studies reporting follow up of at least 12 months’ duration compared with 11% previously (Murphy et al 2006).

Several studies reviewed incorporated new and innovative technologies, with some using telemedicine (Liesenfeld et al 2000), internet chat rooms (Iafusco et al 2000), telephone support (Howells et al 2002) or even parent mentor visits (Sullivan-Bolyai et al 2004). Both Liesenfeld et al (2000) and Iafusco et al (2000) showed a statistically significant drop in HbA1c, but neither study used randomisation and the sample sizes were small (61 and 43 participants, respectively). Howells et al (2002) and Sullivan-Bolyai et al (2004) used RCTs; however, although psychological variables improved in both, HbA1c increased in Howells et al’s (2002) study and was not measured by Sullivan-Bolyai et al (2004). The use of new and innovative technologies such as those outlined may be beneficial, but further testing using properly powered RCT methods with robust data collection is needed.

The final substantive review was done by Couch et al (2008) as part of an evidence report/technology assessment in the US. The review focused on diabetes education for children with type 1 diabetes and their families. The results of this review are consistent with the earlier findings of Hampson et al (2001) and Murphy et al (2006). Eighty studies published between 1983 and 2007 were identified, of which 53 were RCTs (Couch et al 2008). Consistent with previous reviews, most of the RCTs emanated from the US (34, 64%), with the remainder from Europe (11, 21%), Canada (5, 9%) and other regions (3, 6%). Couch et al (2008) highlighted the methodological issues of small sample size, poor description of interventions, variety of outcome measures and no long-term follow up, as identified in the previous two reviews. They further supported Murphy et al’s (2006) suggestion for appropriately powered RCTs and also stated that a five to ten-year follow up is needed to ascertain the effect of educational programmes on the development of long-term complications in this patient group (Couch et al 2008).

Effectiveness of structured education

One of the main factors in the implementation of structured diabetes education is the realisation that the increasing incidence of diabetes will lead to an increasing burden on healthcare services. The incidence of type 1 diabetes is increasing at an average rate of approximately 3% per year, with the greatest rise noted in children under four years (International Diabetes Federation 2011). People with chronic illness need to be educated about their condition in an effort to prevent long-term complications, leading to decreased service use. The effectiveness of structured diabetes education may be measured by metabolic, psychological and long-term outcomes associated with an individual patient, or by cost-benefit analysis as is often the case for health service development.

Metabolic, psychological and long-term effectiveness of structured education

In accordance with the jointly published structured diabetes education assessment toolkit (DH et al 2006), education of this nature ‘can improve knowledge, blood glucose control, weight and dietary management, physical activity and psychological wellbeing, particularly when tailored to the needs of the individual’. This statement is supported by the many policy documents advocating the need to introduce structured education for all people with diabetes (DH 2001, 2004, NICE 2003). However, in their review, Couch et al (2008) concluded that there was no indication in children or adolescents ‘that any specific educational intervention improves day-to-day management of metabolic control as determined by HbA1c’. In contrast, other reviews have detailed short-term benefits of structured education programmes for children and adolescents, but were unable to confirm or maintain these effects in the long term (Hampson et al 2001, Murphy et al 2006).

The question of long-term benefit of structured education for children and adolescents remains unanswered. Evidence exists to support the view that structured education has a long-term benefit in adults (Speight et al 2007), so one could speculate that given the right programme this may also be possible for children and adolescents. The DAFNE programme has now been able to show continued benefit after four years, although deterioration in the magnitude of the effect on HbA1c was noted (Speight et al 2007). Limited evidence exists to support long-term benefits of structured diabetes education in adults; some authors suggest a return to baseline levels of HbA1c after six years (Plank et al 2004). The development of new programmes and monitoring of patients post-intervention should continue for a significant number of years to assess and identify metabolic and psychological benefit.

Cost effectiveness

Before the implementation of any new technology or treatment, the onus is on the NHS to evaluate the cost effectiveness of that innovation. Consistent with the limited available data for long-term outcomes of structured diabetes education, information for cost effectiveness is sparse. In a review of the cost effectiveness of educational and psychological programmes for adolescents, Gage et al (2004) noted that most of the studies failed to consider this area effectively. Resources required to deliver programmes tended to be ignored, and a lack of information about the interventions made ascertaining basic costs impossible.

Shearer et al (2004) did a cost effectiveness analysis of the DAFNE programme in the UK using data from a similar programme in Germany (Bott et al 1997) and one in Austria (Pieber et al 1995). Their results indicate that structured diabetes education programmes are likely to save approximately £2,200 per patient treated over ten years and increased life expectancy by 5.31 years per 100 patients educated. They further suggest that these education programmes will outperform routine care after approximately four and a half years. Figures reported allow for development of...
long-term complications and increased service use. In light of the limited documented cost benefits of structured diabetes education, there is a need for all future researchers to incorporate this analysis into their studies.

Recent diabetes education initiatives in the UK

In the past three years, several new structured diabetes education programmes have been developed and piloted, and tested using an RCT, or are being undertaken in the UK (Murphy et al 2007, Waller et al 2008, Christie et al 2009, Chaney et al 2010). The aim of each of these programmes is to test the efficacy of their respective structured diabetes education component, addressing the methodological inadequacies identified in previous systematic reviews. Each of these studies is at a different stage of testing; both the Families, Adolescents, and Children’s Teamwork Study (FACTS) (Murphy et al 2007) and the Carbohydrate Insulin Collaborative Education (CHOICE) study (Chaney et al 2010) are due to report findings by the end of 2012.

Conclusion

Use of structured diabetes education programmes to assist people with type 1 diabetes in managing their condition effectively is now widely accepted as best practice. Government policy and NICE (2003) recommendations advocate the

References


introduction of such programmes as routine care for people with diabetes. Despite these policy recommendations, only one programme – DAFNE – has been recognised by NICE as meeting all standards for structured diabetes education for adults with type 1 diabetes. Although some education programmes have been developed and tested, no universally accepted and evidenced-based programme for children and adolescents with type 1 diabetes exists. The educational needs of this group of patients are not the same as those of adults and therefore the development of new education programmes is required.

Several systematic reviews of previous research on structured diabetes education programmes have highlighted methodological inadequacies. Small sample size, poor description of interventions and insufficient follow up have resulted in low quality reporting of research in this area.

The effectiveness of structured diabetes education programmes in reducing long-term complications and associated costs of diabetes care remain unknown. Recent attempts to develop new and innovative ways to deliver structured diabetes education to children and adolescents either have been unsuccessful or are still being evaluated. NICE (2009) guidance advocates the need for partnership working and shared decision making between patients and professionals to improve clinical outcomes.
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Parental Expectations in the Care of Their Children and Adolescents With Diabetes

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There is little research about what parents of children with diabetes want and need from their health-care providers as they negotiate life with diabetes. Sixty-three parents of children with type 1 diabetes were interviewed. Interviews were tape-recorded and transcribed verbatim, and a content analysis of text data was conducted. Three themes emerged describing what they wanted in their relationships with diabetes providers: laying the foundation, providing clinical care, and engaging families as partners. Collectively, these data provide vivid insights into the parent’s perspective regarding their needs from diabetes providers as well as their perceptions of interactions that were unhelpful or worse, hurtful or undermining.

DIABETES IS A labor-intensive chronic illness that is best managed at home by the parents and child. Intensive diabetes management requires that parents monitor blood glucose at least four times a day and constantly consider the interactions among insulin, food, and activity. In addition, they must balance the short-term risks of hypoglycemia and diabetic ketoacidosis while integrating the demands of diabetes management into their daily life. The challenges inherent to assuming this ongoing responsibility have the potential for creating significant stress within the family unit. Studies have found increased parental distress and mealtime behavior problems (Powers, Byars, Mitchell, Patton, Standiford, & Dolan, 2002), intense maternal vigilance (Sullivan-Bolyai, Deatrick, Gruppuso, Tamborlane, & Grey, 2003), and posttraumatic stress symptoms in mothers after the diagnosis of diabetes (Horsch, McManus, Kennedy, & Edge, 2007).

The empirical literature includes a number of studies that provide clinicians with investigator-driven recommendations for working with families. Motivational interviewing and counseling skills had been suggested to deal with challenging patients (Helseth, Susman, Crabtree, & O’Connor, 1999). From a review of the care-giving literature, Sullivan-Bolyai, Knafl, Sadler, and Gillis (2004), generated a care-giving list to facilitate dialogue between providers and parents; this list can be used to assess and evaluate parents’ skills, which ultimately can empower parents as they witness the list of skills grow. Nurses should help families gain competence with the nuances of diabetes care to help families regain the flexibility and spontaneity of family life (Sullivan-Bolyai, Knafl, Deatrick, & Grey, 2003).

One study taps directly into the families’ experience of living with diabetes. In interviews with parents, Knafl, Breitmayer, Gallo, and Zoeller (1992) explored provider behaviors that contributed to a positive relationship. Parents identified themes of desired provider care that included information exchange, a warm interaction style, a direct relationship with the child, and the goal to foster parental competence.

Qualitative studies done by Thorne and colleagues (1988) with adults living with chronic illness characterized a three-stage relationship between health-care providers, patients, and their family members (naive trusting, disenchantment, and guarded alliance). This conceptualization provided important insight into the difficulties that chronically ill adults experienced in their relationship with health-care...
providers (Robinson & Thorne, 1984; Thorne & Robinson, 1988; Thorne & Robinson, 1989). Several studies looked at the parent-provider relationship experienced in pediatric care. In interviews with parents with complex chronic health problems, thorough knowledge of the child and team communication contributed to the perception of continuity of care (Miller et al., 2009). Zaffani et al. (2005) looked at the pediatrician-parent relationship and found that attention to relational factors such as the mother’s anxiety and desired outcome from the visit were associated with greater parent satisfaction and therapeutic alliance. In a study looking at transition from pediatric to adult care for special needs children, a higher-quality parent-aliance. In a study looking at transition from pediatric to associated with greater parent satisfaction and therapeutic alliance. In a study looking at transition from pediatric to adult care for special needs children, a higher-quality parent-provider relationship was associated with the extent that transition issues were addressed successfully (Scal & Ireland, 2005). While these studies looked at various aspects or outcomes of parent-provider relationships, the present study hoped to report the parents’ perspective regarding how health-care providers can best support families to integrate diabetes into their lives.

**Purpose of the Study**

The purpose of this study was to develop a broad overview of what parents of children with type 1 diabetes said about their relationships with health-care providers. Specifically, we wanted to gain a better understanding of the characteristics of interactions that were perceived by parents as helpful and those that were viewed as unhelpful in supporting them and their children to live successfully with diabetes.

**Methods**

**Study Design**

This project involved a four-stage mixed qualitative-quantitative methodology consisting of focus groups, a survey, and in-depth interviews. In each stage of the study, a new level of insight and depth was added to the results of the previous stage to develop an understanding of parents’ perspectives of living well with diabetes. Earlier stages of the study were reported previously (Ginsburg et al., 2005). This article presents the results of the fourth and final stage of the study, which involved in-depth interviews.

Drawing from the principles of naturalistic inquiry, a qualitative descriptive design was used to summarize the range of experiences that parents described with their health-care providers. Descriptive qualitative inquiry as described by Sandelowski (2000) is a “relatively unacknowledged, as opposed to being a new, distinctively nursing adaptation of grounded theory, phenomenology, and ethnography” (p. 335). This methodology allows for data interpretation that is low inference and data are kept as close as possible to the descriptions offered by participants with minimal transformation of data to a higher level of abstraction. The aim of this approach is not theory generation but rather a full description of phenomena described by participants (Sandelowski, 2000) and was consistent with our intent to learn directly from parents about the breadth of experiences that they had with their health-care providers. The study was approved by the Institutional Review Board.

**Sample**

Parents involved in the day-to-day management of their child with type 1 diabetes were invited from a tertiary diabetes specialty center with a large urban and three satellite suburban/rural practices (12 advanced practice nurses, 5 endocrinologists, 2 registered dieticians, and 2 social workers followed 1,212 patients) to participate in interviews. Parents were eligible to participate in all phases of the study. Parents who are non–English-speaking and parents of children who used less than 0.6 U/kg/day insulin (in honeymoon phase) were excluded. Maximum variation sampling (Patton, 2002) was used to assure that a broad ethnic range of families from both suburban and urban areas as well as families of children in poor control and good diabetes control were represented in the sample. Parents were contacted by telephone to explore their interest in participating in an interview. If they agreed, a convenient time was arranged to meet them at either the main hospital or one of the suburban locations.

Participants included 63 parents of children with type 1 diabetes who overall had quite a bit of experience with diabetes; 52% had a child diagnosed with diabetes for 1 to 5 years, 32% for 5 to 10 years, 13% for 10 to 15 years, and 3% for 15 to 16.5 years. Their children included 30 girls and 33 boys; 9 were 5 to 10 years, 30 were 10 to 15 years, and 24 were older than 15 years. Racially, the children were 70% White, 22% African American, 3% Hispanic, and 3% multiracial. Mean hemoglobin A1C for the children was 9.02%.

Parents were well-educated, with 78% of mothers and 60% of fathers attending post–high school education. Household income showed a range of income, with 9.5% earning less than $10,000; 17.5%, $10,000 to 40,000; 13%, $40,000 to 55,000; 11%, $55,000 to 70,000; 46%, more than $70,000.

**Measures and Data Collection Procedures**

A 12-question interview guide was the primary data collection tool. Survey results from the previous stage of the study were used to inform the questions for the interview guide (Appendix A) (Ginsburg et al., 2005). These interviews were conducted by experienced clinicians from the Diabetes Center with no previous relationship with the family. Interviewers received a 3-hour training session by the principal investigator to discuss the purpose of the study and qualitative interviewing strategies. Parents were assured that...
their individual responses would be kept confidential and not shared with their providers. Interviews lasted between 1 and 3 hours and were audio-taped. Each participant was reimbursed for time and travel involved in the study. Field notes were recorded after each interview regarding relevant contextual issues and overall tone of the interview.

Data Analysis

Recorded interviews were transcribed verbatim and processed using NVivo (2002). Content analysis was used to analyze the interview data (Cavanagh, 1997; Hsieh & Shannon, 2005; Sandelowski, 2000). The study team members (four diabetes advanced practice nurses and a social worker) individually read the transcripts line by line and applied codes generated directly from the data. Code names were kept as close as possible to the participants’ words. Although this approach to coding data described by Sandelowski (2000) is not completely free of interpretation, it does result in “easier consensus among researchers” (p. 35). Transcripts were double-coded by two study team members, and code definitions were refined until 85% to 90% accordence was reached.

Constant comparison (Lincoln & Guba, 1985) was used to further develop, modify, and merge the codes developed through line-by-line analysis, yielding 10 primary codes each with multiple subcodes. A matrix analysis (Miles & Huberman, 1994) of the 10 primary codes and subcodes was conducted by the study team. This process allowed for an in-depth exploration of the interrelationships and redundancy between and across the subcodes and resulted in the merging of the codes into the three overarching themes reported in this article. Decisions regarding the matrix analysis and resultant merging and regrouping of codes were made only after the study team reached consensus about the code definition for both the primary codes and subcodes across the matrix.

Stability and reproducibility were two approaches used in this study to ensure reliability of the content analysis (Cavanagh, 1997). Stability of data was enhanced by developing and utilizing precise coding rules and code definitions. Reproducibility “signified a shared rather than individual understanding of the data” (Cavanagh, 1997). Transcripts were coded by a team rather than one individual requiring an ongoing process of group consensus with regard to the development and application of code definitions. Similarly, the matrix analysis was conducted through a process of group consensus supporting the reproducibility of the analytic process in this study. The study’s audit trail (Lincoln & Guba, 1985) included a detailed record of how the codes evolved through the process of data analysis.

Results

Three primary themes emerged as parents described the characteristics of a relationship with their provider, which helped them to successfully negotiate the challenges of living with diabetes. The first theme, laying the foundation, illustrated provider qualities and characteristics of interactions that set the stage for a successful or ineffective alliance with the family. The second theme, providing clinical care, summarized the clinical systems and therapeutic interventions that parents wanted from their diabetes health-care team to enable their child to “live well” with diabetes. The final theme, engaging families as partners, detailed a level of collaboration between the health-care provider and the family, which was marked by mutual respect and trust.

Laying the Foundation

Parents described a fundamental process in establishing a therapeutic relationship that integrated what is traditionally thought of as bedside manner with those efforts that the provider took to get to intimately know the patient and connect with the family on an emotional level.

Parents emphasized how the tenor for the entire encounter was set within the first few minutes by the provider’s affective tone and initial presentation as they entered the clinic room. As one parent described, “so much depends on a person’s demeanor with me. She was just warm and open, and puts you at ease the minute you go in there.” Parents clearly responded to providers who exuded warmth, caring, sincerity, and kindness.

Parents also appreciated their provider’s ability to focus on them despite other demands on their time in the course of an outpatient encounter. One mother said:

The nurse practitioner can sit here, I can tell, she MAY have 6 people waiting for her in other rooms, but she never seems rushed. You know, she comes in, she just seems relaxed, and acts like, you know, she has all the time in the world for us.

In contrast, another parent strongly criticized the provider who remained caught up with multiple competing demands. “Instead of calm, they come in so hyped up...they should calm down and come in, in a better way. You know to start this session and talk with this parent. Instead of being hyped up.” Parents valued interactions where they felt that the provider personally knew and understood both the child and the family. They spoke positively about providers who, in addition to intimately knowing their child’s medical, developmental, and special needs, were also keenly aware of their child’s interests and passions. One mother said:

She really takes an interest in my kids, and it makes me feel comfortable, and it makes them feel comfortable to know that it’s not just a white coat walking in the door. It’s somebody who they know, somebody who they’ve known for years and years and years, and somebody who really cares about their whole person, not just the diabetes.

Parents appreciated when the provider was aware of and appreciated the complexity of their family’s day-to-day
logistics, their dynamics, and the stressors in their life. When the provider truly knew and understood the child and family, parents experienced a genuine and helpful relationship. They wanted their providers to be sensitive to and considerate of actual and potential life circumstances that affected living with diabetes and to be attentive to these issues as they worked with them. One parent stated, "They should know a family well enough to say, gee, there’s something wrong here. They should be paying attention, picking up cues as to what kinds of problems you are facing...what are the resources?"

Parents valued their clinician’s efforts to engage with both the parent and the affected child and to do so on more than a superficial level. When providers were able to recognize and deal with their unique emotional needs, parents were deeply appreciative. One mother spoke of the time her child was diagnosed after the death of her sister-in-law from diabetes complications. The provider recognized the initially unspoken cause of this mother’s worry and assuaged her fear. She recalled,

I was pretty petrified about the whole thing. And because I’m a nurse and knowing what’s down the road for a lot of these people...one of the doctors, he kind of walked in and said, “Things are different now; we keep good control with these kids so that we can avoid complications down the road.” And just that one statement, you know, it really helped me.

Providing Clinical Care

Parents expected expert advice from their provider. Such knowledge and expertise contributed not only to good clinical care but also to a sense by the family that they could trust in the competence of the provider and that the child’s medical needs would be met. One parent reported:

She [nurse practitioner] sees things that I don’t see. Even me, living with it for 3 years. She does say, oh you should have changed this dose...or she’ll say, do the snack different. I mean, she is really amazing with the ideas she gives me. I don’t know it all.

Parents needed more than just competent medical advice. They wanted a diabetes treatment plan that addressed and accommodated the family’s composition and lifestyle. One family’s experience with a provider’s one-sided decision to switch their child to an insulin regimen that required an additional injection at school clearly illustrated the consequences of not tailoring medical treatment decisions to the realities of the family’s life. The parent reported, “It was just not feasible so within a week we were back to the regimen of NPH and Humalog.”

Parents also described times when they needed more support and structure from their provider. When asked the question “What would be most helpful in your visit when the diabetes is out of control,” parents spoke about needing more intensive clinical care. One parent commented:

There should be some sort of an intensified treatment in contact and a game plan. They could say, “Now you should start coming in once a month, instead of once every four months.” You should start some kind of management plan which includes more frequent involvement. It would be helpful to have that plan include some benchmarks, some looking at—if this isn’t improving by this time, here are some things that will become the new game plan or if it gets fixed at this time, then things go back to normal procedures.

Parents requested more than advice about diabetes and insulin dosing. They reported the need for support with basic parenting skills and how they applied within the context of diabetes. A mother noted:

Sometimes I get in my head unreasonable limits and stuff and if they would say “that’s a reasonable limit for you to set with your child,” that makes me feel better about my parenting...They know what is important and what’s not so important, so if they help me with what you really can’t compromise on, and other things you can.

Parents also made reference to the value they placed on the guidance and support they received from providers in negotiating normal developmental milestones in the context of this chronic illness. A particular focus for parents of younger children was a concern for how they would prepare their child for assuming greater independence, particularly during the teenage years. A parent reported:

Patient’s going away for a weekend, let’s kind of walk through it. And I am probably going to need support for next year, because I’m going to count on them to have had the experience with previous patients who went away to college.

Many parents anticipated the experience of shifting the primary relationship from that of parent and provider during the preschool and school-age years to one that included the patient as a full partner beginning in adolescence. Parents of adolescents wanted the provider to make their teen “more a part of the process, helping him to make some of the decisions.” With this shift in relationship, one parent noted, “When I come down here, they talk to the kids, and more so as they get older. It’s more directed at them than at me, and I think that’s a good thing.” Parents noted that the provider should get to know the teen on a “personal level,” “more one-on-one,” and that a portion of the appointment should occur with the parent out of the room.

Another mother described her experience when her expectations for this transition did not occur, “When we come to clinic they always listen to me [parent] and never ask patient how she feels. They always ask me when I’m not the diabetic. They need to be asking her.”
Well-functioning clinical systems were an essential infrastructure to support families as they negotiated their way through the health-care system. Families wanted care that was effective, timely, accessible, and creative in meeting their needs. Parents expected to be able to access the health-care team in time of crisis or uncertainty. They counted on respect, privacy, and prompt attention when they sought help. One parent described the importance of provider access through telephone contact:

Who I need to have a good relationship with is who I’m calling and speaking with on the phone about problems. And it is really the nurse practitioners. That’s who your front door is...I’m able to get through, able to get a person. You have a child with diabetes, you don’t want to speak to a machine.

Another parent acknowledged the value of continuity of care with regard to the health-care providers they interacted with:

I try to keep her with at least one of the same nurses that can keep up with her history...We had to change appointment days because the nurse practitioner and doctor had a certain day. Fine. Change that day, as long as we get to keep the same team.

Engaging Families as Partners

When parents felt engaged as partners with their provider in their child’s care, they described an interactive process that resembled a dance. In this dance, the choreography changed over time and the changes in rhythm were perceived and responded to by both parents and providers often without words. Ideally, these changes concurred with the parent’s ability to take on more of a lead in the day-to-day decisions about their child. Early in the process, most parents wanted frequent contact with the provider to obtain reassurance that they were making the necessary adjustments. As novices, parents relied on the provider to offer structure through regular visits and telephone follow-up. Over time, most, but not all, parents wanted the opportunity to learn and eventually master the complexities of life with diabetes. A parent reflected on her increasing independence as she managed her child’s diabetes over time:

I may call like once a month if he’s sick or something. You get more comfortable as time goes on. But, I certainly COULD call everyday if I wanted to and I don’t feel I’m being annoying.

Another mother described the evolving relationship she has with her nurse practitioner that allows her to freely consult with the nurse practitioner whenever the mother needs it:

She [nurse practitioner] KNOWS that I am not a nervous Nellie. When I call, I have a problem, and she’ll call me right back. She has that respect for me and I have that respect for her.

As the patient and parents lived with diabetes, parents reported a deepening trust between themselves and the provider and a growing sense of being known and understood. From the security of this relationship, the provider could respectfully challenge a parent in their day-to-day management decisions or their parenting choices because parents believed the provider ultimately had their best interest at heart and was genuinely concerned about them. When a partnership existed, there was a synchrony where the parent grew in confidence and the provider responded to their steps toward independence. One parent described this synchronicity:

They [diabetes team] talk to us; they talk to both of us. Will you be able to fit this into this, and do this ... not, well go home and do this. You know, let’s work out a plan where it’s easy for mom, easy for [patient], this is how they deal with us.

Empowerment, defined as any action by the provider that increased a sense of mastery in managing diabetes, was an important way of engaging parents as partners. For the families in this study, empowerment involved not only teaching them the skills that enabled them to manage their child’s diabetes but also being aware of the degree of independence that they were ready to assume at any one point in time. One parent recalled that her previous provider mandated that they call the provider before they made any change to their child’s insulin dose. As she described how learning dose adjustment and the use of insulin to carbohydrate ratios and insulin sensitivity factors empowered her to take charge of her child’s diabetes, this mother said:

When we came up here, it was almost like a whole new world was opened up to us because they taught us how to do it ourselves.

A few parents discussed obstacles to feeling empowered as independent decision makers in their child’s care. They noted that a provider’s judgmental or dismissive attitudes, inflexibility, or prescription of a regimen that could not be sustained within the context of their family’s life impeded their sense of independence and empowerment. A parent noted:

We sorta felt sandbagged when the decision was made to change the whole insulin regimen over to Lantus and Novolog. This was a monumental change and I think it was not really discussed...and I don’t think we were really asked for too much feedback.

Parents emphasized the need to be treated with mutual respect as a fundamental prerequisite to establishing a true partnership with their providers. They wanted to be seen as having expertise and as having competence to care for their child’s diabetes. One mother described her experience of a
provider’s initial judgment and subsequent respect of how she manages her daughter’s diabetes:

The first 2 visits, definitely we were totally judged, the third one, he was more receptive to hear what we’re doing because...you know what he said? When he looked at all of her blood work, he actually said “how can I dispute what you’re doing, how can I say anything?” Because it was so good.

Partnership encompassed reciprocal respect between the provider and competent parent. Parents wanted to be seen as having expertise from their lived experience with diabetes and expected providers to trust their judgment and management decisions.

Discussion

Parents in this study offered insightful advice to providers in regards to the relationships and interactions they hope for with their child and themselves as they live with diabetes. The theme, laying the foundation, outlined provider qualities and characteristics of interactions that were core to a successful working relationship. The overall demeanor of the providers when they entered the room seemed to have a subtle but important impact on the parent’s and child’s initial engagement with and ongoing connection to their provider. These findings from parents are similar to those described by adult participants in a study by Fareed (1996), who cited qualities such as “cheerful attitude, always pleasant” as well as the intonation of the provider’s voice as important in conveying a sense of reassurance to patients.

The range of what parents expected in terms of health-care providers knowing the family ran the full gamut from the very concrete notion of being known by name to the familiarity that comes from intimately understanding individual family dynamics and the complexities of integrating diabetes into their daily life. Parents wanted their child to stand out and be valued as an individual so as not to be, in the words of one father, “the provider’s 3:00 slot.” This finding extends upon previous findings from adult studies in which adult patients reported a desire to be known as a unique individual, not merely as a patient with a disease or as a case (Hornsten, Lundman, Selstam, & Sandstrom, 2004; Richards, Morris, Booker, & Johnson, 2006). In a similar vein, adult participants, in a study about living with chronic illness, reported the expectation that providers would remember their name, would recognize some aspect of their life beyond their diagnosis, and would make them feel welcome, listened to, and comfortable (Thorne, Harris, Mahoney, Con, & McGuiness, 2004). Adults with cancer passionately described a need for human connection and the desire to be known as a whole person in a subsequent study by Thorne et al. (2005) on health-care communications.

The second theme, providing clinical care, included an overview of the clinical systems and interventions that parents expected from their diabetes health-care team. The parents in this study wanted clinicians to be knowledgeable and up-to-date in research and technology, and able to provide them with clear medical information and resources. These findings add to the earlier work of Ginsburg, Forke, Cnaan, and Slap (2002), who found that adolescents had expectations that their providers knew what they were doing, were well educated, up-to-date, and careful. It is also congruent with findings from adult studies that reported participants’ expectation that clinical expertise involved providing accurate information, up-to-date disease management, and astute interpretation of clinical signs (Knafl, Brettmayer, Gallo, & Zoeller, 1992; Thorne, Paterson, & Russell, 2003).

Parents also described a need that resembled the theme of “making it fit” described by adolescents in the study of Christian, D’Auria, and Fox (1999). Many parents expressed a request for help in integrating diabetes care demands into their everyday lives, thereby regaining some degree of normalcy and preserving their desired quality of life. The importance of tailoring the chronic illness demands to the unique demand of the family’s lifestyle was a need that was expressed by families. Parents became frustrated when diabetes regimens were prescribed that did not fit into their daily life. These results add to the body of literature of earlier work with adults. Paterson’s study (2001) documented that adults’ ability to use diabetes information was impaired when it was irrelevant to the unique needs of adult patients. Similarly, participants in the study by Thorne et al. (2003) accepted the advice of providers who were sympathetic to real life, rather than those who tended to give impractical textbook advice.

Parents found it very helpful when clinicians offered anticipatory guidance for the usual developmental considerations as well as the challenges of growing up with diabetes. With this information, parents felt more prepared and less anxious. Families also asked that providers develop a direct relationship with their child. This direct communication to the child increased their independence and motivated them to assume responsibility over time. These findings add strength to the earlier study of Knafl et al. (1992), which described support for a similar relationship by talking directly with the child and “treating them like a person.” This desire for the patient-provider relationship to shift in line with the developmental stage was also described by young adults with diabetes (Dovey-Pearce, Hurrell, May, Walker, & Dougherty, 2005).

Parents voiced the need for systems and structures that support a true relationship with their provider. Consistency and continuity of care over the years was deeply valued by parents in this study. Several authors support this same ideal (Paterson, 2001; Richards et al., 2006). Parents in this study also discussed time issues, including the importance of the provider respecting their time in terms of timeliness of appointments, availability of appointments, and accessibility by telephone. These findings add to those found by Thorne et al. (2004), who found that basic courtesy was related to timeliness, and Paterson (2001), who identified time as an
essential component of a good patient-provider relationship in which time was interpreted in the broadest sense to include duration of relationship, the pace and duration of visits, and waiting time for appointments.

The final theme, engaging families as partners, detailed a level of collaboration between the health-care provider and the parent marked by mutual respect and trust. A successful partnership greatly impacted the parents’ self-confidence, attitude, and overall ability to live well with diabetes. Initially, parents preferred to discuss concerns and make plans for diabetes management in collaboration with their health-care provider. Over time, many parents wanted to make most decisions independently or in collaboration with their provider. To feel empowered, parents needed to be informed and to be respected for their expertise gained from the lived experience with diabetes. These findings extend upon current literature by relating the unique partnership between parents and providers in managing a child’s chronic illness. This theme of mutual respect was reflective of previous work with chronically ill adults in Thorne’s (2006) study, who expressed a need for providers to respect their inherent expertise in regards to their illness.

Some parents offered insight into experiences with health-care providers in which they felt disempowered, alienated, and negated. This often resulted from the provider’s expectation that the family be passive compliers with a given treatment recommendation or when a provider disagreed with how a parent managed their child’s diabetes. Again, this finding speaks in particular to the relationship between parents and providers. Similarly, adult participants with type 1 diabetes in Paterson’s (2001) self-care study expressed a comparable feeling of disrespect when practitioners discounted the participant’s experiential knowledge and failed to provide them with the knowledge and resources necessary for informed decision making.

Advances in the management of diabetes including new types of insulin, insulin pumps, and blood glucose sensors offer the potential for improved diabetes control and lifestyle flexibility. Many parents successfully embrace these new technologies in an effort to improve their child’s quality of life and diabetes outcomes. However, parents in this study are telling clinicians to not lose sight of the fact that the quality and character of the relationship that they have with their clinicians is at the heart of what enables them to “live well” with diabetes. Earlier seminal works (Knafl, et al., 1992; Thorne & Robinson, 1988; Robinson & Thorne, 1984), which were conducted when routine diabetes care was much less sophisticated than present day, is as relevant to clinicians today as it was when it first was published.

Limitations to the Study

The intention of this study was to provide a broad overview of parents’ perceptions of provider care in a diabetes clinic. Data were analyzed with no set preconceptions to allow themes and issues to surface in the reading. It may be interesting to analyze parent perceptions from different perspectives such as time trajectory from diagnosis, age of the child, or level of diabetes control. Such analyses may provide a deeper understanding of the parent-provider relationship in the care of children with diabetes.

Clinical Implications

The purpose of this research was to hear parents’ perspectives regarding how health-care providers can best support families and help them to “live well” with diabetes. First, parents spoke about how the provider conducted themselves in the outpatient clinic. While understanding the many constant demands placed on the clinician, parents appreciated the provider who was able to disregard the distractions of a busy clinic in order to be present for them and mindful in their interaction. Parents valued the provider who was truly curious and worked hard to get to know their child and family; they wanted to be known in terms of who they were, what they did, what was important to them, and what their life was like in general and with diabetes. Parents respected providers who educated them to make informed decisions and worked with them to develop a treatment plan that fit their family lifestyle. Many parents ultimately wanted to partner with providers to help them figure out how to live with diabetes rather than giving them prescribed textbook recommendations about diabetes. Lastly, they wished for systems and structures that made clinic visits efficient, convenient, and comfortable. While these findings focus on parent-provider relationships in general, these findings have great applicability to nursing as many advanced practice nurses are the main health-care provider for children with chronic illness.

Appendix A. Interview Guide (Lead Probes)

From the focus groups and the survey, it is clear to us that many families believe that the diabetes team can make a difference in how well your child and family does with diabetes. Talk to me about what the team does right and what they do wrong. Be as specific as you can.

1. The parents told us that the diabetes team had to better understand that families live with diabetes 24 hours a day and 7 days a week. What do you think they were trying to tell us here?
2. Do you feel the diabetes team knows/understands the issues in your family’s life?
3. We learned from the survey that families want us to know more about them than just their diabetes. Tell me about your child and family. If the diabetes team knew these things, what do you think would be different in terms of managing diabetes?
4. It makes a big difference to families if the diabetes team does not judge or blame the family when the
child’s diabetes control is poor. Has there been a time when this happened to you? Describe what happened. What would have been more helpful?

5. We know you live with diabetes all of the time, and we also know that you see us only 4 times a year. Tell me what we could do that would be helpful at your visit when the diabetes is out of control? Or not going well? When things are going well, what do you get out of the visits?

6. How would you describe the relationship that your child has now with the members of the diabetes team?

7. How would you describe the relationship that you have now with the diabetes team? How would you like it to change?

8. We learned from the survey that many families believe it makes a big difference if the diabetes team knows how to deal with the child’s emotions and attitudes when he/she becomes a teenager. What do you think parents here were concerned about?

9. Has there been a time when you disagreed with the diabetes team’s expectations of you and/or your child about diabetes management?

10. Has there been a time that you felt disrespected while in the Diabetes Center?

11. It makes a big difference to families if the Diabetes Team treats all patients equally, no matter what race or culture. Do you think there is a problem with unequal treatment in the Diabetes Center?

12. Many families told us that it makes a big difference if the diabetes team keeps them up to date about new treatment and gives them information and choices. How has the Diabetes Team been a resource for you, and how can the Diabetes Team improve?

References


Type 2 diabetes is more common in African Americans, Hispanics/Latinos, American Indians, and Asian Americans and Pacific Islanders. For more information, visit us at www.diabetes.org or call 1-800-DIABETES.

ARE YOU AT RISK FOR TYPE 2 DIABETES?

Diabetes Risk Test

1. How old are you?
   - Less than 40 years (0 points)
   - 40—49 years (1 point)
   - 50—59 years (2 points)
   - 60 years or older (3 points)

2. Are you a man or a woman?
   - Man (1 point)
   - Woman (0 points)

3. If you are a woman, have you ever been diagnosed with gestational diabetes?
   - Yes (1 point)
   - No (0 points)

4. Do you have a mother, father, sister, or brother with diabetes?
   - Yes (1 point)
   - No (0 points)

5. Have you ever been diagnosed with high blood pressure?
   - Yes (1 point)
   - No (0 points)

6. Are you physically active?
   - Yes (0 points)
   - No (1 point)

7. What is your weight status? (see chart at right)

Write your score in the box.

Add up your score.

If you scored 5 or higher:
You are at increased risk for having type 2 diabetes. However, only your doctor can tell for sure if you do have type 2 diabetes or prediabetes (a condition that precedes type 2 diabetes in which blood glucose levels are higher than normal). Talk to your doctor to see if additional testing is needed.

Lower Your Risk
The good news is that you can manage your risk for type 2 diabetes. Small steps make a big difference and can help you live a longer, healthier life.

If you are at high risk, your first step is to see your doctor to see if additional testing is needed.

Visit diabetes.org or call 1-800-DIABETES for information, tips on getting started, and ideas for simple, small steps you can take to help lower your risk.

Type 2 diabetes is more common in African Americans, Hispanics/Latinos, American Indians, and Asian Americans and Pacific Islanders.

For more information, visit us at www.diabetes.org or call 1-800-DIABETES

Visit us on Facebook
Facebook.com/AmericanDiabetesAssociation
1. What is diabetes? (choose all that apply)
   a. Means that your body produces too much insulin
   b. Means that your body produces too much sugar
   c. **Means your body does not produce any insulin**
   d. **Means that your body does not produce enough insulin**
2. Normal blood sugar is __________________________.
   a. Between 80-120
   b. Between 40-70
   c. Between 130-160
   d. Between 1-40
3. What are some things that the nurse must think about when working with a young adult? (choose all that apply)
   a. Eating habits
   b. Alcohol intake
   c. Exercise habits
   d. Relationships
4. Insulin can only be given in the right and left arm muscle. True_____/False_____
5. If you are the nurse who is working with patients with diabetes you need to make sure that you understand how the __________________________ works.
   a. Liver
   b. Stomach
   c. Pancreas
   d. Intestines
6. The nurse working with the diabetic patient needs to ask questions about (Choose all that apply)
   a. How the patient is feeling
   b. How the family is doing
   c. How comfortable the patient is giving injections
   d. How the patient is doing taking the pills
7. Hypoglycemia means
   a. High blood sugar
   b. Low blood sugar
   c. No insulin
   d. Too much insulin
8. Describe two ways the nurse can help the diabetic patient manage his/her diabetes.
   1. __________________________________________
   2. __________________________________________
   1. __________________________________________
   2. __________________________________________
10. A six year old child is usually diagnosed with type ______ of diabetes?
**Session 4: Case Study Robert Hernandez**

Robert Hernandez is a 20 year old young Hispanic man who has diabetes. He has had diabetes type 2 since he was a teenager but now he has some new challenges since becoming a young adult. His blood sugar readings are too high and his doctor wants to put him on more medication. He has asked you, his nurse, to help him get more control of his diabetes. Read this scenario and think of some ways that a nurse might help Robert handle some of his challenges with being a diabetic as a young adult.

Robert works for a local radio station as an announcer. He loves his job but he does have to get up very early in the morning to get to his job for his morning show. The good news is that he gets out of his job at about 2pm. He knows that he needs to watch his diabetes, but sometimes it is difficult. Usually he does not have time for breakfast but often someone at the station has brought in something like bagels to eat. He usually eats one. He skips lunch usually and for dinner often has chicken at a fast food restaurant. At night he is hungry and snacks on apples, carrots, cookies, and popcorn. He tells you that he does not like too many fruits and vegetables.

Robert’s activity is “whatever he has time for” in the afternoon. He thinks that exercise would help him control both his weight and his diabetes but he is not sure how to fit it in on a regular basis. He wonders if you might have any ideas. Robert is 6’ tall and weighs 240 lbs. He lives in a small condo within walking distance of the Renaissance Center.

Robert has been told that he might need to begin to take more diabetes medicine. What type of medicine (pills or shots) might Robert need to take? Help him understand how to take both of these and how often to measure his blood sugar.

Robert now has a girlfriend who he really likes. He has not yet told her about his diabetes and is not sure how to tell her this. He is afraid that she will not like him if he tells her he has diabetes. As a nurse, help Robert identify some ways to tell his girlfriend about diabetes. What do you think about Robert’s idea that his girlfriend might not like him if he has diabetes?

Lastly, some of Robert’s friends are going to go out this weekend to celebrate Robert’s 21st birthday. He is very excited but wonders what drinking beer will do to his diabetes. He is also looking forward to his girlfriend making a birthday cake for him. What would the nurse tell Robert about celebrating his birthday with his friends?
Gestational diabetes: what you need to know

On this page: Spanish

- What is gestational diabetes?
- Who can get gestational diabetes?
- How will gestational diabetes affect me and my baby?
- What can I do about gestational diabetes?
- Where can I get more information about diabetes?

Did you know that if you are pregnant, you could develop gestational diabetes?

What is gestational diabetes?

Gestational diabetes is a type of diabetes that develops only during pregnancy. Having diabetes means you have too much glucose, also called sugar, in your blood. Your body uses glucose for energy. Too much glucose in your blood is not good for you or your baby. You can protect your baby and yourself by controlling your blood glucose levels.

[Top]

Who can get gestational diabetes?

Any pregnant woman can get gestational diabetes. Your chances of getting gestational diabetes are higher if you

- are overweight
- have had gestational diabetes before
- have given birth to a baby weighing more than 9 pounds
- have a parent, brother, or sister with type 2 diabetes
- have prediabetes, meaning your blood glucose levels are higher than normal yet not high enough for a diagnosis of diabetes
- are African American, American Indian, Asian American, Hispanic/Latina, or Pacific Islander American
• have a hormonal disorder called polycystic ovary syndrome, also known as PCOS

How will gestational diabetes affect me and my baby?

Gestational diabetes may lead to high blood pressure and too much protein in your urine while you are pregnant. You could also have a large baby and a difficult delivery. You might even need a c-section. Your gestational diabetes will probably go away after your baby is born. However, you will be more likely to get type 2 diabetes later in life. Also, your gestational diabetes may come back if you get pregnant again.

Untreated or uncontrolled gestational diabetes can cause problems for your baby, such as

• being born with a larger than normal body, which can make delivery difficult and more dangerous
• having low blood glucose right after birth
• having breathing problems
• having a higher chance of dying before or soon after birth
• becoming overweight or obese
• getting type 2 diabetes later on

What can I do about gestational diabetes?

Ask your doctor about getting tested for gestational diabetes. If you have gestational diabetes, you can

• talk with your doctor about what your blood glucose numbers should be.
• follow the healthy eating plan that you make with your health care team.
• be physically active—aim for 30 minutes most days of the week. Talk with your doctor about the type of activity that is best for you.
• take insulin shots, if needed. Insulin will not harm your baby.

Where can I get more information about diabetes?

National Diabetes Education Program
1 Diabetes Way
Session 5: Case study of Ruth Anne

Ruth Ann is expecting her first child. Ruth is 30 years old and has been pursuing her career as an engineer. She and her husband are very excited about this pregnancy and look forward to welcoming a baby boy into their family in September. Ruth plans to take 6 weeks off after the delivery before she returns to work full-time. She and her husband have looked into daycare options already and have several possible choices.

Ruth Ann just completed her 7th month of pregnancy. Her nurse midwife told her today that her blood sugar was very high and diagnosed gestational diabetes. She was put on insulin and told that she needed to watch her food choices through the rest of her pregnancy. She will have to monitor her blood sugars carefully. She may need to adjust her work schedule in the next 2 months of her pregnancy.

Ruth Ann and her husband are devastated by this news. What can the nurse do to help Ruth Ann and her husband manage this new situation in her pregnancy?

Ruth Ann and her husband do not understand how this could have happened to them. They do not understand “gestational diabetes”. As the nurse please explain “gestational diabetes”.

What can the nurse do to help Ruth Ann and her husband prepare for the birth of their son?
Introduction

• For nurses, diabetes mellitus, whether gestational or pregestational, represents one of the most challenging medical complications encountered in pregnancy.
• A comprehensive and multidisciplinary approach is required to improve maternal and neonatal outcomes.
Incidence and Significance

- In the United States, 23 million people (8 percent of the total population) have diabetes (CDC, 2008).
- Women over age 20 account for more than half of the individuals with diabetes in the United States; only 25 percent of these women are aware that they have the disease (ADA, 2009a).
Incidence and Significance (Continued)

- The prevalence of diabetes is 2 to 4 times greater for non-Hispanic black, Hispanic/Latino American, American Indian and Asian/Pacific Islander women than for non-Hispanic white women (CDC, 2008).
- Factors that contribute to the increasing prevalence of diabetes are the aging population, urbanization, the obesity epidemic and physical inactivity (Hunt & Schuller, 2007).
Incidence and Significance (Continued)

• A significant factor contributing to the development of diabetes and obesity is exposure to hyperglycemia in the intrauterine environment.
• Pregnancies complicated by diabetes are at increased risk of perinatal morbidity and mortality.
Definition and Classification of Diabetes Mellitus

- Diabetes mellitus is a metabolic disorder caused by defects in insulin secretion or action, which lead to abnormalities in the metabolism of carbohydrates, lipids and protein (ADA, 2008a).
- Chronic hyperglycemia associated with diabetes causes tissue damage in all organ systems.
Type 1 Diabetes

- An immune-mediated disorder characterized by destruction of the beta cells of the pancreas, which leads to an absolute insulin deficiency
- Accounts for 5 percent to 10 percent of all diabetes and 1 percent of diabetes in pregnancy (ADA, 2008 a; Lethbridge-Cejku et al., 2004)
Type 2 Diabetes

• Is the most prevalent form of diabetes, accounting for 90 percent to 95 percent of cases (CDC, 2008)
• Is a disease of insulin resistance and relative insulin deficiency
• Can be controlled with lifestyle modification and oral medications
Gestational diabetes mellitus (GDM)

- Any degree of glucose intolerance with onset or first recognition during pregnancy
- Accounts for 90 percent of all pregnancies complicated by diabetes; prevalence ranges from 1 percent to 14 percent, depending on the population

(ADA, 2008a)
Metabolic Alterations of Pregnancy

- During the first trimester, fasting blood glucose decreases because of insulin production, and sensitivity slightly increases (Catalano, Huston, Amini & Kalhan, 1999).
- By the end of the first trimester, insulin sensitivity decreases, with a responding increase in insulin production; this change creates the diabetogenic state of pregnancy.
Metabolic Alterations of Pregnancy (Continued)

• Euglycemia is maintained in pregnancy because the pancreatic beta cells produce enough insulin to counteract increasing insulin resistance (Richardson & Carpenter, 2007).

• In pregnant women, hepatic glucose production is 1.3 times higher than it is in nonpregnant women (Lain & Catalano, 2007).
Perinatal Implications of Diabetes

- Fetal growth abnormalities most frequently seen in women with pregestational or gestational diabetes are macrosomia and IUGR.
- Poorly controlled diabetes, whether pregestational or gestational, increases the risk of RDS in the infant.
• The risk of neonatal hypoglycemia, hyperbilirubinemia, hypocalcemia, hypomagnesemia and polycythemia is increased in infants born to women with diabetes who have suboptimal glycemic control during the third trimester (Ogata, 2008).
Screening and Diagnosis of GDM

- Major differences exist in guidelines for the diagnosis and treatment of GDM and for postpartum screening in women diagnosed with GDM (Jovanovic, 2008b).
- GDM can be diagnosed when pancreatic beta cells fail to produce enough insulin to maintain euglycemia, resulting in hyperglycemia.
Screening and Diagnosis of GDM
(Continued)

• Women are assessed for GDM at the first prenatal visit. High-risk women are tested as soon as possible; women of average risk receive the GCT at 24 to 28 weeks.

• Women at high risk for GDM (ADA, 2008a):
  - Marked obesity
  - Personal history of GDM
  - Glycosuria
  - Strong family history of diabetes
• In the United States, providers test for GDM in one or two steps, based on level of risk and economic factors.

• A fasting plasma glucose of 126 mg/dl, or a random plasma glucose of 200 mg/dl, is diagnostic for GDM and requires no further testing (ADA, 2008a).
Antepartum Care

- The initial assessment of women with preexisting diabetes, whether done before or early in pregnancy, includes a thorough medical and obstetric evaluation.
- Evaluation includes:
  - A complete health, obstetric, gynecologic and diabetes history
  - A physical examination
  - Laboratory tests
Self-monitored Blood Glucose (SMBG)

- The most important parameter used to determine the level of metabolic control is evaluation of SMBG levels.
- Professional organizations have yet to agree on glycemic thresholds and timing and frequency of testing.
To determine the effectiveness of the diet in controlling blood glucose, women with GDM or diet-controlled type 2 diabetes that is managed by medical nutrition therapy (MNT) should initially test when fasting and then 1 hour postprandially.

Preprandial and postprandial measurement of blood glucose allow for accurate and safe adjustment of insulin.
Continuous Glucose Monitoring Systems (CGMS)

- A temporary sensor implanted subcutaneously makes it possible to measure glucose in the interstitial fluid.
- CGMS cannot replace SMBG; they can, however, provide more information on the diurnal variation in blood glucose than SMBG.
Indications for use of CGMS in pregnancy:
- Frequent episodes of hypo- or hyperglycemia
- Diabetic ketoacidosis
- Lack of correlation between reported blood glucose and A1C
Urine-ketone Testing

- To ensure adequate intake ruling out starvation ketosis, pregnant women should test urine for ketones daily from the first void.
- Hyperglycemic levels >200 mg/dl warrant ketone testing.
- Hyperglycemia and ketosis may indicate an infection and should be evaluated thoroughly.
Record Keeping

• Accurate records of blood-glucose levels, urine-ketone testing, dietary intake, timing and dosage of insulin, and activity level allow for appropriate adjustment of the diabetes regimen.

• To detect falsification or over- or under-reporting, the nurse periodically correlates logged values to the meter memory.
Medical Nutrition Therapy (MNT)

- MNT by a registered dietitian is the cornerstone for diabetes management in women with pregestational and gestational diabetes.
- The nutritional management of women with preexisting and gestational diabetes does not differ and has the same therapeutic goals: adequate nutrition and weight gain, plus prevention of ketosis and postprandial hyperglycemia.
MNT (Continued)

- After a thorough assessment, the dietitian and the woman develop an individualized meal plan to achieve desired treatment goals.
- The dietitian and the woman examine and discuss lifestyle influences that have a bearing on MNT.
The diet for a pregnant woman with diabetes includes at least 175 g of carbohydrate, 28 g of fiber and 1.1 g of protein per kg/day (Reader & Thomas, 2008).

All pregnant women should take a prenatal vitamin with 600 mcg of folic acid daily (IOM, 1998).

All pregnant women should limit caffeine to 200 mg/day (March of Dimes, 2008).
Exercise

- Exercise may be beneficial for women with diabetes for metabolic control and well-being.
- The health care provider must thoroughly evaluate diabetes-associated complications before the woman begins or continues an exercise program during pregnancy.
- Vascular disease precludes exercise during pregnancy.
Exercise (Continued)

- Before exercising, the woman should check blood glucose and urine ketones:
  - If blood sugar is $\geq 250$ mg/dl and if ketones are positive, she should delay exercise.
  - If blood sugar is $<250$ and ketones are moderate, she should call her provider.
  - If blood sugar is $>250$ and ketones are negative, she can exercise.

(Harris & White, 2005)
In women with type 1 diabetes, exogenous insulin concentrations do not fall during exertion, and the usual increase in hepatic glucose production does not occur (Carpenter & Gabbe, 2004).

Frequent monitoring of blood glucose before, during and after exercise improves safety and allows for early detection of hypoglycemia and prompt intervention.
Pharmacologic Therapy: Pregestational Diabetes

- Women with type 2 diabetes controlled by oral antidiabetes agents who become pregnant should discontinue these agents and begin insulin therapy (ADA, 2008b).
- When a pregnant woman has type 1 diabetes, she should review all aspects of insulin administration with the nurse.
Pharmacologic Therapy: Pregestational Diabetes (Continued)

- Women with pregestational diabetes, particularly type 1, are prone to hypoglycemia and may have hypoglycemia unawareness (Herman & Kitzmiller, 2008).
- The nurse reviews the increasing insulin requirements of pregnancy and advises the woman that the dosage at the end of pregnancy increases dramatically and warrants weekly adjustments.
Pharmacologic Therapy: GDM

• When MNT and exercise do not achieve glycemic control, insulin is indicated.
• Euglycemia is best achieved when insulin therapy is prescribed in a physiologic basal bolus pattern.
• Neutral protamine of Hagedorn (NPH) is the only basal insulin approved for use during pregnancy (Brown & Jovanovic, 2008).
Pharmacologic Therapy: GDM (Continued)

- Dosage and timing of insulin are based on the results of SMBG and calculated based on the woman’s weight and gestational age.
- Physiologic administration of insulin requires three to four injections daily, with 50 percent to 60 percent of the total daily dose (TDD) as the basal insulin.
Pharmacologic Therapy: GDM
(Continued)

- Oral antidiabetes medications have been studied during pregnancy but are not yet approved for use.
- Both glyburide and metformin have been used successfully under research protocols.
Pharmacologic Therapy: CSII

- Continuous subcutaneous insulin infusion (CSII or insulin pump therapy), consists of a syringe or cartridge filled with short- or rapid-acting insulin that is connected to a catheter inserted into subcutaneous tissue.
- The pump is programmed to dispense a continuous infusion of basal insulin.
Pharmacologic Therapy: CSII
(Continued)

- Indications for CSII include:
  - Difficult-to-control diabetes
  - History of recurrent hypoglycemia
  - Lifestyle or work schedule that warrants flexible insulin therapy
  - Desire for pump therapy
Pharmacologic Therapy: CSII  
(Continued)

- Pregnant women may safely begin CSII as outpatients as long as they check their blood glucose before and after meals and, if necessary, during the night.
- Access to local medical care and the ability to recognize symptoms of hypoglycemia and ketoacidosis are necessary for safe CSII.
Pharmacologic Therapy: Hypoglycemia

- Intensive metabolic management during pregnancy carries an increased incidence of hypoglycemia.
- Hypoglycemia can be caused by too much insulin, inadequate food intake, vomiting or increased activity.
- Symptoms of hypoglycemia are individualized and can change over time as hormonal counterregulatory function becomes impaired.
Pharmacologic Therapy: Hypoglycemia (Continued)

• If a woman has frequent incidents of hypoglycemia, the nurse explores her adherence to and understanding of the diabetes regimen, any psychosocial dysfunction and possible hypoglycemia unawareness.

• Family members and significant others must know how to administer glucagon if the women is unconscious.
Acute Complications: Preterm Labor

- The incidence of preterm birth is increased in women with GDM and more significantly increased (relative risk of 7) in women with preexisting diabetes that is uncontrolled (Jensen et al., 2004, Leperca et al., 2004; Rosenberg et al., 2005).
- Vascular disease, hypertensive disorders and obesity contribute to the increased risk of preterm birth in women with diabetes.
• The effect of 17P on glucose metabolism in women with diabetes to prevent preterm labor has not been thoroughly studied.

• Women with diabetes who present with preterm labor are evaluated and managed in the same manner as women without diabetes, with particular attention to maintaining euglycemia.
Providers must be careful when using tocolytics to treat preterm labor in women with diabetes. Commonly used tocolytics for these women include:

- Magnesium sulfate
- Prostaglandin synthetase inhibitors
- Beta adrenergic agonists
- Calcium channel blockers
Acute Complications: Preterm Labor (Continued)

- Antenatal glucocorticoids are indicated in gestations from 24 to 33 weeks to (ACOG, 2002a):
  - Enhance fetal lung maturation
  - Reduce the risk of RDS, intraventricular hemorrhage and death
- Use of corticosteroids results in hyperglycemia in women with diabetes; the condition is treated aggressively with insulin usually for several days.
Acute Complications: Diabetic Ketoacidosis (DKA)

- DKA is an uncommon, but life-threatening, complication associated with pregestational diabetes.
- It occurs in 1 percent to 4 percent of pregnancies affected by PGD (Schneider et al., 2003).
- An absolute or relative insulin deficiency causes DKA.
Acute Complications: DKA (Continued)

- DKA occurs more often in women with type 1 diabetes, but it can occur in women with type 2 diabetes. It does not occur in women with GDM.
- Women in DKA are managed in a critical-care unit with obstetric involvement.
- The focus of DKA prevention is education of the pregnant woman.
Chronic Complications: Retinopathy

- Diabetic retinopathy, the leading cause of blindness between ages 24 and 64, is the most common vascular complication in pregnancy (Brown & Jovanovic, 2008).
- Development in pregnancy is rare; however, the rate of progression doubles in pregnancy (Brown & Jovanovic, 2008).
- Postpartum regression of diabetic retinopathy usually occurs and warrants close follow-up.
Chronic Complications: Nephropathy

- Diabetic nephropathy is a progressive disease that affects 20 percent to 40 percent of individuals with diabetes and 5 percent to 10 percent of all pregnancies (ADA, 2008a; Carr et al., 2006).
- Without intervention, end-stage renal disease (ESRD) results.
Chronic Complications: Nephropathy (Continued)

- Management during pregnancy involves attainment of glycemic control, with frequent SMBG to detect episodes of hypoglycemia.
- Control of hypertension improves perinatal outcome.
- Monitoring of serum creatinine provides an indirect measure of GFR.
Chronic Complications: Nephropathy (Continued)

• For women with overt nephropathy, a registered dietitian is consulted to help restrict daily protein intake.

• Nephropathy significantly affects perinatal morbidity and mortality; it increases the risk of preeclampsia, nephrotic syndrome, preterm birth, stillbirth and fetal growth restriction (Khoury et al., 2002).
Chronic Complications: Neuropathy

- Diabetic neuropathies cause damage to the peripheral motor, sensory and autonomic nerves; individuals with type 1 and type 2 disease are affected (ADA, 2008b).
- Pregnant women face an increased risk of neuropathy directed at the gastrointestinal and cardiovascular systems. Pregnancy does not appear to accelerate neuropathy progression.
Chronic Complications: Neuropathy (Continued)

- The goal of treatment is stable and optimal glycemic control, which may improve neuropathic symptoms.
- Painful symptoms require pharmacologic intervention.
Chronic Complications: Gastroparesis

- Gastroparesis involves autonomic neuropathy of the viscera, causing decreased innervation of the stomach and intestines.
- Preprandial and postprandial blood-glucose testing are recommended to detect hyperglycemia and hypoglycemia (Funnel & Feldman, 2003).
Chronic Complications: Gastroparesis (Continued)

- Maternal and fetal morbidity is high because of difficulty in maintaining adequate nutrition; hospitalization and total parenteral nutrition often are required.
- Diagnosing gastroparesis requires tests that evaluate and measure the stomach’s neuromuscular activity.
Chronic Complications: Cardiovascular Autonomic Neuropathy (CAN)

- CAN may lead to cardiac arrhythmias, silent myocardial ischemia and painless infarction (Rosenn, 2008).
- Women who lack adrenergic signs of low blood glucose (sweating, palpitations, anxiety or nervousness) have hypoglycemia unawareness, which may be an indication of autonomic neuropathy.
Chronic Complications: Cardiovascular Disease (CVD)

- CVD carries a significant risk for maternal mortality.
- Treatment involves modifying risk with smoking cessation and managing risk of hypertension, dislipidemia and hyperglycemia while avoiding hypoglycemia (Paramsothy & Knopp, 2008).
- Cardiac monitoring in labor is recommended, and an epidural is advised (Paramsothy & Knopp, 2008).
Chronic Complications: CVD (Continued)

• Peripheral vascular disease (PVD) is a common finding in long-standing diabetics who smoke.
• The incidence of PVD in women of reproductive age ranges from 2 percent to 12 percent (Hillier & Padula, 2003).
• Absence of peripheral pulses is an indication of PVD; this is more common in women with type 2 diabetes than in type 1 (Vinicor, 2003).
Maternal Surveillance: Pregestational Diabetes

- A comprehensive antepartum assessment includes a history, physical exam and laboratory evaluation at the first prenatal visit.

- Providers should see women who require frequent insulin adjustments weekly or twice weekly; they should see women who achieve a higher level of metabolic control every other week.
Maternal Surveillance: Pregestational Diabetes (Continued)

- Nursing surveillance of women with pregestational and gestational diabetes:
  - Take vital signs.
  - Check the woman’s weight.
  - Test urine for protein, glucose and ketones.
  - Review the self-management log.
  - Inspect injection sites for bruising, infection and atrophy.
Maternal Surveillance: GDM

- If diagnosed in the first trimester, providers should monitor women with GDM similarly to how they monitor women with preexisting diabetes.
- Women diagnosed with GDM at 24 to 28 weeks require weekly visits to evaluate the level of glycemic control.
- Women who initiate insulin may need more frequent visits.
Fetal Surveillance

• ACOG (2005) recommends fetal testing in women with pregestational diabetes between 32 and 34 weeks.

• Ultrasound
  - Early ultrasound confirms viability and provides accurate dating.
  - In second or third trimester, serial ultrasounds can assess growth and detect macrosomia or IUGR.
Fetal Surveillance (Continued)

- Maternal serum screening—Offered in the late-first trimester to screen for neural tube defects (NTDs) and chromosomal abnormalities (Conway & Catalano, 2008).
- Fetal anatomical surveys—Offered to all women with type 1 or 2 diabetes between 18 and 22 weeks gestation. Should include echocardiography.
- Fetal movement count—A noninvasive way to evaluate fetal well-being in high-risk pregnancy; a decrease in perceived fetal activity warrants further exploration by NST or BPP.
Fetal Surveillance (Continued)

- Nonstress test (NST)—An electronic fetal monitor records fetal heart rate and uterine activity.
- Biophysical profile (BPP)—An ultrasound that measures fetal breathing, gross body movements, fetal tone and amniotic fluid volume.
- Contraction stress test (CST)—Has some risk of initiating labor because nipple stimulation and low-dose oxytocin induce contractions.
Indications for Delivery in Pregnant Women with Diabetes

- Poorly controlled blood glucose
- Abnormal fetal testing
- Fetal growth restriction
- Deterioration of vascular complications
- Significant macrosomia

(Dudley, 2007)
Intrapartum Care

- On admission, the nurse takes a comprehensive and detailed obstetric and diabetes history.
- The nurse uses continuous electronic fetal monitoring in laboring women.
- The woman should receive a thorough explanation of pain relief options, ideally before the onset of labor.
Indications for Increased Surveillance During Labor

- Macrosomia
- Growth restriction
- Abnormal (low or high) level of amniotic fluid
- Uncontrolled blood glucose
- Elevated A1C
- Frequent hospital admissions during pregnancy
- Little or no prenatal care
Intrapartum Care: Monitoring Blood Glucose

- Blood-glucose levels are maintained during labor at <110 mg/dl to reduce the risk of maternal and fetal hyperglycemia, which can lead to neonatal hypoglycemia (ACOG, 2005).

- The nurse assesses urine ketones with each void when blood glucose is >200 mg/dl or every 4 hours when blood glucose is within the target range.
Intrapartum Care: Intravenous Fluid Therapy

• The nurse obtains intravenous access soon after a woman’s admission to allow for hydration and insulin administration.

• Most women with diabetes who have an anticipated labor of 6 to 8 hours require an intravenous solution containing dextrose administered hourly at a rate of 100 ml to 150 ml (Jovanovic, 2004b).
Intrapartum Care: Insulin Management

• Women with type 2 diabetes or GDM may not require insulin in labor, even if they were insulin-dependent during pregnancy.
• All women with type 1 diabetes require insulin in labor.
• Insulin is administered per institution protocol or physician preference.
Intrapartum Care: CSII

- CSII can be continued safely during hospitalization for vaginal and cesarean birth.
- The nurse determines all pump settings on admission and documents them in the chart.
- CSII infusion sites should be changed every 48 to 72 hours to prevent infection.
Intrapartum Care: Neonatal Considerations

• Most infants of mothers with diabetes have an uncomplicated perinatal course, but the risk for adverse outcomes is higher than for infants born to mothers who do not have diabetes.

• Because full neonatal resuscitation may be required, the nurse should check all necessary equipment in advance and ensure its immediate availability.
Intrapartum Care: Neonatal Considerations  (Continued)

- Neonatal hypoglycemia is a risk in the first 48 hours of life and requires close monitoring and early intervention to prevent serious complications.
- A thorough physical examination after birth involving all organ systems is essential to identify malformations that were not detected prenatally.
Risks for offspring:

- RDS
- Neonatal hypoglycemia
- Congenital defects
- Birth injury
- Impaired glucose tolerance
- Type 2 diabetes
- Obesity
Intrapartum Care: Neonatal Considerations (Continued)

- Breastfeeding appears to modify the risk of developing type 2 diabetes and obesity in offspring of diabetic mothers.
- Nurses play a pivotal role in educating women about the lifelong risk of diabetes and obesity in their offspring.
Postpartum Care Goals

- Encourage women to maintain glycemic control.
- Promote bonding and lactation with the newborn.
- Educate women with GDM about reducing their risk of developing diabetes.
- Educate women with overt diabetes about reducing their risk of diabetes-associated complications.

(Inturrisi et al., 2008; Kjos, 2007)
Postpartum Care

• Immediately after birth, insulin resistance dramatically improves for all women with diabetes.

• Oral antidiabetes medications can be resumed if they are compatible with breastfeeding (Briggs et al., 2005; Feig et al., 2005; Hale et al., 2004; Simmons et al., 2004).

• In women with GDM, blood-glucose monitoring continues until normoglycemia is evident.
Postpartum Care (Continued)

- Most (64.5 percent) women with GDM fail to obtain the recommended postpartum glucose testing, and most (66.7 percent) physicians do not document orders for it (Almario et al., 2008; Hunt & Conway, 2008).
- Because the lifetime risk of developing type 2 diabetes after GDM ranges from 50 percent to 60 percent, annual testing for diabetes is recommended (AACE, 2007; Kjos, 2007).
Breastfeeding

- Insulin requirements for breastfeeding women with pregestational diabetes are usually lower and episodes of hypoglycemia increased than for nonbreastfeeding women with pregestational diabetes.
- Women with diabetes should eat a 15-g carbohydrate snack before or during breastfeeding.
Contraception

- Ideally, the woman considers contraceptive options during pregnancy.
- Providers should address contraception with a woman immediately in the postpartum period.
Contraceptive Options

- Women who breastfeed exclusively without supplementation may use LAM.
- Women with pregestational diabetes and established lactation
  - Progestin-only (21 days postpartum) and combined oral contraceptives (6 weeks postpartum)
  - Progestin-only injectable contraceptives (begin 21 days to 6 weeks postpartum)
  - Intrauterine device (nonhormonal) (6 to 8 weeks postpartum)
  - Barrier methods
Contraceptive Options (Continued)

- Women with diabetes (unstudied options)
  - Progestin intrauterine system
  - Progestin implants
  - Injectable depomethoxyprogesterone acetate
- Breastfeeding women with a history of GDM should avoid progestin-only oral contraceptives and depomethoxyprogesterone acetate.
Summary

With a combined knowledge of diabetes and obstetrics, nurses can provide interventions and support that help ensure healthy outcomes for diabetic women and their infants.
Session 7: Case Study of James Apple

James Apple is a 76 year old Caucasian man who has had diabetes for the past 25 years. Sometimes he has been very careful about his diabetes but usually he has not managed his diabetes well. Often he would eat whatever sounded good to him and he only exercised when his wife told him to. Now James is in the hospital and his high blood sugar levels over the years have caused him some pretty big problems. He needs to have his right leg amputated above the knee. Three weeks ago James noticed a big sore on his right foot. Because he does not have good feeling in his legs, the sore on his foot was very large by the time he noticed that he had it. When he noticed the sore James started to take his blood sugar more often and even started to take his medicine exactly the way he was supposed to. Despite being careful about his diabetes in the last few weeks, the sore kept on getting bigger and creeping up his leg. He went to see his doctor and was admitted to the hospital. Now he has been told that he will need to have his leg removed.

James is very angry. He thinks that it is not fair that he has to have his leg amputated, especially now that he has been good about managing his diabetes. How can the nurse help James to manage his emotions?

James wonders how he will be able to get along without his leg. He wonders if he will have to just stay in his house for the rest of his life. Is James right to feel scared? How can you help James deal with his concerns?

James thinks that there is no longer a reason to take care of himself and manage his diabetes. Explain to James why it continues to be important to manage his diabetes.
Session 7: Interview of diabetic

Introduction: “Hello, my name is __________________________. I am a student in a program at Wayne State University and we are learning about diabetes and how nurses can help patients with diabetes. Would it be OK if I asked you a few questions about your diabetes? “

1. What kind of diabetes do you have?

2. How long have you known that you have diabetes?

3. How did you find out that you had diabetes?

4. How did you feel when you found out that you had diabetes?

5. What did you do to learn about diabetes after you were diagnosed?

6. Give me some ideas of what sorts of things you do to help keep your diabetes under control?

7. What is the hardest part about having diabetes?

8. Why is that hard?

9. What helps you handle this challenge?

10. Tell me what someone without diabetes should know about the life of someone with diabetes.

11. What is one thing that a nurse could do to help you manage your diabetes better?

12. Is there anything else that you would like to share with me about you and diabetes?

Thank you for sharing your experience with diabetes with me.
1. What is gestational diabetes? (Choose all that apply)
   a. A condition that every woman gets when they are pregnant
   b. A condition that only affects the mom and not the baby
   c. A condition that some women get during pregnancy
   d. A condition that affects the mom and the baby

2. What are all of the ways that you have learned to decrease your risk of diabetes?
   a. ____________________________________________________
   b. ____________________________________________________
   c. ____________________________________________________
   d. ____________________________________________________

3. Which of the following would the nurse use when teaching a diabetic patient about foot care? (Choose all that apply)
   a. a mirror
   b. a monofilament
   c. a stethoscope
   d. a glucometer

4. What are some of the long-term results of not managing diabetes?
   a. blindness
   b. loss of feeling in your legs and feet
   c. amputation
   d. depression

5. What is the most important thing that a nurse does to help patients manage diabetes?
   a. allow patients to talk about their diabetes
   b. allow patients to express frustration and fear about being diabetic
   c. say to the patient that it is too bad your family gave you diabetes
   d. say to the patient that they can never eat anything sweet again

6. If the mother has diabetes the unborn child will have diabetes. True____/False_______
7. Name some challenges that the diabetic patient faces after he/she hears that a leg must be amputated?

1. _____________________________________________
2. _____________________________________________
3. _____________________________________________

8. When is it important for a diabetic to monitor their blood sugar?

   a. when they eat sweets
   b. before they exercise
   c. when they have complications, such as sore on their foot
   d. when they are on vacation

9. The nurse only helps diabetic patients in the hospital. True_______/False_______

10. What would be the best breakfast choice for a diabetic patient?

   a. Frosted flakes with skim milk
   b. McDonald’s Egg McMuffin and orange juice
   c. Wheat toast with peanut butter and banana and black coffee
   d. Bacon, 2 eggs, hash browns and grits with apple juice
Session 8 - Patient Scenarios (to be drawn from a hat and role played)

1. Louise is a 7 year old who has just been diagnosed with diabetes type 1. Explain to her and her parents what diabetes type 1 is and what they can do as a family to help manage it.

2. You have just been diagnosed with type 2 diabetes. Will you tell your friends? What can a nurse say to you to help you feel better?

3. Maria is a senior in college and has just been told at the campus health center that her blood sugar is very high (250). She has been told by the nurse practitioner that she will need to watch her diet. As her nurse, help Maria identify foods to have and foods to avoid for a typical breakfast, lunch and dinner.

4. Your grandfather and has had diabetes since he was 20 years old. He is having difficulty with feeling in his foot and is experiencing changes in his vision
(reading, watching TV, driving). You are concerned that he has not been managing his diabetes well. What kinds of things can you suggest for him?

5. Najeh is a 30 year old Middle-Eastern woman with diabetes. She has been invited to her friend’s big wedding where there will be champagne and dancing. Najeh has been asked to do a toast to the bride and groom and help serve the wedding cake. What challenges will Najeh face at the wedding related to her diabetes and how should she handle them?