



MASSACHUSETTS

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Medical Policy

Islet Transplantation

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Policy Number: 324

BCBSA Reference Number: 7.03.12 (For Plan internal use only)

Related Policies

- Insulin Delivery Devices, [#332](#)
- Continuous or Intermittent Monitoring of Glucose in Interstitial Fluid, [#107](#)
- Allogeneic Pancreas Transplant, [#328](#)

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Autologous pancreas islet transplantation may be considered **MEDICALLY NECESSARY** as an adjunct to a total or near total pancreatectomy in individuals with chronic pancreatitis.

Allogeneic islet transplantation using an FDA-approved cellular therapy product (donislecel-jujn [ie, Lantidra]) is considered **INVESTIGATIONAL** for the treatment of type 1 diabetes.

Islet transplantation with donislecel-jujn is considered **INVESTIGATIONAL** in all other situations.

Policy Guidelines

Only adult subjects were enrolled in donislecel-jujn (Lantidra) clinical studies, although clinical studies did not include sufficient numbers of patients aged 65 and over to determine whether they respond differently than younger patients. Risks of donislecel-jujn infusion in pregnancy has not been assessed.

There are risks associated with the infusion procedure and long-term immunosuppression. There is no evidence of donislecel-jujn benefit for individuals whose diabetes is well-controlled with insulin therapy or for those with hypoglycemic unawareness who are able to prevent current repeated severe hypoglycemic events (neuroglycopenia requiring active intervention from a third party) using intensive diabetes management (including insulin, devices, and education).

Repeated intraportal islet infusions are not recommended in patients who have experienced prior portal thrombosis, unless the thrombosis was limited to second- or third-order portal vein branches. There is no evidence to support donislecel-jujn for individuals with liver disease, renal failure, or who have received a renal transplant.

Islet transplantation does not supplant future whole pancreatic transplantation (see policy [328 Allogeneic Pancreas Transplant prn.pdf](#)).

A specific target of HbA1c cannot be provided for all patients, as the target can be different based on age, duration of diabetes, and diabetic complications.

"Current repeated episodes" indicates risk within 1 year of the intended transplantation and is not related to events more than 1 year prior to the intended transplantation.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	This procedure is performed in the inpatient setting.
Commercial PPO and Indemnity	This procedure is performed in the inpatient setting.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

The above **medical necessity criteria MUST** be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code Description
0584T	Islet cell transplant, includes portal vein catheterization and infusion, including all imaging, including guidance, and radiological supervision and interpretation, when performed; percutaneous
0585T	Islet cell transplant, includes portal vein catheterization and infusion, including all imaging, including guidance, and radiological supervision and interpretation, when performed; laparoscopic
0586T	Islet cell transplant, includes portal vein catheterization and infusion, including all imaging, including guidance, and radiological supervision and interpretation, when performed; open
48160	Pancreatectomy, total or subtotal, with autologous transplantation of pancreas or pancreatic islet cells

HCPCS Codes

HCPCS codes:	Code Description
G0341	Percutaneous islet cell transplant, includes portal vein catheterization and infusion
G0342	Laparoscopy for islet cell transplant, includes portal vein catheterization and infusion
G0343	Laparotomy for islet cell transplant, includes portal vein catheterization and infusion

ICD-10 Procedure Codes

ICD-10-PCS procedure codes:	Code Description
3E030U0	Introduction of Autologous Pancreatic Islet Cells into Peripheral Vein, Open Approach
3E030U1	Introduction of Nonautologous Pancreatic Islet Cells into Peripheral Vein, Open Approach
3E033U0	Introduction of Autologous Pancreatic Islet Cells into Peripheral Vein, Percutaneous Approach
3E033U1	Introduction of Nonautologous Pancreatic Islet Cells into Peripheral Vein, Percutaneous Approach

Description

Islet Transplantation

In autologous islet transplantation during the pancreatectomy procedure, islet cells are isolated from the resected pancreas using enzymes, and a suspension of the cells is injected into the portal vein of the patient's liver.¹ Once implanted, the beta cells in these islets begin to make and release insulin.

Allogeneic islet transplantation potentially offers an alternative to whole-organ pancreas transplantation in patients with type 1 diabetes.² In the case of allogeneic islet cell transplantation, cells are harvested from a deceased donor's pancreas, processed, and injected into the recipient's portal vein. Islet transplantation has generally been reserved for patients with frequent and severe metabolic complications who have consistently failed to achieve control with insulin-based management. Allogeneic transplantation may be performed in the radiology department.

In 2000, a modified immunosuppression regimen increased the success of allogeneic islet transplantation. This regimen is known as the "Edmonton protocol."

Summary

Description

Performed in conjunction with pancreatectomy for chronic pancreatitis, autologous islet transplantation is proposed to reduce the likelihood of insulin-dependent diabetes. Allogeneic islet cell transplantation with donislecel-jujn is also being investigated as a treatment or cure for patients with type 1 diabetes.

Summary of Evidence

For individuals with chronic pancreatitis undergoing total or near-total pancreatectomy who receive autologous pancreas islet transplantation, the evidence includes nonrandomized studies and systematic reviews. Relevant outcomes are overall survival (OS), change in disease status, medication use, resource utilization, and treatment-related morbidity. Autologous islet transplants are performed in the context of total or near-total pancreatectomies to treat intractable pain from chronic pancreatitis. The procedure appears to decrease significantly the incidence of diabetes after total or near-total pancreatectomy in patients with chronic pancreatitis. Also, this islet procedure is not associated with serious complications and is performed in patients who are already undergoing a pancreatectomy procedure. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with type 1 diabetes who receive allogeneic pancreas islet transplantation with donislecel-jujn, the evidence includes single-arm prospective trials conducted at a single study site without strict protocols demonstrating insulin independence for over 1 year in a majority of participants, with mean insulin independence of approximately 5 years, resulting in Food and Drug Administration approval of donislecel for adults who are unable to approach target HbA1c because of current repeated episodes of severe hypoglycemia despite intensive diabetes management and education and for use in conjunction with concomitant immunosuppression. Additional well-designed studies are required to determine the effects of allogeneic islet transplantation in patients with type 1 diabetes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
2/2024	Annual policy review. References added. Policy title updated and investigational statement added for use of donislecel-jujn in type 1 diabetes. Effective 2/1/2024.

10/2022	Annual policy review. References added. Minor editorial refinements to policy statement; intent unchanged.
9/2021	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
1/2021	Medicare information removed. See MP #132 Medicare Advantage Management for local coverage determination and national coverage determination reference.
10/2020	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
1/2020	Clarified coding information.
10/2019	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
11/2018	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
10/2018	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
9/2017	Annual policy review. New references added.
7/2015	Annual policy review. New references added.
10/2014	Annual policy review. New investigational indications described. Effective 10/1/2014.
6/2014	Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015.
4/2014	Coding information clarified.
8/2013	Annual policy review. New references added.
11/2011 -4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
10/2011	Reviewed - Medical Policy Group - Gastroenterology, Nutrition, and Organ Transplantation. No changes to policy statement.
5/2011	New policy effective 5/2011 describing ongoing non-coverage.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

References

1. Tillou JD, Tatum JA, Jolissaint JS, et al. Operative management of chronic pancreatitis: A review. *Am J Surg.* Aug 2017; 214(2): 347-357. PMID 28325588
2. Vantghem MC, de Koning EJP, Pattou F, et al. Advances in β -cell replacement therapy for the treatment of type 1 diabetes. *Lancet.* Oct 05 2019; 394(10205): 1274-1285. PMID 31533905
3. U.S. Food & Drug Administration (FDA). FDA Approves First Cellular Therapy to Treat Patients with Type 1 Diabetes. June 28, 2023. <https://www.fda.gov/news-events/press-announcements/fda-approves-first-cellular-therapy-treat-patients-type-1-diabetes>. Accessed July 2, 2023.
4. Chinnakotla S, Radosevich DM, Dunn TB, et al. Long-term outcomes of total pancreatectomy and islet auto transplantation for hereditary/genetic pancreatitis. *J Am Coll Surg.* Apr 2014; 218(4): 530-43. PMID 24655839
5. Zhang YJ, Duan DD, Yuan H. Efficacy and safety of islet autotransplantation after total pancreatectomy in chronic pancreatitis: A systematic review and meta-analysis including 17 studies. *Clin Res Hepatol Gastroenterol.* Sep 2020; 44(4): 598-608. PMID 31523018
6. Kempeneers MA, Scholten L, Verkade CR, et al. Efficacy of total pancreatectomy with islet autotransplantation on opioid and insulin requirement in painful chronic pancreatitis: A systematic review and meta-analysis. *Surgery.* Sep 2019; 166(3): 263-270. PMID 31085044
7. Wu Q, Zhang M, Qin Y, et al. Systematic review and meta-analysis of islet autotransplantation after total pancreatectomy in chronic pancreatitis patients. *Endocr J.* 2015; 62(3): 227-34. PMID 25735805
8. Dong M, Parsaik AK, Erwin PJ, et al. Systematic review and meta-analysis: islet autotransplantation after pancreatectomy for minimizing diabetes. *Clin Endocrinol (Oxf).* Dec 2011; 75(6): 771-9. PMID 21605156

9. Cameron JL, Mehigan DG, Broe PJ, et al. Distal pancreatectomy and islet autotransplantation for chronic pancreatitis. *Ann Surg.* Mar 1981; 193(3): 312-7. PMID 6782958
10. Hinshaw DB, Jolley WB, Hinshaw DB, et al. Islet autotransplantation after pancreatectomy for chronic pancreatitis with a new method of islet preparation. *Am J Surg.* Jul 1981; 142(1): 118-22. PMID 6266268
11. Toledo-Pereyra LH. Islet cell autotransplantation after subtotal pancreatectomy. *Arch Surg.* Jul 1983; 118(7): 851-8. PMID 6407457
12. Fontana I, Arcuri V, Tommasi GV, et al. Long-term follow-up of human islet autotransplantation. *Transplant Proc.* Apr 1994; 26(2): 581. PMID 8171565
13. Rastellini C, Shapiro R, Corry R, et al. Treatment of isolated pancreatic islets to reverse pancreatectomy-induced and insulin-dependent type I diabetes in humans: a 6-year experience. *Transplant Proc.* 1997; 29(1-2): 746-7. PMID 9123507
14. Jindal RM, Fineberg SE, Sherman S, et al. Clinical experience with autologous and allogeneic pancreatic islet transplantation. *Transplantation.* Dec 27 1998; 66(12): 1836-41. PMID 9884286
15. Rabkin JM, Olyaei AJ, Orloff SL, et al. Distant processing of pancreas islets for autotransplantation following total pancreatectomy. *Am J Surg.* May 1999; 177(5): 423-7. PMID 10365884
16. Oberholzer J, Triponez F, Mage R, et al. Human islet transplantation: lessons from 13 autologous and 13 allogeneic transplantations. *Transplantation.* Mar 27 2000; 69(6): 1115-23. PMID 10762216
17. Berney T, Mathe Z, Bucher P, et al. Islet autotransplantation for the prevention of surgical diabetes after extended pancreatectomy for the resection of benign tumors of the pancreas. *Transplant Proc.* May 2004; 36(4): 1123-4. PMID 15194391
18. Ahmad SA, Lowy AM, Wray CJ, et al. Factors associated with insulin and narcotic independence after islet autotransplantation in patients with severe chronic pancreatitis. *J Am Coll Surg.* Nov 2005; 201(5): 680-7. PMID 16256909
19. Argo JL, Contreras JL, Wesley MM, et al. Pancreatic resection with islet cell autotransplant for the treatment of severe chronic pancreatitis. *Am Surg.* Jun 2008; 74(6): 530-6; discussion 536-7. PMID 18556996
20. Dixon J, DeLegge M, Morgan KA, et al. Impact of total pancreatectomy with islet cell transplant on chronic pancreatitis management at a disease-based center. *Am Surg.* Aug 2008; 74(8): 735-8. PMID 18705576
21. Sutherland DE, Gruessner AC, Carlson AM, et al. Islet autotransplant outcomes after total pancreatectomy: a contrast to islet allograft outcomes. *Transplantation.* Dec 27 2008; 86(12): 1799-802. PMID 19104425
22. Webb MA, Illouz SC, Pollard CA, et al. Islet auto transplantation following total pancreatectomy: a long-term assessment of graft function. *Pancreas.* Oct 2008; 37(3): 282-7. PMID 18815550
23. Jung HS, Choi SH, Kim SJ, et al. Delayed improvement of insulin secretion after autologous islet transplantation in partially pancreatectomized patients. *Metabolism.* Nov 2009; 58(11): 1629-35. PMID 19604519
24. Takita M, Naziruddin B, Matsumoto S, et al. Variables associated with islet yield in autologous islet cell transplantation for chronic pancreatitis. *Proc (Bayl Univ Med Cent).* Apr 2010; 23(2): 115-20. PMID 20396418
25. Sutherland DE, Radosevich DM, Bellin MD, et al. Total pancreatectomy and islet autotransplantation for chronic pancreatitis. *J Am Coll Surg.* Apr 2012; 214(4): 409-24; discussion 424-6. PMID 22397977
26. Walsh RM, Saavedra JR, Lentz G, et al. Improved quality of life following total pancreatectomy and auto-islet transplantation for chronic pancreatitis. *J Gastrointest Surg.* Aug 2012; 16(8): 1469-77. PMID 22673773
27. Dorlon M, Owczarski S, Wang H, et al. Increase in postoperative insulin requirements does not lead to decreased quality of life after total pancreatectomy with islet cell autotransplantation for chronic pancreatitis. *Am Surg.* Jul 2013; 79(7): 676-80. PMID 23815999
28. Garcea G, Pollard CA, Illouz S, et al. Patient satisfaction and cost-effectiveness following total pancreatectomy with islet cell transplantation for chronic pancreatitis. *Pancreas.* Mar 2013; 42(2): 322-8. PMID 23407482
29. Gruessner RW, Cercone R, Galvani C, et al. Results of open and robot-assisted pancreatectomies with autologous islet transplantations: treating chronic pancreatitis and preventing surgically induced diabetes. *Transplant Proc.* 2014; 46(6): 1978-9. PMID 25131087
30. Wilson GC, Sutton JM, Abbott DE, et al. Long-term outcomes after total pancreatectomy and islet cell autotransplantation: is it a durable operation?. *Ann Surg.* Oct 2014; 260(4): 659-65; discussion 665-7. PMID 25203883

31. Chinnakotla S, Beilman GJ, Dunn TB, et al. Factors Predicting Outcomes After a Total Pancreatectomy and Islet Autotransplantation Lessons Learned From Over 500 Cases. *Ann Surg.* Oct 2015; 262(4): 610-22. PMID 26366540
32. Georgiev G, Beltran del Rio M, Gruessner A, et al. Patient quality of life and pain improve after autologous islet transplantation (AIT) for treatment of chronic pancreatitis: 53 patient series at the University of Arizona. *Pancreatology.* 2015; 15(1): 40-5. PMID 25455347
33. Takita M, Lara LF, Naziruddin B, et al. Effect of the Duration of Chronic Pancreatitis on Pancreas Islet Yield and Metabolic Outcome Following Islet Autotransplantation. *J Gastrointest Surg.* Jul 2015; 19(7): 1236-46. PMID 25933581
34. Tai DS, Shen N, Szot GL, et al. Autologous islet transplantation with remote islet isolation after pancreas resection for chronic pancreatitis. *JAMA Surg.* Feb 2015; 150(2): 118-24. PMID 25494212
35. Wilson GC, Sutton JM, Smith MT, et al. Completion pancreatectomy and islet cell autotransplantation as salvage therapy for patients failing previous operative interventions for chronic pancreatitis. *Surgery.* Oct 2015; 158(4): 872-8; discussion 879-80. PMID 26173686
36. Mokadem M, Nouredine L, Howard T, et al. Total pancreatectomy with islet cell transplantation vs intrathecal narcotic pump infusion for pain control in chronic pancreatitis. *World J Gastroenterol.* Apr 28 2016; 22(16): 4160-7. PMID 27122666
37. Shahbazov R, Yoshimatsu G, Haque WZ, et al. Clinical effectiveness of a pylorus-preserving procedure on total pancreatectomy with islet autotransplantation. *Am J Surg.* Jun 2017; 213(6): 1065-1071. PMID 27760705
38. Fan CJ, Hirose K, Walsh CM, et al. Laparoscopic Total Pancreatectomy With Islet Autotransplantation and Intraoperative Islet Separation as a Treatment for Patients With Chronic Pancreatitis. *JAMA Surg.* Jun 01 2017; 152(6): 550-556. PMID 28241234
39. Quartuccio M, Hall E, Singh V, et al. Glycemic Predictors of Insulin Independence After Total Pancreatectomy With Islet Autotransplantation. *J Clin Endocrinol Metab.* Mar 01 2017; 102(3): 801-809. PMID 27870552
40. Solomina J, Gołębiewska J, Kijek MR, et al. Pain Control, Glucose Control, and Quality of Life in Patients With Chronic Pancreatitis After Total Pancreatectomy With Islet Autotransplantation: A Preliminary Report. *Transplant Proc.* Dec 2017; 49(10): 2333-2339. PMID 29198673
41. Morgan KA, Lancaster WP, Owczarski SM, et al. Patient Selection for Total Pancreatectomy with Islet Autotransplantation in the Surgical Management of Chronic Pancreatitis. *J Am Coll Surg.* Apr 2018; 226(4): 446-451. PMID 29289751
42. Thompson DM, Meloche M, Ao Z, et al. Reduced progression of diabetic microvascular complications with islet cell transplantation compared with intensive medical therapy. *Transplantation.* Feb 15 2011; 91(3): 373-8. PMID 21258272
43. Food and Drug Administration (FDA). Guidance for Industry: Considerations for Allogeneic Pancreatic Islet Cell Products. 2009; <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/considerations-allogeneic-pancreatic-islet-cell-products>. Accessed July 5, 2023.
44. Gangemi A, Salehi P, Hatipoglu B, et al. Islet transplantation for brittle type 1 diabetes: the UIC protocol. *Am J Transplant.* Jun 2008; 8(6): 1250-61. PMID 18444920
45. Qi M, Kinzer K, Danielson KK, et al. Five-year follow-up of patients with type 1 diabetes transplanted with allogeneic islets: the UIC experience. *Acta Diabetol.* Oct 2014; 51(5): 833-43. PMID 25034311
46. ClinicalTrials.gov. Islet Transplantation in Type 1 Diabetic Patients Using the University of Illinois at Chicago (UIC) Protocol (NCT00679042). July 27, 2022. <https://classic.clinicaltrials.gov/ct2/show/NCT00679042>. Accessed July 5, 2023.
47. ClinicalTrials.gov. Islet Transplantation in Type I Diabetic Patients Using the University of Illinois at Chicago (UIC) Protocol (NCT03791567). March 16, 2022. <https://classic.clinicaltrials.gov/ct2/show/NCT03791567>. Accessed July 3, 2023.
48. U.S. Food and Drug Administration (FDA). Donislecel-jujn (Lantidra) approval letter. June 28, 2023. <https://www.fda.gov/vaccines-blood-biologics/lantidra>. Accessed July 3, 2023
49. U.S. Food and Drug Administration (FDA). Donislecel-jujn (Lantidra) package insert. June 30, 2023. <https://www.fda.gov/vaccines-blood-biologics/lantidra>. Accessed July 5, 2023
50. LANTRIDA. U.S. Food and Drug Administration. August 7, 2023. <https://www.fda.gov/vaccines-blood-biologics/lantidra>. Accessed August 24, 2023.
51. National Institute for Health and Care Excellence (NICE). Allogenic pancreatic islet cell transplantation for type 1 diabetes mellitus [IPG257]. 2008; <https://www.nice.org.uk/Guidance/IPG257>. Accessed July 5, 2023.

52. National Institute for Health and Care Excellence (NICE). Autologous pancreatic islet cell transplantation for improved glycaemic control after pancreatectomy [IPG274]. 2008; <https://www.nice.org.uk/Guidance/IPG274>. Accessed July 3, 2023.
53. ElSayed NA, Aleppo G, Aroda VR, et al. 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Care in Diabetes-2023. *Diabetes Care*. Jan 01 2023; 46(Suppl 1): S140-S157. PMID 36507650
54. Abu-El-Haija M, Anazawa T, Beilman GJ, et al. The role of total pancreatectomy with islet autotransplantation in the treatment of chronic pancreatitis: A report from the International Consensus Guidelines in chronic pancreatitis. *Pancreatology*. Jun 2020; 20(4): 762-771. PMID 32327370
55. Centers for Medicare & Medicaid. National Coverage Determination (NCD) for ISLET CELL Transplantation in the Context of a Clinical Trial (260.3.1). 2004; <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=286&ncdver=1&CoverageSelection=Both&ArticleType=All&PolicyType=Final&s=All&KeyWord=islet+cell&KeywordLookUp=Title&KeywordSearchType=And&bc=gAAAABAAAA&>. Accessed July 5, 2023.