

**INTRAVASCULAR LITHOTRIPSY**

Effective Date: September 1, 2025

Review Dates: 8/23, 8/24, 8/25

Date Of Origin: August 23, 2023

Status: Current

**Summary of Changes**

## Additions:

- Added Section II. GOVERNMENTAL REGULATIONS.

**I. POLICY/CRITERIA**

Scope: This medical policy addresses the use of intravascular lithotripsy in both the arteries of the lower extremities and the coronary arteries.

- A. Intravascular lithotripsy for endovascular revascularization of the lower extremities is medically necessary when the following criteria are met:
1. Target lesion is located in a native, de novo artery
  2. Target lesion is  $\geq 70\%$  stenosis by visual estimate:
    - a. 70 to 99% stenosed: Target lesion length  $\leq 180$  mm.
    - b. Chronic total occlusion: Lesion length  $\geq 20$  mm
  3. Member has at least one patent tibial vessel on the target leg with runoff to the foot (defined as no stenosis  $> 50\%$ ).
  4. Calcified lesion
- B. Intravascular lithotripsy for endovascular revascularization of the lower extremities is not medically necessary if any the following are present:
1. Target lesion is below the knee.
  2. In-stent restenosis within 10 mm of the target zone.
  3. Lesions within 10 mm of the ostium of the SFA or within 10 mm of the ostium of the anterior tibial artery.
  4. Evidence of aneurysm or thrombus in target vessel.
  5. No calcium in the target lesion.
  6. Target lesion within native or synthetic vessel grafts.
  7. Failure to successfully cross the guidewire across the target lesion (successful crossing defined as tip of the guidewire distal to the target lesion in the absence of flow limiting dissections or perforations)
- C. Intravascular lithotripsy for endovascular revascularization of the coronary arteries is experimental and investigational due to insufficient evidence of effectiveness in improving clinical outcomes.

## II. GOVERNMENTAL REGULATIONS

Centers for Medicare & Medicaid Services (CMS)

National Coverage Determinations (NCDs)	
None identified	
Local Coverage Determinations (LCDs)	
CGS Administrators, LLC	None identified
First Coast Service Options, Inc.	None identified
National Government Services, Inc.	None identified
Noridian Healthcare Solutions, LLC	None identified
Novitas Solutions, Inc.	None identified
Palmetto GBA	None identified
WPS Insurance Corporation	None identified

## III. MEDICAL NECESSITY REVIEW

Prior authorization for certain drug, services, and procedures may or may not be required. In cases where prior authorization is required, providers will submit a request demonstrating that a drug, service, or procedure is medically necessary. For more information, please refer to the [Priority Health Provider Manual](#).

## IV. APPLICATION TO PRODUCTS

Coverage is subject to member's specific benefits. Group specific policy will supersede this policy when applicable.

- ❖ **HMO/EPO:** *This policy applies to insured HMO/EPO plans.*
- ❖ **POS:** *This policy applies to insured POS plans.*
- ❖ **PPO:** *This policy applies to insured PPO plans. Consult individual plan documents as state mandated benefits may apply. If there is a conflict between this policy and a plan document, the provisions of the plan document will govern.*
- ❖ **ASO:** *For self-funded plans, consult individual plan documents. If there is a conflict between this policy and a self-funded plan document, the provisions of the plan document will govern.*
- ❖ **INDIVIDUAL:** *For individual policies, consult the individual insurance policy. If there is a conflict between this medical policy and the individual insurance policy document, the provisions of the individual insurance policy will govern.*
- ❖ **MEDICARE:** *Coverage is determined by the Centers for Medicare and Medicaid Services (CMS); if a coverage determination has not been adopted by CMS, this policy applies.*
- ❖ **MEDICAID/HEALTHY MICHIGAN PLAN:** *For Medicaid/Healthy Michigan Plan members, this policy will apply. Coverage is based on medical necessity criteria being met and the appropriate code(s) from the coding section of this policy being included on the Michigan Medicaid Fee Schedule located at: [http://www.michigan.gov/mdch/0,1607,7-132-2945\\_42542\\_42543\\_42546\\_42551-159815--,00.html](http://www.michigan.gov/mdch/0,1607,7-132-2945_42542_42543_42546_42551-159815--,00.html). If there is a discrepancy between*

*this policy and the Michigan Medicaid Provider Manual located at: [http://www.michigan.gov/mdch/0,1607,7-132-2945\\_5100-87572--,00.html](http://www.michigan.gov/mdch/0,1607,7-132-2945_5100-87572--,00.html), the Michigan Medicaid Provider Manual will govern. If there is a discrepancy or lack of guidance in the Michigan Medicaid Provider Manual, the Priority Health contract with Michigan Medicaid will govern. For Medical Supplies/DME/Prosthetics and Orthotics, please refer to the Michigan Medicaid Fee Schedule to verify coverage.*

## V. BACKGROUND

**Intravascular lithotripsy (IVL) is a technique that evolved from the established therapy for renal and ureteral calculi.** IVL combines ultrasound mechanical pulse waves with angioplasty to purportedly treat calcified plaque in stenotic or occluded peripheral arteries. The system consists of a single-use proprietary balloon catheter, a reusable generator, and a reusable connector cable. The balloon catheter has integrated lithotripsy emitters designed to enhance angioplasty by disrupting calcified lesions before balloon revascularization.

### Peripheral lithotripsy

The **U.S. Food and Drug Administration (FDA)** granted the Shockwave Medical **Intravascular Lithotripsy (IVL) System** ([Shockwave Medical, Inc.](#), Fremont, CA) initial Class II device 510(k) Premarket Notification ([K180454](#)) on June 27, 2018. The device is classified as a *Percutaneous Catheter, Ultrasound (Intended for ultrasound wave enhanced balloon dilatation of lesions, including calcified lesions, in the peripheral vasculature)*, Product Code [PPN](#). **Indications for use:** *The Shockwave Medical Intravascular Lithotripsy (IVL) System is intended for lithotripsy-enhanced balloon dilatation of lesions, including calcified lesions, in the peripheral vasculature, including the iliac, femoral, ilio-femoral, popliteal, infrapopliteal, and renal arteries. Not for use in the coronary or cerebral vasculature.*

The following are generally applicable to intravascular lithotripsy:

- Used for severe calcified lesions where a balloon crosses but does not fully dilate
- Used as an adjunct to atherectomy therapy for infrequent but difficult cases
- Average hospital utilization is generally between 2 and 8% of percutaneous coronary interventions

Currently, the Disrupt BTK trial (Shockwave Medical Peripheral Lithoplasty System Study for Below The Knee Peripheral Artery Disease) is the only study available that investigated the safety and feasibility of performing intravascular lithotripsy for calcified lesions in the arteries below the knee. The design was prospective and nonrandomized trial conducted in Germany, Austria, and New

Zealand. The study had a safety endpoint of a composite of major events including emergent surgical intervention for revascularization or amputation, myocardial infarction, or death which at the end of the study was 0%. The effectiveness endpoint for this study based on reduction of the target lesion which was further defined as a secondary endpoint of procedural success if there was  $\leq 50\%$  diameter of the residual stenosis after IVL therapy. Both endpoints were achieved in all patients that were successfully treated with IVL. However, this has been the only study to date and had a limited cohort of patients.

There is a sequel trial named Disrupt BTK II. The study design is a single-arm, multicenter, prospective study that will be including patients with critical limb ischemia anywhere from the distal segment of the popliteal artery all the way down to the ankle joint. Moreover, the study included patients with up to 2 target lesions in native arteries that have a vessel diameter of 2–4 mm and a length of  $\leq 200$  mm. The study is expected to be completed by the end of 2023.

#### Coronary lithotripsy

Shockwave Medical Inc. received FDA Pre-Market Approval for the Shockwave **Intravascular Lithotripsy (IVL)** System with Shockwave C2 Coronary IVL Catheter on February 12, 2021 ([P200039](#)). This product is regulated as a class III device and is assigned product code [QMG](#) (shockwave intravascular lithotripsy system). *The Shockwave C2 Coronary IVL Catheter system is intended "for lithotripsy-enabled, low-pressure balloon dilatation of severely calcified, stenotic de novo coronary arteries prior to stenting.*

The following are generally applicable to intravascular lithotripsy:

- Used for severe calcified lesions where a balloon crosses but does not fully dilate
- Used as an adjunct to atherectomy therapy for infrequent but difficult cases
- Average hospital utilization is generally between 2 and 8% of percutaneous coronary interventions

In 2021 Hayes, Inc. concluded that available clinical studies and systematic reviews demonstrated minimal support for using Shockwave IVL System with C2 Coronary IVL catheter for treatment of calcified coronary lesions, while available clinical practice guidelines confer weak support.

*Findings from studies indicate that intravascular lithotripsy (IVL) for coronary artery disease (CAD) is technically feasible and associated with improved diameter stenosis with minimal complications. However, current evidence does not inform whether using IVL before other catheter-based interventions (e.g., stents, balloon therapy) improves long-term clinical*

*outcomes, due to a lack of comparison groups and short duration of study follow-up. Further, because patients often received both IVL and other catheter-based interventions, the influence of IVL cannot be isolated and may be confounded by the effects of the other interventions.*

## VI. CODING INFORMATION

Lower extremity artery(ies) EXCEPT tibial/peroneal (*Covered for Commercial, Medicare, Medicaid*)

C9764 Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), **except** tibial/peroneal; with intravascular lithotripsy, includes angioplasty within the same vessel(s), when performed

C9765 Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), **except** tibial/peroneal; with intravascular lithotripsy, and transluminal stent placement(s), includes angioplasty within the same vessel(s), when performed

C9766 Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), **except** tibial/peroneal; with intravascular lithotripsy and atherectomy, includes angioplasty within the same vessel(s), when performed

C9767 Revascularization, endovascular, open or percutaneous, lower extremity artery(ies), **except** tibial/peroneal; with intravascular lithotripsy and transluminal stent placement(s), and atherectomy, includes angioplasty within the same vessel(s), when performed

Tibial/peroneal artery (ies) (*Covered for Medicare and Medicaid. Not Separately Payable for Commercial.*)

C9772 Revascularization, endovascular, open or percutaneous, **tibial/peroneal artery(ies)**, with intravascular lithotripsy, includes angioplasty within the same vessel(s), when performed

C9773 Revascularization, endovascular, open or percutaneous, **tibial/peroneal artery(ies)**; with intravascular lithotripsy, and transluminal stent placement(s), includes angioplasty within the same vessel(s), when performed

C9774 Revascularization, endovascular, open or percutaneous, **tibial/peroneal artery(ies)**; with intravascular lithotripsy and atherectomy, includes angioplasty within the same vessel(s), when performed

C9775 Revascularization, endovascular, open or percutaneous, **tibial/peroneal artery(ies)**; with intravascular lithotripsy and transluminal stent placement(s), and atherectomy, includes angioplasty within the same vessel(s), when performed

Coronary artery(ies):

C1761 Catheter, transluminal intravascular lithotripsy, coronary (*Covered for Medicare and Medicaid*)

92972 Percutaneous transluminal coronary lithotripsy (List separately in addition to code for primary procedure) (*Not separately payable Commercial and Medicare*)

## VII. REFERENCES

Intravascular lithotripsy for coronary and peripheral applications was reviewed by the Priority Health **Technology Assessment Committee (TAC)** on June 21, 2023.

1. Adams G, Shammass N, Mangalmurti S, Bernardo NL, Miller WE, Soukas PA, Parikh SA, Armstrong EJ, Tepe G, Lansky A, Gray WA. Intravascular Lithotripsy for Treatment of Calcified Lower Extremity Arterial Stenosis: Initial Analysis of the Disrupt PAD III Study. *J Endovasc Ther.* 2020 Jun;27(3):473-480. doi: 10.1177/1526602820914598. Epub 2020 Apr 3. PMID: 32242768; PMCID: PMC7288854.
2. Aksoy A, Tiyerili V, Jansen N, Al Zaidi M, Thiessen M, Sedaghat A, Ulrich Becher M, Jansen F, Nickenig G, Zimmer S. Propensity-score-matched comparison of safety, efficacy, and outcome of intravascular lithotripsy versus high-pressure PTCA in coronary calcified lesions. *Int J Cardiol Heart Vasc.* 2021 Dec 9;37:100900. doi: 10.1016/j.ijcha.2021.100900. PMID: 34950765; PMCID: PMC8671124.
3. Armstrong EJ, Soukas PA, Shammass N, Chamberlain J, Pop A, Adams G, de Freitas D, Valle J, Woo E, Bernardo NL. Intravascular Lithotripsy for Treatment of Calcified, Stenotic Iliac Arteries: A Cohort Analysis From the Disrupt PAD III Study. *Cardiovasc Revasc Med.* 2020 Oct;21(10):1262-1268. doi: 10.1016/j.carrev.2020.02.026. Epub 2020 Mar 2. PMID: 32147133.
4. Butt N, Khalid N, Shlofmitz E. **Intravascular Lithotripsy**. 2023 May 22. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. PMID: 32809383.
5. Chandra V, Lansky AJ, Sayfo S, Shammass NW, Soukas P, Park J, Siah M, Babaev A, Shields R, West NEJ, Armstrong E. Thirty-day outcomes from the Disrupt PAD BTK II study of the Shockwave Intravascular Lithotripsy System for treatment of calcified below-the-knee peripheral arterial disease. *J Vasc Surg.* 2025 Mar;81(3):710-719.e2. doi: 10.1016/j.jvs.2024.11.003. Epub 2024 Nov 12. PMID: 39536842.
6. Gallinoro E, Monizzi G, Sonck J, Candreva A, Mileva N, Nagumo S, Munhoz D, Buytaert D, Mastrangelo A, Andreini D, Galli S, Bartorelli AL, Barbato E, De Bruyne B, Collet C. Physiological and angiographic outcomes of PCI in calcified lesions after rotational atherectomy or intravascular lithotripsy. *Int J Cardiol.* 2022 Apr 1;352:27-32. doi: 10.1016/j.ijcard.2022.01.066. Epub 2022 Feb 1. PMID: 35120947.

7. Hayes, Inc. Evolving Evidence Review. Intravascular Lithotripsy for Calcified Peripheral Arterial Lesions. Hayes, Inc. November 19, 2021.
8. Hayes, Inc. Evolving Evidence Review. Intravascular Lithotripsy (IVL) System with C<sup>2</sup> Coronary IVL Catheter (Shockwave Medical Inc.) for Calcified Coronary Lesions. Hayes, Inc. August 31, 2021.
9. Hayes, Inc. Medical Code Brief. 0715T – Category III (T codes). Hayes, Inc. May 13, 2022.
10. Honton B, Monsegu J. Best Practice in Intravascular Lithotripsy. *Interv Cardiol*. 2022 Jan 28;17:e02. doi: 10.15420/icr.2021.14. PMID: 35154381; PMCID: PMC8826142.
11. Jazar DA, Thakker R, Salehin S, Hasan SM, Jabri A, Albaeni A, Addasi Y, Gandhi S, Gilani S, Motiwala A, Khalife W. Use of Coronary Intravascular Lithotripsy: A Comprehensive Review of Literature. *Curr Probl Cardiol*. 2022 Nov;47(11):101076. doi: 10.1016/j.cpcardiol.2021.101076. Epub 2021 Nov 27. PMID: 34843807.
12. Kereiakes DJ, Ali ZA, Riley RF, Smith TD, Shlofmitz RA. Intravascular Lithotripsy for Treatment of Calcified Coronary Artery Disease. *Interv Cardiol Clin*. 2022 Oct;11(4):393-404. doi: 10.1016/j.iccl.2022.02.004. Epub 2022 Sep 24. PMID: 36243485.
13. Khan S, Li B, Salata K, Aljabri BA, Hussain MA, Khan M, de Mestral C, Verma S, Al-Omran M. The Current Status of Lithoplasty in Vascular Calcifications: A Systematic Review. *Surg Innov*. 2019 Oct;26(5):588-598. doi: 10.1177/1553350619848557. Epub 2019 May 10. PMID: 31074330.
14. Madhavan MV, Shahim B, Mena-Hurtado C, Garcia L, Crowley A, Parikh SA. Efficacy and safety of intravascular lithotripsy for the treatment of peripheral arterial disease: An individual patient-level pooled data analysis. *Catheter Cardiovasc Interv*. 2020 Apr 1;95(5):959-968. doi: 10.1002/ccd.28729. Epub 2020 Jan 20. PMID: 31957955; PMCID: PMC7187419.
15. Mhanna M, Beran A, Nazir S, Sajdeya O, Srour O, Elzanaty A, Eltahawy EA. Efficacy and Safety of Intravascular Lithotripsy in Calcified Coronary Lesions: A Systematic Review and Meta-Analysis. *Cardiovasc Revasc Med*. 2022 Mar;36:73-82. doi: 10.1016/j.carrev.2021.05.009. Epub 2021 May 19. PMID: 34024748.
16. Ozdemir D, Karimi Galougahi K, Petrossian G, Ezratty C, Dominguez-Sulca D, Chowdhury E, Scheiner J, Thomas SV, Shlofmitz RA, Ali ZA. Calcific Plaque Modification by Acoustic Shockwaves: Intravascular Lithotripsy in Cardiovascular Interventions. *Curr Cardiol Rep*. 2022 May;24(5):519-528. doi: 10.1007/s11886-022-01674-9. Epub 2022 Mar 14. PMID: 35286663.
17. Patel MR, Conte MS, Cutlip DE, Dib N, Geraghty P, Gray W, Hiatt WR, Ho M, Ikeda K, Ikeno F, Jaff MR, Jones WS, Kawahara M, Lookstein RA, Mehran R, Misra S, Norgren L, Olin JW, Povsic TJ, Rosenfield K, Rundback J, Shamoun F, Tchong J, Tsai TT, Suzuki Y, Vranckx P, Wiechmann BN, White CJ, Yokoi H, Krucoff MW. Evaluation and treatment of patients with lower extremity peripheral artery disease: consensus definitions from Peripheral Academic Research Consortium (PARC). *J Am Coll Cardiol*. 2015 Mar

- 10;65(9):931-41. doi: 10.1016/j.jacc.2014.12.036. Erratum in: J Am Coll Cardiol. 2015 Jun 16;65(23):2578-9. PMID: 25744011; PMCID: PMC4874808.
18. Sattar Y, Almas T, Arshad J, et al. **Clinical and angiographic success and safety comparison of coronary intravascular lithotripsy: An updated meta-analysis.** *Int J Cardiol Heart Vasc.* 2022;39:100975. Published 2022 Feb 24. doi:10.1016/j.ijcha.2022.100975
  19. Sattar Y, Almas T, Arshad J, Zghouzi M, Ullah W, Mir T, Mohamed MO, Elgendy IY, Aljaroudi W, Prasad A, Shlofmitz R, Mamas MA, Kereiakes DJ, Chadi Alraies M. Clinical and angiographic success and safety comparison of coronary intravascular lithotripsy: An updated meta-analysis. *Int J Cardiol Heart Vasc.* 2022 Feb 24;39:100975. doi: 10.1016/j.ijcha.2022.100975. PMID: 35242998; PMCID: PMC8881660.
  20. Sattar Y, Ullah W, Virk HUH, Doshi R, Rauf H, Desai H, Panchal A, Nasir M, Almas T, Ullah I, Pacha HM, Zaher N, Alraies MC. Coronary intravascular lithotripsy for coronary artery calcifications- systematic review of cases. *J Community Hosp Intern Med Perspect.* 2021 Mar 23;11(2):200-205. doi: 10.1080/20009666.2021.1883219. PMID: 33889320; PMCID: PMC8043535.
  21. Tepe G, Brodmann M, Werner M, Bachinsky W, Holden A, Zeller T, Mangalmurti S, Nolte-Ernsting C, Bertolet B, Scheinert D, Gray WA; Disrupt PAD III Investigators. Intravascular Lithotripsy for Peripheral Artery Calcification: 30-Day Outcomes From the Randomized Disrupt PAD III Trial. *JACC Cardiovasc Interv.* 2021 Jun 28;14(12):1352-1361. doi: 10.1016/j.jcin.2021.04.010. PMID: 34167675.
  22. Tepe G, Brodmann M, Werner M, Bachinsky W, Holden A, Zeller T, Mangalmurti S, Nolte-Ernsting C, Bertolet B, Scheinert D, Gray WA; Disrupt PAD III Investigators. Intravascular Lithotripsy for Peripheral Artery Calcification: 30-Day Outcomes From the Randomized Disrupt PAD III Trial. *JACC Cardiovasc Interv.* 2021 Jun 28;14(12):1352-1361. doi: 10.1016/j.jcin.2021.04.010. PMID: 34167675.
  23. Vazquez Sosa CE, Malik A, Sreenivasan J, Shah A, Jayasree Rajendran R, Gupta R, Ahmad H, Mateo R, Frishman WH, Aronow WS. Intravascular Lithotripsy in Peripheral Artery Disease. *Cardiol Rev.* 2024 Jan-Feb 01;32(1):71-74. doi: 10.1097/CRD.0000000000000483. Epub 2022 Oct 28. PMID: 36580408.
  24. Wong CP, Chan LP, Au DM, Chan HWC, Chan YC. Efficacy and Safety of Intravascular Lithotripsy in Lower Extremity Peripheral Artery Disease: A Systematic Review and Meta-Analysis. *Eur J Vasc Endovasc Surg.* 2022 Mar;63(3):446-456. doi: 10.1016/j.ejvs.2021.10.035. Epub 2021 Dec 6. PMID: 34887206.
  25. Wong JJ, Umopathy S, Keh YS, Lau YH, Yap J, Idu M, Chin CY, Fam JM, Liew BW, Chin CT, Wong PEH, Koh TH, Yeo KK. Coronary Intravascular Lithotripsy Versus Rotational Atherectomy in an Asian Population: Clinical Outcomes in Real-World Patients. *Korean Circ J.* 2022 Apr;52(4):288-300. doi:



10.4070/kcj.2021.0155. Epub 2021 Nov 29. PMID: 35043608; PMCID: PMC8989791.

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