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Reflections on Southwestern Diabetic Foundation Internship

Honors Thesis/Project

Katherine N. Hamilton

University of Arkansas

Introduction

I chose to complete an experiment-based course in order to conduct my honors project by designing an internship with the Southwestern Diabetic Foundation. The internship can be broken down into an orientation period, an immersive period, and educative preparation period as well as a telehealth period. This internship allowed me to fully immerse myself in the world of my patients, as for nine of the weeks I worked, I was responsible for children with diabetes around the clock. It also challenged me to adapt to telehealth educational programming as this internship was impacted by the COVID-19 pandemic in 2020. I completed my internship with the Southwestern Diabetic Foundation over two periods of time, May 2019 -August 2019 and March 2020 through July 2020, totaling 2,084 hours over the course of my internship, including forty hours of telehealth programming. I worked along other nursing students, medical students, nurses, and physicians. This position helped me to sharpen my assessment skills, therapeutic communication, and interdisciplinary collaboration, all of which will vastly improve my nursing practice in the future.

Description of Internship

The Southwestern Diabetic Foundation is a nonprofit organization. The foundation operates a summer camp in Cooke County, Texas that serves about 800 children with type one diabetes every year. Camp Sweeney is divided into three twenty day sessions throughout the summer, with about 260 children at each session. I was placed in a cabin with a little over thirty female campers from the ages of eleven to fourteen years old. I worked in a team of nine women consisting of students studying various healthcare roles. We were supported by a medical staff, physician on call, associate staff, and the camp director, who is also a Medical Doctor (MD). I was directly responsible for a group of four campers and their holistic wellbeing each session. At

the beginning of my internship experience, I attended a two-week-long orientation. This orientation period included diabetes and other health education, team building, and preparation for the children to arrive. For the next nine weeks, I performed primary care and diabetes management for the children in my cabin as well as others throughout various activities. I assisted in the intake assessment of children at the camp's sick call under the supervision of a physician and my site supervisor, Kelly Wilson, Registered Nurse (RN). I was then selected to be a part of the leadership team for the 2020 season, allowing me to extend my internship for the following year. In preparation for the summer of 2020, I began planning my health promotion lessons for the five to eleven year old age group. As the year progressed, it became necessary to move the camp to virtual programming for the summer of 2020, with the exception of a few in person Center for Disease Control (CDC) compliant events. I was able to help with the planning of the first event, on July 4th, 2020. We successfully pulled off the events without the transmission of COVID-19, marking the end of my internship.

Responsibilities

Throughout the course of my internship, I had many different responsibilities. In the summer of 2019, as a member of the general staff, my responsibilities included daily blood glucose, ketone, weight and temperature monitoring. My team and I were responsible for drawing up insulin and reviewing it, as well as observing and assisting the children in their administration of it. I was responsible for aiding in the changing of pump sites and continuous glucose monitors, according to organizational policy. I was also responsible for treating hypoglycemia and hyperglycemia according to the doctor's orders and recording it in the electronic medical record (EMR). If the child had any other medical ailments, I would fill out the referral form for them to go to the camp 'sick call'. Some days, I was responsible for conducting

intake assessments during this sick call, under supervision. This assignment included gathering vital signs, as well as assessing for relieving and aggravating factors. I would record all my findings in the EMR. I also would contact the parents to update them on their child's health status if indicated. Another responsibility I had was to support the children's education about their diabetes by asking them questions and being a resource for them after medical lectures. If there were an emergency, such as a diabetic seizure, I would aid in the treatment protocol under physician's supervision.

When I joined the leadership staff in 2020, I was responsible for the creation of two age appropriate health promotion lessons. Both of these lessons included question and answer segments as well as a PowerPoint (Appendix B & C). I was responsible for creating eighteen questions for each presentation in order to evaluate the learning outcomes of the children. As a consequence of COVID-19, I presented these lessons and evaluated the children's learning outcomes utilizing video calls. To prepare for the first in-person event at Camp Sweeney, I developed a protocol for how to test blood sugars while observing CDC guidelines and clean technique (Appendix A). I also aided in the COVID-19 screening of employees and visitors.

Skills Learned

I learned many skills throughout my internship with the Southwestern Diabetic Foundation. I learned how to create and present engaging medical information for children about complex topics, such as complications and management of type one diabetes. Another skill I learned was how to operate different insulin pumps and continuous glucose monitors - including Omnipod, T:slim, Medtronic, Dexcom and Freestyle systems. I had to become familiar with how to change settings, read alarms and redo the sites. I gained an understanding of the pharmacology of every insulin type on the market, including newly released products, such as Fiasp and

Tresiba. I learned how to stay professional under periods of stress due to caring for so many children with diabetes under strict time deadlines. Also, I learned how to treat a diabetic seizure as well as other medical emergencies such as anaphylaxis. I gained experience in how to effectively relay pertinent medical information about minors to their guardians and in how to communicate with providers about medication discrepancies. The most important skill I learned was how to utilize small moments of routine care and turn them into educational opportunities that would help my patients achieve both their short and long-term goals. I believe that these skills will better my future career as a pediatric emergency department nurse and in many other roles I may pursue in the future.

Project Description

My main goal for this project was to gain a better understanding of children with chronic conditions, and the challenges they face. These physical and emotional challenges are difficult to learn about and understand how to treat from a textbook or case study. Children have different issues and coping mechanisms than adults. As I am pursuing a future in the pediatric field, I wanted to fully immerse myself in these children's treatment to stand apart and be a better nurse for my patients. My site supervisor, Kelly Wilson RN, would point out certain aspects of care that would cross over from my experience in my internship to my nursing career. With the help of her and other medical professionals at the camp, I was able to gain a broader understanding of the different factors that impact care of chronic illness. As rates of diabetes diagnosis continue to increase in this country, I wanted to gain more knowledge and experience in health promotion activities to better serve my clients in the future. Through an intensive two-week orientation, examination, and nine weeks of experience with managing this disease, I was able to become familiar with new innovations in diabetes care as well as proper procedures for the management

of this condition. I was able to create two half hour long health promotion lessons and conduct them using virtual platforms. The obstacles presented by the pandemic helped introduce me to the world of telehealth therapies and how they can further be utilized to provide care safely and effectively. Overall, this experience impacted me beneficially by challenging me to learn, grow and collaborate with others to reach a specific population's health needs.

Literature Review

In *Diabetes camp still matters: Relationships with diabetes specific distress, strengths, and self-care skills*, a nationwide study was done on the psychological benefits of attending a residential diabetes camp for youth. This study consisted of questions before and after attending a program by both the parent and youth. Weissberg, Vesco, and Rychlik, (2019) found that self-efficacy and resilience ratings significantly increased after attending a diabetes camp. Parental ratings were closely correlated to the children's self-ratings, confirming this finding. However, the researchers did not find statistical evidence of an increase in metabolic control as measured by hemoglobin A1C lab values.

This conclusion was confirmed by another study done in the mid-south discussed in *Adolescent Self-efficacy and Resilience In Participants Attending A Diabetes Camp*. Winsett, Stender, Gower and Burghen, (2010, p.293) found that "Self-efficacy and resilience scores were moderately high after attending a one-week camp session". The camp experience was described as "one way to ameliorate the perception of feeling alone with [type one diabetes] (Winsett et al., 2010, p.293)", by older adolescents involved with the program. The authors also did not find statistical evidence of increased metabolic control, stating that further exploration of data is warranted. Winsett, Stender, Gower and Burghen also brought up an important note that with increased levels of diagnosis of type two diabetes and obesity, pediatric endocrinologists and

certified diabetes educators had less time and resources for their patients. Diabetes education is concentrated on newly diagnosed type one diabetics with few resources for children who had already been living with the disease for a while. The researchers posited that diabetes camp presents an opportunity to give these patients the continued education that they need.

In Improved glycemic control in adolescents with type 1 diabetes mellitus who attend diabetes camp, a retrospective study was done using medical records of children who were endocrinology patients at Children's Medical Center Dallas who also were campers at Camp Sweeney. Wang, Stewart, Tuli and White found that patients who did not attend Camp Sweeney had increased Hemoglobin A1C values over time whereas children who attended Camp Sweeney had decreased Hemoglobin A1C levels. The researchers found that campers, and their guardians gave "consistent reports of improved knowledge regarding self-care after diabetes camp" (Wang, Stewart, Tuli & White, 2008, p.9).

The Effects of an Evidence-Based Routine

To further illustrate my project, I will describe a day in the life of one of my patients and describe how a standardized routine has positive effects on those living with type one diabetes. The patient woke up at 0700, and immediately went to the infirmary to test their blood glucose. Next, the child went to check their urinary ketones, and the results were confirmed by a staff member. Then, a different staff member records their temperature and weight. The child proceeded to prepare for breakfast and the morning classes. Per camp policy, the child had to take two active classes in the morning and was allowed one passive class. The child then sat in their specified insulin administration seat with all the other children and systematic insulin administration followed. The children quickly lined up and walked to the dining area for

breakfast, allowing for the insulin to reach its onset time as the child began to eat. After mealtime, the child went to his/her classes for the morning.

The child had a hypoglycemic blood sugar at 10:00 am and was treated with fifteen grams of fast acting carbohydrates, administered by a trained counselor. After the morning classes, the child returned to the cabin to test his/her blood sugar with his/her peers. After the staff logged the blood glucose, the child had the opportunity to change and use the restroom while the staff waited on orders to come back from the medical staff and insulin to be drawn. The child returned to their insulin administration seat and systemic insulin administration followed. Then, the children lined up and went to lunch. After lunch, the children attended their medical lesson of the day, followed by group bonding time in their assigned small group. A staff member fostered the conversation and helped them to understand the information in the medical lesson. After this, the child returned to the cabin and the campers had rest time. Then, the campers tested their blood glucose values again, and got ready for the afternoon activities while the staff members waited for orders and to draw up the insulin. The child took two active classes in the afternoon. Once snack insulin was administered, the child went to the dining area for a 15 grams of complex carbohydrate snack. Then, the children went to their classes. After the child's two active classes, he/she returned to the cabin and had a hypoglycemic reaction and consumed another 15 grams of fast-acting carbohydrates to treat it.

The child then went and got ready for dinner while insulin was drawn. After systemic insulin administration, the child stood in line with his/her peers and went to dinner. The children returned to their cabins in order to prepare for the evening's activity, after eating and social time. The child went to a campfire that night. The child walked with the rest of the cabin to the

campfire, where staff members sprayed the children with bug spray and instructed them on where to go test their blood glucose during the activity. After dancing and singing for two hours, the child tested his/her blood sugar with his/her peers, and the staff members logged this information. The staff members used prescribed sliding scales to adjust the insulin where it was needed and then the child took his/her short and long acting insulins. After returning to the cabin, the child tested his/her blood glucose value with the other campers, showered and got ready for bed at about 22:00.

This structured routine for the child is a result of evidence based practice guidelines. The American Diabetes Association states that “Children and adolescents should have at least 60 minutes or more of physical activity each day” (Exercise and Type One, n.d.). Wang et al. (2008, p.9) states that “Potential contributors to improved metabolic controls are frequent exercise, preplanned meals, diabetes education and a structured self-care environment with supervised insulin injections and blood glucose checks” (Wang et al., 2008, p.9). These interventions along with the creation and utilization of peer support groups help to improve the quality of life for campers at Camp Sweeney. By utilizing evidence-based practice measures in the every-day camp routine, Camp Sweeney is able to change these children’s lives for the better. I am very proud of the work I was able to do through this program and credit my better understanding of the treatment of chronically ill patients to the philosophy of Camp Sweeney.

Challenges

One of the greatest challenges I faced throughout this internship was maintaining emotional boundaries with my patients. When one is fully immersed in a child’s world for three to nine weeks at a time, one grows to care for that child and their wellbeing. Before this experience, I had always been able to leave a clinical assignment and categorize my worries

about my client into a 'clinical box'. Meaning that I did not take those concerns home from the hospital and let them impact my personal life. In this case, when the child's time to leave my care came, I experienced some emotional distress about whether the child would take care of themselves and have enough support or medical supplies to stay healthy for the next year. This anxiety lessened after each session of children left to go home from the camp, however, I still worry about their health and safety on occasion. I believe that this challenge was beneficial to my professional practice, as I will without a doubt have patients whose health I wonder about from time to time. Experiencing this as a nurse intern compared to as a new graduate will help ease my transition to practice experience.

Another challenge that I experienced was time management. The camper's days are very structured so as to be conducive to their diabetes management. This dynamic resulted in some very tight turn arounds in which we had to coordinate blood glucose testing, drawing of insulin, and administering insulin as well as allowing the campers to complete other activities of daily living. There also was not much personal time for the adults as we had to be ready before 0700 to wake up the children and their bedtime was usually not before 2300 or 0000. One was also still responsible for the children if one was sleeping. If a child woke one up to test their blood glucose in the night, one was to test them, treat their blood sugar and chart the result in the EMR. I found the scheduling to be mentally challenging, but it taught me many lessons about time management and staying professional under stress. This learning experience benefited me as there will be days when I work in a hospital when I do not have much time to eat or perform other self-care activities and days I will show up to work not fully rested due to personal life events. I am glad that I have learned how to stay professional early on, as it is a challenge that becomes easier with practice.

Expectations and Goals

My goals going into this internship were to gain more experience with children, to better understand the complex variables of treating a chronic illness and to become proficient in creating health promotion lessons for a pediatric audience. I expected that I would be able to complete these goals, but I was surprised by all of the other lessons I learned along the way. Although, I began the internship with a great deal of knowledge about type one diabetes, I was able to gain new knowledge of different brands of insulin pumps as well as continuous glucose monitors, and the most current evidence based practice guidelines. I was grateful for the opportunity to learn different methods of engaging children in educational lessons about complex ideas. I was proud of my presentations about complications of uncontrolled diabetes as well as interventions for better glucose control. Along the way, I learned how to collaborate with a large multidisciplinary team, deal with large amounts of stress and how to practice compassion while maintaining tight timelines. This experience coupled with the COVID-19 pandemic taught me new skills in adaptation, policy planning, symptom screening and organization. Overall, I have learned so much about how to make a positive impact in the lives of those with chronic illnesses in real world situations, where there are certain obstacles one must overcome in order to meet health goals. I left this internship experience feeling better prepared and comfortable in pediatric patient interactions and more confidence in my interactions with providers and other members of the healthcare team, which can lead to more stress in the new graduate nurse experience. These skills I gained, both expected and unexpected, have some unexpected crossover into my professional practice, and I am very thankful to have learned them prior to graduation.

Analysis of Internship

The Southwestern Diabetic Foundation, as the nonprofit organization that runs Camp Sweeney, has a mission to “build a family that can help support campers through all of the highs and lows of Type One Diabetes” (The Sweeney Difference, 2020). My experience at camp proves this statement to be not only a mission, but a reality. By focusing on encouraging children and aiding them to build relationships with their peers, the children take more ownership of their diabetes. With the proper support and normalization of good habits, the children start to feel less alone in their illness. They gain confidence and enthusiasm in their ability to care for themselves.

This innovative approach to care is something that is unique to this environment, as it cannot be done as effectively during a short hospital stay or outpatient treatment program. I was proud to be a part of a diverse team serving these children, and I have a greater compassion and respect for others because of this experience. The opportunity to immerse myself in a treatment environment where the variables of care are controlled was truly once in a lifetime. I will remember this experience fondly for the rest of my career. The goal to serve every child with equal levels of care, but to meet unique individual needs, regardless of race, gender, or affluence is a mantra I will carry throughout my practice. Selfless service is very much a virtue of the Southwestern Diabetic Foundation and a lesson that has impacted the way I see the career path I am on. I am so grateful for all the medical and life lessons I have learned through this internship and would recommend this experience to any future student.

Knowledge Gained

This internship experience provided me with many opportunities and learning experiences. One of the most beneficial experiences I learned was how to log blood glucose values efficiently, send them off to the medical staff team and read the orders sent back to me. This skill was an important to learn as on occasion, the data would get mixed up or due to a

software error, and I would have to identify whether the actions were appropriate for the patients. If I had any doubt about the appropriateness, I would call the medical staff and communicate my concerns to a provider. This communication built up my confidence in speaking to doctors and helped me to learn to trust my judgment.

I also learned about insulins that I was previously unfamiliar with, including Tresiba and Toujeo. I received hands on training using the T:slim, Medtronic, and OmniPod pump systems. These insulin pumps work by replacing the need for long acting and short acting insulin injections. I also was exposed to the Dexcom and Freestyle Libre continuous glucose monitors. These are technologies that we briefly touch upon during lecture in nursing school, but do not have the option to learn how they work or how to use them. Being familiar with this technology will help me to understand what questions to ask patients with diabetes regarding their management. Because I am familiar with this technology, I know what interventions to employ concerning their functionality in the case of an emergency situation. I also gained knowledge about how to speak to children about complex medical concepts as well as how to motivate and support them in their care.

Ethical Considerations

There are many ethical considerations that came about during my internship. The most challenging consideration is how to maintain HIPPA guidelines between patients when they are sharing living quarters. There are different vital signs that we would take daily, such as weight, temperature, and blood glucose values. All this information is confidential. Also, in the case of an emergency, such as a diabetic seizure, that child's health status and information need to be protected as best as possible. This task is difficult to do when the children are in very close living quarters, but it is important to realize that no matter the physical closeness, every person is

entitled to their privacy. This challenge was addressed by strategic placing the children apart when conducting vital sign screenings and making sure not to pass along what one child had told one to another, keeping the conversations confidential between the child and the staff.

Another ethical consideration is the equal treatment of campers no matter what their background is. As staff members, it was also our responsibility to make sure that the children were treating each other equally. A unique aspect of the program is that there are children from a wide variety of backgrounds through need based financial aid. It was an objective to make money not matter during the program. We were tasked with the duty to make sure that every camper had the best experience possible as each child needed something different from the program. This taught me a valuable lesson, everyone deserves quality care tailored to their needs, no matter who they know or how much or how little money they have. People deserve a chance at a happy and healthy life.

Conclusion

In conclusion, I believe that this internship was enormously beneficial to my nursing skillset as well as my mindset. The challenges this experience provided me helped me to grow in compassion, time management, and collaboration skills. This internship exposed me to many different roles in the healthcare industry which allowed me to recognize how collaborative care and a team mindset can make a difference in the health outcomes of patients. I also believe that the challenges presented by COVID-19 enabled me to learn how to adapt to meet the patient populations needs through telehealth therapy. This experience allowed me to understand better what a career in the nursing profession will be for me. I would recommend this internship to other nursing students as it teaches one how to focus on goal-oriented holistic care and the impact compassion can have on short and long term patient outcomes.

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Appendix A.

Clean Technique Blood Glucose Testing Procedure

Camper/ Camper family approaches you and says they have no testing supplies...

1. Only break social distancing with diabetic in need of testing, both parties must be wearing masks
2. Don Gloves
3. Pull out all testing supplies for camper (ie. Glucometer, test strip bottle, 2 swabs and lancet) set on surface
4. Back up 6 feet ideally (as much as you can while not leaving situation but giving yourself and said diabetic room)
5. Diabetic conducts testing
6. Diabetic reveals blood sugar
7. Pull out desired amount of tabs if diabetic can not go get juice themselves
8. Hand to diabetic
9. As soon as diabetic receives tabs, instruct them to return to family and normal social distancing guidelines of at least 6 feet apart. Encourage them to social distance by 6 feet before removing masks to consume tabs if possible
10. Instruct diabetic to dispose of sharps and trash properly
11. Wipe off meter with alcohol swab and dispose of waste in nearest trash can
12. Discard gloves
13. Hand sanitize with sanitizer from middle pocket

Ensure that you do not touch any part of your body with gloves once you have touched any medical supplies or diabetic in scenario

Appendix B.



1

Foot Checks

- 1

High blood sugars put people at diabetes at risk for neuropathy, a condition where one cannot feel one's feet
- 2

High blood sugars also put people at risk for decreased blood flow to one's feet

 - These two conditions put people at risk for infection
- 3

Foot checks everyday decrease the risk for infection and further complications by catching things early on

2

Blood glucose testing fingers

- What fingers do we use to prick at camp?
- We can also lose feeling in our fingers as well as our toes
- It is really hard to type and pick things up if we can't feel with our thumb or pointer finger
- Therefore it is best to prick with our other fingers!!

3

Good hand hygiene

- Diabetes makes us more likely to have infections
 - By washing our hands often and swabbing our fingers before pricking, we are less likely to get an infection



4



Dosing before eating

- Insulin starts working 9-15 minutes after we take it
 - By taking insulin before we eat, we match the absorption of carbs to the absorption of insulin
 - This helps improve our control of our blood sugars

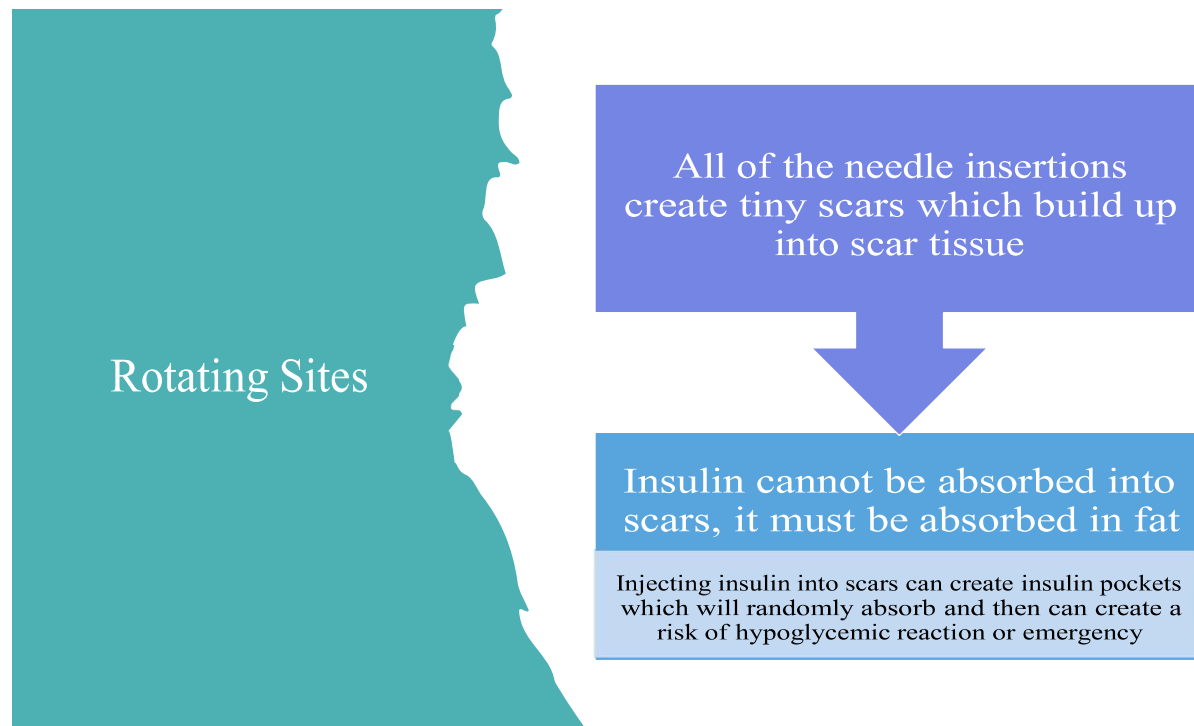
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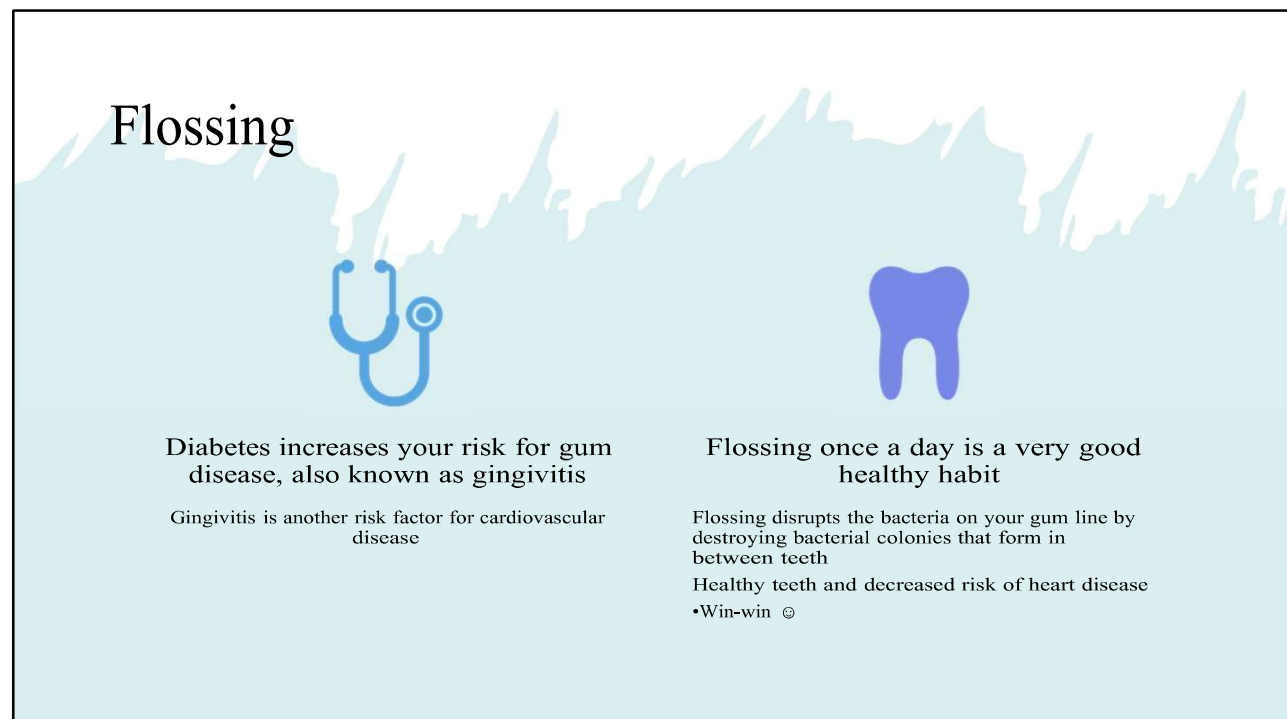
Balanced diet

- Different foods raise blood sugars at different rates
 - A balanced diet helps us to match our insulin absorption to our carbohydrate absorption just like what happens naturally!
 - This helps us have better A1Cs and decreases our risks for complications!

6



7



8

Exercise

- Exercise is beneficial to everyone!!
 - It is...
 - Stress reducing
 - Confidence building
 - Heart and lung conditioning
- It also helps us decrease our insulin resistance and have better blood sugars all our lives!
- Exercise is also a healthy coping mechanism when diabetes is frustrating, or life is stressful

9

<p>Healthy Habits and Sweeney Whys Knowledge Check 1. Why do we do foot checks everyday?</p> <ol style="list-style-type: none"> To make sure our toenails aren't too long To make sure one is really clean Captain Footsniff makes us To identify wounds before they become infected <p>2. How do you correctly do your own foot check?</p> <ol style="list-style-type: none"> Using a mirror Touching them without looking Stretching feet close to face You can't do one by yourself <p>3. What fingers do we use to test?</p> <ol style="list-style-type: none"> All of them None - use stomach Pointer and thumbs Pinky, ring and middle fingers <p>4. Why do we choose not to prick the other fingers?</p> <ol style="list-style-type: none"> They don't have enough blood We use them to feel and grip things They have too much blood You can't use finger readers <p>5. Diabetes makes one more likely to have _____?</p> <ol style="list-style-type: none"> Awesomeness A higher IQ Red hair Infections <p>6. What is a simple way to help prevent infections?</p> <ol style="list-style-type: none"> Using a UV light to kill germs Washing one's hands correctly and often Spitting on things Biting one's nails <p>7. How long do you wait after giving insulin to eat?</p> <ol style="list-style-type: none"> You don't wait An hour 9 minutes 20 minutes 	<p>8. Why is it important to time our insulin correctly?</p> <ol style="list-style-type: none"> So you don't go low So you don't go high All of the above None of the above <p>9. A diabetic person, like other people trying to live healthy lifestyles should eat a _____ diet?</p> <ol style="list-style-type: none"> High carb Low carb High fat Balanced <p>10. A well controlled A1C helps to prevent _____?</p> <ol style="list-style-type: none"> Juragadon bites Complications Growth spurts Stomachaches <p>11. Why do we rotate our sites?</p> <ol style="list-style-type: none"> To help the insulin absorb better To stop the insulin from absorbing To help sugar absorb To prevent sugar from absorbing <p>12. After taking out an old site, what should one do?</p> <ol style="list-style-type: none"> Throw it in the trash Wave it around Leave it in a public area Apply antibiotic ointment and a bandaid <p>13. Rotating sites helps prevent _____?</p> <ol style="list-style-type: none"> Red bumps An allergic reaction Scar tissue Bruises <p>14. How often should one floss their teeth?</p> <ol style="list-style-type: none"> After every meal Once a day Once a week When you feel something stuck in them 	<p>15. Flossing our teeth helps prevent _____?</p> <ol style="list-style-type: none"> Heart disease Gum disease All of the above None of the above <p>16. People with diabetes are more likely to have _____ due to higher blood sugar levels.</p> <ol style="list-style-type: none"> Blue tongues Fragile bones Healthier Hearts Gum disease <p>17. True or False, Exercise helps to increase insulin resistance.</p> <ol style="list-style-type: none"> False <p>18. True or False, Exercise is a healthy way to deal with stress from diabetes.</p> <ol style="list-style-type: none"> True
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10

Appendix C.

Your Organs and Diabetes

Katherine Hamilton

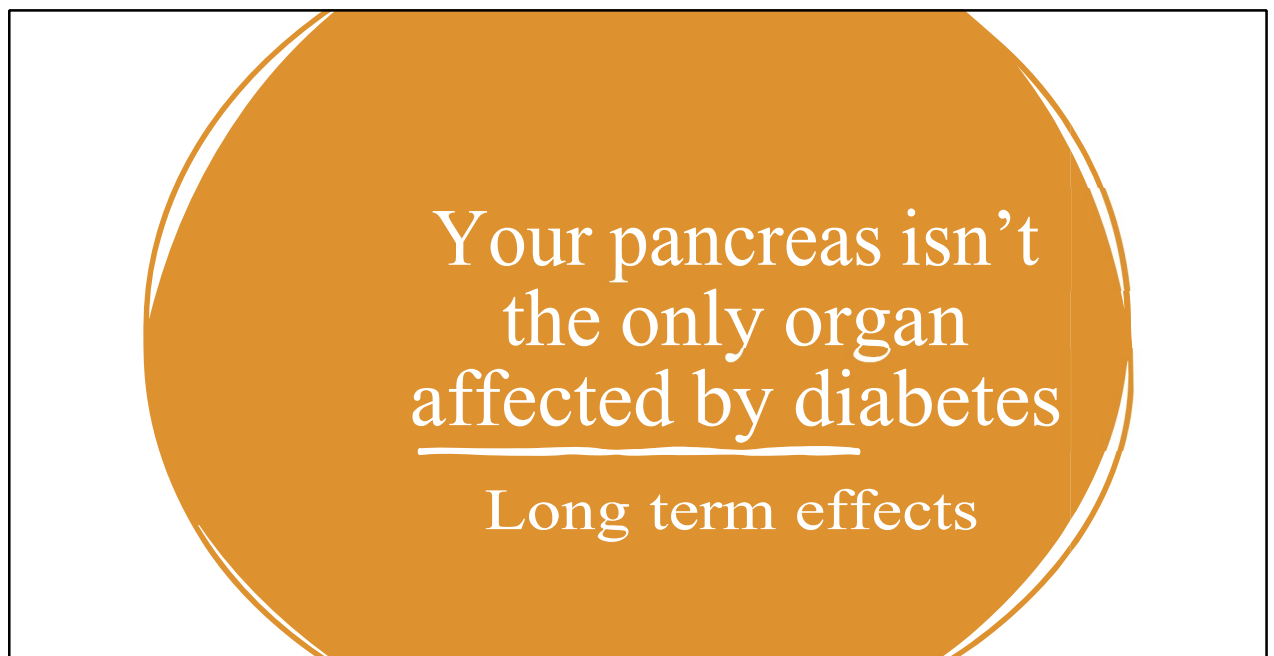
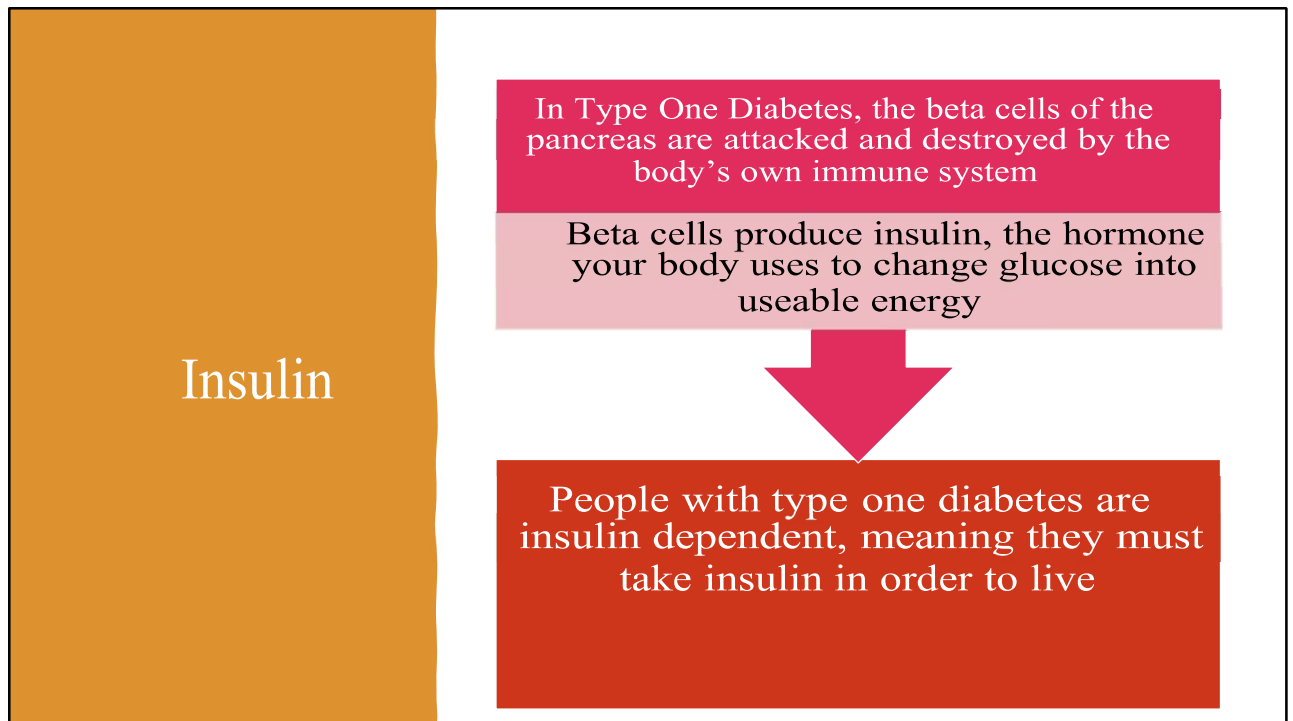
1



The Pancreas

- A gland organ that is a part of the endocrine system in your body
- Secretes enzymes that the body uses to digest food
- Organized into islets of Langerhans
- Beta Cells – insulin
- Alpha Cells – glucagon
- Delta Cells – somatostatin

2



Eyes & Diabetes

Retinopathy

- Blood gets thicker when blood sugar is high
- Your body grows extra tiny blood vessels to help pump the thick blood
- The extra capillaries can block the retina in your eye and make it harder to see
- It can result in blindness

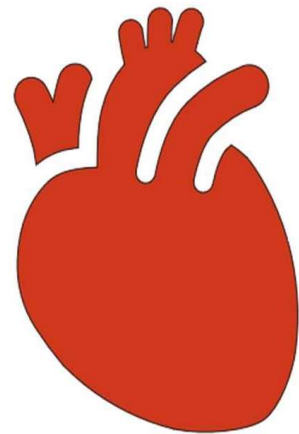
5

The cardiovascular system

The cardiovascular system refers to the system that contains your heart, blood vessels and blood

Diabetes can cause changes to this system in 3 major ways

- Cardiac
- Hypertension
- Peripheral vascular disease



Cardiac disease



Your heart must work harder when your blood sugar is high because your blood is thicker and therefore harder to pump

Do you notice your heartbeat more when your blood sugar is high?



Your heart is a muscle with 4 chambers

When your heart is relaxed, the chambers fill with blood
When your muscles squeeze, it pushes blood out



Prolonged high blood sugar can cause your heart to not work as well

Hypertension

Extra sugar in blood can scrape the inside of blood vessels

Plaques are created like scabs due to these tiny scrapes

This causes a narrowing of blood vessels

Smaller blood vessels increase the pressure created in the system

This leads to a condition known as hypertension

One can decrease the chances of getting hypertension by keeping good control of blood sugar

Periphera Vascular Disease

A condition that occurs when your heart has a hard time pumping blood all the way to your hands and feet

This can occur due to high blood sugars happening over a long period of time



Signs and symptoms

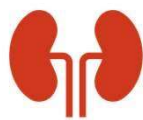
Pale color of
skin of
hands and feet

Slight blue
color of skin
of hands and feet

Cool temperature
of hands and feet

Increased
capillary
refill time

Kidneys



Kidneys are organs in our bodies that filter out toxins and help us get rid of them

We can get really sick if our kidneys don't work correctly because these bad toxins are unable to leave the body



Nephropathy

Damage to a part of your kidney called a nephron

This is due to higher concentrations of sugar in the blood

Damage starts at 180 mg/dL

If our kidneys aren't working, we may need dialysis or a kidney transplant

Neuropathy



- A loss of feeling in hands and feet due to long-term uncontrolled blood sugars
- Nerve damage
- How would this affect your daily life? If you couldn't feel your fingers or toes?

Short term complications

Hypoglycemia



Hypo =
Hypoglycemia is low
blood
Risk for seizures



What do we do
when we're low?

Hyperglycemia



Hyper = high

Hyperglycemia is
high blood sugar

Ketones

Increased risk of
diabetic
ketoacidosis

Increased risk of
coma

1. What is it called when high blood sugar causes damage to the eyes?

Eye syndrome

Nephropathy **Retinopathy**

Eyeplasty

2. What is cardiac disease?

Damage to the heart

Damage to the arms and legs

Damage to the kidneys

Damage to the brain

3. How can you decrease your chance of getting hypertension?

Check your feet for cuts

Keep your blood sugar in range

Shower everyday

Clean and cover cuts and scrapes

4. What is it called when high blood sugar causes kidney damage?

Kidneyplasty Neuropathy

Nephropathy

Nephron Disease

5. High blood sugar causes blood to be:

Thinner **Thicker**

Redder

Smellier

6. What is neuropathy?

Damage to the brain

Checking your feet before bed

Damage to the eyes

Damage to the nerves

7. What is hypoglycemia?

High blood pressure

Low blood pressure High

blood sugar

Low blood sugar

8. Why can we get sick if our kidneys aren't working properly?

Our kidneys are supposed to filter the toxins out of our bodies

Our kidneys are supposed to pump blood throughout our bodies

Our kidneys help us see

Our kidneys are supposed to secrete insulin

9. Treatment for nephropathy can include:

Dialysis and a kidney transplant

Decreasing insulin dosage

There is no treatment

Wearing glasses

10. At what blood sugar does damage to the kidneys begin?

100 mg/dL

60 mg/dL

180 mg/dL

200 mg/dL

11. If you have high blood sugar, you should test for:

Fever

Ketones

Headache

Sweating

12. High blood sugar can cause blood pressure to be:

Lower

Higher

Blood sugar does not affect blood pressure

13. Peripheral vascular disease is:

An infection in your blood

Damage to the kidneys

An infection in your brain

When your heart has a hard time pumping blood to your hands and feet

14. What is a symptom of peripheral vascular disease?

Cold temperature of hands and feet

Hot temperature of hands and feet

Stomach ache

Fever

15. What is not a symptom of hypoglycemia?

Dizziness

Fatigue

Vomiting

Feeling shaky

16. What is not a symptom of hyperglycemia?

Fruity-smelling breath

Fever

Nausea

Weakness

17. When is there a risk of seizures?

When we have low blood sugar When

we are eating

When we have high blood sugar

When we are sweating

18. When is there an increased risk of diabetic ketoacidosis?

When we are eating

When we have low blood sugar

When we are sleeping

When we have high blood sugar