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The Insulin-Only Bionic Pancreas Pivotal Trial: Testing the iLet in Adults and Children with Type 1 Diabetes (RCT)

Adult_Parental Informed Consent Form (electronic)

Version 4.8

JCHR IRB Stamp Date 28JAN2021

NCT04200313

CONSENT TO TAKE PART IN A RESEARCH STUDY

STUDY TITLE: The Insulin-Only Bionic Pancreas Pivotal Trial: Testing the iLet in Adults and Children with Type 1 Diabetes (RCT)

STUDY DOCTOR'S INFORMATION
Name:
Contact Number:
Site Name:
Site Address:
Emergency (24-hour) Number:
Study Coordinator Name/Contact:

SUMMARY

In this form, when it says "you" it is referring to you as the participant if you are an adult, or to the person under your care that would be in the study if you are a legally authorized representative (LAR). Please see the next section called "Legally Authorized Representatives (LAR)" for more information about who can be a LAR. This would be like a parent reviewing the information for their child to be in the study. In this case, "you" would mean "your child."

This consent form will give you important information about this study. It will help you decide if you would like to take part in the study. You do not have to be in this study. You can stop the study at any time. You should read and discuss all the information in this consent form with the study doctor.

- **The study is being done to learn if an automated insulin delivery system (the iLet Bionic Pancreas system [BP]) can safely improve blood sugar control in people with type 1 diabetes.**
- **The BP includes an insulin pump, a continuous glucose monitor (CGM), and a computer program. The CGM measures your sugar level. It sends this information to the insulin pump. A computer program on the insulin pump decides how much insulin should be given. Usually if your sugar level is going up, the insulin pump will increase the amount of insulin you get. And, if your sugar level is going down, it will decrease the amount of insulin you get.**
- **The BP system is not approved by the Food and Drug Administration (FDA). It can only be used in research studies. For this reason, it is called experimental in this study. The insulins used in this study are FDA approved.**
- **You will be asked to be in the study for up to 3 months.**
- **The most likely risks to you are pain, bruising, redness and temporary discomfort from blood draws, fingersticks, CGM sensor insertions, or infusion set insertions. Although unlikely, it is possible that the system could deliver too much or too little insulin. This could result in low blood sugar or high blood sugar. In rare cases, this could be serious.**
- **The possible benefit is better blood sugar control while you are in the study. You may not benefit from this study. The information gained from the study may help people with type 1 diabetes in the future.**

- **If you do not participate, you may choose to continue your current diabetes treatment.**

LEGALLY AUTHORIZED REPRESENTATIVE (LAR)

A "minor" is a person under the age of 18. A LAR for a minor is a natural or adoptive parent, a legal custodian, or a legal guardian.

WHAT IS INFORMED CONSENT?

You are being asked to take part in this research study because you have type 1 diabetes. The goal of this study is to learn things that may help people with type 1 diabetes.

Your study doctor will be talking with you about this study and this form. You can take as much time as you need to think about whether or not you want to be in this study. You can also take a copy of this form with you to discuss with friends, family, or other doctors to help you decide. Please read this document carefully. Do not agree to be in this study unless all of your questions have been answered.

You do not have to be in this study. If you decide not to be in this study, you will not be treated differently as a person just because you didn't want to be in this study. Also, your regular care will not be impacted.

WHO IS DOING THE STUDY?

This study is being done by the diabetes staff at your clinic. It is being paid for by The National Institutes of Diabetes and Digestive and Kidney Disease (NIDDK) and Beta Bionics. Novo Nordisk and Eli Lilly will be providing some of the insulin for the study. The Jaeb Center for Health Research will use the funding to organize the study. Your study doctor and clinic staff will use the funding to carry out this study. The name of the study doctor and the doctor's contact information is listed on the first page of this form. If one of the study doctors gets money or benefits from a company that makes the devices in this study, then they have to tell the Jaeb Center.

WHY IS THIS STUDY BEING DONE?

The purpose of this study is to learn whether an automated insulin delivery system (the iLet Bionic Pancreas [BP]) can safely improve blood sugar control for individuals with type 1 diabetes. The system uses a CGM, an insulin pump, and a software program to automatically give insulin and control blood sugar. It is also sometimes called a "closed-loop" system or "artificial pancreas". The study will include about 440 people at multiple centers in the US.

WHO CAN PARTICIPATE IN THIS STUDY?

In general, to take part in this study, you must:

1. Have had type 1 diabetes for at least one year and be using insulin for at least one year.
2. Use either an insulin pump or multiple daily injections (MDI), with or without CGM for at least three months consistently before you collect CGM data for the study.

3. Be at least six years old.
4. Use a CGM to monitor your sugar level. If you do not use a CGM, you must check your blood sugar at least three times a day on average.
5. Avoid starting any new non-insulin diabetes medications during the study period.
6. If you are not yet 18 years old, you must live with at least one parent/legal guardian who knows the emergency response for severe low blood sugars.
7. For females who may become pregnant, and are sexually active, you must agree to use birth control.
   a. *If you become pregnant during the study, you will not be able to continue in the study.*

Also, you must not:

1. Plan to make a major change to your usual diabetes care within the next three months
   - Examples of this would include changing from MDI therapy to an insulin pump, starting or stopping use of a CGM, or changing to an insulin pump that automatically suspends insulin delivery if your blood sugar is too low.
2. Be using a non-FDA approved closed-loop or hybrid closed-loop insulin delivery system.
3. Be using Apidra insulin and be unwilling to switch during the study.
4. Be in another diabetes-related clinical trial.
5. Have any of the following medical conditions:
   - cystic fibrosis, pancreatitis, or another pancreatic disease, including pancreatic tumor or insulinoma, or history of complete pancreatectomy
   - advanced kidney disease
     - If you are at least 18 years old and have not had this tested in the last 2 years, you will need to have a blood test done before you can be considered for the study
   - hemoglobinopathy
6. Have electrically powered implants that might be susceptible to RF interference.
7. Have an allergy or severe reaction to adhesive or tape that must be used in the study.
8. Be using or plan to use an oral diabetes drug known as an SGLT2 inhibitors or a sulfonylurea drug.
9. If you are using a GLP1 drug, pramlintide, or metformin, you must be on a stable dose for 3 months before enrolling in the study. If you are using a GLP1 drug or pramlintide, you must be willing to stop using these while you are using the iLet BP System.
10. Be pregnant, breast feeding or plan to become pregnant in the next three months.
11. Have a condition the study doctor thinks would make it unsafe to be in the study.
12. Work for or have immediate family members who work for Beta Bionics or study team.
13. Be unable to speak and read English.
    - For pediatric participants, both caregivers and participants must be able to speak and read English

If you live alone, you must have someone who lives within 30 minutes of you and is willing to be contacted to check on you if we feel you may be having a medical emergency and we can't reach you.

Your study doctor and staff will review more health-related requirements with you.

WHAT WILL HAPPEN IN THIS STUDY?

The purpose of this study is to test a new device, the iLet Bionic Pancreas (BP), for controlling blood sugar levels. A bionic pancreas also can be referred to as an artificial pancreas, closed loop system, or automated insulin delivery system. The BP consists of (1) a continuous glucose monitor (CGM) that measures the glucose in the fluid under the skin, (2) a pump that delivers insulin, and (3) a computer program that determines how much insulin will be given.

In addition to the iLet insulin pump itself, the entire iLet BP system includes a glass insulin cartridge, an infusion set and pieces to help fill the cartridge with insulin. The infusion set for this study is called the iLet infusion set. It uses a flexible tubing connected to a small plastic flexible tube (cannula). The tube remains under your skin to deliver insulin. This tubing uses a special adapter to connect to the iLet BP reservoir of insulin. The infusion set, tubing and cartridge need to be replaced every two to three days. It also will need to be replaced if it stops working.

The CGM sensor being used in this study is made by Dexcom, Inc. This sensor is called the Dexcom G6. It includes two parts: the sensor and the plastic transmitter. The Dexcom G6 uses a small sensor that is placed under the skin. It measures the glucose in the fluid under the skin every five minutes. The transmitter snaps onto the sensor. It relays the sugar level values to the iLet. The software on the iLet uses the sugar level values from the sensor to decide how much insulin to deliver. The sensor must be worn on the abdomen. If you are not yet 18 years old, the sensor may also be worn on the upper buttocks. The Dexcom G6 sensor will need to be replaced every 10 days, or sooner if it comes out or stops working. The Dexcom G6 uses a web program called Clarity to get the glucose readings. The study team will help you set up an account in Clarity. To set up the account you will need to provide an email address and your date of birth. Dexcom will have access to your CGM data and the information used to create the account including your email address. This information will be stored in a secure database. If you are not comfortable using your personal information a different email address and birthdate can be created for you to use.

The use of the BP system with the Dexcom G6 CGM and infusion set is not approved by the US Food and Drug Administration (FDA). The BP system can only be used in research studies.

This study has two phases:

1. The Main Study
2. The Transition Phase

The ***Main Study*** will last 13 weeks (about three months). In the Main Study, you will either use the BP (we will refer to this as the BP group) or continue to have your insulin delivered with the same pump or injections you are using now and use a Dexcom G6 CGM (we will refer to this as the Usual Care group). A computer program will be used to select which group you are in. You and the study doctor cannot choose your study group. You will have a one in three chance of being assigned to the Usual Care group. You will have a two in three chance of being assigned to a BP group. Participants in the Usual Care group who complete all study visits and procedures will be able to use the BP after the Main Study in a separate extension study that will last for 13 weeks. If you decide to participate in the extension study, you will be given information about the study in a separate consent form.

Half of the participants who are at least 18 years old in the BP group and all of the participants less than 18 years old in the BP group will use either lispro (Humalog) or aspart (Novolog) insulin in the BP system. Humalog and Novolog are approved by the FDA to prevent and treat high blood sugar. However, no insulins are approved for use in the BP system. The other half of the participants at least 18 years old in the BP group will use Fiasp insulin. We are using Fiasp to see if it works any better than Humalog or Novolog. The Fiasp cartridge will be labeled as faster aspart, but this does not mean that Fiasp is faster than insulin aspart in the BP system.

The ***Transition Phase*** will last two to four days. After wearing the BP, you will go back to getting insulin however you did before the study. Half of the participants will have the insulin dosing decided by the study doctor and the other half will have this decided by the BP. This will be done over two to four days. A computer program will be used to select what group you are in. You and the study doctor cannot choose your group for this phase. During this phase, you will complete a questionnaire each day.

If you decide to take part in this study, you may be able to complete some or all of the study visits by video conference and, you will do the following:

Screening Visit
The screening visit will take about two hours. If you took part in a separate screening protocol, you may be able to skip all or part of this testing.

At this visit we will do some tests and procedures to see if you qualify to be in the study. The study doctor will review the results of these tests and procedures. If you don't qualify, the study doctor will tell you why. During this visit we will:

- Ask you some questions about your personal and family medical history, medications and any other personal history that is important to your health and being in the study.
- If you are female and able to become pregnant, we will perform a urine pregnancy test to see if you are pregnant. If you are pregnant, breast feeding or planning to become pregnant in the next three months, you cannot be in the study.
    - *If the visit is done by video conference, a pregnancy test will be given to you to take at home. This will be the same process for all visits that are done by video conference during the study.*
- Measure your height and weight.
    - *If the visit is done by video conference and you do not have a scale at home to measure your weight, one will be given to you. You will use the same scale for all visits during the study when weight is measured.*
- Collect blood for measurement of your hemoglobin A1c.
    - *If the visit is done by video conference a report of your most recent result will be acceptable.*
- Have you complete questionnaires.
- If you currently use a Dexcom G6, we will download the information from your CGM to see how much data you have collected over the last 14 days.
    - If you do not have at least 85 percent of readings during the last 14 days, we will ask you to wear your Dexcom CGM daily to obtain this amount.

- If you do not use a Dexcom G6, we will insert a CGM sensor and give you the necessary CGM supplies to collect data over the next two weeks. If you currently use a Dexcom G5, you will be able to see the blood sugar values while wearing the sensor. If you do not use a Dexcom G5, you will not be able to see the blood sugar values of this sensor.
- Have you answer questions about how you feel when you have low blood sugar.

Main Study Starting Visit

This visit will occur at the beginning of the Main Study and will take up to two to three hours. If this visit is on the same day as the Screening visit, you may be able to skip some of the items below. During this visit we will:

- Ask you some questions about any changes to your medical history since your last visit to confirm you are still eligible to participate.
- Review the CGM data collected after the screening visit. If there is not enough CGM data available, the CGM wear may be repeated.
- Use a computer program to decide which group you will be assigned to.
- Review the study procedures and answer any questions you might have.
- Collect blood for measurement of your hemoglobin A1c.
    - *If the visit is done by video conference, a collection kit will be sent to you and you will be given instructions on shipping the collection kit once you have collected the blood.*
- Draw blood to measure your blood sugar and c-peptide level.
    - C-peptide is a measure of how much insulin your pancreas is producing.
    - If the visit is done by video conference, this will be skipped.
- An optional part of the study is to have blood drawn to store for possible future use (this is described later).
- If you are female and able to become pregnant, we will perform a urine pregnancy test to see if you are pregnant. If you are pregnant, breast feeding or planning to become pregnant in the next three months you cannot be in the study.
    - *If the visit is conducted virtually, a pregnancy test will be given to you to take at home*
- Measure your height and weight.

If you are assigned to one of the BP groups, the steps below will be completed. If your visit is done by video conference, some of these steps may be scheduled for a later date when supplies can be delivered to you.

- Train you to use the system.
- Train you to use the study blood glucose meter and ketone meter.
- Train you to use the BP system, including replacing the insulin cartridge, understanding the information on the BP display, and using the features of the device.
- Train you to use the Dexcom G6 CGM system (or review with you if you are already using this CGM). We will help you set up high and low blood glucose alarms to use for the study.
- Ask you to insert a new Dexcom G6 CGM sensor.
- Ask you to fill the insulin reservoir, prime the tubing and prepare the iLet BP for use. We will have you place the insulin infusion set.
- Ask you to stop your usual diabetes treatment and start the BP system.

- Give you the BP and necessary supplies, CGM and supplies, and blood glucose and ketone meter testing supplies that you will need.
- Depending on how aware you are of your symptoms of hypoglycemia (based on your answers to some questions), you may be asked to check your blood sugar on the first 2-3 nights after you start using the BP system.

For the Usual Care group:

- If you are not using a Dexcom G6 CGM you will be asked to use a Dexcom G6 CGM every day during the Main Study.
- You will be trained on the insertion of the sensor and use of the Dexcom G6 CGM. You will insert your own sensor and study staff will confirm you are doing it properly. You will only use approved insertion sites (abdomen for adults and abdomen or upper buttocks for those less than 18 years old) and to insert a new sensor every 10 days or sooner if the sensor comes off early or stops working. You will be given instructions on how to provide the data from your CGM to your study staff.

Phone Call Check In

Study staff will contact you over the phone twice during the first week of the Main Study. This will happen one to two days after you start using the BP. A second call will occur after about one week. We will ask you about any issues you have had and answer any questions at this time. You can contact the study staff at any time during the study. If you have any questions, you do not need to wait until this phone call or a clinic visit.

Home Procedures for the Usual Care Group

The Usual Care group will be asked to do the following:

- Continue your pre-study diabetes management, including insulin delivery. The study doctors will not make any changes to your insulin dosing. You will continue to see your usual diabetes doctor for this.
- Not make any major changes to your diabetes management during the study (for example starting a CGM, switching from MDI to a pump or changing to a pump with a low glucose suspend feature).
- Complete a weekly questionnaire. This questionnaire will ask you questions about any low blood sugars you experienced over the previous day.
- Use a Dexcom G6 sensor every day. You will need to replace the sensor every 10 days or sooner if it falls out or stops working.
- Tell a study staff member if you become ill during the study. You will continue to seek medical care as usual from your own providers for any illness or medical advice.

Home Procedures for the BP Groups

The BP groups will be asked to do the following:

- Not travel outside the United States or its territories for the entire time the system is in use
- Calibrate the Dexcom G6 CGM if it is inaccurate.
    - You should use the study blood glucose meter for all calibrations and checking your blood sugar when you think the CGM might not be accurate.

- When using the study blood glucose meter, you should only test with your fingers.
- Carry fast-acting carbohydrates at all times in case of low blood sugar.
- Do not change your weight in the BP or the settings in the BP or CGM without contacting the study staff first.
- Change your insulin infusion set and reservoir every two to three days, or whenever the insulin level gets low or if there is a problem.
- Charge the iLet BP once a day, or whenever the battery level gets low.
- Remove the iLet BP for all water related activities.
- Limit the amount of time you are disconnected from the BP.
- Tell a study staff member if you become ill during the study. You will continue to see your own regular doctors for any illness or medical advice not related to study procedures.
    - If you are admitted to the hospital for any reason, you will be asked to contact your study staff as soon as possible and stop using the iLet while you are in the hospital.
- Complete a weekly questionnaire. This questionnaire will ask you questions about any low blood sugars you experienced over the previous day.
- Treating low blood sugars:
    - Study staff will recommend you set a hypoglycemia alarm for 70 mg/dl. The Dexcom CGM will alarm at 55 mg/dl and the iLet BP will alarm at 50 mg/dl.
    - If you hear any of these alarms or feel symptoms of a low blood sugar level, you should check your blood sugar using the study meter. You may take carbohydrates to treat a low blood sugar level at any time as you choose.
    - You can contact the study staff at any time if you have questions about the study procedures or your blood sugar level.
- Treating high blood sugars:
    - Study staff will recommend you set a hyperglycemia alarm for 250 mg/dl.
    - If you hear any high blood sugar alarms or feel symptoms of high blood sugar, you should check your blood sugar using the study meter.
    - If your blood sugar is high, you should check the insulin infusion site, tubing, and the iLet BP to make sure they are working. If you have any suspicion of an insulin site failure, the set should be replaced. You should continue to monitor your blood sugar until it returns to normal.
    - If your blood sugar is above 300 mg/dL for more than 90 minutes, you should check your blood ketone level using the study meter. If your ketones are 0.6 mmol/l or higher, you should replace your infusion set and call the study team. You should continue to monitor your blood sugar and blood ketones until they return to normal. You will be given an instruction sheet that will have these details of what to do. **It is extremely important that you follow what this sheet says to do.**
    - You can contact the study staff at any time if you have questions about the study procedures or your blood sugar level.

Follow Up Study Visits

There will be four follow up study visits after the randomization visit in the RCT Period. These visits will be at 2, 6, 10 and 13 weeks after your randomization visit. The study staff will review the visit schedule with you. These visits will each take about an hour.

At these visits we will:

- Perform a urine pregnancy test if you are female and able to become pregnant. We also will ask the date of your last menstrual period. If you are pregnant you cannot continue to be in the study.
    - *If the visit is conducted virtually, a pregnancy test will be given to you to take at home*
- Ask you some questions about any changes to your medical history since your last visit to confirm you are still eligible to participate.
- Review the study procedures, answer any questions you might have, and provide additional supplies if needed.
- Download the data from all study devices.

At the 6 week and 13-week visits for all groups, we will also:

- Measure your height and weight.
- Have you to complete questionnaires.
- Collect some blood for measurement of your hemoglobin A1c.
    - *If the visit is done by video conference, a collection kit will be sent to you and you will be given instructions on shipping the collection kit once you have collected the blood.*
- If you agree to have optional blood samples collected for future use, this will be done at the 13 week visit unless the visit is done by video conference.
- Have you answer questions about how you feel when you have low blood sugar (this will be done at the 13 week visit).

For the BP groups, we also will:

- Review recent blood sugar control, answer any questions you might have, and adjust the settings of the BP if needed.
- If you stop using the BP system and are not using a Dexcom G6 sensor, we will place a sensor. The procedures will be the same as described above for the Usual Care group.

For the Usual Care group, we also will:

- Insert a Dexcom G6 sensor and give you the necessary CGM supplies to collect data as described previously. This can be skipped if you are already wearing a sensor provided for the study.
- At the 13-week visit, you may be asked to participate in an optional Extension Study in which you will use the iLet BP system for 13 weeks. You will be eligible to participate in this study if you have not missed more than three of the weekly questionnaires, completed all study visits, and wore the CGM sensor at least 80% of the time in the Main Study.

The table below shows what will happen at each visit:

Schedule of Study Visits[7] and Procedures During Main Study

	Screening	Randomization/ Study Start (0w)	1-2d (phone call)	1w (phone call)	2w	6w	10w	13w
Informed Consent	X							
Eligibility assessment	X	X						
HbA1c point of care/local lab	X[8]							
HbA1c central lab		X				X		X
C-peptide and glucose central lab		X[8]						
Blood collection for storage[1]		X[8]						X[8]
Urine pregnancy test[2]	X	X[6]			X	X	X	
Height/Weight	X	X[6]				X		X
Questionnaire(s)	X					X		X
Placement of CGM sensor	X[3]				X[3]	X[3]	X[3]	
Data download	X[4]				X	X	X	X
Medical history updates		X	X	X	X	X	X	X
Focus Groups[5]								X

[1]Optional
[2]Pregnancy test for females with child-bearing potential
[3]At screening, current users of Dexcom G6 sensor with at least 85% usage in last 14 days can skip CGM wear for baseline data. Current users of a Dexcom G5 will be provided with an unblinded G6 device for baseline data collection. Participants who do not use a Dexcom G5 or G6 will be provided with a blinded Dexcom G6 device. During follow-up, a G6 sensor will be placed for participants in the UC group if they are not already wearing one. An unblinded sensor will also be placed for those in the BP group who have stopped using the iLet BP system and Dexcom G6 CGM and agree to wear a Dexcom G6 sensor.
[4]For participants who use a Dexcom G6 CGM
[5]Optional for those ending BP system use
[6] If randomization date is different from screening date
[7] Study visits can occur in clinic or virtually
[8]Will be skipped if visit is done by video conference

Transition Phase
At the end of the BP use in the Main Study, all study participants using the BP will participate in the Transition Phase. You will go back to your pre-study diabetes routine of either pump or injections. There will be two groups in this phase you may be assigned to. You will only participate in one of these groups.

In one of the groups, the study doctor will decide on the insulin dosing. In the other group, you will use insulin doses the iLet BP recommends for you. This will be based on the insulin dosing if used to control your blood sugar during the prior 13 weeks. These may be different from your usual routine. A study doctor will review the doses with you and help change the settings in your pump as needed.

For the next two to four days, you will use the doses of the group you are assigned to. You will continue to wear a Dexcom G6 CGM. You will be asked to follow all the same procedures you did during the other study phases. You will answer a daily questionnaire about your insulin dosing and any low blood sugars. The study team will call you one to two days after the start of the transition.

At the end of the two to four days, you will return to the study doctor's office. You will return the study supplies and return to your usual home dosing routine.

The table below shows what will happen at each visit:

Schedule of Study Visits[1] and Procedures During the Transition Phase

	Randomization/ Start of Phase (0d)	Phone call (2d)	<4d
Questionnaire			X
Placement of Dexcom G6 sensor (if you are not already wearing one)	X		
Data download			X
Medical history updates		X	X

[1]Study visits can occur in clinic or virtually

Focus Groups
An optional part of the study will include participating in a focus group after you finish using the BP system. In the focus group, study participants will share their experiences using the BP with each other. This will occur over the internet in what is called a virtual chat room. The focus group will occur one to three weeks after you have completed using the BP system. The focus group will be run by researchers at Lurie Children's Hospital, Department of Pediatrics of Northwestern University's Feinberg School of Medicine. If you agree to participate, the staff at Lurie Children's Hospital will be given your name, phone number and/or email address to contact you for scheduling. The focus group will include three to six participants who are around your age. Others in the group will be able to see you and will know your first name. No other identifying information about you will be shared during the focus group. You will be asked questions about your experience using the BP system. We ask that everyone in the groups keep the people in the group and the information discussed in the groups private and confidential. We cannot promise that everyone will. The sessions will be audio- and video-taped. They will then be

transcribed, or written down. The transcription will replace first names with speaker 1, speaker 2, etc. so they will not include identifying information. After the recording is transcribed and reviewed by the researchers for accuracy, the original recordings will be destroyed so that only de-identified data will be available to the study team. It is possible that someone could hack into the group without us knowing. This is not expected because you will be signing in to a HIPAA compliant, secure website that can only be accessed by study participants.

Optional Blood Draw
If you agree, extra blood samples will be collected at Randomization and Week 13 visits. These samples will be used for future research by the research team at Massachusetts General Hospital (MGH). The types of research that may be conducted with these samples include studying different antibodies people may develop against insulin, and ways to measure the antibody level in blood. If any of these visits are completed virtually, this blood draw will be skipped.

The samples will not identify you. There is no end date for the use of these samples. Your samples from this study will not be shared with researchers outside of Massachusetts General Hospital.

If you decide not to let your samples be used, you will not be treated differently as a person, and you can still be in this study. Your regular care outside of the study will not be impacted. If you change your mind later we will not be able to get your samples back.

WHAT ARE THE RISKS OF THIS STUDY?

If you choose to take part in this study, you need to know that there are some side effects or risks of being in this study.

The more common side effects that are known:

- Discomfort with the insertion or removal of the infusion set or CGM sensor.
- The fingerstick or blood draw to measure your HbA1c, blood sugar and c-peptide may cause bruising, discomfort, bleeding, infection or fainting. These risks are possible but unlikely and usually mild. Reactions at the site where the insulin is injected into your body can include bruising, bleeding, pain or discomfort redness, swelling or itching. These problems usually go away after a few days. You can reduce the risk by changing the place where you put the infusion set on.
- Allergic reactions to the insulin used in this study may occur in other parts of your body. Signs may include rash, redness, hives itching or wheezing at the infusion site. A more serious reaction may lead to swelling of your throat and face, or breathing problems, fast heart rate, pale and cold skin, feeling dizzy or weak. If you have signs of a serious allergic reaction you must stop taking the insulin immediately and get emergency help right away.

The less common side effects that are known:

- About 1 out of 10 people will get a mild bruise from fingerstick blood sugar checks or blood draws. A small scar may persist for several weeks. The risk of local infection from fingersticks or blood draws is less than 1 in 1000.

- Skin infections at the site of the infusion set or CGM insertion (low risk).
- Skin rash or allergy related to the tape used with the infusion sets or CGM sensor.
- Rarely, the Dexcom sensor may break and leave a small part under the skin. This may cause moderate redness, pain or swelling.
- Skin changes where you inject your insulin may occur. The fatty layer under your skin may shrink ("lipo-atrophy) or get thicker (lipo-hypertrophy). This risk of these changes is 1 in 100. You can reduce the risk by changing the place where you put the infusion set on.
- If your glucose level decreases very quickly, this may cause changes to your vision or cause feelings of "pins and needles" in your hands, arms, feet, or legs for a short time.
- If you change the type of insulin you use, you may have swelling around your ankles or other joints for a short time.

BP System Risks

There is a risk that parts of the bionic pancreas system may not work properly. As a result, you could receive less or more insulin than needed and be at risk for high or low blood sugars. Common reasons for the BP system not working correctly are:

- CGM sensor reads higher or lower than your actual blood sugar.
- Batteries run out faster than usual.
- The infusion set may be clogged, kinked or there may be another problem with the BP preventing insulin from being delivered.

If a high blood sugar occurs, symptoms may include blurry vision or increased urination, feeling thirsty, feeling very tired or having a headache. If blood sugar levels are high enough for an extended period of time, ketones can build up in the blood. Accumulation of ketones can result in nausea and vomiting. In more severe cases, diabetic ketoacidosis (DKA) or coma may occur. DKA can lead to kidney failure, irregular heartbeat, heart attack, muscle breakdown and even death.

If a low blood sugar occurs, symptoms may include feeling anxious or nervous, sweating, rapid heart rate, confusion, unconsciousness or seizure. In extremely rare cases, death from a low blood sugar could occur.

Risks when Using Fiasp Insulin

- Fiasp starts to lower blood sugar faster compared to other mealtime insulins. If low blood sugar occurs, you may experience it earlier with Fiasp.
- When using Fiasp in an insulin pump, you may have more high blood sugars than with other types of insulin.
- You may have changes to your skin texture or color in the areas where you insert your infusion sets.

Risks for Unborn Babies

High and low blood sugars can be harmful to an unborn baby or to an infant who is breastfeeding. The risks of the BP System in this study on an unborn baby are unknown. Anyone who becomes pregnant during the study will have to stop being in the study. Urine pregnancy tests are done as part of this study for anyone that is considered to be able to get pregnant. For example, anyone that has started having

menstrual periods, or is still having menstrual periods, will have pregnancy tests no matter how young or old they are. They will also be asked about how they plan to make sure they do not become pregnant while they are in the study (like if they use birth control). The study doctors are required to do this even if someone thinks there is no possibility of pregnancy.

For minors, the results of a pregnancy test will only be told to the LAR if the minor has verbally given permission. Minors will be told about the pregnancy tests in an Assent form. If you are not comfortable with any of the following, then you should not allow the minor to participate:

- The minor getting information about pregnancy
- The minor discussing pregnancy with you and the study doctor
- The minor having pregnancy tests
- The minor giving permission to share results of pregnancy tests

Unknown Risks

There may be additional risks from the BP system or the study procedures that are not known. If we find out that there are any new risks, you will be told about them. You will be able to decide if you want to continue in the study based on this new information.

Risks to Confidentiality

This study will be capturing some information about you that includes identifiable, personal information, like your date of birth. The study has procedures in place to protect that information. There is a chance that a loss of that protection could occur. This would be a loss of confidentiality. Please see the "How will my information be protected and kept confidential" section below for more information.

As part of the study, you will be receiving text messages or emails with the link to login and complete your weekly questionnaires. The text messages and emails will only contain the link to access the blank questionnaires and they will not contain any information about you. It is possible that someone else may see the text messages or emails on your phone, or if your email is hacked. If this happens, then someone might know that you are in a study but they will not be able to see any other information about you or the study. You will receive text messages or emails weekly to complete the questionnaires.

Also, the study doctor and staff may use your contact information to call, text or email you during the study. They may do this to send you things like appointment reminders. They are not allowed to send you identifiable health information by text or regular email because it is unsecure. This means that there is a risk that a message may be seen by someone that is not supposed to see it, like when an email gets hacked. Your email, phone number and your/your child's name will likely be in the text or email. If you think that the study doctor's office has texted or emailed information that they should not have, please contact JCHR at 813-975-8690 and ask to speak to the IRB Administrator. If you text or send a regular email the study doctor's office is unsecure and what you put in the text or email is not protected.

Study Questionnaires/Surveys

This study will involve asking you some questions about your diabetes and your overall health. You also will be asked questions about how you feel about things like diabetes and your life. The risk of these questions is that you might feel upset or uncomfortable. It is important that all questions are answered,

but if you don't want to, then you can withdraw from the study. You can decide to take a break or stop taking part in the study at any time.
Please discuss the risks with your study doctor or any other health care provider.

WHAT ARE THE BENEFITS OF TAKING PART IN THIS STUDY?

The possible benefit is improved blood sugar control but that is what the study is trying to find out. People who take part in this research study will add to new knowledge that may help other people with type 1 diabetes.

ARE THERE OTHER OPTIONS THAN BEING IN THIS STUDY?

If you do not take part in this study, your options include standard treatment like continuing your usual diabetes therapy, other research studies, or you may choose not to do anything. Your study doctor will discuss these choices with you.

CAN I STOP BEING IN THE STUDY?

You can stop being in the study at any time. If you decide to stop being in this study, you will not be treated differently as a person. Also, your regular care will not be impacted. Please talk to your study doctor or staff so they know why you are stopping the study and can help you do so safely.

The text messages and emails with the links to the questionnaires are a part of the study. You cannot be in the study if you do not want to get the text messages or emails with the links to the study questionnaires.

If you do not want the study staff to contact you by text messages or email contacts, then you can ask them to stop at any time. You will need to tell your study doctor if you would like to stop receiving text messages or emails from them. You can still be in the study if you do not want to get text messages or emails from the study staff anymore.

If we find out that there is any important new information about the study, you will be told about it. You will be able to decide if you want to continue in the study based on this new information.

The study may stop or the study doctor may decide to take you out of the study at any time. You do not have to give permission for the study to stop or for the study doctor to remove you from the study. You will be told if this happens.

Some reasons why you may be removed from the study include:

- The study doctors feel that it is in your best interest
- If you do not follow the study instructions
- The study doctors think that being in the study may cause you harm
- If you experience an injury related to the study
- If you need additional or different medication

- If you become pregnant

If you withdraw, are removed from the study, or the study is stopped, you may continue to receive care like you normally would if you were not in this study. Also, you will no longer be able to use the BP system and you must return the BP system and CGM system with all related supplies to the study staff.

ARE THERE COSTS RELATED TO TAKING PART IN THE STUDY?

The costs of routine treatment, office visits, and tests that are part of your regular care will be billed to you or your insurance company like they normally would if you were not in a study. The study BP system, CGM system, a blood glucose meter and its supplies and a ketone meter and its supplies will be provided to those in the BP and BP Fiasp group at no cost. Visits and procedures that are required solely for study purposes will not be billed to you or your insurance. The Fiasp insulin will also be supplied to those in the BP Fiasp group. The CGM supplies for the Usual Care group and those in the BP group who stop using the BP system will be provided at no cost for those who are not currently using a Dexcom G6 routinely. Those in the Usual Care group who do currently use a Dexcom G6 will be provided CGM sensors and transmitters at no cost. The Usual Care group will use their own blood glucose meter, ketone meter and related supplies until the Extension Phase. Humalog (lispro) and Novolog (aspart) insulin vials will be supplied by the study to those in the BP group who use insulin pens. If the study visits are conducted virtually, and you do not have a scale at home, one will be provided to you for no cost. This scale will be yours to keep. At the end of the study, or if you decide to withdraw from the study, you must return the BP system and CGM system with all related supplies, including Fiasp insulin, to the study staff. Any additional tests and procedures will be billed to you or your insurance company like they normally would.

Please ask to speak to someone at your study doctor's office if you want more information about what you or your insurance will be expected to pay.

IS THERE PAYMENT FOR TAKING PART IN THIS STUDY?

If you take part in the study, you will receive up to $350 for your participation. These payments will be paid as follows: $50 for each completed visit (up to 7 visits). The payment will be made either as a check or as a gift card at the end of each study visit or at the end of the study depending on your study team's policy.

If you withdraw from the study, you will still be paid for the visits that you have completed. You will not receive extra payments for visits that are required as part of your normal care or for visits that are for treating an illness or injury.

The use of your samples may result in commercial profit. You will not be compensated for the use of your samples other than what is described in this consent form. The samples collected will not be used for whole genome sequencing or other genetic research.

Because payments made to you for participating in this study may be reported to the IRS as income, you may need to provide your social security number or a Form W-9 to your study doctor's office. These will not be shared outside of your study doctor's office, other than as required by the IRS.

WHAT HAPPENS IF I HAVE AN ILLNESS OR INJURY FROM BEING IN THE STUDY?

If you have an illness or injury that is related to your participation in the study, then you can get care like you normally would. If you have an emergency, please seek emergency care as soon as possible. Please tell the emergency doctor that you are in a research study. Please also tell your study doctor about the emergency as soon as you can. The study does plan to provide costs for care or other expenses relating to illnesses or injuries **directly resulting from a manufacturing defect** in the Fiasp insulin or iLet device. Otherwise, the study does not plan to provide costs for care or other expenses relating to illnesses or injuries. Your study doctor, the study doctor's office, the Jaeb Center, NIDDK, Novo Nordisk and Beta Bionics are not planning to cover payment for lost wages, direct losses, or indirect losses.

CONTACT INFORMATION FOR QUESTIONS OR PROBLEMS

If you have questions about this study; a research illness or injury; or have concerns, suggestions or questions about the study, then contact your study doctor using the contact information on the first page of this form.

Contact the Jaeb Center for Health Research Institutional Review Board (IRB) Office at 813-975-8690 or irb@jaeb.org if you:

- Have questions about your rights as a research participant
- Wish to talk about your concerns or suggestions about the research
- Want additional information about the research, or
- Want to provide comments about the research.

HOW WILL MY INFORMATION BE PROTECTED AND KEPT CONFIDENTIAL?

As required by law, study-related records with identifying information will be kept confidential. Safety measures for the access, security, and privacy of your information have been put in place by law. Your date of birth and initials may be used in the study to help the researchers keep the right information together. This information will be protected as described below. Unless the law requires it, your name, address, social security number, telephone number, or any other directly identifying information will not be used to identify you.

Certificate of Confidentiality

NIDDK has given us a Certificate of Confidentiality for this study. This adds special protection for study information that identifies you and allows us, in some cases, to refuse to give out information that could identify you without your consent. This could be done when the information is requested by a federal, state, local court or public agency. If you need medical help, we may still share your identifiable information. As described in this form or in other cases, we may share identifiable information. For

example, if the government inspects us, they may see your identifiable information. Your study doctor and research team will follow local laws and will tell local or state authorities:

- if certain diseases are present;
- if they suspect neglect, abandonment, or abuse of you; and
- if your study doctor or research team learn that you plan to harm yourself or someone else

Purpose of Authorization
We have rules to protect information about you. Federal and state laws also protect your information. By giving your electronic signature, you are giving your permission, called your "authorization," for the use and disclosure of information protected by the law.

You must electronically sign, including the Protected Health Information Authorization statement if you want to be in the study. When you provide your electronic signature, you give permission for the use and sharing of your Protected Health Information (PHI) for the study. PHI is health information that identifies you. Your authorization is beneficial and important for the study. Without your authorization, you will not be able to be in this study.

Using and Sharing Your PHI
Your study doctor will collect information about you. This information includes things learned from study procedures as well as your name, address, date of birth, and information from your medical records. These are examples of identifiable information. A code number with your initials and date of birth will replace your name, address, telephone number, or social security number in the results given to the Jaeb Center for Health Research in Tampa, Florida.

The following people or companies involved in this study may see your study results with things like your date of birth, initials and date of procedures:

- Your study doctor's office
- Jaeb Center for Health Research
- Beta Bionics.
- Novo Nordisk
- NIDDK
- Researchers who are part of the study

The study doctor's office will not share study results that can identify you except as explained in this form or when required by law. The Jaeb Center and your study doctor's office will guard the privacy of your study PHI.

Who Can Receive and Use Your Study Information?
It is possible that people outside of this doctor's office and the Jaeb Center may need to see or receive your information from this study. Some examples include government agencies (such as the Food and Drug Administration), committees that monitor safety, other sites in the study, and companies that are providing either funding or supplies for the study, laboratories, and centers that may receive images. Dexcom, Inc. will have access to CGM data and the information used to create your Dexcom Clarity

We ask that everyone keep the people and the information discussed in the focus groups private and confidential. We cannot promise that everyone will.

Results from the study will not be sent to you.

Contact from the Jaeb Center
Separately from your research data, the Jaeb Center for Health Research in Tampa, Florida will be provided with information on how to contact you for the weekly surveys described earlier. Also, if your study doctor's office is not able to locate you when they try to schedule your follow-up visit, a third-party search service may be used to try to contact you.

You may also have communication with the study doctor's office by phone, text, or by video (like FaceTime or Skype). There is a chance that someone could see or hear the conversation like they could if you were speaking or texting with anyone.

You will receive text messages from the Jaeb Center through a third-party texting service. The text messages will be sent automatically using a computer program from the Jaeb Center database. This database is designed with security protections. Your contact information will be saved in a different part of the database and will not be saved with your study information. The third-party texting service will only receive your phone number and has agreed to only use your phone number for the study texts.

Clinical Trial Reporting
A description of this clinical trial will be available on *http://www.ClinicalTrials.gov*, as required by law. This Web site will not include information that can identify you. At most, the Web site will include a summary of the results. You can search this Web site at any time. A copy of one of the study consent form templates will also have to be posted on a federal Web site.

Separate HIPAA Attestation (for participants from a clinical site that requires a separate standalone HIPAA form)

By entering your password below, you/the participant agree to take part in this study. Your e-signature means that:

- you authorize the use and disclosure of your/the participant's protected health information. This information is collected as part of participation in this study. You/the participant cannot be in this study if this permission is not provided.

To electronically sign, please re-enter your password and click "sign".

Investigator's Attestation

I certify that to the best of my knowledge the participant and/or LAR(s) understand(s) the nature, demands, risks, and benefits involved in the participation of this study.

To electronically sign, please re-enter your password and click "sign"

account. In most cases the information will have a code number with it instead of your name, address, telephone number, or social security number.

There are some situations where the information will not have a code number but may include your name, address, telephone number, or social security number (PHI). Once PHI is disclosed by your study doctor and the clinic staff, it may no longer be covered by the privacy laws. Everyone who needs to see your information will be told it is confidential, but we cannot guarantee full confidentiality once it leaves the study doctor's office.

Can You Cancel Your Authorization?
You may cancel your permission for the collection of your study PHI at any time. You will need to contact your study doctors and give them a written notice of cancellation, or you may contact the JCHR IRB Office at 813-975-8690 or irb@jaeb.org. When you cancel your permission or when you withdraw from the study directly, you are no longer part of the study. No new information about you will be gathered for the study, except when there is a safety concern related to the study. If there is a safety concern, your entire medical record may need to be reviewed.

The Jaeb Center will receive all the information that was collected for the study up to the time that you cancel or withdraw from the study. The Jaeb Center will receive any new information about any safety concerns that may be related to the study.

When Will the Use and Sharing of Your PHI Stop?
Some of your study PHI does not have a code number with it. Your permission for the use and sharing of your PHI lasts fifty years from the date that you provide your electronic signature or until the end of the study, whichever comes first.

The rest of your study information that is not PHI does have a code number with it. When it is collected, it becomes part of a research report. Your permission for the use and sharing of this coded information will never end. This coded data does not have your name, address, telephone number, or social security number.

Other Considerations
The information and samples collected in the study may be used in future studies without additional permission from you. This may include research done by other researchers. The information that may be shared will not contain any information that could identify you. There may still be a chance that someone could identify you, but this is not likely. The study results will also be made public. These results will not have any information that could identify you.

A limited dataset that contains some PHI may be provided to certain researchers. This PHI will not include things like your name, address, identifying pictures, or medical record numbers. Any researcher would need to sign an agreement to protect your PHI before getting this dataset as required by law.

Study results without the identifiable information may be shared in medical journals and at scientific meetings. Your records will be confidential. No one will share your identity in a medical journal or at a scientific meeting.

ELECTRONIC ATTESTATION PAGES

Optional Blood Samples for Future Use (For all participants; e-consent cannot be submitted without a selection)

The extra blood samples MGH will be using for future use would not include any identifiable information about you/the participant. Please choose only one of the options below:

☐ I ***do*** give my permission to allow for the collection of extra blood samples for future research as described above, or

☐ I ***do not*** give my permission to allow for the collection of extra blood samples for future research

Optional Focus Group (For all participants; e-consent cannot be submitted without a selection)

The focus group will ask questions about your/the participant's experience using the bionic pancreas. The interviewers will have your name, phone number and/or email address to contact you for scheduling. The interview will be audio- and video-taped,

☐ I ***do*** give my permission to join the focus group, provide them with my contact information and be audio- and video-taped, or

☐ I ***do not*** give my permission to join the focus group, provide them with my contact information, and be audio- and video-taped

Adult/Parental Attestation (For all participants)

I, _____ attest that I am authorized to provide consent as I am the following (select only one):
☐ Participant ☐ Natural or Adoptive Parent of participant; ☐ Legal Custodian of participant; or ☐ Legal Guardian of participant

By entering your password below, you/the participant agree to take part in this study. Your e-signature means that:

- you have read this informed consent form
- you have been given the chance to discuss the study and to ask questions to your satisfaction
- you freely choose (or you freely choose to allow the participant) to participate and you/the participant can withdraw at any time you will receive a copy of this consent form
- you authorize the use and disclosure of your protected health information. This information is collected as part of participation in this study. You/the participant cannot be in this study if you do not provide this permission.

To electronically sign, please re-enter your password and click "sign"

Minor's Legally Authorized Representatives (LARs) Assent Attestation (For participants 7-17 years of age)

By entering your password below, you agree to allow your child to take part in this study. Your e-signature means that:

- you confirm that the study has been explained to the child in your presence in a language that the child could understand.
- you confirm that the child was told to ask questions and the questions were answered so the child could understand.
- you confirm that the child has expressly stated that he/she wants to be in the study at this time.

To electronically sign, please re-enter your password and click "sign"