

Erectile Dysfunction

Policy Number: AHS – G2132 – Erectile Dysfunction	Prior Policy Name and Number, as applicable:
Effective Date: 06/01/2022	

I. Policy Description

Erectile dysfunction (ED), or impotence, is defined as the inability to achieve or maintain an erection of sufficient rigidity to enable penetration and completion of the sexual act (Cunningham & Khera, 2020).

For guidance on hormonal testing in males, please refer to AHS-G2013 Testosterone Testing.

II. Related Policies

Policy Number	Policy Title
AHS-G2013	Testosterone Testing

III. Indications and/or Limitations of Coverage

Application of coverage criteria is dependent upon an individual's benefit coverage at the time of the request. Medical Policy Statements do not ensure an authorization or payment of services. Please refer to the plan contract (often referred to as the Evidence of Coverage) for the service(s) referenced in the Medical Policy Statement. If there is a conflict between the Medical Policy Statement and the plan contract (i.e., Evidence of Coverage), then the plan contract (i.e., Evidence of Coverage) will be the controlling document used to make the determination.

Application of coverage criteria is dependent upon an individual's benefit coverage at the time of the request. If there is a conflict between this Policy and any relevant, applicable government policy [e.g. National Coverage Determinations (NCDs) for Medicare] for a particular member, then the government policy will be used to make the determination. For the most up-to-date Medicare policies and coverage, please visit their search website <http://www.cms.gov/medicare-coverage-database/overview-and-quicksearch.aspx?from2=search1.asp&> or [the manual website](#).

1. The following lab tests **MEET COVERAGE CRITERIA** in the diagnosis of erectile dysfunction:
 - a. Blood glucose (Fasting / HbA1c)
 - b. Complete blood count
 - c. Creatinine and Blood Urea Nitrogen

- d. Hepatic panel
- e. Lipid profile
- f. Prostate specific antigen
- g. Serum testosterone (Total / Free or Bioavailable)* (See Note 1)
- h. Thyroid function studies
- i. Urinalysis

The following does not meet coverage criteria due to a lack of available published scientific literature confirming that the test(s) is/are required and beneficial for the diagnosis and treatment of a patient's illness.

- 2. The following tests for the diagnosis of erectile dysfunction **DO NOT MEET COVERAGE CRITERIA** because their effectiveness has not been established:
 - a. Iron binding capacity
 - b. Prostatic acid phosphatase

NOTE 1: Due to considerable variability in serum total testosterone testing, the Centers for Disease Control and Prevention (CDC) developed a standardization program for total testosterone assays (Hormone Standardization [HoSt]/Testosterone). An assay certified by the CDC's HoSt/Testosterone program is standardized to within $\pm 6.4\%$ of the CDC total testosterone reference standard. It is **STRONGLY RECOMMENDED** that serum total testosterone testing be performed on an assay that has been certified by the CDC HoSt/Testosterone program (Bhasin et al., 2018). A list of CDC-certified assays is available on the HoSt website (CDC, 2020).

IV. Scientific Background

It has been projected that approximately 150 million men in the world suffer from erectile dysfunction (ED) and the worldwide prevalence is expected to increase to 322 million men by 2025 (McKinlay, 2000), making it one of the most frequent chronic health problems in men over 40 years of age and a common reason for consultation of family physicians and specialists (Brotons et al., 2004; Cunningham & Khera, 2020). Najari and Kashanian (2016) report that ED is present in 1 of 2 men over the age of 40. However, men younger than 40 also seek medical help for new-onset ED. One study reports that one in four patients younger than 40 experience ED, with almost 50% of the young men complaining of severe ED (Capogrosso et al., 2013). ED may be an indicator for other underlying diseases, such as diabetes, hypertension, or atherosclerosis, and thus merits investigation (Brotons et al., 2004; Najari & Kashanian, 2016; Yoshimura, Kato, Chencellor, Nelson, & Glorioso, 2010). Men with ED experience twice as many heart attacks and strokes (6.3%) in comparison to men who do not have ED (2.6%) (AHA, 2018).

The development of an erection is a complex process that involves the brain, hormones, emotions, nerves, muscles, and blood vessels. A problem with any of these components (endocrine,

cardiovascular, neurological, and so on) can result in ED. For example, low intracavernosal nitric oxide synthase, which is necessary for nitric oxide to maximize blood flow to the penis, is often found in low levels in diabetic patients or patients with low testosterone. Any disruption of blood flow or nitric oxide synthesis may prevent intracavernosal blood pressure from rising enough to maintain acceptable rigidity for an erection (Cunningham & Khera, 2020). Other causes of erectile dysfunction may be penile trauma, spinal cord injuries, abnormalities of the penis (e.g., penile fibrosis and Peyronie's disease), veno-occlusive dysfunction or as a result of a radical pelvic surgery (e.g., radical prostatectomy or cystectomy) (Shindel, Brant, Bochinski, Bella, & Lue, 2014). Regardless of the cause, ED has a negative impact on the quality of life of both the patient and partner (Althof, 2002).

ED may be cured or improved simply by implementing lifestyle changes. Diet and weight loss plans may improve ED symptoms significantly. Patients are also recommended to reduce alcohol intake, avoid smoking, and eliminate illicit drug use (Najari & Kashanian, 2016). Further, if side effects from medication are the cause of ED, physicians may work with the patient to prescribe alternative medications. Psychotherapy may also be recommended if ED is caused by psychological factors.

Proprietary tests exist for the assessment of risk factors for ED. For example, Walk-In Lab offers an ED panel consisting of several biomarkers (thyroid stimulating hormone [TSH], complete blood count [CBC], luteinizing hormone [LH], and so on) (Walk-In, 2017). Genova offers a similar panel, which evaluates hormones, including free testosterone, estradiol, PSA (prostate specific antigen), DHEA-S (dehydroepiandrosterone), Dihydrotestosterone (DHT), Insulin-Like Growth Factor 1 (IGF-1), and Sex Hormone Binding Globulin (SHBG) (GENOVA, 2019, 2021). Finally, GX Sciences offers a genetic "Men's Health Panel" that evaluates 15 gene variants proposed to play a significant role in "Testosterone conversion and breakdown, estrogen formation, risk of metabolic weakness, and risk of hypertension." Besides low sex drive and testicular atrophy, GX Sciences states that their genetic test can also be used to address "carbohydrate cravings," "slow recovery," and male pattern baldness (GXSciences, 2019). AccessaLabs has also developed an ED test panel which measures FSH, LH, prolactin, total testosterone and free testosterone levels (AccessaLabs, 2020).

Clinical Utility and Validity

The evaluation of male sexual dysfunction may include sexual history and physical examination, which have been reported to have a 95 percent sensitivity but only a 50 percent specificity in determining the cause of ED (Davis-Joseph, Tiefer, & Melman, 1995). Additional diagnostic tests include fasting glucose or glycated hemoglobin (A1C) to examine for diabetes or level of glucose control, complete blood count (CBC), comprehensive metabolic profile to assess liver and kidney function, thyroid-stimulating hormone (TSH) to rule out thyroid disease, lipid profile to assess cardiac risk factors, and serum total testosterone to assess gonadal function (Cunningham & Khera, 2020; Hatzimouratidis et al., 2010; Qaseem et al., 2009).

Lane-Cordova, Kershaw, Liu, Herrington, and Lloyd-Jones (2017) performed a study assessing cardiovascular health with ED. The study included 1136 men who were divided into three categories of cardiovascular health (CVH, low, medium, high) and were assessed for ED. The researchers concluded that 58% of men with low CVH were found to have ED (233/387), 41% with moderate CVH (277/670), and 33% (26/79) with CVH. ED was also found to have a prevalence ratio of 0.75 with moderate CVH and 0.68 with high CVH (Lane-Cordova et al., 2017).

Brooke et al. (2014) conducted a study examining the association between testosterone levels in ED patients with type 2 diabetes. A total of 355 diabetic patients were evaluated, and on average,

patients with ED were found to have 9.1% lower SF-36 health questionnaire score, which correlated with lower total, bioavailable, and free testosterone (Brooke et al., 2014).

Kizilay, Kalemci, Simsir, and Altay (2020) researched predisposing factors for ED and response to treatment in young versus old men. Patients were divided in to two groups: <40 years (n=58, group I) and ≥40 years (n=73, group II). Participants completed both the International Index of Erectile Function-5 (IIEF-5) questionnaire, and Beck's Depression Inventory (BDI) questionnaire. Results seem to be typical. The researchers report higher morning rigidity and libido in group I. Further, "In multivariate analysis, the factors predicting the low IIEF-Erectile Function domain score in young men were testosterone level and BDI score (p = .026 and p = .034). Although psychogenic factors contribute significantly to the aetiology of ED, hormone profile is more preserved in young men than in older men (Kizilay et al., 2020)."

Huntingdon, Muscat, de Wit, Duracinsky, and Juraskova (2020) completed a systematic review for ED in men with and without HIV. Fourteen studies from 1997 to 2019 met the inclusion criteria. The researchers found that both age and depression were significantly associated with ED. Also, "Importantly, factors unique to HIV emerged as consistently significant across studies, including time on antiretroviral medication and protease inhibitor medication use (Huntingdon et al., 2020)." The authors concluded by suggesting that psychological factors such as fear of transmission or rejection by a sexual partner should be considered in future ED/HIV research.

- V. **Yilmaz et al. (2021)** completed a cross-sectional study to define the relationship between triglyceride-glucose index (TyG) and erectile dysfunction (ED). TyG is an inexpensive insulin resistance marker **that** is calculated using serum glucose and **triglyceride** values. Out of 142 patients included in the study, 91 patients (64.1%) had ED according to the International Index of Erectile Function survey. "BMI, fasting insulin level, fasting glucose level, IR, GGT, HDL, HbA1c, Triglyceride, TyG, DM, HT, and MetS status of the patients in ED group were statistically significantly higher compared to non-ED group." The **cutoff** value of TyG index for ED was found to be 8.88 and any value above the cut off is **deemed to** be an independent predictor of ED. **The authors conclude that** TyG index may be useful in the diagnosis and follow up of **erectile dysfunction**.

VI. Guidelines and Recommendations

American College of Physicians (ACP) (Qaseem, Horwitch, Vijan, Etxeandia-Ikobaltzeta, & Kansagara, 2020; Qaseem et al., 2009)

The ACP concluded that the evidence for the utility of hormonal blood tests in identifying and affecting therapeutic outcomes for treatable causes of ED is inconclusive. The ACP makes no recommendations either for or against routine use of hormonal blood tests or hormonal treatment in the management of patients with ED. Clinicians should make decisions to measure hormone levels on a case-by-case basis, in accordance with the patient's clinical presentation (Qaseem et al., 2009).

In 2020, the ACP published guidelines for testosterone treatment in adult men with age-related low testosterone levels. These guidelines mention that the "ACP suggests that clinicians discuss whether to initiate testosterone treatment in men with age-related low testosterone with sexual dysfunction who want to improve sexual function (conditional recommendation; low-certainty evidence) (Qaseem et al., 2020)." However, these guidelines do not give specific examples of recommended testing methods for men experiencing sexual dysfunction.

European Association of Urology (EAU) (Hatzimouratidis, 2016)

In 2016, EAU published revised guidelines for the diagnosis and treatment of patients suffering from erectile dysfunction. It recommended that laboratory testing must be ordered based on the patient's complaints and risk factors. It recommended that "patients may need a fasting blood glucose or HbA1C and lipid profile if not recently assessed. Hormonal tests include an early morning total testosterone. If indicated, bioavailable or calculated-free testosterone may be needed to corroborate total testosterone measurements." It further recommended that additional laboratory testing may be considered in some patients (for example, prostate-specific antigen, prolactin and luteinizing hormone) (Hatzimouratidis, 2016).

American Urological Association (AUA) (Burnett et al., 2018)

The AUA recommends measuring morning serum total testosterone in men with ED. The AUA also states that "with the possible exception of serum testosterone, glucose/hemoglobin A1c, and in some cases serum lipids, no routine serum study is likely to alter ED management", but list "serum BUN/Cr, fasting lipids, fasting glucose or hemoglobin A1c, morning testosterone, thyroid function studies (i.e. thyroid-stimulating hormone, free T4) and PSA" as potentially appropriate tests for men with ED (Burnett et al., 2018).

American Association of Clinical Endocrinologists (AACE) (Guay et al., 2003)

The AACE guidelines (Guay et al., 2003) state that "chemistry testing should evaluate for anemia, increased plasma glucose levels, or impaired renal function. Thyroid testing should be done if clinically indicated. Other hormone screening should include serum testosterone and prolactin levels". The AACE concluded that free or bioavailable testosterone assays were preferred over measurement of the total testosterone level. AACE further recommended that "if the testosterone level is low, or even borderline, a serum LH level should be obtained to distinguish primary from secondary hypogonadism."

American Society of Clinical Oncology (ASCO) (J. Carter et al., 2018)

The ASCO published guidelines (J. Carter et al., 2018) which state that "Clinicians should check testosterone levels, even if the patient has a cancer that is not typically associated with hormone changes in men reporting decreased sexual functioning and satisfaction."

ASCO recommends discussing sexual health and dysfunction due to cancer or treatment with the patient. Psychosocial and/or psychosexual counseling should be offered to all male patients with cancer. The first step should be to identify medical and treatable contributing factors and address those issues first (Jeanne Carter et al., 2018).

British Society for Sexual Medicine (BSSM) (Hackett et al., 2018)

The BSSM recommends the following lab testing for ED: "fasting glucose and/or glycated hemoglobin, lipid profile, and fasting testosterone level in all cases." Serum PSA may also be considered if "clinically indicated." The BSSM also notes that if serum testosterone is borderline or low, the test should be repeated together with serum LH and prolactin (Hackett et al., 2018).

VII. State and Federal Regulations, as applicable

FDA prescribing information for drugs that treat erectile dysfunction contraindicate their use in patients with severe renal impairment, hepatic impairment or if sexual activity is inadvisable due to cardiovascular status or any other reason.

FDA approved methods for fasting glucose or glycated hemoglobin (A1C), complete blood count, comprehensive metabolic profile to assess liver and kidney function, thyroid-stimulating hormone (TSH) to rule out thyroid disease, lipid profile to assess cardiac risk factors, and serum total testosterone are available in most CLIA certified laboratories.

Additionally, many labs have developed specific tests that they must validate and perform in house. These laboratory-developed tests (LDTs) are regulated by the Centers for Medicare and Medicaid (CMS) as high-complexity tests under the Clinical Laboratory Improvement Amendments of 1988 (CLIA '88). As an LDT, the U. S. Food and Drug Administration has not approved or cleared this test; however, FDA clearance or approval is not currently required for clinical use.

VIII. Applicable CPT/HCPCS Procedure Codes

CPT	Code Description
80061	Lipid panel This panel must include the following: Cholesterol, serum, total (82465) Lipoprotein, direct measurement, high density cholesterol (HDL cholesterol) (83718) Triglycerides (84478)
80076	Hepatic function panel This panel must include the following: Albumin (82040) Bilirubin, total (82247) Bilirubin, direct (82248) Phosphatase, alkaline (84075) Protein, total (84155) Transferase, alanine amino (ALT) (SGPT) (84460) Transferase, aspartate amino (AST) (SGOT) (84450)
81002	Urinalysis, by dip stick or tablet reagent for bilirubin, glucose, hemoglobin, ketones, leukocytes, nitrite, pH, protein, specific gravity, urobilinogen, any number of these constituents; non-automated, without microscopy
81003	Urinalysis, by dip stick or tablet reagent for bilirubin, glucose, hemoglobin, ketones, leukocytes, nitrite, pH, protein, specific gravity, urobilinogen, any number of these constituents; automated, without microscopy
81005	Urinalysis; qualitative or semiquantitative, except immunoassays
82565	Creatinine; blood
82570	Creatinine; other source
82947	Glucose; quantitative, blood (except reagent strip)
83036	Hemoglobin; glycosylated (A1C)
83550	Iron binding capacity
84066	Phosphatase, acid; prostatic
84153	Prostate specific antigen (PSA); total
84402	Testosterone; free
84403	Testosterone; total
84410	Testosterone; bioavailable, direct measurement (eg, differential precipitation)
84439	Thyroxine; free
84443	Thyroid stimulating hormone (TSH)
84520	Urea nitrogen; quantitative

84540	Urea nitrogen, urine
85025	Blood count; complete (CBC), automated (Hgb, Hct, RBC, WBC and platelet count) and automated differential WBC count
85027	Blood count; complete (CBC), automated (Hgb, Hct, RBC, WBC and platelet count)

Current Procedural Terminology© American Medical Association. All Rights reserved.

Procedure codes appearing in Medical Policy documents are included only as a general reference tool for each policy. They may not be all-inclusive.

IX. Evidence-based Scientific References

- AccesaLabs. (2020). Erectile Dysfunction Test Panel. Retrieved from <https://www.accesalabs.com/Erectile-Dysfunction-Test>
- AHA. (2018). Erectile dysfunction may be warning sign for more serious health problems. Retrieved from <https://www.heart.org/en/news/2018/07/11/erectile-dysfunction-may-be-warning-sign-for-more-serious-health-problems#:~:text=Men%20with%20ED%20experienced%20more,the%20study's%20senior%20author%2C%20Dr.>
- Althof, S. E. (2002). Quality of life and erectile dysfunction. *Urology*, 59(6), 803-810. Retrieved from [https://www.goldjournal.net/article/S0090-4295\(02\)01606-0/fulltext](https://www.goldjournal.net/article/S0090-4295(02)01606-0/fulltext)
- Bhasin, S., Brito, J. P., Cunningham, G. R., Hayes, F. J., Hodis, H. N., Matsumoto, A. M., . . . Yialamas, M. A. (2018). Testosterone Therapy in Men With Hypogonadism: An Endocrine Society* Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*, 103(5), 1715-1744. doi:10.1210/jc.2018-00229
- Brooke, J. C., Walter, D. J., Kapoor, D., Marsh, H., Muraleedharan, V., & Jones, T. H. (2014). Testosterone deficiency and severity of erectile dysfunction are independently associated with reduced quality of life in men with type 2 diabetes. *Andrology*, 2(2), 205-211. doi:10.1111/j.2047-2927.2013.00177.x
- Brotons, F. B., Campos, J. C., Gonzalez-Correales, R., Martín-Morales, A., Moncada, I., & Pomerol, J. M. (2004). Core document on erectile dysfunction: key aspects in the care of a patient with erectile dysfunction. *International Journal of Impotence Research*, 16. doi:doi:10.1038/sj.ijir.3901240
- Burnett, A. L., Nehra, A., Breau, R. H., Culkin, D. J., Faraday, M. M., Hakim, L. S., . . . Shindel, A. W. (2018). Erectile Dysfunction: AUA Guideline. *J Urol*, 200(3), 633-641. doi:10.1016/j.juro.2018.05.004
- Capogrosso, P., Colicchia, M., Ventimiglia, E., Castagna, G., Clementi, M. C., Suardi, N., . . . Salonia, A. (2013). One Patient Out of Four with Newly Diagnosed Erectile Dysfunction Is a Young Man—Worrisome Picture from the Everyday Clinical Practice. *The Journal of Sexual Medicine*, 10(7), 1833-1841. doi:10.1111/jsm.12179
- Carter, J., Lacchetti, C., Andersen, B. L., Barton, D. L., Bolte, S., Damast, S., . . . Rowland, J. H. (2018). Interventions to Address Sexual Problems in People With Cancer: American Society of Clinical Oncology Clinical Practice Guideline Adaptation of Cancer Care Ontario Guideline. *J Clin Oncol*, 36(5), 492-511. doi:10.1200/jco.2017.75.8995
- Carter, J., Lacchetti, C., Andersen, B. L., Barton, D. L., Bolte, S., Damast, S., . . . Rowland, J. H. (2018). Interventions to Address Sexual Problems in People With Cancer: American Society of Clinical Oncology Clinical Practice Guideline Adaptation of Cancer Care Ontario Guideline. *Journal of Clinical Oncology*, 36(5), 492-511. doi:10.1200/jco.2017.75.8995
- CDC. (2020, 09/28/2020). HoSt/VDSCP: Certified Participants. Retrieved from https://www.cdc.gov/labstandards/hs_certified_participants.html

- Cunningham, G., & Khera, M. (2020). Evaluation of male sexual dysfunction - UpToDate. In K. Martin (Ed.), *UpToDate*. Retrieved from https://www.uptodate.com/contents/evaluation-of-male-sexual-dysfunction?source=search_result&search=erectile%20dysfunction&selectedTitle=3~150
- Davis-Joseph, B., Tiefer, L., & Melman, A. (1995). Accuracy of the initial history and physical examination to establish the etiology of erectile dysfunction. *Urology*, 45(3), 498-502. Retrieved from [https://www.goldjournal.net/article/S0090-4295\(99\)80022-3/abstract](https://www.goldjournal.net/article/S0090-4295(99)80022-3/abstract)
- GENOVA. (2019). Male Hormonal Health™. Retrieved from <https://www.gdx.net/product/male-hormonal-health-hormone-test-blood>
- GENOVA. (2021). Male Hormonal Health™. Retrieved from <https://www.gdx.net/product/male-hormonal-health-hormone-test-blood>
- Guay, A. T., Spark, R. F., Bansal, S., Cunningham, G. R., Goodman, N. F., Nankin, H. R., . . . Perez, J. B. (2003). American Association of Clinical Endocrinologists medical guidelines for clinical practice for the evaluation and treatment of male sexual dysfunction: a couple's problem--2003 update. *Endocr Pract*, 9(1), 77-95. doi:10.4158/ep.9.1.77
- GXSciences. (2019). Men's Health Panel: Genetic Testing for Men. Retrieved from <https://www.gxsciences.com/genetic-testing-men-health-s/152.htm>
- Hackett, G., Kirby, M., Wylie, K., Heald, A., Ossei-Gerning, N., Edwards, D., & Muneer, A. (2018). British Society for Sexual Medicine Guidelines on the Management of Erectile Dysfunction in Men-2017. *J Sex Med*, 15(4), 430-457. doi:10.1016/j.jsxm.2018.01.023
- Hatzimouratidis, K. (2016). EAU Guidelines on Erectile Dysfunction, Premature Ejaculation, Penile Curvature and Priapism. Retrieved from <https://uroweb.org/wp-content/uploads/EAU-Guidelines-Male-Sexual-Dysfunction-2016-3.pdf>
- Hatzimouratidis, K., Amar, E., Eardley, I., Giuliano, F., Hatzichristou, D., Montorsi, F., . . . Wespes, E. (2010). Guidelines on male sexual dysfunction: erectile dysfunction and premature ejaculation. *Eur Urol*, 57(5), 804-814. doi:10.1016/j.eururo.2010.02.020
- Huntingdon, B., Muscat, D. M., de Wit, J., Duracinsky, M., & Juraskova, I. (2020). Factors associated with erectile dysfunction among men living with HIV: a systematic review. *AIDS Care*, 32(3), 275-285. doi:10.1080/09540121.2019.1653443
- Kizilay, F., Kalemci, S., Simsir, A., & Altay, B. (2020). Predisposing factors for erectile dysfunction and response to treatment in younger males: Are they different from those of older men? An observational-comparative study. *Andrologia*, 52(2), e13495. doi:10.1111/and.13495
- Lane-Cordova, A. D., Kershaw, K., Liu, K., Herrington, D., & Lloyd-Jones, D. M. (2017). Association Between Cardiovascular Health and Endothelial Function With Future Erectile Dysfunction: The Multi-Ethnic Study of Atherosclerosis. *Am J Hypertens*, 30(8), 815-821. doi:10.1093/ajh/hpx060
- McKinlay, J. B. (2000). The worldwide prevalence and epidemiology of erectile dysfunction. *Int J Impot Res*, 12 Suppl 4, S6-s11. doi:10.1038/sj.ijir.3900567
- Najari, B. B., & Kashanian, J. A. (2016). Erectile Dysfunction. *Jama*, 316(17), 1838. doi:10.1001/jama.2016.12284
- Qaseem, A., Horwitch, C. A., Vijan, S., Etzandia-Ikobaltzeta, I., & Kansagara, D. (2020). Testosterone Treatment in Adult Men With Age-Related Low Testosterone: A Clinical Guideline From the American College of Physicians. *Ann Intern Med*. doi:10.7326/m19-0882
- Qaseem, A., Snow, V., Denberg, T. D., Casey, D. E., Jr., Forciea, M. A., Owens, D. K., & Shekelle, P. (2009). Hormonal testing and pharmacologic treatment of erectile dysfunction: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*, 151(9), 639-649. doi:10.7326/0003-4819-151-9-200911030-00151
- Shindel, A., Brant, W. O., Bochinski, D., Bella, A. J., & Lue, T. F. (2014). Medical and Surgical Therapy of Erectile Dysfunction. doi:<https://www.ncbi.nlm.nih.gov/books/NBK278925/>

Walk-In. (2017). ERECTILE DYSFUNCTION. Retrieved from <https://www.walkinlab.com/men-s-wellness-tests/erectile-dysfunction.html>

Yilmaz, M., Karaaslan, M., Tonyali, S., Celik, M., Toprak, T., & Odabas, O. (2021). Triglyceride-Glucose Index (TyG) is associated with erectile dysfunction: A cross-sectional study. *Andrology*, 9(1), 238-244. doi:<https://doi.org/10.1111/andr.12904>

Yoshimura, N., Kato, R., Chencellor, M. B., Nelson, J. B., & Glorioso, J. C. (2010). Gene therapy as future treatment of erectile dysfunction. *Expert Opin Biol Ther*, 10(9), 1305-1314. doi:10.1517/14712598.2010.510510

X. Revision History

Revision Date	Summary of Changes
01/01/2022	Initial Effective Date
04/12/2022	<p>Updated background, guidelines, and evidence-based scientific references. Literature review did not necessitate any modification to the coverage criteria. Added Note 1 strongly recommending the use of a CDC HoSt/Testosterone-certified assay for serum total testosterone testing and added asterisks (*) and “See Note 1” within CCs addressing total testosterone (TT) testing. [Based on CDC recommendations and The Endocrine Society guidelines]</p> <p>Removed Coverage Criteria 2a and 2b, CPT codes 81400 and 81479</p> <p>Added statement “Procedure codes appearing in Medical Policy documents are included only as a general reference tool for each policy. They may not be all-inclusive” at end of procedure code section.</p>