

Corporate Medical Policy

Insulin Therapy, Chronic Intermittent Intravenous (CIIT)

File Name:	insulin_therapy_chronic_intermittent_intravenous
Origination:	5/2002
Last CAP Review:	7/2011
Next CAP Review:	7/2012
Last Review:	7/2011

Description of Procedure or Service

Chronic intermittent intravenous insulin therapy (CIIT) is a technique for delivering viable-dosage insulin to diabetic patients with the goal of improved long-term glycemic control through an unknown mechanism; it is postulated to induce insulin-dependent hepatic enzymes to suppress glucose production.

There are 3 main sites of insulin-mediated glucose homeostasis that must function in a coordinated fashion to maintain euglycemia: 1) insulin secretion by the pancreas; 2) glucose uptake, primarily in the muscle, liver, gut, and fat; and 3) hepatic glucose production. For example, in the fasting state, when insulin levels are low, the majority of glucose uptake is non-insulin mediated. Glucose uptake is then balanced by liver production of glucose, critical to nourish vital organs, such as the brain. However, after a glucose challenge, insulin binds to specific receptors on the hepatocyte to suppress glucose production. Without this inhibition, as can be seen in diabetic patients, marked hyperglycemia may result. Different classes of diabetic drug therapy target different aspects of glucose metabolism. Various insulin secretagogues (i.e., sulfonylureas) function by increasing the pancreatic secretion of insulin; thiazolidinediones (i.e., pioglitazone [Actos®] and rosiglitazone [Avandia®]) function in part by increasing glucose uptake in the peripheral (principally skeletal) tissues; and biguanides (i.e., metformin) function by decreasing hepatic glucose production. While patients with type 2 diabetes may be treated with various combinations of all 3 of the above classes of drugs, patients with type 1 diabetes, who have no baseline insulin secretion, receive exogenous insulin therapy with or without additional drug therapy with thiazolidinediones or metformin. Large-scale randomized studies have established that tight glucose control is associated with a decreased incidence of microvascular complications of diabetes (i.e., nephropathy, neuropathy, and retinopathy). Currently, the American Diabetics Association recommends a target hemoglobin A1c (HbA1c) concentration of less than 7%.

Chronic intermittent intravenous insulin therapy (CIIT), also referred to as outpatient intravenous insulin therapy (OIVIT), hepatic activation, or metabolic activation, involves delivering insulin intravenously over a six to seven hour period in a pulsatile fashion using a specialized pump controlled by a computerized program that adjusts the dosages based on frequent blood glucose monitoring. The pulses are designed to deliver a higher, more physiologic concentration of insulin to the liver than is delivered by traditional subcutaneous injections. This higher level of insulin is thought to more closely mimic the body's natural levels of insulin as they are delivered to the liver. It is hoped that this therapy ultimately results in improved glucose control through improved hepatic activation.

CIIT is typically delivered once weekly as an outpatient therapy.

Any insulin infusion pump can be used for the purposes of CIIT. Infusion pumps have received U.S. Food and Drug Administration (FDA) marketing clearance through a 510(k) process, as they

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are determined to be substantially equivalent to predicate devices for the delivery of intravenous medications.

Related Policy: Insulin Potentiation Therapy

*****Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.**

Policy

Chronic Intermittent Intravenous Insulin Therapy is considered investigational. BCBSNC does not provide coverage for investigational services or procedures.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Insulin Therapy, Chronic Intermittent Intravenous (CIIT) is covered

Not applicable.

When Insulin Therapy, Chronic Intermittent Intravenous (CIIT) is not covered

Chronic intermittent intravenous insulin therapy (CIIT) is considered investigational. BCBSNC does not cover investigational services.

Policy Guidelines

A 2010 literature search was unable to identify any randomized controlled clinical trials to determine the effectiveness of this treatment. The American Diabetes Association and the Association of Clinical Endocrinologists do not include chronic intermittent intravenous insulin therapy in their practice guidelines for diabetes. Additional data is needed to establish the safety and efficacy of this treatment.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: G9147

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual, 11/20/2001; 2.01.43

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Specialty Matched Consultant Advisory Panel - 7/2002

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.43, 4/29/2003.

Specialty Matched Consultant Advisory Panel - 6/2004

American Diabetes Association. Clinical practice recommendations 2006. Diabetes Care. 2006;29:S4-S40. Retrieved 3/29/06 from http://care.diabetesjournals.org/cgi/content/full/29/suppl_1/s3

American Association of Clinical Endocrinologists. Medical guidelines for the management of diabetes mellitus: the AACE system of intensive diabetes self-management - 2002 update. Endocr Pract. 8(suppl 1):40-65. Retrieved 3/29/06 from http://test.aace.com/clin/guidelines/diabetes_2002.pdf

Specialty Matched Consultant Advisory Panel - 5/2006

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.43, 9/10/2009

American Diabetes Association (ADA). 2010 Standards of Medical Care in Diabetes. Diabetes Care January 2010 vol. 33 no. Supplement 1 S11-S61. Retrieved on August 5, 2010 from <http://care.diabetesjournals.org/search?fulltext=2010+medical+guidelines&submit=yes>

Specialty Matched Consultant Advisory Panel 8/2010

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.01.43, 9/16/2010

Policy Implementation/Update Information

5/2002	Original policy issued.
8/2002	Specialty Matched Consultant Advisory Panel review 7/1/2002. No changes.
4/2004	Benefits Application and Billing/Coding sections updated for consistency.
6/24/04	Specialty Matched Consultant Advisory Panel review. No changes to criteria. References added.
7/10/06	Specialty Matched Consultant Advisory Panel review 5/18/2006. No changes to policy statement. Rationale added to "Policy Guidelines" section. References added. Active Archive, policy no longer scheduled for routine literature review. (btw)
4/27/10	Policy status changed from "Active Policy, no longer scheduled for routine literature review" to "Active". Removed the Policy Number. Added the following statement to the "Description" section indicating; "*The infusion pump used is specially designed for the purposes of CIIT. The pump received U.S. Food and Drug Administration (FDA) marketing clearance through a 510(k) process." New HCPCS code G9147 added to the "Coding/Billing" section. References added. (btw)
9/28/10	Specialty Matched Consultant Advisory Panel review 8/2010. References updated. (mco)
8/30/11	Description section updated. No change to policy statement. Specialty Matched Consultant Advisory Panel review 7/27/11. (adn)

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Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.