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Study Title: Assessing feasibility, safety, and efficacy of deploying a closed-loop automated insulin delivery system by community-based primary care physicians and academic endocrinologists, in person and through telehealth

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Key Information:
Please read all the information below and ask questions about anything you don't understand before deciding if you want to take part.

You are being asked to be in a research study. Participation in research is voluntary.

Purpose of this study:
The purpose of this study is to learn more about the safety and effectiveness of the iLet™ bionic pancreas device for treating Type 1 diabetes when implemented in primary care and endocrinology, and both in-person and via telehealth.

Procedures:
If you agree to participate, the following will happen:

- You will take part in a screening visit to determine if you are eligible to participate in the study. During screening, you will be asked questions about your person and family medical history, review medications you are taking, and take a pregnancy test (if you are a female of child-bearing potential), If the visit is happening remotely, you will be sent a pregnancy test in advance to take at home.
- If you are determined to be eligible to participate, you will be placed in one of the two groups, and you cannot choose which group you will be in.
    - If you are in the first group, you will follow your usual diabetes management routine, wearing a Dexcom G6 CGM for fourteen days. For the next fourteen days, you will be asked to wear the iLet bionic pancreas for fourteen days, which will be used to control your blood sugar. During this time you will not take injections for your insulin or control the insulin dosing.
    - If you are in the second group, you will wear the iLet bionic pancreas for fourteen days, which will be used to control your blood sugar. During this time you will not take injections for your insulin or control the insulin dosing. For the next fourteen days, you will follow your normal diabetes management routine, wearing a Dexcom G6 CGM.
- You will be asked to complete psychosocial questionnaires and complete a test for your HbA1c at the screening visit or at the start of the first study visit if not completed previously.
- You will be asked to complete your first study visit either in person or over a video call, where you will be weighed, take a pregnancy test (if you are a female of child-bearing potential), discuss any events that have happened since your screening visit, and complete questionnaires.
- If you are in the Bionic Pancreas group, the study team will help you insert and set up the iLet device, teach you how to use and maintain it, and complete questionnaires.

- Study staff will call you around two and five days after beginning the study period to discuss your blood sugar and any new events.
- After fourteen-sixteen days from the study's start, you will be asked to complete a crossover visit where you will end your first study period and may begin your second either same day, or within 14 days. You will be asked to complete questionnaires, discuss any events that have occurred, and transition to the second study period within 14 days.
    - If you are starting the iLet study period, the study team will assist you in transitioning to using the device and provide training and guidance.
- After both study periods have been competed, you will complete your final visit where you will return any study devices, the data from your devices will be downloaded, and you will complete questionnaires.
- If you agree to participate in the study, you will be in the study for approximately one month.

Risks:
Participation in this study involves risks, including the following:

- iLet Bionic Pancreas risks: high or low glucose levels
    - Low glucose risks: anxiety, nervousness, sweating rapid heart rate, confusion, passing out, and seizures
    - High glucose risks: blurry vision, increased urination
- Dexcom sensor risks: irritation or infection at the injection location
- Insulin risks: low glucose level
- Risk of allergic reaction

Benefits:
There is no guarantee that your health will improve if you join this study. This study may lead to information that could help patients and health care providers in the future.

Alternatives:
Please discuss standard treatment and care options with your doctor.

Detailed Consent:

Why is this study being done?
This study plans to learn more about using the iLet™ bionic pancreas system when implemented in primary care and endocrinology, and both in-person and via telehealth. The iLet™ bionic pancreas is an automated insulin delivery system that is comprised of an insulin pump, a continuous glucose monitor (CGM), and a computer program. The CGM measures your glucose level. It sends this information to the insulin pump. The computer program on the insulin pump decides how much insulin should be given. Usually if your glucose level is going up, the insulin pump will increase the amount of insulin you get. If your glucose level is going down, it will decrease the amount of insulin you get.

You are being asked to be in this research study because you have Type 1 diabetes being treated with a stable regimen and have indicated interest in this diabetes technology.

Other people in this study
Up to 40 people from your area may be enrolled in the study to ensure that 20 complete the entire study.

Up to 80 people around the country may be enrolled in the study to ensure that 40 complete the entire study.

What happens if I join this study?
If you join the study, you will be asked to take part in two 14-day study schedules – one using the iLet bionic pancreas, and one continuing your usual care.
You will need to complete 8 study visits during the two 14-day study periods. The two study periods total 28 days, however there may be a gap between the two 14-day periods.

Screening Visit (Visit 1)
The screening visit will take up to 2 hours to complete. At this visit we will review your medical history and see if you qualify for this study. The study doctor (MD) or nurse (NP) will review your medical history and screening forms to make sure that you are eligible to take part in this study. If you are not eligible, the study MD or NP will tell you why.

During this visit, we will:
- Ask you some questions about your personal medical history, family medical history, medications, and other personal history that is important to your health.
- If you are a person who can become pregnant, we will test your urine to see if you are pregnant. If the visit is happening over a video call, we will send you the pregnancy test in advance and ask you to take the test at home the day of the study visit.
- You cannot take part in this study if you are pregnant, or plan to become pregnant within the next 6 months. If your pregnancy test is positive, we will tell you. If you are not okay with being in this study, then do not sign this form. If you sign this form, then you are saying that it is okay to do the pregnancy tests and to talk to you about the test results. You do not have to be in the study if you don't want to.
- Record your height and weight.
- You will be asked to complete psychosocial questionnaires and complete a test for your HbA1c at the screening visit, or at the start of the first study visit if not completed previously.

If you do not start the study within 3 months of your screening visit, this visit will have to be repeated.

Assignment to a Study Schedule
If you qualify to take part in the study and choose to take part, we will assign you by chance (like a coin toss) to a schedule of visits. Each study schedule will include both study periods, but the order that they occur will be random.

You and the study doctor cannot choose your study schedule. You will have an equal chance of being assigned to any schedule. No matter what schedule you get assigned to, you will still be able to participate in each of the study periods.

There are 2 different 14-day study periods that can happen in any order:

1. *Usual Care*
   You will follow your usual diabetes management routine.

If you use a Dexcom G6 CGM, you will need to wear it for the whole 14 days, and we will use that to collect your blood glucose data.

If you do not use a Dexcom G6 CGM, we will provide you with a Dexcom G6 Pro CGM that you will need to wear for the whole 14 days. This CGM allows us to collect your blood glucose data, but you will not be able to see the glucose readings or get glucose related alarms.

2. *iLet Bionic Pancreas*
   You will wear the iLet bionic pancreas for 14 days. The iLet will use Humalog or Novolog to control your blood sugar for 14 days. You will not take your normal insulin injections or control any of the insulin dosing.

Participants will be selected to participate either in-person, or "virtually" (via video call). This decision will be made based on factors including your location, and you may let us know which you prefer. However, we cannot guarantee that there will be spots in your preferred group (in-person or virtual). Virtual participants will have study supplies mailed to them.

Study Start Visit (Visit 2)
This visit will take place on the first day of the study. This visit may last about 3 hours. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit we will:
- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.
- Test your urine for pregnancy, if you are a person who can become pregnant. You cannot take part in this study if you are pregnant, or plan to become pregnant within the next 6 months. If your pregnancy test is positive, we will tell you. If you are not okay with being in this study, then do not sign this form. If you sign this form, then you are saying that it is okay to do the pregnancy tests and to talk to you about the test results. You do not have to be in the study if you don't want to.
- Assess your HbA1c, if this has not been done prior to this visit. We will provide a finger stick test for you to do so.
- Ask you about your medical history and any events that have occurred since the last visit.
- We will ask you to insert a Dexcom sensor and start a session, if you are not already wearing one. We will review training on the Dexcom G6, glucometer, study policies, and schedule.
- We will ask you to complete questionnaires if they have not been completed prior to this visit, which will ask you questions about your diabetes and your quality of life.
- Randomize you to either the Usual Care group or the Bionic Pancreas group

For participants in the Usual Care group we will also:
- Provide you with enough study supplies until your next visit

For participants in the Bionic Pancreas group we will also:
- Help you insert and setup the iLet
- Teach you about how to use and maintain the iLet
- Teach you how to use the ketone meter and follow a ketone action plan

- Ask you to complete an additional questionnaire to assess your awareness of hypoglycemia (low blood sugar) and provide instructions for checking your blood sugar.

Mid-period Follow-up Visits (Visits 3, 4, 6, and 7)
Study staff will call you 2 and 5 days (+/-2 days) after starting the study period. They will ask about any new events since the last visit and how your blood sugar has been.

If you are using the iLet bionic pancreas, we will ask about how it has been working and provide additional guidance and training, as needed.

They will answer any questions you may have. If you want, we will supervise your first site change via a video visit. You can always contact study staff if you have questions or need assistance and it is not time for this phone call.

Crossover Visit (Visit 5)
During this visit, the study period you just completed will end, and the next study period will begin. This visit will last about 3 hours. If you have a break between study arms, this visit will happen twice: one to stop the study period and one to start the next one. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit, we will:
- Ask you questions about any changes to medications or medical history, or any events that may have occurred since the last study visit.
- Ask you to complete a set of questionnaires that will ask you about your diabetes, quality of life, and about your experience with the iLet (if applicable).
- Download information from the study devices you are using
- Help you transition between the study groups (usual care to iLet or iLet to usual care).
- Review training on study devices, study policies, and study schedule, as needed.
- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.
- Test your urine for pregnancy, if you are a person who can become pregnant. You cannot continue in this study if you are pregnant, or plan to become pregnant within the next 6 months. If your pregnancy test is positive, we will tell you.

Final Visit (Visit 8)
This visit will take place once at the end of the last study period, after both study periods have been completed. This visit will last about 1-2 hours. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit, we will:
- Ask you questions about any changes to medications or medical history, or any events that may have occurred since the last study visit
- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.
- Collect any study devices and help you transition back to your usual care
- Download data from your study devices
- Ask you to complete a set of questionnaires that will ask you about your diabetes, quality of life, and about your experience with the iLet (if applicable).

- Ask you to resume your usual glucose monitoring from before entering the study
- Ask you to contact your usual diabetes care provider about any questions or concerns you may have about your usual diabetes care after the study ends

There are several devices that will be used in this study. The devices are:

1. The **iLet bionic pancreas** is a handheld device that includes an insulin chamber and the Bionic Pancreas Control Algorithm. The iLet bionic pancreas calculates and doses insulin automatically to regulate blood glucose, based on the CGM glucose readings it receives from the Dexcom G6 CGM. The iLet bionic pancreas is a U.S. Food and Drug Administration (FDA) "investigational device" which means that it may only be used in research studies.
    a. The iLet bionic pancreas will use insulin to lower your blood glucose. The iLet can be used with either insulin lispro (Humalog) or insulin aspart (Novolog). Humalog and Novolog are approved by the FDA to prevent and treat hyperglycemia (high blood sugar), but not for use in the iLet bionic pancreas.

2. The **Dexcom G6 Continuous Glucose Monitor (CGM)** will be used in both study periods. It uses a small sensor inserted under the skin to measure glucose levels every 5 minutes.
    a. In the Usual Care period, subjects that don't already use a Dexcom G6 CGM will be provided with a Dexcom G6 Pro. The Dexcom G6 Pro lets us record your blood sugars, but you will not be able to see them.
    b. In the Bionic Pancreas period, the Dexcom G6 CGM will be used by the iLet bionic pancreas to give insulin.

3. The **Ascensia Contour Next One glucose meter** is an FDA approved fingerstick blood glucose meter. This meter will be used for all blood glucose measurements during the study.

4. The **Abbott Precision Xtra ketone meter** is an FDA approved fingerstick blood ketone meter. This meter will be used for all ketone measurements during the study to manage hyperglycemia.

Instructions and Policies for the Study

We will ask you to agree to the following policies during each of your 14-day study periods. These policies are important for your safety during the study, for the integrity of the study results, and they are requirements for taking part in the study. If you cannot follow any of these policies, please tell the study provider immediately, as you may no longer be able to participate in the study.

- You will keep the Contour Next One glucometer nearby at all times and use it for all blood glucose checks during the study. You can check your blood glucose as many times as you want.
- Dexcom G6 CGM sensors need to be replaced every 10 days throughout the study.
- If you become sick during the study, you should contact your regular doctor and tell a study staff member. You will continue to seek medical care as usual from your own doctors for any sickness or medical advice not related to study procedures.
    - If you are sick and unable to eat for more than one day, you must tell study staff so that they can assess the safety of continuing the study.
    - If you are sick and need to be admitted to the hospital, we may stop your study period. We may have you continue or redo the study arm once you are well enough, depending on how much data was collected before your hospitalization.

- We will encourage you to keep your diet, activity level, work and sleep schedule as similar as possible during each study period.
- Every day, we will e-mail you a survey to complete. We ask that you complete daily surveys in a timely fashion to reduce the chance of you forgetting something. Some of the things we may ask about are:
    - How many episodes of hypoglycemia you had and what treatment you used
    - Roughly how long and how hard you exercised
    - How much alcohol you drank
    - Insulin dosing
    - Any other issues you had throughout your day

Instructions and Policies for the Usual Care period

- You will follow your usual diabetes routine. The study team will not make any changes to your care. You are allowed to wear your own CGM if you normally do for your diabetes care.
- If you do not normally use a Dexcom G6 CGM, we will ask you to wear the blinded G6 Pro CGM during this period. This means that you will not be able to see the blood glucose values. These blood glucose values will be used for data collection only and will not be seen by study staff until the end of the study period.

Instructions and Policies for the Bionic Pancreas period

- You will be trained how to respond to iLet alarms and troubleshoot any issues that come up with the device. The iLet will sound an alarm if your CGM glucose is:
    - above 300 mg/dl for 90 minutes
    - less than 70 mg/dl
    - less than 55 mg/dl
    - less than 100 mg/dl and falling rapidly
- You will keep the Precision Xtra ketone meter nearby at all times and use it for all ketone checks during the study. You will check your ketones whenever your CGM glucose is above 300 mg/dl for 90 minutes and will call study staff if your ketones are 0.6 mmol/l or higher.
    - You will keep extra infusion sets and insulin vials and syringes or pens nearby at all times in case they are needed to manage hyperglycemia.
- You will not tamper with the iLet or change any of its settings other than what the study team instructs you to change.
- You will keep the iLet charged using the charging pad we will provide to you.
- The iLet is **not** waterproof and must be removed for water related activities.
    - You will disconnect the iLet for showering and swimming but will not be disconnected for more than 1 hour at a time or 2 hours in one day.
    - The infusion sets and the Dexcom G6 CGM sensor are water resistant and can be worn while swimming and showering.
- While on the bionic pancreas, you will announce the 3 major meals of the day with the estimated number of carbohydrates (usual, less than usual or more than usual) to the iLet. It will learn what you mean by that and give part of the insulin it thinks you will need for that meal at the beginning. We expect this to lower your average blood glucose compared to what the iLet would reach if you did not announce meals. You will not announce any snacks between meals.
- We will ask you to change your insulin infusion sets and reservoirs every 3 days, or if there is any doubt that your infusion set may not be working. Your infusion set may not be working if your CGM is greater than 300 mg/dl for 90 minutes, or greater than 400 mg/dl. Study staff will make sure you have enough supplies to change your infusion sets whenever it may be needed. Call study staff for any assistance related to infusion sets.

Treating Low Blood Glucose on the iLet bionic pancreas
We will ask you to confirm any symptoms of hypoglycemia or any CGM glucose alarms with a fingerstick blood glucose using the study meter. You will receive alarms from the iLet for CGM glucose below 55 mg/dl, CGM glucose below 70 mg/dl and if your CGM glucose is below 100 mg/dl and is dropping rapidly.

You should take carbohydrates to treat hypoglycemia at any time as you choose. We suggest that you use the "rule of 15s": give 15g of carbs for blood glucose below 70 mg/dl and retest blood glucose in 15 minutes. When you are on the iLet, you may need to treat with less carbohydrates than typical because insulin dosing would have automatically been suspended.

If you experience a lot of hypoglycemia, or a have a severe low blood sugar, call study staff. You may contact the study staff at any time for assistance troubleshooting any problems.

Treating High Blood Glucose on the iLet bionic pancreas
You will receive an alarm from the iLet for CGM glucose above 300 mg/dl for 90 minutes. You should check a fingerstick blood glucose using the study meter, and fingerstick ketones using the study ketone meter.

If your blood glucose is high, you should check your insulin infusion site and the iLet to make sure they are working. If there is any sign of insulin set failure, the set should be replaced. If your blood glucose is over 300 mg/dl for more than 90 minutes, you should check your ketones using the ketone meter. If ketones are 0.6 mmol/l or higher, please call study staff for additional guidance on how to manage your high blood glucose. You may contact the study staff at any time for ketones or high blood sugar.

Do not take any additional insulin outside of the iLet, as this could be very dangerous. If you need additional insulin, study staff will help you to do it safely.

What happens if my iLet bionic pancreas isn't working?
- You may contact study staff at any time for any issues, questions, or concerns that may arise. They will help troubleshoot the problem over the phone.
    - If it can't be resolved over the phone, a study staff member will be dispatched to meet you in a public place to help resolve the problem. Study staff may not enter your home and will follow all infection control procedures.
    - If a problem requiring in person assistance to resolve happens at night, study staff may wait until the next morning to meet you.
    - If a problem with the iLet cannot be resolved quickly, you may have to disconnect the iLet and connect your own pump or give yourself injections until the problem is resolved.
- If the study staff cannot reach you about a technical problem, they will try other numbers they have for you (such as your house or office phone).

Treating Other Medical Needs
If you have a non-urgent medical issue or concern, not related to your diabetes care, you should follow up with your primary care physician or usual medical provider. If you have an emergency medical issue or concern, you should seek care at a medical walk-in, emergency room or call 911, if necessary. You should notify the study staff of any medical care received during the study, even if it is not related to your diabetes.

Text Messaging During the Study

Text messages by mobile/cell phones are a common form of communication. This study involves sending you text messages that are relevant to the research study. Texting over mobile/cell phones carries security risks because text messages to mobile/cell phones are not encrypted. This means that information you send or receive by text message could be intercepted or viewed by an unintended recipient, or by your mobile/cell phone provider or carrier. If you want to receive communications by unencrypted texts despite these risks, the University of Colorado will not be held responsible for any interception of messages sent through unencrypted text message communications.

You will be responsible for all fees charged by your carrier's service plan for text messaging. This research study and University of Colorado are not responsible for any increased charges, data usage against plan limits or changes to data fees from the research texts.

Messages will only be read during regular business hours. Messages sent on nights or weekends will not be read until the next business day. Messaging should not be used in case of an emergency. If you experience a medical emergency, call 911 or go to the nearest hospital emergency department.

You may decide to not send or receive text messages with staff associated with this research study at any time. You can do this in person or by sending the research number a text message that says "Stop Research Text." Your agreement to the use of text messaging applies to this research study only. Agreeing to other texts from University of Colorado, for example appointment reminders, is a separate process. Opting out of other texts from University of Colorado is a separate process as well.

It is your responsibility to update your mobile/cell phone number with this research study in the event of a change.

Do you consent to text messages for this study? (Please use your initials to indicate your response. If completed electronically, your initials indicate consent to electronic consent and signature.)

☐ YES ☐ NO Initials _____

What are the possible discomforts or risks?

Risks of the iLet Bionic Pancreas

The iLet bionic pancreas may not control your glucose levels well. You might develop low or high glucose levels.

The symptoms of low glucose may include:

- Feeling anxious or nervous
- Sweating
- Rapid heart rate
- Confusion
- Unconsciousness (passing out)
- Seizure

The symptoms of high glucose may include:

- Blurry vision
- Increased urination

Risks of Inserting Infusion Sets and Dexcom CGM Sensors

You may feel some pain (like a pinprick) when the infusion sets or Dexcom CGM sensors are placed under your skin. In very rare cases, the skin at the injection locations can become irritated or infected. If there is any sign of irritation or infection, we will ask you to remove the infusion sets or sensors and put them in another place on your body. Sensors tips may break off under the skin on very rare occasions.

Risks of Insulin

Whenever insulin is injected into the body, there is a risk of getting a low glucose level.

Risks of an Allergic Reaction

With any drug, an allergic reaction can occur. Allergic reactions can be mild or more serious and can even result in death. Common symptoms of an allergic reaction are rash, itching, skin problems, swelling of the face and throat, or trouble breathing. If you think you are having an allergic reaction, call the study doctor right away. If you are having trouble breathing, call 911 immediately.

Risks to Pregnant Participants

High or low glucose levels can be harmful to an embryo or fetus (developing baby still in the womb) or on a breastfeeding infant. Because of these risks, volunteers cannot take part in this study if they are:

- Pregnant
- Trying to become pregnant
- Breastfeeding

Participants who are able to become pregnant will have a pregnancy test performed from their urine sample at the screening visit, Study Start visit, and Crossover visit.

If you are a menopausal participant and have not had a period for the past 12 months or more, you will not need to have a pregnancy test. Also, if you have had any well-documented method of surgical sterilization, you will not need to have a pregnancy test. The documented methods of surgical sterilization include having had a:

- Hysterectomy (removal of the uterus with or without the ovaries)

- Bilateral oophorectomy (removal of both ovaries)
- A tubal ligation (having your tubes tied)
- Transvaginal occlusion (plugging the opening of the tubes with a coil)

If you are a participant who is sexually active and able to become pregnant, you must agree to use one of the birth control methods listed below. You must use birth control for at least 2 weeks prior to the start of the study, for the entire study, and for at least 2 weeks after your last dose of study drug.

- Acceptable birth control methods for use in this study are:
  - Oral contraceptive pill (OCP)
  - Intrauterine Device (IUD, hormonal or copper)
  - External condom
  - Internal condom
  - Diaphragm or cervical cap with spermicide
  - Cervical sponge with spermicide
  - Contraceptive patch (such as OrthoEvra)
  - Contraceptive implant (such as Implanon, Nexplanon)
  - Vaginal ring (such as NuvaRing)
  - Progestin shot (such as Depo-Provera)

Unknown Risks

There may be other risks and side effects that are not known at this time.

There is a risk that people outside of the research team will see your research information. We will do all that we can to protect your information, but it cannot be guaranteed.

If you become pregnant, the particular treatment or procedures involved in the study may involve risks to the embryo or fetus, which are currently unclear.

What are the possible benefits of the study?

You may or may not benefit by taking part in this research. The bionic pancreas may help you maintain a lower blood glucose average with less hypoglycemia while in the study. The low glucose alarm and monitor contact for prolonged low glucose may reduce your risk of severe hypoglycemia during both the usual care and bionic pancreas periods.
This study is not designed to treat any illness or to improve your health.

Are there alternative treatments?

There may be other ways of treating your diabetes. These other ways include not using the iLet bionic pancreas and continuing with your usual care. You could also choose to get no treatment at all.

You should talk to your doctor about your choices. Make sure you understand all of your choices before you decide to take part in this study. You may leave this study and still have these other choices available to you.

Who is paying for this study?

This research is being sponsored by The Helmsley Charitable Trust.

Equipment is being provided by Beta Bionics, the manufacturer of the iLet.

Will I be paid for being in the study?
Financial compensation will be provided to all participants who complete the screening visit. Participants will be paid $25 for completing the screening visit whether or not they are eligible to participate in the study. Study participants will be compensated per the following schedule.

		Cross over: Usual Care				Cross over: Bionic Pancreas		
	Screening	Day 1	Mid Period Follow-up		Crossover/Day 1	Mid Period Follow-up		Final Visit
	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Visit 7	Visit 8
Screening	$25							
Visit Stipend		$50			$50			$50
Mid-period follow-up			$20	$20		$20	$20	
Questionnaire Completion		$25			$25			$25

The total compensation for a participant who completed all study visits and questionnaires would be $330.

Parking/transportation expenses will be paid for up to $30 per participant for each visit.

Participants who are unable to complete the study or choose to stop participation will receive prorated compensation for the portion of the study visits that they complete.

It is important to know that payment for participation in a study is taxable income.

Will I have to pay for anything?
Study funds will pay for certain study-related items and services, including screening procedures, study devices and blood glucose testing supplies. We may bill your health insurer for, among other things, routine items and services you would have received even if you did not take part in the research. You will be responsible for payment of any deductibles and co-payments required by your insurer for this routine care or other billed care. If you have any questions about costs to you that may result from taking part in the research, please speak with the study doctors and study staff.

Is my participation voluntary?
Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you refuse or decide to withdraw later, you will not lose any benefits or rights to which you are entitled.

If you leave this study, you will still receive your normal medical care. The only medical care that you will lose is the medical care you are getting as part of this study. You might be able to get that same kind of medical care outside of the study. Ask your study doctor.

If there are any new findings during the study that may affect whether you want to continue to take part, you will be told about them.

Can I be removed from this study?
The study doctor may decide to stop your participation without your permission if the study doctor thinks that being in the study may cause you harm, or for any other reason. Also, the sponsor may stop the study at any time.

What happens if I am injured or hurt during the study?
If you have an injury while you are in this study, you should call the investigators immediately. Their number is below.

University of Colorado
Tamara Oser, MD
Sean Oser, MD, MPH
303-724-2060

We will arrange to get you medical care if you have an injury that is caused by this research. However, you or your insurance company will have to pay for that care.

Who do I call if I have questions?
The researchers carrying out this study at the **University of Colorado** are Dr. Tamara Oser and Dr. Sean Oser. You may ask any questions you have now. If you have questions, concerns, or complaints later, you may call them at the numbers below. You will be given a copy of this form to keep.

Tamara Oser, MD
Sean Oser, MD, MPH
303-724-2060

You may have questions about your rights as someone in this study. You can call your local investigator (above) with questions. You can also call the responsible Institutional Review Board (COMIRB). You can call them at 303-724-1055.

A description of this clinical trial will be available on http://www.ClinicalTrials.gov, as required by U.S. 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.

What happens to data collected in this study?
The data we collect will be used for this study but may also be important for future research. Your data may be used for future research or distributed to other researchers for future study without additional consent if information that identifies you is removed from the data.

Who will see my research information?
The University of Colorado Denver | Anschutz Medical Campus (the University) and its affiliated health systems have rules to protect information about you. Federal and state laws including the Health Insurance Portability and Accountability Act (HIPAA) also protect your privacy. This part of the consent form tells you what information about you may be collected in this study and who might see or use it.

The institutions involved in this study include:
- University of Colorado Denver | Anschutz Medical Campus
- University of Colorado Health

We cannot do this study without your permission to see, use and give out your information. You do not have to give us this permission. If you do not, then you may not join this study.

We will see, use and disclose your information only as described in this form and in our Notice of Privacy Practices; however, people outside the University and its affiliate hospitals may not be covered by this obligation.

We will do everything we can to maintain the confidentiality of your personal information but confidentiality cannot be guaranteed.

The use and disclosure of your information has no time limit. You can cancel your permission to use and disclose your information at any time by writing to the study's Principal Investigator (PI), at the name and address listed below. If you do cancel your permission to use and disclose your information, your part in this study will end and no further information about you will be collected. Your cancellation would not affect information already collected in this study.

University of Colorado
Tamara Oser, MD
Tamara.Oser@cuanschutz.edu

Sean Oser, MD, MPH
Sean.Oser@cuanschutz.edu

Both the research records that identify you and the consent form signed by you may be looked at by others who have a legal right to see that information, such as:

- Federal offices such as the Food and Drug Administration (FDA) and the Office of Human Research Protections (OHRP) that protect research subjects like you
- The Institutional Review Board that is responsible for overseeing this research
- The study doctor and the rest of the study team
- The Helmsley Charitable Trust, who is the company paying for this research study
- Beta Bionics, who is the company providing equipment for this research study
- Officials at the institution where the research is conducted and officials at other institutions involved in this study who are in charge of making sure that we follow all of the rules for research

We might talk about this research study at meetings. We might also print the results of this research study in relevant journals. But we will always keep the names of the research subjects, like you, private.

You have the right to request access to your personal health information from the Investigator.

The investigator (or staff acting on behalf of the investigator) will use your information for the research outlined in this consent form. They will also make *all or some* of the following health information about you collected in this study available to:

- Researchers at other sites, including Massachusetts General Hospital (Mass General Brigham/Partners Health)
- Advanced Research and Diagnostics Laboratory at the University of Minnesota
- Beta Bionics (the manufacturer of the iLet)

Information about you that will be seen, collected, used and disclosed in this study:

- Name and Demographic Information (age, sex, ethnicity, address, phone number, etc.)
- Your social security number
- Portions of your previous and current Medical Records that are relevant to this study, including but not limited to Diagnosis(es), History and Physical, laboratory or tissue studies, radiology studies, procedure results
- Research Visit and Research Test records

- Psychological and mental health tests
- Alcoholism, Alcohol or Drug abuse
- Billing or financial information
- Other: data from the iLet, CGM, or other devices used for this study

What happens to Data, Tissue, Blood and Specimens that are collected in this study?
Scientists at the University and the health systems involved in this study work to find the causes and cures of disease. The data, tissue, blood and specimens collected from you during this study are important to this study and to future research. If you join this study:

- The data, tissue, blood, or other specimens given by you to the investigators for this research no longer belong to you.
- Both the investigators and any sponsor of this research may study your data, tissue, blood, or other specimens collected from you.
- If data, tissue, blood, or other specimens are in a form that identifies you, the University or the health systems involved in this study may use them for future research only with your consent or Institutional Review Board (IRB) approval.
- Any product or idea created by the researchers working on this study will not belong to you.
- There is no plan for you to receive any financial benefit from the creation, use or sale of such a product or idea.

Agreement to be in this study and use my data
I have read this paper about the study or it was read to me. I understand the possible risks and benefits of this study. I understand and authorize the access, use and disclosure of my information as stated in this form. I know that being in this study is voluntary. I choose to be in this study: I will get a signed and dated copy of this consent form. If applicable, I consent to the use of electronic consent and signature.

Signature: _____ Date:_____

Print Name: _____

Witness Signature: _____ Date: _____

Print Name: _____

Relationship to participant: _____

Consent form explained by: _____ Date: _____

Print Name: _____

Mass General Brigham

Research Consent Form
General Consent Form Template
Version Date: February 2021

Subject Identification

Protocol Title: Assessing feasibility, safety, and efficacy of developing a closed-loop automated insulin delivery system by community-based primary care physicians and academic endocrinologists, in person and through telehealth

Principal Investigator: Melissa S. Putman, MD, MMSc

Site Principal Investigator:

Description of Subject Population: Adults with type 1 diabetes

About this consent form

Please read this form carefully. It tells you important information about a research study. A member of our research team will also talk to you about taking part in this research study. People who agree to take part in research studies are called "subjects." This term will be used throughout this consent form.

If you decide to take part in this research study, you must sign this form to show that you want to take part. We will give you a signed copy of this form to keep.

Key Information

Taking part in this research study is up to you. You can decide not to take part. If you decide to take part now, you can change your mind and drop out later. Your decision won't change the medical care you get within Mass General Brigham now or in the future.

The following key information is to help you decide whether or not to take part in this research study. We have included more details about the research in the Detailed Information section that follows the key information.

Why is this research study being done?

The standard treatment for Type 1 Diabetes (T1D) is to give insulin either by injection or by infusion from a pump that provides insulin through a small tube (catheter) inserted under the skin. The person with type 1 diabetes must decide how much insulin to give, and when.

In this research study, we want to learn more about using the iLet™ bionic pancreas system when implemented in primary care and endocrinology, and both in-person and via telehealth. The iLet™ bionic pancreas is an automated insulin delivery system that is comprised of an insulin pump, a continuous glucose monitor (CGM), and a computer program. The CGM measures your glucose level. It sends this information to the insulin pump. The computer program on the insulin pump decides how much insulin should be given. Usually if your glucose level is going up, the insulin pump will increase the amount of insulin you get. If your glucose level is going down, it will decrease the amount of insulin you get.

You are being asked to be in this research study because you have type 1 diabetes being treated with a stable regimen and have indicated interest in this diabetes technology.

How long will you take part in this research study?

If you decide to join this research study, it will take you about 6 months to complete the study. During this time, we will ask you to complete 4 study visits and 4 phone check ins.
Half of the people in the study will complete all of their study visits virtually using a video call, and the other half of the people will be required to come to our office, the Diabetes Research Center, located at 50 Staniford Street, Suite 301, in Boston, MA for their study visits.

What will happen if you take part in this research study?

If you decide to join this research study, we will ask you to sign this consent form before we do any study procedures. You will wear the iLet™ bionic pancreas for two weeks. We call this the Bionic Pancreas period. You will also manage your diabetes care the way you usually do for two weeks. We call this the Usual Care period. You will need to complete three study visits in this four-week period. A detailed description of each study visit can be found later in this consent form in the section called “What will happen in this research study?”

Why might you choose to take part in this study?

We cannot promise any benefits to you from taking part in this research study. However, possible benefits may include a lower average blood glucose (BG) while wearing the iLet bionic pancreas. Others with type 1 diabetes may benefit in the future from what we learn in this study.

Why might you choose NOT to take part in this study?

Taking part in this research study has some risks and requirements that you should consider carefully.

Important risks and possible discomforts to know about include high and low blood glucose levels, and pain like a pinprick from the insertion of infusion sites and CGM sensors.

A detailed description of side effects, risks, and possible discomforts can be found later in this consent form in the section called "What are the risks and possible discomforts from being in this research study?"

Other things to consider are the time it will take to complete the study. The Screening Visit and Study Start Visit will be about 2-3 hours long. The Crossover and Study Stop Visits will each be about 1-2 hours long. These visits may be done virtually via videoconferencing or may be required to be in person. Each of the 4 scheduled phone call check ins will take approximately 15 minutes and can be done at a time that is convenient for you.

What other treatments or procedures are available for your condition?

Other treatments or procedures that are available to treat type 1 diabetes include insulin infusion pumps or insulin injections. The Dexcom G6 CGM, without the rest of the iLet bionic pancreas, is available for anyone with diabetes.

If you have questions or concerns about this research study, whom can you call?

You can call us with your questions or concerns. Our telephone numbers are listed below. Ask questions as often as you want.

Melissa S. Putman, MD, MMSc is the person in charge of this research study. You can call her at 617-840-4820 Monday through Friday, 9 am to 5 pm. A study doctor or nurse can be reached 24 hours a day, 7 days a week by calling 857-286-9934.

If you have questions about the scheduling of appointments or study visits, call **Sarah Gaston** at 617-726-1848 or **Rachel Bartholomew** at 617-724-7851.

If you want to speak with someone **not** directly involved in this research study, please contact the Mass General Brigham IRB office. You can call them at 857-282-1900.

You can talk to them about:

- Your rights as a research subject
- Your concerns about the research
- A complaint about the research
- Any pressure to take part in, or to continue in the research study

Detailed Information

A description of this clinical trial will be available on *http://www.ClinicalTrials.gov,* as required by U.S. 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.

Why is this research study being done?

This study plans to learn more about using the iLet™ bionic pancreas system when implemented in primary care and endocrinology, and both in-person and via telehealth. The iLet™ bionic pancreas is an automated insulin delivery system that is comprised of an insulin pump, a continuous glucose monitor (CGM), and a computer program. The CGM measures your glucose level. It sends this information to the insulin pump. The computer program on the insulin pump decides how much insulin should be given. Usually if your glucose level is going up, the insulin pump will increase the amount of insulin you get. If your glucose level is going down, it will decrease the amount of insulin you get.

The standard treatment for type 1 diabetes is to give insulin either by injection or by infusion from a pump that provides insulin through a small tube (catheter) inserted under the skin. The person with type 1 diabetes has to decide how much insulin to give, and when. The iLet bionic pancreas is different, because the iLet automatically determines the amount of insulin using a computer-generated system based on blood sugar levels.

The iLet bionic pancreas is not approved by the U.S. Food and Drug Administration (FDA) to treat type 1 diabetes. This means it is "investigational" and may only be used in research studies.

There are several devices that will be used in this study. The devices are:

1. The **iLet bionic pancreas** is a handheld device that includes an insulin chamber and the Bionic Pancreas Control Algorithm. The iLet bionic pancreas calculates and doses insulin automatically to regulate BG, based on the CGM glucose readings it receives from the Dexcom G6 CGM. The iLet bionic pancreas is not approved by the FDA for use in treating type 1 diabetes. Therefore, the device is considered experimental and may only be used in research studies.

2. The **Dexcom G6 Continuous Glucose Monitor (CGM)** will be used in both study periods. It uses a small sensor inserted under the skin to measure glucose levels every 5 minutes. The Dexcom G6 CGM is approved to monitor glucose levels in people with type 1 diabetes.

a. In the Usual Care period, subjects that don't already use a Dexcom G6 CGM will be provided with a Dexcom G6 Pro. The Dexcom G6 Pro lets us record your blood sugars, but you will not be able to see them.
b. In the Bionic Pancreas period, the Dexcom G6 CGM will be used by the iLet bionic pancreas to give insulin.

3. The **Ascensia Contour Next One glucose meter** is an FDA approved fingerstick BG meter. This meter will be used for all BG measurements during the study.

4. The **Abbott Precision Xtra ketone meter** is an FDA approved fingerstick blood ketone meter. This meter will be used for all ketone measurements during the study to manage hyperglycemia.

The iLet bionic pancreas will use **insulin** to lower your blood glucose. The iLet can be used with either insulin lispro (Humalog), or insulin aspart (Novolog). You will fill the iLet with the same type of insulin you currently use. If you use Apidra or Fiasp, we will provide you with Humalog or Novolog. Humalog and Novolog are approved by the FDA to prevent and treat hyperglycemia (high blood sugar), but not for use in the iLet bionic pancreas.

Who will take part in this research?

You are being asked to be in this research study because you have type 1 diabetes being treated with a stable regimen and have indicated interest in this diabetes technology.

This study is being conducted at two research centers: University of Colorado and Massachusetts General Hospital (MGH). Up to 40 people with type 1 diabetes will be enrolled in the study at MGH. After screening, the first 20 adults that qualify for the study will be scheduled to participate.

Up to 80 people around the country will be screened for the study of which 40 people will participate study wide.

This research is being sponsored by The Helmsley Charitable Trust. Equipment is being provided by Beta Bionics, the manufacturer of the iLet.

What will happen in this research study?

If you choose to take part in this study, we will ask you to sign this consent form before we do any study procedures.

Screening Visit (visit 1)
The screening visit will take up to 2 hours to complete. At this visit we will review your medical history and see if you qualify for this study. The study doctor (MD) or nurse (NP) will review your medical history and screening forms to make sure that you are eligible to take part in this study. If you are not eligible, the study MD or NP will tell you why.

During this visit, we will:

- Ask you some questions about your personal medical history, family medical history, medications, and other personal history that is important to your health.
- If you are a person who can become pregnant, we will test your urine to see if you are pregnant. If the visit is happening over a video call, we will send you the pregnancy test in advance and ask you to take the test at home the day of the study visit.
  You cannot take part in this study if you are pregnant, or plan to become pregnant within the next 6 months.
- Record your height and weight.

If you do not start the study within 3 months of your screening visit, this visit will have to be repeated.

Assignment to a Study Schedule
If you qualify to take part in the study and choose to take part, we will assign you by chance (like a coin toss) to a schedule of visits. Each study schedule will include both study periods, but the order that they occur will be random.

You and the study doctor cannot choose your study schedule. You will have an equal chance of being assigned to each schedule. No matter what schedule you get assigned to, you will still be able to participate in each of the study periods.

There are 2 different 14-day study periods that can happen in any order:

1. *Usual Care*
   You will follow your usual diabetes management routine.
   If you use a Dexcom G6 CGM, you will need to wear it for the whole 14 days, and we will use that to collect your blood glucose data.

   If you do not use a Dexcom G6 CGM, we will provide you with a Dexcom G6 Pro CGM that you will need to wear for the whole 14 days. This CGM allows us to collect your blood glucose data, but you will not be able to see the glucose readings or get glucose related alarms.

2. *iLet Bionic Pancreas*
   You will wear the iLet bionic pancreas for 14 days. The iLet will use Humalog or Novolog to control your blood sugar for 14 days. You will not wear your own pump or control any of the insulin dosing.

Assignment to in-person or virtual study visits
Participants will be selected to participate either in-person, or "virtually" (via video call). This decision will be made based on factors including your location, and you may let us know which you prefer. However, we cannot guarantee that there will be spots in your preferred group (in-person or virtual). Virtual participants will have study supplies mailed to them.

Study Start Visit (Visit 2)
This visit will take place on the first day of the study. This visit will last about 3 hours. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit we will:
- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.
- Test your urine for pregnancy if you are a person who can become pregnant.
- Assess your Hemoglobin A1c. This test measures your average glucose levels over the last three months. We will provide a finger stick test for you to do so.
- Ask you about your medical history and any events that have occurred since the last visit.
- We will ask you to insert a Dexcom sensor and start a session. We will review training on the Dexcom G6, glucometer, ketone meter, study policies, and schedule.
- We will ask you to complete questionnaires, which will ask you questions about your diabetes and your quality of life.

For participants in the Usual Care group, we will also:
- Provide you with enough study supplies until your next visit

For participants in the Bionic Pancreas group, we will also:
- Help you insert and setup the iLet
- Teach you about how to use and maintain the iLet
- Ask you to complete an additional questionnaire to assess your awareness of hypoglycemia (low blood sugar) and provide instructions for checking your blood sugar.

Mid-period Follow-up Visits (Visits 3, 4, 6, and 7)

Study staff will call you 2 and 5 days (+/-2 days) after starting the study period. They will ask about any new events since the last visit and how your blood sugar has been.

If you are using the iLet bionic pancreas, we will ask about how it has been working and provide additional guidance and training, as needed.

They will answer any questions you may have. If you want, we will supervise your first site change via a video visit. You can always contact study staff if you have questions or need assistance and it is not time for this scheduled phone call.

Crossover Visit (Visit 5)
During this visit, the study period you just completed will end, and the next study period will begin. This visit will last about 1-2 hours. If you have a break between study arms, this visit will happen twice: one to stop the study period and one to start the next one. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit, we will:

- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.
- Test your urine for pregnancy if you are a person who can become pregnant.
- Ask you questions about any changes to medications or medical history, or any events that may have occurred since the last study visit.
- Ask you to complete a set of questionnaires that will ask you about your diabetes, quality of life, and about your experience with the iLet (if applicable).
- Download information from the study devices you are using
- Help you transition between the study groups (usual care to iLet or iLet to usual care).
- Review training on study devices, study policies, and study schedule, as needed.

Final Visit (Visit 8)
This visit will take place once at the end of the last study period, after both study periods have been completed. This visit will last about 1-2 hours. If the study visit will happen over a video call, study staff will mail you all the supplies you will need ahead of time. They will confirm you have your supplies and are able to access the video call.

During this visit, we will:

- Record your weight. If the visit is happening over a video call, we will ask you to measure yourself at home.

- Ask you questions about any changes to medications or medical history, or any events that may have occurred since the last study visit
- Collect any study devices and help you transition back to your usual care
- Download data from your study devices
- Ask you to complete a set of questionnaires that will ask you about your diabetes, quality of life, and about your experience with the iLet (if applicable).
- Ask you to resume your usual glucose monitoring from before entering the study
- Ask you to contact your usual diabetes care provider about any questions or concerns you may have about your usual diabetes care after the study ends

Instructions and Policies for the Study

We will ask you to agree to the following policies during each of your 14-day study periods. These policies are important for your safety during the study, for the integrity of the study results, and they are requirements for taking part in the study. If you cannot follow any of these policies, please tell the study provider immediately, as you may no longer be able to participate in the study.

- You will keep the Contour Next One glucometer nearby at all times and use it for all blood glucose checks during the study. You can check your blood glucose as many times as you want.
- Dexcom G6 CGM sensors need to be replaced every 10 days throughout the study.
- If you become sick during the study, you should contact your regular doctor and tell a study staff member. You will continue to seek medical care as usual from your own doctors for any sickness or medical advice not related to study procedures.
    - If you are sick and unable to eat for more than one day, you must tell study staff so that they can assess the safety of continuing the study.
    - If you are sick and need to be admitted to the hospital, we may stop your study period. We may have you continue or redo the study arm once you are well enough, depending on how much data was collected before your hospitalization.
- We will encourage you to keep your diet, activity level, work, and sleep schedule as similar as possible during each study period.
- Every day, we will e-mail you a survey to complete. We ask that you complete daily surveys in a timely fashion to reduce the chance of you forgetting something. Some of the things we may ask about are:
    - How many episodes of hypoglycemia you had and what treatment you used
    - Roughly how long and how hard you exercised
    - How much alcohol you drank
    - Insulin dosing
    - Any other issues you had throughout your day

Instructions and Policies for the Usual Care period

- You will follow your usual diabetes routine. The study team will not make any changes to your care. You are allowed to wear your own CGM if you normally do for your diabetes care.
- If you do not normally use a Dexcom G6 CGM, we will ask you to wear the blinded G6 Pro CGM during this period. This means that you will not be able to see the blood glucose values. These blood glucose values will be used for data collection only and will not be seen by study staff until the end of the study period.

Instructions and Policies for the Bionic Pancreas period

- You will be trained how to respond to iLet alarms and troubleshoot any issues that come up with the device. The iLet will sound an alarm if your CGM glucose is:
  - above 300 mg/dl for 90 minutes
  - less than 70 mg/dl
  - less than 55 mg/dl
  - less than 100 mg/dl and falling rapidly
- You will keep the Precision Xtra ketone meter nearby at all times and use it for all ketone checks during the study. You will check your ketones whenever your CGM glucose is above 300 mg/dl for 90 minutes and will call study staff if your ketones are 0.6 mmol/l or higher.
  - You will keep extra infusion sets and insulin vials and syringes or pens nearby at all times in case they are needed to manage hyperglycemia.
- You will not tamper with the iLet or change any of its settings other than what the study team instructs you to change.
- You will keep the iLet charged using the charging pad we will provide to you.
- The iLet is **not** waterproof and must be removed for water related activities.
  - You will disconnect the iLet for showering and swimming but will not be disconnected for more than 1 hour at a time or 2 hours in one day.
  - The infusion sets and the Dexcom G6 CGM sensor are water resistant and can be worn while swimming and showering.
- While on the bionic pancreas, you will announce the 3 major meals of the day with the estimated number of carbohydrates (usual, less than usual or more than usual) to the iLet. It will learn what you mean by that and give part of the insulin it thinks you will need for that meal at the beginning. We expect this to lower your average blood glucose compared to what the iLet would reach if you did not announce meals. You will not announce any snacks between meals.
- We will ask you to change your insulin infusion sets and reservoirs every 3 days, or if there is any doubt that your infusion set may not be working. Your infusion set may not

be working if your CGM is greater than 300 mg/dl for 90 minutes, or greater than 400 mg/dl. Study staff will make sure you have enough supplies to change your infusion sets whenever it may be needed. Call study staff for any assistance related to infusion sets.

Treating Low Blood Glucose on the iLet bionic pancreas
We will ask you to confirm any symptoms of hypoglycemia or any CGM glucose alarms with a fingerstick blood glucose using the study meter. You will receive alarms from the iLet for CGM glucose below 55 mg/dl, CGM glucose below 70 mg/dl and if your CGM glucose is below 100 mg/dl and is dropping rapidly.

You should take carbohydrates to treat hypoglycemia at any time as you choose. We suggest that you use the "rule of 15s": give 15g of carbs for blood glucose below 70 mg/dl and retest blood glucose in 15 minutes. When you are on the iLet, you may need to treat with less carbohydrates than typical because insulin dosing would have automatically been suspended.

If you experience a lot of hypoglycemia, or a have a severe low blood sugar, call study staff. You may contact the study staff at any time for assistance troubleshooting any problems.

Treating High Blood Glucose on the iLet bionic pancreas
You will receive an alarm from the iLet for CGM glucose above 300 mg/dl for 90 minutes. You should check a fingerstick blood glucose using the study meter, and fingerstick ketones using the study ketone meter.

If your blood glucose is high, you should check your insulin infusion site and the iLet to make sure they are working. If there is any sign of insulin set failure, the set should be replaced. If your blood glucose is over 300 mg/dl for more than 90 minutes, you should check your ketones using the ketone meter. If ketones are 0.6 mmol/l or higher, please call study staff for additional guidance on how to manage your high blood glucose. You may contact the study staff at any time for ketones or high blood sugar.

Do not take any additional insulin outside of the iLet, as this could be very dangerous. If you need additional insulin, study staff will help you to do it safely.

What happens if my iLet bionic pancreas isn't working?

- You may contact study staff at any time for any issues, questions, or concerns that may arise. They will help troubleshoot the problem over the phone.
    - If it can't be resolved over the phone, a study staff member will be dispatched to meet you in a public place to help resolve the problem. Study staff may not enter your home and will follow all infection control procedures.

  - If a problem requiring in person assistance to resolve happens at night, study staff may wait until the next morning to meet you.
  - If a problem with the iLet cannot be resolved quickly, you may have to disconnect the iLet and connect your own pump or give yourself injections until the problem is resolved.
- If the study staff cannot reach you about a technical problem, they will try other numbers they have for you (such as your house or office phone).

Treating Other Medical Needs
If you have a non-urgent medical issue or concern, not related to your diabetes care, you should follow up with your primary care physician or usual medical provider. If you have an emergency medical issue or concern, you should seek care at a medical walk-in, emergency room or call 911, if necessary. You should notify the study staff of any medical care received during the study, even if it is not related to your diabetes.

Text Messaging During the Study
Text messages by mobile/cell phones are a common form of communication. This study involves sending you text messages that are relevant to the research study. Texting over mobile/cell phones carries security risks because text messages to mobile/cell phones are not encrypted. This means that information you send or receive by text message could be intercepted or viewed by an unintended recipient, or by your mobile/cell phone provider or carrier. If you want to receive communications by unencrypted texts despite these risks, MGB/Partners HealthCare will not be held responsible for any interception of messages sent through unencrypted text message communications.

You will be responsible for all fees charged by your carrier's service plan for text messaging. This research study and MGB/Partners Healthcare are not responsible for any increased charges, data usage against plan limits or changes to data fees from the research texts.

Text messages will only be read during regular business hours. Texts sent on nights or weekends will not be read until the next business day. Text messaging should not be used in case of an emergency. If you experience a medical emergency, call 911 or go to the nearest hospital emergency department.

You may decide to not send or receive text messages with staff associated with this research study at any time. You can do this in person or by sending the research number a text message that says "Stop Research Text." Your agreement to the use of text messaging applies to this research study only. Agreeing to other texts from MGB/Partners Healthcare, for example

appointment reminders, is a separate process. Opting out of other texts from MGB/Partners Healthcare is a separate process as well.

It is your responsibility to update your mobile/cell phone number with this research study in the event of a change.

Please select one of the following options:
Do you consent to text messages for this study? (please use your initials to indicate your response)

☐ YES ☐ NO Initial _____

Stopping the Study Early
You may choose to withdraw from the study at any time. If you choose to withdraw from the study while wearing the iLet bionic pancreas, a study provider will help you switch back to your usual diabetes care. The study staff may stop the study without your permission. This could happen because:

- The iLet bionic pancreas is not controlling your blood glucose well enough (too low or too high)
- You become ill, cannot eat, or start vomiting during the study.
- You don't follow the study instructions
- The study is stopped by a committee that monitors the safety and scientific results of the study

Study information included in your medical record
Partners has an electronic system that lets your study doctors know if you are admitted to a Partners Hospital, or if you visit a Partners Hospital Emergency Department. We want to make sure the study doctors know about any possible problems or side effects you experience while you are taking part in this study.

A notation that you are taking part in this research study may be made in your electronic medical record. Information from the research that relates to your general medical care may be included in the record (for example: list of allergies, results of standard blood tests done at the hospital labs).

Please ask your study doctor if you have any questions about what information will be included in your electronic medical record.

Sending Samples/Data to Research Collaborators Outside Partners
We will send your study information and/or samples to research collaborators. We will label all your study materials with a code instead of your name. The key to the code connects your name to your study information and samples. The study doctor will keep the key to the code here at Partners and will not share it with our research collaborators. No one outside of Partners will know which study information or samples are yours.

How may we use and share your samples and health information for other research?

The information we collect in this study may help advance other research. If you join this study, we may remove all information that identifies you (for example, your name, medical record number, and date of birth) and use these de-identified samples and data in other research. It won't be possible to link the information or samples back to you. Information and/or samples may be shared with investigators at our hospitals, at other academic institutions or at for-profit, commercial entities. You will not be asked to provide additional informed consent for these uses.

Storing, Using and Sharing Identifiable Information and Identifiable Samples
At the completion of this research study, we would like to store and be able to use and share your identifiable samples and health information with researchers at Mass General Brigham for other research related to type 1 diabetes. If we share your samples and/or health information with other researchers outside of Mass General Brigham, we will label the samples and information with a code instead of your name or other directly identifying information. The key to the code connects your name or other identifiers to your sample and/or information. We will keep the code in a password protected file.

Because these samples and/or health information are identifiable, we are asking your permission to store, use and share them for other research. You can still take part in the research study whether or not you give permission for the storage, use, and sharing of the samples and health information for other research.

Do you agree to let us store and use your samples and health information for other research related to type 1 diabetes?

☐ YES ☐ NO Initial _____

Will you get the results of this research study?

You and your doctor should not expect to get information about the results of the research study or the results of your individual participation in the research study. We will study samples and

information from many people. It could take many years before anyone knows whether the results have any meaning. There is a small chance that we could find out something from the study that might be important to your health. If this happens, we may contact you to find out if you would like to learn more. However, even if we find something important to your health, we cannot guarantee that you will be contacted.

What are the risks and possible discomforts from being in this research study?

Risks of the iLet Bionic Pancreas

The iLet bionic pancreas may not control your glucose levels well. You might develop low or high glucose levels.

The symptoms of low glucose may include:

- Feeling anxious or nervous
- Sweating
- Rapid heart rate
- Confusion
- Unconsciousness (passing out)
- Seizure

The symptoms of high glucose may include:

- Blurry vision
- Increased urination

Risks of Inserting Infusion Sets and Dexcom CGM Sensors

You may feel some pain (like a pinprick) when the infusion sets or Dexcom CGM sensors are placed under your skin. In very rare cases, the skin at the injection locations can become irritated or infected. If there is any sign of irritation or infection, we will ask you to remove the infusion sets or sensors and put them in another place on your body. Sensors tips may break off under the skin on very rare occasions.

Risks of Insulin

Whenever insulin is injected into the body, there is a risk of getting a low glucose level.

Risks of an Allergic Reaction

With any drug, an allergic reaction can occur. Allergic reactions can be mild or more serious and can even result in death. Common symptoms of an allergic reaction are rash, itching, skin problems, swelling of the face and throat, or trouble breathing. If you think you are having an allergic reaction, call the study doctor right away. If you are having trouble breathing, call 911 immediately.

Risks to Pregnant Participants

High or low glucose levels can be harmful to an embryo or fetus (developing baby still in the womb) or on a breastfeeding infant. Because of these risks, volunteers cannot take part in this study if they are:

- Pregnant
- Trying to become pregnant
- Breastfeeding

Participants who are able to become pregnant will have a pregnancy test performed from their urine sample at the screening visit.

If you are a menopausal participant and have not had a period for the past 12 months or more, you will not need to have a pregnancy test. Also, if you have had any well-documented method of surgical sterilization, you will not need to have a pregnancy test. The documented methods of surgical sterilization include having had a:

- Hysterectomy (removal of the uterus with or without the ovaries)
- Bilateral oophorectomy (removal of both ovaries)
- A tubal ligation (having your tubes tied)
- Transvaginal occlusion (plugging the opening of the tubes with a coil)

If you are a participant who is sexually active and able to become pregnant, you must agree to use one of the birth control methods listed below. You must use birth control for at least 2 weeks prior to the start of the study, for the entire study, and for at least 2 weeks after your last dose of study drug.

- Acceptable birth control methods for use in this study are:
  - Oral contraceptive pill (OCP)
  - Intrauterine Device (IUD, hormonal, or copper)
  - External condom
  - Internal condom
  - Diaphragm or cervical cap with spermicide
  - Cervical sponge with spermicide
  - Contraceptive patch (such as OrthoEvra)
  - Contraceptive implant (such as Implanon, Nexplanon)
  - Vaginal ring (such as NuvaRing)
  - Progestin shot (such as Depo-Provera)

Unknown Risks

There may be other risks and side effects that are not known at this time.

There is a risk that people outside of the research team will see your research information. We will do all that we can to protect your information, but it cannot be guaranteed.

If you become pregnant, the particular treatment or procedures involved in the study may involve risks to the embryo or fetus, which are currently unclear.

What are the possible benefits from being in this research study?

You may or may not benefit by taking part in this research. The bionic pancreas may help you maintain a lower blood glucose average with less hypoglycemia while in the study.

This study is not designed to treat any illness or to improve your health.

What other treatments or procedures are available for your condition?

You do not have to take part in this research study to be treated for type 1 diabetes. You could continue to treat your diabetes as you usually do, per your doctor's recommendations. You should talk to your doctor about your choices. Make sure you understand all of your choices before you decide to take part in this study. You may leave this study and still have these other choices available to you.

Can you still get medical care within Mass General Brigham if you don't take part in this research study, or if you stop taking part?

Yes. Your decision won't change the medical care you get within Mass General Brigham now or in the future. There will be no penalty, and you won't lose any benefits you receive now or have a right to receive.

We will tell you if we learn new information that could make you change your mind about taking part in this research study.

What should you do if you want to stop taking part in the study?

If you take part in this research study, and want to drop out, you should tell us. We will make sure that you stop the study safely. We will also talk to you about follow-up care, if needed.

Also, it is possible that we will have to ask you to drop out of the study before you finish it. If this happens, we will tell you why. We will also help arrange other care for you, if needed.

Will you be paid to take part in this research study?

We will pay you $330 for completing the entire research study.

You will receive:

- $25 for the screening visit (Visit 1)
- $50 for each study visit (Visits 2, 5, and 8)
- $20 for each phone check in (Visits 3, 4, 6 and 7)
- $25 for completing the questionnaires the study visits (Visits 2, 5 and 8)
- Parking/transportation expenses will be paid for up to $30 per participant for each in person visit.

Participants who are unable to complete the study or choose to stop participation will receive prorated compensation for the portion of the study visits that they complete.

It is important to know that payment for participation in a study is taxable income.

We may use your samples and information to develop a new product or medical test to be sold. The Sponsor, hospital, and researchers may benefit if this happens. There are no plans to pay you if your samples or information are used for this purpose.

What will you have to pay for if you take part in this research study?

Study funds will pay for certain study-related items and services. We may bill your health insurer for, among other things, routine items, and services you would have received even if you did not take part in the research. You will be responsible for payment of any deductibles and co-payments required by your insurer for this routine care or other billed care. If you have any questions about costs to you that may result from taking part in the research, please speak with the study doctors and study staff. If necessary, we will arrange for you to speak with someone in Patient Financial Services about these costs.

What happens if you are injured as a result of taking part in this research study?

We will offer you the care needed to treat any injury that directly results from taking part in this research study. We reserve the right to bill your insurance company or other third parties, if appropriate, for the care you get for the injury. We will try to have these costs paid for, but you

may be responsible for some of them. For example, if the care is billed to your insurer, you will be responsible for payment of any deductibles and co-payments required by your insurer.

Injuries sometimes happen in research even when no one is at fault. There are no plans to pay you or give you other compensation for an injury, should one occur. However, you are not giving up any of your legal rights by signing this form.

If you think you have been injured or have experienced a medical problem as a result of taking part in this research study, tell the person in charge of this study as soon as possible. The researcher's name and phone number are listed in the beginning of this consent form.

If you take part in this research study, how will we protect your privacy?

Federal law requires Mass General Brigham to protect the privacy of health information and related information that identifies you. We refer to this information as "identifiable information."

In this study, we may collect identifiable information about you from:

- Past, present, and future medical records
- Research procedures, including research office visits, tests, interviews, and questionnaires

Who may see, use, and share your identifiable information and why they may need to do so:

- Mass General Brigham researchers and staff involved in this study
- The sponsor(s) of the study, and people or groups it hires to help perform this research or to audit the research
- Other researchers and medical centers that are part of this study
- The Mass General Brigham ethics board or an ethics board outside Mass General Brigham that oversees the research
- A group that oversees the data (study information) and safety of this study
- Non-research staff within Mass General Brigham who need identifiable information to do their jobs, such as for treatment, payment (billing), or hospital operations (such as assessing the quality of care or research)
- People or groups that we hire to do certain work for us, such as data storage companies, accreditors, insurers, and lawyers

- Federal agencies (such as the U.S. Department of Health and Human Services (DHHS) and agencies within DHHS like the Food and Drug Administration, the National Institutes of Health, and the Office for Human Research Protections), state agencies, and foreign government bodies that oversee, evaluate, and audit research, which may include inspection of your records
- Public health and safety authorities, if we learn information that could mean harm to you or others (such as to make required reports about communicable diseases or about child or elder abuse)
- Other:

Some people or groups who get your identifiable information might not have to follow the same privacy rules that we follow and might use or share your identifiable information without your permission in ways that are not described in this form. For example, we understand that the sponsor of this study may use your identifiable information to perform additional research on various products or conditions, to obtain regulatory approval of its products, to propose new products, and to oversee and improve its products' performance. We share your identifiable information only when we must, and we ask anyone who receives it from us to take measures to protect your privacy. The sponsor has agreed that it will not contact you without your permission and will not use or share your identifiable information for any mailing or marketing list. However, once your identifiable information is shared outside Mass General Brigham, we cannot control all the ways that others use or share it and cannot promise that it will remain private.

Because research is an ongoing process, we cannot give you an exact date when we will either destroy or stop using or sharing your identifiable information. Your permission to use and share your identifiable information does not expire.

The results of this research study may be published in a medical book or journal or used to teach others. However, your name or other identifiable information **will not** be used for these purposes without your specific permission.

Your Privacy Rights

You have the right **not** to sign this form that allows us to use and share your identifiable information for research; however, if you don't sign it, you can't take part in this research study.

You have the right to withdraw your permission for us to use or share your identifiable information for this research study. If you want to withdraw your permission, you must notify

the person in charge of this research study in writing. Once permission is withdrawn, you cannot continue to take part in the study.

If you withdraw your permission, we will not be able to take back information that has already been used or shared with others, and such information may continue to be used for certain purposes, such as to comply with the law or maintain the reliability of the study.

You have the right to see and get a copy of your identifiable information that is used or shared for treatment or for payment. To ask for this information, please contact the person in charge of this research study. You may only get such information after the research is finished.

Informed Consent and Authorization

Statement of Person Giving Informed Consent and Authorization

- I have read this consent form.
- This research study has been explained to me, including risks and possible benefits (if any), other possible treatments or procedures, and other important things about the study.
- I have had the opportunity to ask questions.
- I understand the information given to me.

Signature of Subject:

I give my consent to take part in this research study and agree to allow my health information to be used and shared as described above.

_____	_____	_____
Subject	Date	Time

Signature of Study Doctor or Person Obtaining Consent:

Statement of Study Doctor or Person Obtaining Consent

- I have explained the research to the study subject.
- I have answered all questions about this research study to the best of my ability.

Study Doctor or Person Obtaining Consent | Date | Time

Consent Form Version: 2/15/2022