



## Table of Contents

Policy Title	Policy Number	Last Reviewed
<a href="#">Chronic Intermittent IV Insulin Therapy (CIIT), Metabolic Activation Therapy (Hepatic Activation Therapy), or Cellular Activation Therapy (CAT)</a>	<a href="#">230</a>	04/11/24
<a href="#">Radiofrequency Ablation for Benign Thyroid Nodules</a>	<a href="#">646</a>	04/17/24
<a href="#">Whole Body Vibration Therapy (WBVT) for the Treatment of Osteoporosis</a>	<a href="#">516</a>	12/18/24



## MEDICAL POLICY

### CHRONIC INTERMITTENT IV INSULIN THERAPY (CIIT), METABOLIC ACTIVATION THERAPY (HEPATIC ACTIVATION THERAPY), OR CELLULAR ACTIVATION THERAPY (CAT)

Policy # 230

Implementation Date: 5/1/04

Review Dates: 4/14/05, 4/20/06, 5/17/07, 4/24/08, 4/23/09, 5/19/11, 6/21/12, 6/20/13, 4/17/14, 5/7/15, 4/14/16, 4/27/17, 9/18/18, 4/19/19, 4/15/20, 4/15/21, 3/17/22, 4/20/23, 4/11/24

Revision Dates: 2/8/10

**Disclaimer:**

1. Policies are subject to change without notice.
2. Policies outline coverage determinations for Select Health Commercial, Select Health Medicare (CMS), and Select Health Community Care (Medicaid) plans. Refer to the "Policy" section for more information.

#### Description

Hepatic activation, also referred to as chronic intermittent intravenous insulin infusion therapy (CIIT) or pulsatile IV insulin therapy (PIVIT), is a treatment of diabetes involving the delivery of insulin intravenously over a 6–7-hour period, in a pulsatile fashion, using a specialized pump controlled by a computerized program. The dosages of insulin are adjusted based on frequent blood glucose monitoring and are designed to deliver a higher, more physiologic concentration of insulin to the liver than is delivered by traditional subcutaneous injections of insulin. It is hoped that this therapy ultimately results in improved glucose control through improved hepatic activation. Although the exact physiologic mechanism is unclear, Aoki, one of the principal investigators of CIIT, proposes that in diabetics, lower levels of insulin in the portal vein are associated with a decreased concentration of the liver enzymes required for hepatic metabolism of glucose. Once weekly, 6-hour intravenous pulsatile infusions of insulin while the patient ingests a carbohydrate meal are designed to increase the portal vein concentrations of insulin, ultimately stimulating the synthesis of glucokinase and other insulin-dependent enzymes.

The CIIT Program consists of a once-a-week treatment session of 6 hours of programmed intermittent intravenous insulin therapy, together with oral glucose. This session uses a complex methodology under the direction of a physician in a healthcare setting. Patients relax in big lounge chairs and read, watch TV, sleep, do crafts, or even work on business projects for 6 hours. The remainder of the week, the patient follows the American Diabetes Association (ADA) recommended insulin therapy, usually the "4 shot regimen." The patient and physician work in partnership to optimize health with attention to diet, exercise, and treatment of other medical problems such as hypertension.

#### COMMERCIAL PLAN POLICY AND CHIP (CHILDREN'S HEALTH INSURANCE PROGRAM)

Select Health does NOT cover chronic intermittent IV insulin therapy (CIIT), metabolic activation therapy (hepatic activation therapy), or cellular activation therapy (CAT); the long-term health outcomes of our members with regards to these therapies has not been established. This meets the plan's definition of experimental/investigational.

#### SELECT HEALTH MEDICARE (CMS)

Coverage is determined by the Centers for Medicare and Medicaid Services (CMS); if a coverage determination has not been adopted by CMS, and InterQual criteria are not available, the Select Health Commercial policy applies. For the most up-to-date Medicare policies and coverage,

POLICY # 230 - CHRONIC INTERMITTENT IV INSULIN THERAPY (CIIT), METABOLIC ACTIVATION THERAPY (HEPATIC ACTIVATION THERAPY), OR CELLULAR ACTIVATION THERAPY (CAT)

© 2023 Select Health. All rights reserved.

Page 1

### Chronic Intermittent IV Insulin Therapy (CIIT), Metabolic Activation Therapy (Hepatic Activation Therapy), or Cellular Activation Therapy (CAT), continued

please visit their search website <http://www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?from2=search1.asp&> or the manual website

#### SELECT HEALTH COMMUNITY CARE (MEDICAID)

**Select Health Community Care policies typically align with State of Utah Medicaid policy, including use of InterQual. There may be situations where NCD/LCD criteria or Select Health commercial policies are used.** For the most up-to-date Medicaid policies and coverage, please visit their website <http://health.utah.gov/medicaid/manuals/directory.php> or the [Utah Medicaid code Look-Up tool](#)

#### Summary of Medical Information

There were no systematic reviews identified for this report and only 3 published clinical trials, 2 of which were controlled, the third a cross-over trial; total sample size for the 3 studies was 149 (including controls) and follow-up ranged from 3–18 months. While these 3 studies demonstrated improvement in the measured outcomes, the total number of patients studied, and short follow-up times prevent making any conclusions about the effectiveness or safety of the therapy.

Aoki and colleagues studied the effect of CIIT on hypertensive medications in 26 patients with type 1 diabetes and associated hypertension and nephropathy. The 26 patients were randomly assigned to a control group or treatment group for 3 months and then crossed over to the opposite group for an additional 3 months. At baseline, all patients were being treated with 4 daily insulin injections and had achieved acceptable HbA1c levels of 7.4%. The patients also achieved acceptable baseline blood pressure control with a variety of medications. While the study was randomized, it was not blinded in that sham CIIT procedures were not performed. Therefore, those patients receiving CIIT received more intense follow-up during this period. During the treatment phase, patients reported a significant decrease in the dosage of antihypertensive medicines. No difference in glycemic control was noted. Since all the patients had adequate blood pressure control at baseline, the clinical significance of the decrease in antihypertensive dosage requirement associated with CIIT is uncertain.

Dailey and colleagues reported on the effect of CIIT on the progression of diabetic nephropathy in a prospective, non-randomized trial of 49 patients with Type 1 diabetes. A total of 26 were assigned to the control group, while 23 were assigned to the treatment group who underwent weekly CIIT. Both groups reported a similar significant decrease in HbA1c levels during the 18-month study period. The creatinine clearance declined in both groups as expected, but the rate of decline in the treatment group was significantly less compared to the control group. Again, the clinical significance of this finding is uncertain, particularly since the decrease in HbA1c was similar in both groups.

All other studies of CIIT therapy were case series. Additionally, there have been no new studies regarding this therapy since 2001. This suggests that despite the prominence of diabetes and its complications in the US population, academic interest in this therapy is lacking.

Finally, metabolic activation therapy is not discussed as a treatment option in the 2004 clinical practice recommendations of the American Diabetes Association or the American Academy of Clinical Endocrinologists. This suggests that this therapy remains outside the standard of care for the treatment of diabetes or its complications.

A literature review performed in February 2010 identified Medicare's National Coverage Decision for this treatment. They stated the evidence does not support a conclusion that the therapy improved health outcomes.

#### Billing/Coding Information

**Not Covered: Investigational/Experimental/Unproven for this indication**

#### CPT CODES

<b>82947</b>	Glucose; quantitative, blood (except reagent strip)
<b>82948</b>	; quantitative, blood, reagent strip
<b>82950</b>	; post glucose dose (includes glucose)

### Chronic Intermittent IV Insulin Therapy (CIIT), Metabolic Activation Therapy (Hepatic Activation Therapy), or Cellular Activation Therapy (CAT), continued

82962	Glucose, blood by glucose monitoring devices(s) cleared by the FDA specifically for home use
84132	Potassium; serum, plasma or whole blood
84133	; urine
84540	Urea nitrogen; urine
96374	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); intravenous push, single or initial substance/drug
96379	Unlisted therapeutic, prophylactic, or diagnostic intravenous or intra-arterial injection or infusion
94681	Oxygen uptake, expired gas analysis; including CO2 output, percentage oxygen extracted.
94690	Oxygen uptake, expired gas analysis; rest, indirect (separate procedure)

#### HCPCS CODES

G9147	Outpatient intravenous insulin treatment (OIVIT) either pulsatile or continuous, by any means, guided by the results of measurements for: respiratory quotient; and/or, urine urea nitrogen (UUN); and/or, arterial, venous or capillary glucose; and/or potassium concentration
-------	--

#### Key References

1. 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*, 2002; 8(Suppl 1):40-65
2. American Diabetes Association. Clinical Practice Recommendations 2003. *Diabetes Care*, 2003; 26 (Suppl 1).
3. Aoki TT, Benbarka MM, Okimura MC, et al. Long-term intermittent intravenous insulin therapy and type 1 diabetes mellitus. *Lancet*, 1993, Aug 28; 342(8870):515-8.
4. Aoki TT, Grecu EO, Arcangeli MA, Meisenheimer R. Effect of intensive insulin therapy on abnormal circadian blood pressure pattern in patients with type 1 diabetes mellitus. *Online J Curr Clin Trials*, 1995, Dec 15; Doc No 199.
5. Aoki TT, Grecu EO, Arcangeli MA. Chronic intermittent intravenous insulin therapy corrects orthostatic hypotension of diabetes. *Am J Med*, 1995 Dec;99(6):683-4.
6. Aoki TT, Grecu EO, Prendergast JJ, et al. Effect of chronic ntermittent intravenous insulin therapy on antihypertensive medication requirements in IDDM subjects with hypertension and nephropathy. *Diabetes Care*, 1995 Sep;18(9):1260-5.
7. Dailey GE, Boden GH, Creech RH, Johnson DG, Gleason RE, Kennedy FP, Weinrauch LA, Weir M, D'Elia JA. Effects of pulsatile intravenous insulin therapy on the progression of diabetic nephropathy. *Metabolism*, 2000 Nov; 49(11):1491-5.
8. Gill G, Williams G. Long-term intermittent intravenous therapy and type 1 diabetes mellitus. Editorial Comment. *Lancet*, 1993 Oct 23;342(8878):1056-7; author reply, 1057-8.
9. Heinemann L. Chronic intermittent intravenous insulin therapy: really a new therapeutic option? *Diabetes Technol Ther*, 2001 SprinQ; 3(1):125-7.
10. Lamb WH. Long-term intermittent intravenous therapy and type 1 diabetes mellitus. *Lancet*, 1993 Oct 23;342(8878):1057; author reply, 1057-8.

#### Disclaimer

This document is for informational purposes only and should not be relied on in the diagnosis and care of individual patients. Medical and Coding/Reimbursement policies do not constitute medical advice, plan preauthorization, certification, an explanation of benefits, or a contract. Members should consult with appropriate healthcare providers to obtain needed medical advice, care, and treatment. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the member's individual benefit plan that is in effect at the time services are rendered.

The codes for treatments and procedures applicable to this policy are included for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Select Health® makes no representations and accepts no liability with respect to the content of any external information cited or relied upon in this policy. Select Health updates its Coverage Policies regularly, and reserves the right to amend these policies without notice to healthcare providers or Select Health members.

Members may contact Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this Coverage Policy may call Select Health Provider Relations at (801)442-3692.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without permission from Select Health.

"Intermountain Healthcare" and its accompanying logo, the marks of "Select Health" and its accompanying marks are protected and registered trademarks of the provider of this Service and or Intermountain Health Care, Inc., IHC Health Services, Inc., and Select

### Chronic Intermittent IV Insulin Therapy (CIIT), Metabolic Activation Therapy (Hepatic Activation Therapy), or Cellular Activation Therapy (CAT), continued

Health, Inc. Also, the content of this Service is proprietary and is protected by copyright. You may access the copyrighted content of this Service only for purposes set forth in these Conditions of Use.

© CPT Only – American Medical Association



## MEDICAL POLICY

### RADIOFREQUENCY ABLATION FOR BENIGN THYROID NODULES

Policy # 646

Implementation Date: 4/17/21

Review Dates: 3/15/22, 4/3/23, 4/17/24

Revision Dates:

**Disclaimer:**

1. Policies are subject to change without notice.
2. Policies outline coverage determinations for Select Health Commercial, Select Health Advantage (Medicare/CMS), and Select Health Community Care (Medicaid/CHIP) plans. Refer to the "Policy" section for more information.

**Description**

Thyroid nodules are common and occur in up to 50% of individuals. Most are benign (non-cancerous) and only require monitoring. However, sometimes even benign nodules become large enough to either cause pressure symptoms in the neck or be otherwise bothersome to the patient. Surgery is then an option, but leaves a scar, and, depending upon the extent of surgery needed, can result in hypothyroidism and rarely problems with the parathyroid glands that control calcium in the blood.

When nodules are cystic, ethanol infusion can be used to decrease the size. However, with solid nodules, other methods, such as radiofrequency ablation (RFA) and laser ablation (LA), have been used.

#### COMMERCIAL PLAN POLICY AND CHIP (CHILDREN'S HEALTH INSURANCE PROGRAM)

**Select Health covers radiofrequency ablation of thyroid nodules** for symptomatic benign thyroid nodules.

**Select Health does not cover radiofrequency ablation of thyroid nodules** for cosmetic purposes or as a primary cancer treatment.

#### SELECT HEALTH MEDICARE

Coverage is determined by the Centers for Medicare and Medicaid Services (CMS); if a coverage determination has not been adopted by CMS, and InterQual criteria are not available, the Select Health Commercial policy applies. For the most up-to-date Medicare policies and coverage, please visit their search website <http://www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?from2=search1.asp&> or the manual website

#### SELECT HEALTH COMMUNITY CARE (MEDICAID)

Coverage is determined by the State of Utah Medicaid program; if Utah State Medicaid has no published coverage position and InterQual criteria are not available, the Select Health Commercial criteria will apply. For the most up-to-date Medicaid policies and coverage, please visit their website <http://health.utah.gov/medicaid/manuals/directory.php> or the [Utah Medicaid code Look-Up tool](#)

### Summary of Medical Information

Both RFA and LA have been shown to be effective in many studies including a recent meta-analysis with volume reduction rates at 6 months, 1 year, and 2 years were 68%, 75%, and 87% for RFA and 48%, 52%, and 45% for LA. However, the two techniques have not been compared head-to-head.

This study was done to directly compare RFA and LA in their ability to decrease the size and symptoms of benign, solid thyroid nodules.

### Billing/Coding Information

#### CPT CODES

- 60660** Ablation of 1 or more thyroid nodule(s), one lobe or the isthmus, percutaneous, including imaging guidance, radiofrequency
- 60661** Ablation of 1 or more thyroid nodule(s), additional lobe, percutaneous, including imaging guidance, radiofrequency (List separately in addition to code for primary procedure)

#### Key References

1. Bernardi, S., Giudici, F., Cesareo, R., Antonelli, G., Cavallaro, M., Deandrea, M. ...Mauri, G. Five-Year Results of Radiofrequency and Laser Ablation of Benign Thyroid Nodules: A Multicenter Study from the Italian Minimally Invasive Treatments of the Thyroid Group. *Thyroid*. 2020 Dec;30(12):1759-1770. doi: 10.1089/thy.2020.0202. Epub 2020 Jul 24. PMID: 32578498.
2. Cheng Z, Liang P. Advances in ultrasound-guided thermal ablation for symptomatic benign thyroid nodules. *Adv Clin Exp Med*. 2020 Sep;29(9):1123-1129. doi: 10.17219/acem/125433. PMID: 32926600.
3. Familiar Casado C, Merino Menendez S, Ganado Diaz T, Pallarés Gasulla R, Pazos Guerra M, Marcuello Foncillas C, Calle Pascual A. Single-session treatment of benign thyroid nodules with radiofrequency ablation: Results at 6 months in 24 patients. *Endocrinol Diabetes Nutr (Engl Ed)*. 2020 Mar;67(3):164-171. English, Spanish. doi: 10.1016/j.endinu.2019.06.003. Epub 2019 Aug 19. PMID: 31439500.
4. Iram Hussain, Fizza Zulfiqar, Xilong Li, Shahzad Ahmad, Jules Aljammal, Safety and Efficacy of Radiofrequency Ablation of Thyroid Nodules—Expanding Treatment Options in the United States, *Journal of the Endocrine Society*, Volume 5, Issue 8, August 2021, bvab110, <https://doi.org/10.1210/jendso/bvab110>
5. Kim, J.H., et al. Guideline Committee for the Korean Society of Thyroid Radiology (KSThR) and Korean Society of Radiology. 2017 Thyroid Radiofrequency Ablation Guideline: Korean Society of Thyroid Radiology. *Korean J Radiol*. 2018 Jul-Aug;19(4):632-655. doi: 10.3348/kjr.2018.19.4.632. Epub 2018 Jun 14. PMID: 29962870; PMCID: PMC6005940.
6. Lončar, I, et al. Radiofrequency Ablation for Benign Symptomatic Thyroid Nodules in the Netherlands: Successful Introduction of a Minimally Invasive Treatment Option Improving Quality of Life. *J Vasc Interv Radiol*. 2022 Feb 2: S1051-0443(22)00049-5. doi: 10.1016/j.jvir.2022.01.012. Epub ahead of print. PMID: 35121096.
7. Monpeyssen, H., et al. Long-Term Results of Ultrasound-Guided Radiofrequency Ablation of Benign Thyroid Nodules: State of the Art and Future Perspectives-A Systematic Review. *Front Endocrinol (Lausanne)*. 2021 May 26; 12:622996. doi: 10.3389/fendo.2021.622996. PMID: 34122328; PMCID: PMC8187951.
8. Muhammad H, Santhanam P, Russell JO. Radiofrequency ablation and thyroid nodules: updated systematic review. *Endocrine*. 2021 Jun;72(3):619-632. doi: 10.1007/s12020-020-02598-6. Epub 2021 Jan 15. PMID: 33449296.
9. Noel JE, Sinclair CF. Radiofrequency Ablation for Benign Thyroid Nodules. *J Clin Endocrinol Metab*. 2023 Dec 21;109(1):e12-e17. doi: 10.1210/clinem/dgad357. PMID: 37401778.
10. Orloff, L.A., et al. Radiofrequency ablation and related ultrasound-guided ablation technologies for treatment of benign and malignant thyroid disease: An international multidisciplinary consensus statement of the American Head and Neck Society Endocrine Surgery Section with the Asia Pacific Society of Thyroid Surgery, Associazione Medici Endocrinologi, British Association of Endocrine and Thyroid Surgeons, European Thyroid Association, Italian Society of Endocrine Surgery Units, Korean Society of Thyroid Radiology, Latin American Thyroid Society, and Thyroid Nodules Therapies Association. *Head Neck*. 2022 Mar;44(3):633-660. doi: 10.1002/hed.26960. Epub 2021 Dec 23. PMID: 34939714.
11. Papi, G., et al. Impact of the introduction of minimally invasive treatments of the thyroid (MITT) for benign thyroid nodules in an Italian hospital: a cost-minimization analysis. *Endocrine*. 2023 Oct;82(1):126-133. doi: 10.1007/s12020-023-03403-w. Epub 2023 May 31. PMID: 37258994.
12. Schalch MS, Costa ACN, de Souza RP, Guerra FLB, Guerreiro R, De Cicco R. Radiofrequency ablation of thyroid nodules: prospective cost-effectiveness analysis in comparison to conventional thyroidectomy. *Arch Endocrinol Metab*. 2021 Nov 24;65(6):752-757. doi: 10.20945/2359-3997000000411. Epub 2021 Nov 11. PMID: 34762781.
13. Thyroid Nodules. Radiofrequency and laser ablation of benign thyroid nodules are similarly effective at 6 months in a prospective, randomized trial. *Clinical Thyroidology for the Public*. American Thyroid Association. September 2020. Vol. 13, Issue 9; pp. 11 and 12.

#### Disclaimer

This document is for informational purposes only and should not be relied on in the diagnosis and care of individual patients. Medical and Coding/Reimbursement policies do not constitute medical advice, plan preauthorization, certification, an explanation of benefits, or a contract. Members should consult with appropriate healthcare providers to obtain needed medical advice, care, and

## Endocrinology Policies, Continued

### Radiofrequency Ablation for Benign Thyroid Nodules, continued

treatment. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the member's individual benefit plan that is in effect at the time services are rendered.

The codes for treatments and procedures applicable to this policy are included for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Select Health<sup>®</sup> makes no representations and accepts no liability with respect to the content of any external information cited or relied upon in this policy. Select Health updates its Coverage Policies regularly, and reserves the right to amend these policies without notice to healthcare providers or Select Health members.

Members may contact Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this Coverage Policy may call Select Health Provider Relations at (801)442-3692.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without permission from Select Health.

"Intermountain Healthcare" and its accompanying logo, the marks of "Select Health" and its accompanying marks are protected and registered trademarks of the provider of this Service and or Intermountain Health Care, Inc., IHC Health Services, Inc., and Select Health, Inc. Also, the content of this Service is proprietary and is protected by copyright. You may access the copyrighted content of this Service only for purposes set forth in these Conditions of Use.

© CPT Only – American Medical Association





MEDICAL POLICY

**WHOLE BODY VIBRATION THERAPY (WBVT)  
FOR THE TREATMENT OF OSTEOPOROSIS**

Policy # 516

Implementation Date: 11/4/12

Review Dates: 12/19/13, 12/18/14, 12/10/15, 12/15/16, 12/21/17, 12/19/18, 12/12/19, 12/17/20, 11/18/21, 1/13/23, 12/20/23, 12/18/24

Revision Dates:

**Disclaimer:**

1. Policies are subject to change without notice.
2. Policies outline coverage determinations for Select Health Commercial, Select Health Medicare (CMS), and Select Health Community Care (Medicaid) plans. Refer to the "Policy" section for more information.

**Description**

The World Health Organization (WHO) defines osteoporosis as a systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue with a consequent increase in bone fragility and susceptibility to fracture. Assessment of fracture risk should be part of the clinical evaluation of people older than 50 years.

Prevention and treatment of osteoporosis consists of lifestyle modification, prescription and non-prescription, hormonal therapy, supplementation, diet, and exercise. There are several pharmaceutical agents commonly used to treat osteoporosis. The most prescribed medications are oral or injectable bisphosphonate medications. These medications have demonstrated an ability to improve bone mineral density and to reduce bone fractures.

As an alternative to pharmaceutical therapies, whole body vibration therapy (WBVT) has been studied. WBVT refers to a procedure in which a patient stands on a platform that produces vibrations. This procedure is purported to increase bone growth, patients with osteopenia (a loss of bone density that is not severe enough to be classified as osteoporosis), and osteoporosis due to its ease of use and increase adherence to treatment. There are 3 main methods in which WBVT stimulation is speculated to increase bone growth: (1) direct stimulation of bone cells; (2) activation of muscles that then contract and stimulate the bone; and (3) strengthening of muscle that then exposes the bone to greater force. WBVT might be considered a special form of muscle training, as it increases neuromuscular activation similar to resistance exercise. However, concern has been raised regarding the safety of WBVT and the potential for adverse side effects (e.g., low back pain), especially in an older adult population.

WBVT may also influence the regulation of bone remodeling indirectly via the endocrine system. WBVT has been shown to acutely alter testosterone and growth hormone levels. Serum testosterone levels have been positively associated with BMD at the ultradistal radius, lumbar spine, and hip regions in healthy men and women. Growth hormone levels decrease with age but increase with exercise. No studies have been published which identify any impact of WBVT on bone fragility fractures.

**COMMERCIAL PLAN POLICY AND CHIP (CHILDREN'S HEALTH INSURANCE PROGRAM)**

**Select Health does NOT cover whole body vibration therapy (WBVT) for any indication.**

Current evidence does not demonstrate any effect on fracture occurrence and there is no literature comparing WBVT to standard therapies. This meets the plan's definition of experimental/investigational and is considered not medical necessary.

### Whole Body Vibration Therapy (WBVT) for the Treatment of Osteoporosis, continued

#### SELECT HEALTH MEDICARE (CMS)

Coverage is determined by the Centers for Medicare and Medicaid Services (CMS); if a coverage determination has not been adopted by CMS, and InterQual criteria are not available, the Select Health Commercial policy applies. For the most up-to-date Medicare policies and coverage, please visit their search website <http://www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?from2=search1.asp&> or [the manual website](#)

#### SELECT HEALTH COMMUNITY CARE (MEDICAID)

Coverage is determined by the State of Utah Medicaid program; if Utah State Medicaid has no published coverage position and InterQual criteria are not available, the Select Health Commercial criteria will apply. For the most up-to-date Medicaid policies and coverage, please visit their website <http://health.utah.gov/medicaid/manuals/directory.php> or the [Utah Medicaid code Look-Up tool](#)

#### Summary of Medical Information

A Medical Technology Assessment performed in October 2012 identified 6 systematic reviews and 10 peer-reviewed studies related to whole body vibration therapy (WBVT). The oldest article dates to 2004 and the newest was published in 2012. Each of the 6 systematic reviews analyzed, on average, 13 studies, and the average number of participants in each study was 83.6 (range, 28–202). The studies included men, women, postmenopausal women, medicated/unmedicated participants, patients who were taking vitamin D and/or calcium supplements and patients who had and had not already been diagnosed with osteoporosis.

The most recent analysis from Hayes (June 2012), included 9 studies and found that only 1 of the 9 was placebo-controlled and that outcomes from all studies varied greatly irrespective of treatment protocol. None of the studies had a fracture reduction at an identified endpoint. This disparity of outcomes is exemplified by the evidence from 1 study suggesting improvement in bone density with just 12 minutes of WBVT weekly, whereas another study did not show benefit with 140 minutes of WBVT weekly.

The review, by Wysocki et al., published in the *Annals of Medicine* in 2011, probably highlights best the issues related to WBVT and the current evidence. This study's authors made several conclusions concerning WBVT for the treatment or prevention of osteoporosis and its comorbidities, as follows:

1. Characteristics of the intervention protocol were not reported consistently across studies.
2. It is unclear whether WBVT should be/could be done reliably at home or in the clinical setting accompanied with adequate patient compliance.
3. It is unclear which populations will be more susceptible to harms.
4. It is unclear which populations will benefit from WBVT.
5. Little scientific evidence evaluates the benefits and harms of WBVT for the prevention and treatment of osteoporosis.
6. The literature lacks clear guidance about the optimal patient population.
7. The scant literature did not establish whether WBVT therapy leads to clinically important increases in bone mineral density or reduces risk for fracture.

Those studies identified in our literature search not included in other systematic reviews did nothing to dissuade Wysocki's conclusions. Lau et al. and Sitja-Rabert et al. showed that in > 896 patients who had WBVT increased muscle strength but did not improve BMD except in the femoral neck. Similarly, Slatkowska et al., Bembien et al., Gusi et al., Humphries et al., and Zha et al. (31% of all the literature contained in this review) did note an increase in bone mineral density of the femoral neck after the treatment period.

Although whole-body vibration platforms have been proposed as a non-pharmacologic therapy for postmenopausal osteoporosis, the available data from randomized trials show minimal to no improvement in bone mineral density with the use of whole-body vibration platforms compared with sham vibration,

## Whole Body Vibration Therapy (WBVT) for the Treatment of Osteoporosis, continued

walking, or no treatment. In most trials, data were evaluated per-protocol, rather than intention-to-treat. None of the trials evaluated fracture outcomes. In addition, the safety of vibration therapy in elderly patients has not been carefully examined. Therefore, there are insufficient data to recommend this therapy in postmenopausal women

### Billing/Coding Information

#### CPT CODES

- 97110** Therapeutic procedure, 1 or more areas, each 15 minutes; therapeutic exercises to develop strength and endurance, range of motion and flexibility
- 97112** ; neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities
- 97530** Therapeutic activities, direct (one-on-one) patient contact by the provider (use of dynamic activities to improve functional performance), each 15 minutes

#### HCPCS CODES

No specific codes identified

#### Key References

- Beck, BR, Norling, TL. (2010). The effect of 8 mos of twice-weekly low- or higher intensity whole body vibration on risk factors for postmenopausal hip fracture. *Am J Phys Med Rehabil.* 89. 12:997-1009.
- Bemben, DA, Palmer, IJ, Bemben, MG, et al. (2010). Effects of combined whole-body vibration and resistance training on muscular strength and bone metabolism in postmenopausal women. *Bone.* 47. 3:650-6.
- Bope, ET. (2012). *Conn's Current Therapy 2012.* Saunders. Last Update: Available: <http://www.mdconsult.com/books/page.do?eid=4-u1.0-B978-1-4557-0738-6.00009-7-sc0035&isbn=978-1-4557-0738-6&uniqId=361003350-3#4-u1.0-B978-1-4557-0738-6.00009-7-sc0035>. Date Accessed: September 10. 2012.
- Brooke-Wavell, K, Mansfield, NJ. (2009). Risks and benefits of whole body vibration training in older people. *Age Ageing.* 38. 3:254-5.
- Gusi, N, Raimundo, A, Leal, A. (2006). Low-frequency vibratory exercise reduces the risk of bone fracture more than walking: a randomized controlled trial. *BMC Musculoskelet Disord.* 7. 92.
- Hayes Directory. (2012) Whole Body Vibration for the Promotion of Bone Growth in Postmenopausal Women. Winifred S. Hayes Inc. June 4.
- Humphries, B, Fenning, A, Dugan, E, et al. (2009). Whole-body vibration effects on bone mineral density in women with or without resistance training. *Aviat Space Environ Med.* 80. 12:1025-31.
- Iwamoto, J, Takeda, T, Sato, Y, et al. (2005). Effect of whole-body vibration exercise on lumbar bone mineral density, bone turnover, and chronic back pain in post-menopausal osteoporotic women treated with alendronate. *Aging Clin Exp Res.* 17. 2:157-63.
- Lau, RW, Liao, LR, Yu, F, et al. (2011). The effects of whole body vibration therapy on bone mineral density and leg muscle strength in older adults: a systematic review and meta-analysis. *Clin Rehabil.* 25. 11:975-88.
- Merriman, H, Jackson, K. (2009). The effects of whole-body vibration training in aging adults: a systematic review. *J Geriatr Phys Ther.* 32. 3:134-45.
- National Osteoporosis Society. (2009). Vibration Therapy and Osteoporosis. National Osteoporosis Society. Last Update: August 2009. Available: <http://www.nos.org.uk/document.doc?id=905>. Date Accessed: September 17. 2012.
- NIH Consensus Development Panel on Osteoporosis Prevention, D, Therapy. (2001). Osteoporosis prevention, diagnosis, and therapy. *JAMA.* 285. 6:785-95.
- Rosen, CJ. (2005). Clinical practice. Postmenopausal osteoporosis. *N Engl J Med.* 353. 6:595-603.
- Rosen, HN. (2012). Overview of the management of osteoporosis in postmenopausal women. Up to Date. Last Update: August 21, 2012. Available: [http://www.uptodate.com/contents/overview-of-the-management-of-osteoporosis-in-postmenopausal-women?source=search\\_result&search=osteoporosis&selectedTitle=1~150](http://www.uptodate.com/contents/overview-of-the-management-of-osteoporosis-in-postmenopausal-women?source=search_result&search=osteoporosis&selectedTitle=1~150). Date Accessed: September 10. 2012.
- Sitja-Rabert, M, Rigau, D, Fort Vanmeerghaeghe, A, et al. (2012). Efficacy of whole body vibration exercise in older people: a systematic review. *Disabil Rehabil.* 34. 11:883-93.
- Slatkowska, L, Alibhai, SM, Beyene, J, et al. (2010). Effect of whole-body vibration on BMD: a systematic review and meta-analysis. *Osteoporos Int.* 21. 12:1969-80.
- Slatkowska, L, Alibhai, SM, Beyene, J, et al. (2011). Effect of 12 months of whole-body vibration therapy on bone density and structure in postmenopausal women: a randomized trial. *Ann Intern Med.* 155. 10:668-79, W205.
- Totosy de Zepetnek, J. (2009). Whole-body vibration as potential intervention for people with low bone mineral density and osteoporosis: A review. Department of Veterans Affairs. Last Update: Available: <http://www.rehab.research.va.gov/jour/09/46/4/pdf/totosy.pdf>. Date Accessed: September 11. 2012.
- Verschueren, SM, Roelants, M, Delecluse, C, et al. (2004). Effect of 6-month whole body vibration training on hip density, muscle strength, and postural control in postmenopausal women: a randomized controlled pilot study. *J Bone Miner Res.* 19. 3:352-9.
- Von Stengel, S, Kemmler, W, Bebenek, M, et al. (2011). Effects of whole-body vibration training on different devices on bone mineral density. *Med Sci Sports Exerc.* 43. 6:1071-9.
- von Stengel, S, Kemmler, W, Engelke, K, et al. (2011). Effects of whole body vibration on bone mineral density and falls: results of the randomized controlled ELVIS study with postmenopausal women. *Osteoporos Int.* 22. 1:317-25.

### Whole Body Vibration Therapy (WBVT) for the Treatment of Osteoporosis, continued

22. Wysocki, A, Butler, M, Shamliyan, T, et al. (2011). Whole-body vibration therapy for osteoporosis: state of the science. Ann Intern Med. 155. 10:680-6, W206-13.
23. Zha, DS, Zhu, QA, Pei, WW, et al. (2012). Does whole-body vibration with alternative tilting increase bone mineral density and change bone metabolism in senior people? Aging Clin Exp Res. 24. 1:28-36.

#### Disclaimer

This document is for informational purposes only and should not be relied on in the diagnosis and care of individual patients. Medical and Coding/Reimbursement policies do not constitute medical advice, plan preauthorization, certification, an explanation of benefits, or a contract. Members should consult with appropriate healthcare providers to obtain needed medical advice, care, and treatment. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the member's individual benefit plan that is in effect at the time services are rendered.

The codes for treatments and procedures applicable to this policy are included for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Select Health® makes no representations and accepts no liability with respect to the content of any external information cited or relied upon in this policy. Select Health updates its Coverage Policies regularly, and reserves the right to amend these policies without notice to healthcare providers or Select Health members.

Members may contact Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this Coverage Policy may call Select Health Provider Relations at (801) 442-3692.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without permission from Select Health.

"Intermountain Healthcare" and its accompanying logo, the marks of "Select Health" and its accompanying marks are protected and registered trademarks of the provider of this Service and or Intermountain Health Care, Inc., IHC Health Services, Inc., and Select Health, Inc. Also, the content of this Service is proprietary and is protected by copyright. You may access the copyrighted content of this Service only for purposes set forth in these Conditions of Use.

© CPT Only – American Medical Association

### Chronic Intermittent IV Insulin Therapy (CIIT), Metabolic Activation Therapy (Hepatic Activation Therapy), or Cellular Activation Therapy (CAT), continued

82962	Glucose, blood by glucose monitoring devices(s) cleared by the FDA specifically for home use
84132	Potassium; serum, plasma or whole blood
84133	; urine
84540	Urea nitrogen; urine
96374	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); intravenous push, single or initial substance/drug
96379	Unlisted therapeutic, prophylactic, or diagnostic intravenous or intra-arterial injection or infusion
94681	Oxygen uptake, expired gas analysis; including CO2 output, percentage oxygen extracted.
94690	Oxygen uptake, expired gas analysis; rest, indirect (separate procedure)

#### HCPCS CODES

G9147	Outpatient intravenous insulin treatment (OIVIT) either pulsatile or continuous, by any means, guided by the results of measurements for: respiratory quotient; and/or, urine urea nitrogen (UUN); and/or, arterial, venous or capillary glucose; and/or potassium concentration
-------	--

#### Key References

1. 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*, 2002; 8(Suppl 1):40-65
2. American Diabetes Association. Clinical Practice Recommendations 2003. *Diabetes Care*, 2003; 26 (Suppl 1).
3. Aoki TT, Benbarka MM, Okimura MC, et al. Long-term intermittent intravenous insulin therapy and type 1 diabetes mellitus. *Lancet*, 1993, Aug 28; 342(8870):515-8.
4. Aoki TT, Grecu EO, Arcangeli MA, Meisenheimer R. Effect of intensive insulin therapy on abnormal circadian blood pressure pattern in patients with type 1 diabetes mellitus. *Online J Curr Clin Trials*, 1995, Dec 15; Doc No 199.
5. Aoki TT, Grecu EO, Arcangeli MA. Chronic intermittent intravenous insulin therapy corrects orthostatic hypotension of diabetes. *Am J Med*, 1995 Dec;99(6):683-4.
6. Aoki TT, Grecu EO, Prendergast JJ, et al. Effect of chronic ntermittent intravenous insulin therapy on antihypertensive medication requirements in IDDM subjects with hypertension and nephropathy. *Diabetes Care*, 1995 Sep;18(9):1260-5.
7. Dailey GE, Boden GH, Creech RH, Johnson DG, Gleason RE, Kennedy FP, Weinrauch LA, Weir M, D'Elia JA. Effects of pulsatile intravenous insulin therapy on the progression of diabetic nephropathy. *Metabolism*, 2000 Nov; 49(11):1491-5.
8. Gill G, Williams G. Long-term intermittent intravenous therapy and type 1 diabetes mellitus. Editorial Comment. *Lancet*, 1993 Oct 23;342(8878):1056-7; author reply, 1057-8.
9. Heinemann L. Chronic intermittent intravenous insulin therapy: really a new therapeutic option? *Diabetes Technol Ther*, 2001 SprinQ; 3(1):125-7.
10. Lamb WH. Long-term intermittent intravenous therapy and type 1 diabetes mellitus. *Lancet*, 1993 Oct 23;342(8878):1057; author reply, 1057-8.

#### Disclaimer

This document is for informational purposes only and should not be relied on in the diagnosis and care of individual patients. Medical and Coding/Reimbursement policies do not constitute medical advice, plan preauthorization, certification, an explanation of benefits, or a contract. Members should consult with appropriate healthcare providers to obtain needed medical advice, care, and treatment. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the member's individual benefit plan that is in effect at the time services are rendered.

The codes for treatments and procedures applicable to this policy are included for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Select Health® makes no representations and accepts no liability with respect to the content of any external information cited or relied upon in this policy. Select Health updates its Coverage Policies regularly, and reserves the right to amend these policies without notice to healthcare providers or Select Health members.

Members may contact Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this Coverage Policy may call Select Health Provider Relations at (801) 442-3692.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without permission from Select Health.

"Intermountain Healthcare" and its accompanying logo, the marks of "Select Health" and its accompanying marks are protected and registered trademarks of the provider of this Service and or Intermountain Health Care, Inc., IHC Health Services, Inc., and Select