

**Supplementary Appendix:**

<b>Pancreas Transplant Centers</b>	
Barbara Ludwig	University Hospital Carl Gustav Carus-Dresden, Germany
Duck Han	Asan Medical Center Seoul, South Korea
Frantisek Saudek	IKEM Prague, Czech Republic
George Burke	University of Miami, USA
Helmut Arbogast	LMU Munich, Germany
Jeremy Chapman	University of Sydney, Australia
Jon Odorico	University of Wisconsin, USA
Jonathan Fridell	Indiana University School of Medicine, USA
Marcelo Perosa	Leforte Hospital Sao Paulo, Brazil
Mark Cattral	University of Toronto, Canada
Matthew Cooper	Medstar Georgetown Transplant Institute, USA
Neeraj Singh	Louisiana State University, USA
Olivier Thauvat	Lyon University Hospital, France
Pablo Uva	Instituto de Trasplantes y Alta Complejidad (ITAC – Nephrology)
Peter Friend	University of Oxford, UK
Peter Stock	University of California San Francisco, USA
Piotr Witkowski	University of Chicago, USA
Raja Kandaswamy	University of Minnesota, USA
Robert Stratta	Wake Forest University, USA
Takashi Kenmochi	Fujita Health University, Nagoya, Japan
Thierry Berney	University of Geneva, Switzerland
Tim Scholz	Uppsala University Hospital, Sweden
Torbjörn Lundgren	Karolinska Institute, Stockholm, Sweden
Ty Dunn	University of Pennsylvania, USA
Ugo Boggi	University of Pisa, Italy

<b>Islet Transplant Centers</b>	
Andrew Posselt	University of California San Francisco, USA
Barbara Ludwig	University Hospital Carl Gustav Carus-Dresden, Germany
Bernhard J. Hering	University of Minnesota, USA
Eelco J.P. de Koning	Leiden University Medical Center, Netherlands
Francois Pattou	University of Lille, France
Frantisek Saudek	IKEM Prague, Czech Republic
Hanne Scholz	Oslo University Hospital, Norway (Representing Nordic Network for Clinical Islet Transplantation)
James Shapiro	University of Alberta, Canada
Lorenzo Piemonti	San Raffaele University, Milan, Italy
Marie-Christine Vantyghem	University of Lille, France
Michael Rickels	University of Pennsylvania, USA
Olivier Thauvat	Lyon University Hospital, France
Peter Stock	University of California San Francisco, USA
Paul Johnson	University of Oxford, UK
Philip O'Connell	University of Sydney at Westmead Hospital, Sydney, Australia
Piotr Witkowski	University of Chicago, USA
Rodolfo Alejandro	University of Miami, USA
Thierry Berney	University of Geneva, Switzerland
Torbjörn Lundgren	Karolinska Institute, Stockholm, Sweden

**Supplementary Appendix:** List of all contributing survey respondents and their respective institutions.

**Table S1**

<b>Anatomic Site</b> <small>Number (%) of respondents</small>	<b>Portal Vein via IR</b>	<b>Portal vein via mini-laparotomy</b>	<b>Omentum</b>	<b>Intra-Peritoneal</b>	<b>Intra-Muscular</b>	<b>Gastric Submucosa</b>	<b>Bone Marrow</b>
	15 (83.3%)	10 (55.6%)	5 (27.8%)	1 (5.6%)	3 (16.7%)	2 (11.1%)	1 (5.6%)

**Table S1:** Most common anatomic sites selected for islet transplantation. Respondents were allowed to select more than one site.

# International Pancreas Transplant Monitoring Survey

Please complete the survey below. You can click "previous page" (at the bottom) at any time to update or review answers. Once you click submit you will be able to download a PDF of your answers.

Because of the free text responses we received on the prior surveys we tried to include all possible responses in this survey, but in case you find an option is not present, we have placed an "other" section for every response allowing you to free text anything you desire to be more specific.

Please note that many sections are mark all that apply.

Thank you!

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Respondent

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Continent of your institution

- North America
  - South America
  - Europe
  - Asia
  - Australia
  - Africa
- 

Name of Institution

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At your center, do you routinely perform enteric or bladder drainage for your pancreatic grafts?

- Enteric drainage for all pancreas transplants
  - Bladder drainage for all pancreas transplants
  - Bladder drainage for solitary pancreas transplants (PTA/PAK)
  - Other  
(If other, please comment below)
- 

Type of enteric drainage

- Duodenum
  - Jejunum
  - Jejunum with roux
  - Ileum
  - Ileum with roux
- 

Please expand here if other selected above

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**How many pancreas transplants does your center perform annually, on average?**

	0	1-5	6-10	11-15	16-20	>20
SPK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PAK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PTA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Protocol Biopsy**

At your center, do you routinely perform a protocol biopsy on pancreatic grafts post transplant? Please mark all that apply.

- SPK (Simultaneous Pancreas Kidney)
  - PAK (Pancreas After Kidney)
  - PTA (Pancreas Transplant Alone)
  - None
  - Other
- (If other, please comment below)

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Please expand here if other selected above

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At one time point(s) do you perform a protocol biopsy of a pancreas graft? Please mark all that apply.

- at one month or sooner
  - at 3 months
  - at 6 months
  - at 12 months
  - yearly after first year
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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**Donor Specific Antibody and Autoantibody Testing**

At your center do you check DSA's (Donor Specific Antibody) as part of protocol or for clinical indication? Please mark all that apply.

- Protocol  
 Cause  
 None  
 Other  
(If other, please comment below)

Please expand here if other selected above

---

At what time point(s) do you check DSA's as part of your center's protocol? Please mark all that apply.

- at one month or sooner  
 every 3 months  
 every 6 months  
 every 12 months  
 yearly after first year  
 Other  
(if other, please comment below)

Please expand here if other selected above

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After pancreas transplantation, does your center check autoantibodies [insulin (IAA), glutamic acid decarboxylase (GAD), protein phosphatase-like IA-2 (IA-2A), and ZnT8 (ZnT8A)] as part of protocol or for clinical indication? Please mark all that apply.

- Protocol  
 Cause  
 None  
 Other  
(if other, please comment below)

Please expand here if other selected above

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At what time point(s) do you check autoantibodies at your center as part of protocol? Please mark all that apply.

- at one month or sooner  
 every 3 months  
 every 6 months  
 every 12 months  
 yearly after first year  
 Other  
(if other, please comment below)

Please expand here if other selected above

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**What basic metabolic tests does your center routinely perform post-pancreas transplantation (i.e protocol)? Please mark all that apply. If none, then leave blank. If other, please comment below.**

	One month or sooner	Every month	Every 3 months	Every 6 months	Every 12 months	Annually after first year	Other	Not monitored
Monitoring Weight Gain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting glucose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HbA1C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting C-peptide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Random C-peptide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting insulin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please expand here if other selected above regarding timing of basic metabolic testing

---

Please expand here if other selected above regarding types of basic metabolic testing performed at your center.

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**What dynamic metabolic tests does your center routinely perform post-pancreas transplantation (i.e protocol)? Please mark all that apply. If none, then leave blank. If other, please comment below.**

	One month or sooner	Every Month	Every 3 months	Every 6 months	Every 12 months	Annually after first year	Other	Not monitored
Oral Glucose Tolerance Test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mixed Meal/Stimulation Tests: (MMTT, Arginine ST, IVGTT)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clamp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuous Glucose Monitoring (CGM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please expand here if other selected above regarding timing of dynamic metabolic testing

---

Please expand here if other selected above regarding types of dynamic metabolic testing performed at your center.

---

**Metabolic Testing- part 2**

In a post pancreas transplant patient with an increasing HbA1C or increasing fasting blood glucose, what metabolic testing would your center perform? Please mark all that apply.

- Monitoring for weight gain
  - Fasting c-peptide
  - Random c-peptide
  - Fasting insulin
  - Fasting glucose
  - HbA1C
  - Oral Glucose Tolerance Tests: (OGTT)
  - Mixed Meal/Stimulation Tests: (MMTT, Arginine ST, IVGTT)
  - Clamp
  - Continuous Glucose Monitoring (CGM)
  - None
  - Other
- (if other, please comment below)

Please expand here if other selected above

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In a post pancreas transplant patient with suspicion for rejection (increase amylase/lipase), what metabolic testing would your center perform? Please mark all that apply.

- Monitoring for weight gain
  - Fasting c-peptide
  - Random c-peptide
  - Fasting insulin
  - Fasting glucose
  - HbA1C
  - Oral Glucose Tolerance Test: (OGTT)
  - Mixed Meal/Stimulated Tests: (MMTT, AST, IVGTT)
  - Clamp
  - CGM
  - None
  - Other
- (if other, please comment below)

Please expand here if other selected above

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**Transplant Graft Biopsy**

In a patient with increasing HbA1C or increasing fasting glucose, does your center routinely perform a transplant graft biopsy? Please mark all that apply.

- yes- pancreas graft biopsy  
 yes- kidney biopsy in SPK  
 yes- Duodenal biopsy  
 no biopsy  
 Other  
(if other, please comment below)

Please expand here if other selected above

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Do you routinely request C4d testing on biopsy for this indication?

- yes we request C4d staining  
 no

In a patient with suspicion of rejection (increasing amylase/lipase), does your center routinely perform a transplant graft biopsy? Please mark all that apply.

- yes- pancreas graft biopsy  
 yes- kidney biopsy in SPK  
 yes- Duodenal biopsy  
 no biopsy  
 Other  
(if other, please comment below)

Please expand here if other selected above

---

Do you routinely request C4d testing on biopsy for this indication?

- yes we request C4d staining  
 no

**Immunologic Testing**

In a post pancreas transplant patient with an increasing HbA1C or increasing fasting blood glucose, what immunologic testing would your center perform? Please mark all that apply.

- DSA
- Autoantibodies (GAD65, IA-2, ZnT8, IA-2A)
- Cellular Response to auto-antigens
- Cell-free DNA platforms (donor derived, methylated DNA, etc)
- None
- Other  
(if other, please comment below)

---

Please expand here if other selected above

---

In a post pancreas transplant patient with suspicion for rejection (increase amylase/lipase), what immunologic testing would your center perform? Please mark all that apply.

- DSA
- Autoantibodies (GAD65, IA-2, ZnT8, IA-2A)
- Cellular Response to auto-antigens
- Cell-free DNA platforms (donor derived, methylated DNA, etc)
- None
- Other  
(if other, please comment below)

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Please expand here if other selected above

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**Imaging Studies**

In a post pancreas transplant patient with an increasing HbA1C or increasing fasting blood glucose, what imaging studies would your center routinely perform? Please mark all that apply.

- Doppler US
  - CT scan
  - MRI
  - None
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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In a post pancreas transplant patient with a suspicion for rejection (increasing amylase/lipase), what imaging studies would your center routinely perform? Please mark all that apply.

- Doppler US
  - CT scan
  - MRI
  - None
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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**Monitoring**

In your post-pancreas transplant patients, what metabolic monitoring does your center primarily recommend? Please mark all that apply.

- Continuous Glucose Monitoring
  - Fasting glucose checks, patient self monitoring
  - None
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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At your center, is there a composite score system that is used primarily in management of post-pancreas transplant patients? Please select all that apply.

- Beta score
  - Homa-IR
  - Matsuda Index
  - None
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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**Additional Studies at your Institution**

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Are there additional post-pancreas graft monitoring tests performed at your institution that were not included in this survey? Please elaborate below.

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# International Islet Transplant Monitoring Survey

Please complete the survey below.

You can click "previous page" (at the bottom) at any time to update or review answers. Once you click submit you will be able to download a PDF of your answers.

Because of the free text responses we received on the prior surveys we tried to include all possible responses in this survey, but in case you find an option is not present, we have placed an "other" section for every response allowing you to free text anything you desire to be more specific.

Please note that many sections are mark all that apply.

Thank you!

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Respondent

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Continent of your institution

- North America
  - South America
  - Europe
  - Asia
  - Australia
  - Africa
- 

Name of Institution

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At your center, what anatomic site(s) do you currently transplant islets? Please mark all that apply.

- Portal Vein via IR
  - Portal Vein via mini-laparotomy
  - Omentum
  - Intra-peritoneal
  - Gastric Mucosa
  - Intra-muscular
  - Other  
(if other, please comment below)
- 

Please expand here if other selected above

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**How many patients have received islet transplants at your center over the following time periods?**

	None	1-5	6-10	11-15	16-20	>20
in the last year	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
in the last 5 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
in the last 10 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
in the last 20 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Donor Specific Antibody and Autoantibody Testing

At your center do you check DSA's (Donor Specific Antibody) as part of protocol or for clinical indication after islet transplantation? Please mark all that apply.

- Protocol  
 Cause  
 None  
 Other  
 (If other, please comment below)

Please expand here if other selected above

---

At what time point(s) do you check DSA's as part of your center's protocol? Please mark all that apply.

- One month or sooner  
 every 3 months  
 every 6 months  
 every 12 months  
 yearly after first year  
 Other  
 (if other, please comment below)

Please expand here if other selected above

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After islet transplantation, does your center check autoantibodies [insulin (IAA), glutamic acid decarboxylase (GAD), protein phosphatase-like IA-2 (IA-2A), and ZnT8 (ZnT8A)] as part of protocol or for clinical indication? Please mark all that apply.

- Protocol  
 Cause  
 None  
 Other  
 (if other, please comment below)

Please expand here if other selected above

---

At what time point(s) do you check autoantibodies at your center as part of protocol? Please mark all that apply.

- One month or sooner  
 every 3 months  
 every 6 months  
 every 12 months  
 yearly after first year  
 Other  
 (if other, please comment below)

Please expand here if other selected above

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**What basic metabolic tests does your center routinely perform post-islet transplantation (i.e protocol)? Please mark all that apply. If none, then leave blank. If other, please comment below.**

	One month or sooner	Every month	Every 3 months	Every 6 months	Every 12 months	Annually after first year	Other	Not monitored
Monitoring weight gain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting glucose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HbA1C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting c-peptide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Random c-peptide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fasting insulin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please expand here if other selected above regarding timing of basic metabolic tests performed at your center.

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Please expand here if other selected above regarding types of basic metabolic tests performed at your center

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**What dynamic metabolic tests does your center routinely perform post-islet transplantation (i.e protocol). Please mark all that apply. If none, then leave blank. If other, please comment below**

	One month or sooner	Every month	Every 3 months	Every 6 months	Every 12 months	Annually after first year	Other	Not monitored
Oral Glucose Tolerance Test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mixed Meal/Stimulation Tests (MMTT, Arginine ST, IVGTT)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clamp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuous Glucose Monitoring (CGM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please expand here if other selected above regarding timing of dynamic metabolic tests performed at your center.

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Please expand here if other selected above regarding types of dynamic metabolic tests performed at your center

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**Metabolic Testing-Part 2**

In a post islet transplant patient with an increasing HbA1C or increasing fasting blood glucose, what metabolic testing would your center perform? Please mark all that apply.

- Fasting c-peptide,
- Random c-peptide
- Fasting insulin
- Fasting glucose
- HbA1C
- Oral Glucose Tolerance Tests: (OGTT)
- Mixed Meal/Stimulation Tests: (MMTT, Arginine ST, IVGTT)
- Clamp
- Continuous Glucose Monitoring (CGM)
- None
- Other  
(if other, please comment below)

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Please expand here if other selected above

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**Immunologic Testing**

In a post islet transplant patient with an increasing HbA1C or increasing fasting blood glucose, what immunologic testing would your center perform? Please mark all that apply.

- DSA
- Autoantibodies (GAD65, IA-2, ZnT8, IA-2A)
- Cellular Response to auto-antigens
- Cell-free DNA platforms (donor derived, methylated DNA, etc)
- None
- Other  
(if other, please comment below)

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Please expand here if other selected above

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**Monitoring**

In your post-islet transplant patients, what metabolic monitoring does your center primarily recommend? Please mark all that apply.

- Continuous Glucose Monitoring
  - Fasting glucose checks, patient self monitoring
  - None
  - Other
- (if other, please comment below)

---

Please expand here if other selected above

---

At your center, is there a composite score system that is used primarily in management of post-islet transplant patients? Please select all that apply.

- Beta score
  - Beta-2 score
  - SUITO
  - Transplant Estimated Function (TEF)
  - Homa-IR
  - Matsuda Index
  - None
  - Other
- (if other, please comment below)

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Please expand here if other selected above

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**Additional Studies at your Institution**

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Are there additional post-islet graft monitoring tests performed at your institution that were not included in this survey? Please elaborate below.

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