

## CLINICAL PAYMENT AND CODING POLICY

If a conflict arises between a Clinical Payment and Coding Policy (CPCP) and any plan document under which a member is entitled to Covered Services, the plan document will govern. If a conflict arises between a CPCP and any provider contract pursuant to which a provider participates in and/or provides Covered Services to eligible member(s) and/or plans, the provider contract will govern. “Plan documents” include, but are not limited to, Certificates of Health Care Benefits, benefit booklets, Summary Plan Descriptions, and other coverage documents. BCBSTX may use reasonable discretion interpreting and applying this policy to services being delivered in a particular case. BCBSTX has full and final discretionary authority for their interpretation and application to the extent provided under any applicable plan documents.

Providers are responsible for submission of accurate documentation of services performed. Providers are expected to submit claims for services rendered using valid code combinations from Health Insurance Portability and Accountability Act (HIPAA) approved code sets. Claims should be coded appropriately according to industry standard coding guidelines including, but not limited to: Uniform Billing (UB) Editor, American Medical Association (AMA), Current Procedural Terminology (CPT®), CPT® Assistant, Healthcare Common Procedure Coding System (HCPCS), ICD-10 CM and PCS, National Drug Codes (NDC), Diagnosis Related Group (DRG) guidelines, Centers for Medicare and Medicaid Services (CMS) National Correct Coding Initiative (NCCI) Policy Manual, CCI table edits and other CMS guidelines.

Claims are subject to the code edit protocols for services/procedures billed. Claim submissions are subject to claim review including but not limited to, any terms of benefit coverage, provider contract language, medical policies, clinical payment and coding policies as well as coding software logic. Upon request, the provider is urged to submit any additional documentation.

### Parathyroid Hormone, Phosphorous, Calcium and Magnesium Testing

**Policy Number: CPCPLAB055**

**Version 1.0**

**Enterprise Medical Policy Committee Approval Date: 1/25/2022**

**Plan Effective Date: May 1, 2022**

#### Description

BCBSTX has implemented certain lab management reimbursement criteria. Not all requirements apply to each product. Providers are urged to review Plan documents for eligible coverage for services rendered.

#### Reimbursement Information:

1. Serum intact parathyroid (PTH) testing **may be reimbursable** in the following situations:

- a. To assess possible hyperparathyroidism; OR
  - b. To assess post-operative results of parathyroid surgery; OR
  - c. As part of annual testing of a patient previously diagnosed with hyperparathyroidism; OR
  - d. As part of assessment of chronic kidney disease (CKD); OR
  - e. As part of assessment of osteoporosis; OR
  - f. As part of diagnosis and/or assessment of cancer or cancer therapy.
2. Serum intact parathyroid (PTH) testing in cases of possible hypoparathyroidism, pseudohypoparathyroidism, or related disorders\* (See Note 1) **may be reimbursable** in the following situations:
    - a. In initial assessment and diagnosis of the disorders listed in Note 1; OR
    - b. To monitor disease and/or therapy.
  3. Serum intact parathyroid (PTH) testing **is not reimbursable** in screening of patients for asymptomatic hyperparathyroidism.
  4. The following tests **is not reimbursable** for individuals in general encounters without abnormal findings or wellness visits:
    - a. Serum, blood, or fecal magnesium testing
    - b. Serum phosphorus or phosphate testing
    - c. Urine phosphorus or phosphate testing
    - d. Serum total calcium, serum ionized calcium, or urine calcium testing
    - e. Serum parathyroid hormone testing
  5. Testing serum for truncated parathyroid hormone metabolites, including amino-terminal and carboxy-terminal fragments, **is not reimbursable**.

**\*NOTE 1:** Conditions of hypoparathyroidism, pseudohypoparathyroidism, and related disorders (Mantovani et al., 2018)

1. Hypoparathyroidism
2. Pseudohypoparathyroidism Type 1A (PHP1A)—due to maternal loss of function mutation at the *GNAS* coding sequence
3. Pseudohypoparathyroidism Type 1B (PHP1B)—due to methylation defect at the *GNAS* coding sequence
4. Pseudopseudohypoparathyroidism (PPHP)—due to paternal loss of function mutation at the *GNAS* coding sequence
5. Progressive Osseous Heteroplasia (POH)—due to paternal loss of function mutation at the *GNAS* coding sequence
6. Acrodysostosis (ACRDYS1)—due to mutation in *PRKAR1A*
7. Acrodysostosis (ACRDYS2)—due to mutation in *PDE4D*

## Procedure Codes

Codes
82310, 82330, 82340, 83735, 83970, 84100, 84105

## References:

- AACC. (2013, 12/12/2013). Phosphorus. *Lab Tests Online*. Retrieved from <https://labtestsonline.org/tests/phosphorus>
- AACC. (2014, 03/07/2014). Calcium. *Lab Tests Online*. Retrieved from <https://labtestsonline.org/tests/calcium>
- AACC. (2017, 06/29/2017). Magnesium. *Lab Tests Online*. Retrieved from <https://labtestsonline.org/tests/magnesium>
- Almond, A., Ellis, A. R., & Walker, S. W. (2012). Current parathyroid hormone immunoassays do not adequately meet the needs of patients with chronic kidney disease. *Ann Clin Biochem*, 49(Pt 1), 63-67. doi:10.1258/acb.2011.011094
- Bensalah, M., Bouayadi, O., Rahmani, N., Lyagoubi, A., Lamrabat, S., & Choukri, M. (2018). Comparative study of the serum measurement of PTH on Roche Cobas e411((R)) versus the Abbott Architect ci8200((R)). *Ann Biol Clin (Paris)*, 76(1), 61-67. doi:10.1684/abc.2017.1309
- Bharucha, A. E., Dorn, S. D., Lembo, A., & Pressman, A. (2013). American Gastroenterological Association medical position statement on constipation. *Gastroenterology*, 144(1), 211-217. doi:10.1053/j.gastro.2012.10.029
- Bilezikian, J. P., Brandi, M. L., Eastell, R., Silverberg, S. J., Udelsman, R., Marcocci, C., & Potts, J. J. T. (2014). Guidelines for the Management of Asymptomatic Primary Hyperparathyroidism: Summary Statement from the Fourth International Workshop. *The Journal of Clinical Endocrinology & Metabolism*, 99(10), 3561-3569. doi:10.1210/jc.2014-1413
- Bislev, L. S., Langagergaard Rodbro, L., Sikjaer, T., & Rejnmark, L. (2019). Effects of Elevated Parathyroid Hormone Levels on Muscle Health, Postural Stability and Quality of Life in Vitamin D-Insufficient Healthy Women: A Cross-Sectional Study. *Calcif Tissue Int*, 105(6), 642-650. doi:10.1007/s00223-019-00612-2
- Camacho, P. M., Petak, S. M., Binkley, N., Clarke, B. L., Harris, S. T., Hurley, D. L., . . . Watts, N. B. (2016). AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS AND AMERICAN COLLEGE OF ENDOCRINOLOGY CLINICAL PRACTICE GUIDELINES FOR THE DIAGNOSIS AND TREATMENT OF POSTMENOPAUSAL OSTEOPOROSIS - 2016. *Endocr Pract*, 22(Suppl 4), 1-42. doi:10.4158/ep161435.GI
- Curhan, G. C., Willett, W. C., Speizer, F. E., & Stampfer, M. J. (2001). Twenty-four-hour urine chemistries and the risk of kidney stones among women and men. *Kidney Int*, 59(6), 2290-2298. doi:10.1046/j.1523-1755.2001.00746.x
- Dhesy-Thind, S., Fletcher, G. G., Blanchette, P. S., Clemons, M. J., Dillmon, M. S., Frank, E. S., . . . Van Poznak, C. H. (2017). Use of Adjuvant Bisphosphonates and Other Bone-Modifying Agents in Breast Cancer: A Cancer Care Ontario and American Society of Clinical Oncology Clinical Practice Guideline. *J Clin Oncol*, 35(18), 2062-2081. doi:10.1200/jco.2016.70.7257
- Donat, S., Diaz, M., Bishoff, J., Coleman, J., Dahm, P., Derweesh, I., . . . Chang, S. (2013). Follow-up for Clinically Localized Renal Neoplasms. *Clinical Guidelines*. Retrieved from [http://www.auanet.org/guidelines/follow-up-for-clinically-localized-renal-neoplasms-\(2013\)](http://www.auanet.org/guidelines/follow-up-for-clinically-localized-renal-neoplasms-(2013))

- FDA. (2021). Devices@FDA. Retrieved from <https://www.accessdata.fda.gov/scripts/cdrh/devicesatfda/index.cfm>
- Fuleihan, G. E.-H., & Brown, E. M. (2019, 8/28/2019). Parathyroid hormone secretion and action. *UpToDate*. Retrieved from <https://www.uptodate.com/contents/parathyroid-hormone-secretion-and-action>
- Fuleihan, G. E.-H., & Juppner, H. (2020, 01/09/2020). Parathyroid hormone assays and their clinical use. *UpToDate*. Retrieved from <https://www.uptodate.com/contents/parathyroid-hormone-assays-and-their-clinical-use>
- Fuleihan, G. E.-H., & Silverberg, S. J. (2020, 1/16/2020). Primary hyperparathyroidism: Diagnosis, differential diagnosis, and evaluation. *UpToDate*. Retrieved from <https://www.uptodate.com/contents/primary-hyperparathyroidism-diagnosis-differential-diagnosis-and-evaluation>
- Gonzalez-Campoy, J. M., St Jeor, S. T., Castorino, K., Ebrahim, A., Hurley, D., Jovanovic, L., . . . Thomas, K. T. (2013). Clinical practice guidelines for healthy eating for the prevention and treatment of metabolic and endocrine diseases in adults: cosponsored by the American Association of Clinical Endocrinologists/the American College of Endocrinology and the Obesity Society. *Endocr Pract, 19 Suppl 3*, 1-82. doi:10.4158/ep13155.GI
- Hamedanian, L., Badehnoosh, B., Razavi-Khorasani, N., Mohammadpour, Z., & Mozaffari-Khosravi, H. (2019). Evaluation of vitamin D status, parathyroid hormone, and calcium among Iranian pregnant women with preeclampsia: A case-control study. *Int J Reprod Biomed (Yazd)*, 17(11), 831-840. doi:10.18502/ijrm.v17i10.5494
- Han, C. H., Fry, C. H., Sharma, P., & Han, T. S. (2019). A clinical perspective of parathyroid hormone related hypercalcaemia. *Rev Endocr Metab Disord*. doi:10.1007/s11154-019-09529-5
- Hanon, E. A., Sturgeon, C. M., & Lamb, E. J. (2013). Sampling and storage conditions influencing the measurement of parathyroid hormone in blood samples: a systematic review. *Clin Chem Lab Med*, 51(10), 1925-1941. doi:10.1515/cclm-2013-0315
- Hernandez-Becerra, E., Jimenez-Mendoza, D., Mutis-Gonzalez, N., Pineda-Gomez, P., Rojas-Molina, I., & Rodriguez-Garcia, M. E. (2020). Calcium Deficiency in Diet Decreases the Magnesium Content in Bone and Affects Femur Physicochemical Properties in Growing Rats. *Biol Trace Elem Res*. doi:10.1007/s12011-019-01989-9
- Hogan, J., & Goldfarb, S. (2019, 12/11/2019). Regulation of calcium and phosphate balance. *UpToDate*. Retrieved from <https://www.uptodate.com/contents/regulation-of-calcium-and-phosphate-balance>
- Jellinger, P. S., Handelsman, Y., Rosenblit, P. D., Bloomgarden, Z. T., Fonseca, V. A., Garber, A. J., . . . Davidson, M. (2017). American Association Of Clinical Endocrinologists And American College Of Endocrinology Guidelines For Management Of Dyslipidemia And Prevention Of Cardiovascular Disease. *Endocrine Practice*, 23. Retrieved from <https://pro.aace.com/pdfs/education/lipid-guidelines.pdf>

KDIGO. (2013). KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int*, 3(1), v - 150. Retrieved from [https://kdigo.org/wp-content/uploads/2017/02/KDIGO\\_2012\\_CKD\\_GL.pdf](https://kdigo.org/wp-content/uploads/2017/02/KDIGO_2012_CKD_GL.pdf)

KDIGO. (2017). KDIGO 2017 Clinical Practice Guideline Update for the Diagnosis, Evaluation, Prevention, and Treatment of Chronic Kidney Disease—Mineral and Bone Disorder (CKD-MBD). *Kidney Int*, 7(1), 1-59. Retrieved from <https://kdigo.org/wp-content/uploads/2017/02/2017-KDIGO-CKD-MBD-GL-Update.pdf>

Ketteler, M., Block, G. A., Evenepoel, P., Fukagawa, M., Herzog, C. A., McCann, L., . . . Leonard, M. B. (2017). Executive summary of the 2017 KDIGO Chronic Kidney Disease-Mineral and Bone Disorder (CKD-MBD) Guideline Update: what's changed and why it matters. *Kidney Int*, 92(1), 26-36. doi:10.1016/j.kint.2017.04.006

Konishi, H., Fujiwara, H., Itoh, H., Shiozaki, A., Arita, T., Kosuga, T., . . . Otsuji, E. (2018). Influence of magnesium and parathyroid hormone on cisplatin-induced nephrotoxicity in esophageal squamous cell carcinoma. *Oncol Lett*, 15(1), 658-664. doi:10.3892/ol.2017.7345

Kreepala, C., Kitporntheranunt, M., Sangwipasnapaporn, W., Rungsritthananon, W., & Wattanavaekin, K. (2018). Assessment of preeclampsia risk by use of serum ionized magnesium-based equation. *Ren Fail*, 40(1), 99-106. doi:10.1080/0886022x.2017.1422518

Leder, B. Z. (2017). Parathyroid Hormone and Parathyroid Hormone-Related Protein Analogs in Osteoporosis Therapy. *Curr Osteoporos Rep*, 15(2), 110-119. doi:10.1007/s11914-017-0353-4

Lederer, E. (2014). Regulation of serum phosphate. *J Physiol*, 592(18), 3985-3995. doi:10.1113/jphysiol.2014.273979

Magee, L. A., Pels, A., Helewa, M., Rey, E., & von Dadelszen, P. (2014). Diagnosis, evaluation, and management of the hypertensive disorders of pregnancy: executive summary. *J Obstet Gynaecol Can*, 36(5), 416-441.

Mantovani, G., Bastepe, M., Monk, D., de Sanctis, L., Thiele, S., Usardi, A., . . . Linglart, A. (2018). Diagnosis and management of pseudohypoparathyroidism and related disorders: first international Consensus Statement. *Nat Rev Endocrinol*. doi:10.1038/s41574-018-0042-0

Mantovani, G., Bastepe, M., Monk, D., de Sanctis, L., Thiele, S., Ahmed, S. F., . . . Linglart, A. (2020). Recommendations for Diagnosis and Treatment of Pseudohypoparathyroidism and Related Disorders: An Updated Practical Tool for Physicians and Patients. *Hormone Research in Paediatrics*, 93(3), 182-196. doi:10.1159/000508985

Marcucci, G., Della Pepa, G., & Brandi, M. L. (2017). Drug safety evaluation of parathyroid hormone for hypocalcemia in patients with hypoparathyroidism. *Expert Opin Drug Saf*, 16(5), 617-625. doi:10.1080/14740338.2017.1311322

Mayo. (2018a). Calcium, 24 Hour, Urine. Retrieved from <https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/36891>

Mayo. (2018b, 2018). Magnesium, Serum. Retrieved from <https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/8448>

Mechanick, J. I., Apovian, C., Brethauer, S., Garvey, W. T., Joffe, A. M., Kim, J., . . . Still, C. D. (2019). Clinical Practice Guidelines For The Perioperative Nutrition, Metabolic, And Nonsurgical Support Of Patients Undergoing Bariatric Procedures - 2019 Update: Cosponsored By American Association Of Clinical Endocrinologists/American College Of Endocrinology, The Obesity Society, American Society For Metabolic & Bariatric Surgery, Obesity Medicine Association, And American Society Of Anesthesiologists - Executive Summary. *Endocr Pract*, 25(12), 1346-1359. doi:10.4158/gl-2019-0406

Mechanick, J. I., Youdim, A., Jones, D. B., Garvey, W. T., Hurley, D. L., McMahon, M. M., . . . Brethauer, S. (2013). Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient--2013 update: cosponsored by American Association of Clinical Endocrinologists, the Obesity Society, and American Society for Metabolic & Bariatric Surgery. *Endocr Pract*, 19(2), 337-372. doi:10.4158/ep12437.GI

NBA. (2015). Patient blood management guidelines: module 5 - obstetrics and maternity. Retrieved from <https://www.guideline.gov/summaries/summary/49831/patient-blood-management-guidelines-module-5--obstetrics-and-maternity?q=calcium>

NCCMH. (2014). National Institute for Health and Care Excellence: Clinical Guidelines. In *Bipolar Disorder: The NICE Guideline on the Assessment and Management of Bipolar Disorder in Adults, Children and Young People in Primary and Secondary Care*. Leicester (UK): British Psychological Society (c) The British Psychological Society & The Royal College of Psychiatrists, 2014.

NCCN. (2018a). NCCN Clinical Practice Guidelines in Oncology Bone Cancer. *NCCN Guidelines, 2.2018*. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/bone.pdf](https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf)

NCCN. (2018b). NCCN Clinical Practice Guidelines in Oncology Breast Cancer. *NCCN Guidelines, 1.2018*. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/breast.pdf](https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf)

NCCN. (2018c). NCCN Clinical Practice Guidelines in Oncology Prostate Cancer. *NCCN Guidelines, 3.2018*. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/prostate.pdf](https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf)

NCCN. (2019). Bone Cancer - Version 1.2020 - August 12, 2019. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/bone.pdf](https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf)

NCCN. (2020a). Acute Lymphoblastic Leukemia Version 2.2021 - December 3, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/ll.pdf](https://www.nccn.org/professionals/physician_gls/pdf/ll.pdf)

NCCN. (2020b). Bone Cancer - Version 1.2021. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/bone.pdf](https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf)

NCCN. (2020c). Esophageal and Esphagogastric Junction Cancers - Version 5.2020 - December 23, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/esophageal.pdf](https://www.nccn.org/professionals/physician_gls/pdf/esophageal.pdf)

NCCN. (2020d). Kidney Cancer - Version 1.2021 - July 15, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/kidney.pdf](https://www.nccn.org/professionals/physician_gls/pdf/kidney.pdf)

NCCN. (2020e). Multiple Myeloma Version 4.2021. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/myeloma.pdf](https://www.nccn.org/professionals/physician_gls/pdf/myeloma.pdf)



- NCCN. (2020f). Multiple Myeloma Version 4.2021 - December 20, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/myeloma.pdf](https://www.nccn.org/professionals/physician_gls/pdf/myeloma.pdf)
- NCCN. (2020g). NCCN Clinical Practice Guidelines in Oncology: Bone Cancer. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/neuroendocrine.pdf](https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf)
- NCCN. (2020h). Neuroendocrine and Adrenal Tumors Version 2.2020 - July 24, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/neuroendocrine.pdf](https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf)
- NCCN. (2020i). Occult Primary (Cancer of Unknown Primary [CUP]) - Version 1.2021 Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/occult.pdf](https://www.nccn.org/professionals/physician_gls/pdf/occult.pdf)
- NCCN. (2020j). Prostate Cancer - Version 3.2020 - November 17, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/prostate.pdf](https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf)
- NCCN. (2020k). Systemic Light Chain Amyloidosis - Version 1.2021. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/amyloidosis.pdf](https://www.nccn.org/professionals/physician_gls/pdf/amyloidosis.pdf)
- NCCN. (2020l). T-Cell Lymphomas Version 1.2021 - October 5, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/t-cell.pdf](https://www.nccn.org/professionals/physician_gls/pdf/t-cell.pdf)
- NCCN. (2020m). Thyroid Carcinoma - Version 2.2020 - July 15, 2020. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/thyroid.pdf](https://www.nccn.org/professionals/physician_gls/pdf/thyroid.pdf)
- NCCN. (2021a). Breast Cancer - Version 1.2021. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/breast.pdf](https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf)
- NCCN. (2021b). Prostate Cancer - Version 1.2021. Retrieved from [https://www.nccn.org/professionals/physician\\_gls/pdf/prostate.pdf](https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf)
- NGC. (2013). Heart failure in adults. Retrieved from <https://www.guideline.gov/summaries/summary/47030/heart-failure-in-adults?q=magnesium>
- NICE. (2013). National Institute for Health and Clinical Excellence: Guidance. In *Hyperphosphataemia in Chronic Kidney Disease: Management of Hyperphosphataemia in Patients with Stage 4 or 5 Chronic Kidney Disease*. Manchester: National Institute for Health and Clinical Excellence (UK) Copyright (c) National Institute for Health and Clinical Excellence, 2013.
- NICE. (2014a). Multiple sclerosis in adults: management. In.
- NICE. (2014b). National Institute for Health and Care Excellence: Clinical Guidelines. In *Chronic Kidney Disease (Partial Update): Early Identification and Management of Chronic Kidney Disease in Adults in Primary and Secondary Care*. London: National Institute for Health and Care Excellence (UK) Copyright (c) National Clinical Guideline Centre, 2014.
- NICE. (2014c). National Institute for Health and Care Excellence: Clinical Guidelines. In *Multiple Sclerosis: Management of Multiple Sclerosis in Primary and Secondary Care*. London: National Institute for Health and Care Excellence (UK) Copyright (c) National Clinical Guideline Centre, 2014.

NICE. (2015). National Institute for Health and Care Excellence: Clinical Guidelines. In *Suspected Cancer: Recognition and Referral*. London: National Institute for Health and Care Excellence (UK) Copyright (c) National Collaborating Centre for Cancer.

Orloff, L. A., Wiseman, S. M., Bernet, V. J., Fahey, T. J., 3rd, Shaha, A. R., Shindo, M. L., . . . Wang, M. B. (2018). American Thyroid Association Statement on Postoperative Hypoparathyroidism: Diagnosis, Prevention, and Management in Adults. *Thyroid*, *28*(7), 830-841. doi:10.1089/thy.2017.0309

Pak, C. Y. C., Kaplan, R., Bone, H., Townsend, J., & Waters, O. (1975). A Simple Test for the Diagnosis of Absorptive, Resorptive and Renal Hypercalciurias. *New England Journal of Medicine*, *292*(10), 497-500. doi:10.1056/NEJM197503062921002

Pearle, Goldfarb, D., Assimos, D., Gary Curhan, G., Denu-Ciocca, C., Brian R. Matlaga, B., . . . White, J. R. (2019). Medical Management of Kidney Stones (2019). Retrieved from <https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline>

Pearle, M., Goldfarb, D., Assimos, D., Curhan, G., Denu-Ciocca, C., Matlaga, B., . . . White, J. (2014). Medical Management of Kidney Stones. *Clinical Guidelines*. Retrieved from [https://www.auanet.org/guidelines/medical-management-of-kidney-stones-\(2014\)](https://www.auanet.org/guidelines/medical-management-of-kidney-stones-(2014))

Press, D. M., Siperstein, A. E., Berber, E., Shin, J. J., Metzger, R., Monteiro, R., . . . Mitchell, J. C. (2013). The prevalence of undiagnosed and unrecognized primary hyperparathyroidism: a population-based analysis from the electronic medical record. *Surgery*, *154*(6), 1232-1237; discussion 1237-1238.

Quamme, G. A. (1986). Renal handling of magnesium: drug and hormone interactions. *Magnesium*, *5*(5-6), 248-272.

Rodriguez-Ortiz, M. E., Canalejo, A., Herencia, C., Martinez-Moreno, J. M., Peralta-Ramirez, A., Perez-Martinez, P., . . . Almaden, Y. (2014). Magnesium modulates parathyroid hormone secretion and upregulates parathyroid receptor expression at moderately low calcium concentration. *Nephrol Dial Transplant*, *29*(2), 282-289. doi:10.1093/ndt/gft400

Rooney, M. R., Alonso, A., Folsom, A. R., Michos, E. D., Rebholz, C. M., Misialek, J. R., . . . Lutsey, P. L. (2020). Serum magnesium and the incidence of coronary artery disease over a median 27 years of follow-up in the Atherosclerosis Risk in Communities (ARIC) Study and a meta-analysis. *Am J Clin Nutr*, *111*(1), 52-60. doi:10.1093/ajcn/nqz256

Ross, D. S., Burch, H. B., Cooper, D. S., Greenlee, M. C., Laurberg, P., Maia, A. L., . . . Walter, M. A. (2016). 2016 American Thyroid Association Guidelines for Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis. *Thyroid*, *26*(10), 1343-1421. doi:10.1089/thy.2016.0229

Shaker, J. L., & Defetos, L. (2018). Calcium and Phosphate Homeostasis. In K. R. Feingold, B. Anawalt, A. Boyce, G. Chrousos, K. Dungan, A. Grossman, J. M. Hershman, G. Kaltsas, C. Koch, P. Kopp, M. Korbonits, R. McLachlan, J. E. Morley, M. New, L. Perreault, J. Purnell, R. Rebar, F. Singer, D. L. Trencce, A. Vinik, & D. P. Wilson (Eds.), *Endotext*. South Dartmouth (MA): MDText.com, Inc.



Sturgeon, C. M., Sprague, S., Almond, A., Cavalier, E., Fraser, W. D., Algeciras-Schimnich, A., . . . Vesper, H. W. (2017). Perspective and priorities for improvement of parathyroid hormone (PTH) measurement - A view from the IFCC Working Group for PTH. *Clin Chim Acta*, *467*, 42-47. doi:10.1016/j.cca.2016.10.016

Tieder, J. S., Bonkowsky, J. L., Etzel, R. A., Franklin, W. H., Gremse, D. A., Herman, B., . . . Smith, M. B. (2016). Brief Resolved Unexplained Events (Formerly Apparent Life-Threatening Events) and Evaluation of Lower-Risk Infants. *Pediatrics*, *137*(5). doi:10.1542/peds.2016-0590

Valcour, A., Zierold, C., Blocki, F. A., Hawkins, D. M., Martin, K. J., Rao, S. D., & Bonelli, F. (2018). Trueness, precision and stability of the LIAISON 1-84 parathyroid hormone (PTH) third-generation assay: comparison to existing intact PTH assays. *Clin Chem Lab Med*. doi:10.1515/cclm-2018-0217

Wilhelm, S. M., Wang, T. S., Ruan, D. T., & et al. (2016). The american association of endocrine surgeons guidelines for definitive management of primary hyperparathyroidism. *JAMA Surgery*, *151*(10), 959-968. doi:10.1001/jamasurg.2016.2310

Wojda, S. J., & Donahue, S. W. (2018). Parathyroid hormone for bone regeneration. *J Orthop Res*, *36*(10), 2586-2594. doi:10.1002/jor.24075

Wright, M., Southcott, E., MacLaughlin, H., & Wineberg, S. (2019). Clinical practice guideline on undernutrition in chronic kidney disease. *BMC Nephrol*, *20*(1), 370. doi:10.1186/s12882-019-1530-8

### Policy Update History:

5/1/2022	New policy
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