



CADTH Reference List

Penile Doppler Ultrasound for Peyronie Disease

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Key Messages

- We did not find any studies on the diagnostic test accuracy of point-of-care penile Doppler ultrasound for patients suspected of having Peyronie disease.
- We did not find any studies on the clinical utility of point-of-care penile Doppler ultrasounds for patients suspected of having Peyronie disease.
- We did not find any studies on the cost-effectiveness of point-of-care penile Doppler ultrasounds for patients suspected of having Peyronie disease.
- We found 2 evidence-based guidelines regarding the use of penile Doppler ultrasound as a test for Peyronie disease.
- We found 3 evidence-based guidelines regarding the diagnosis of Peyronie disease.

Research Questions

1. What is the diagnostic test accuracy of point-of-care penile Doppler ultrasound for patients suspected of having Peyronie disease?
2. What is the clinical utility of point-of-care penile Doppler ultrasounds for patients suspected of having Peyronie disease?
3. What is the cost-effectiveness of point-of-care penile Doppler ultrasounds for patients suspected of having Peyronie disease?
4. What are the evidence-based guidelines regarding the use of penile Doppler ultrasound as a test for Peyronie disease?
5. What are the evidence-based guidelines regarding the diagnosis of Peyronie disease?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were penile Doppler ultrasound and Peyronie's disease. No filters were applied to limit the retrieval by study type for questions 1 to 4. [CADTH-developed search filters](#) were applied to limit retrieval to guidelines for question 5. The search was completed on May 15, 2023, and limited to English-language documents published since January 1, 2013. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open access full-text versions of evidence-based guidelines were reviewed when available, and relevant recommendations were summarized.

Table 1: Selection Criteria

Criteria	Description
Target condition and population	People with suspected Peyronie disease
Index test and intervention	Q1 to Q3: Point-of-care penile Doppler ultrasound performed by nonradiologists Q4: Penile Doppler ultrasound Q5: Any method or approach for the diagnosis of Peyronie disease
Reference standard	Q1: Vascular ultrasound of the penis performed in a medical imaging facility or by a radiologist Q2 to Q5: Not applicable
Comparator	Q1, Q4, and Q5: Not applicable Q2 and Q3: Standard of care (e.g., patient history, vascular ultrasound in a medical imaging facility)
Outcomes	Q1: Diagnostic test accuracy (e.g., sensitivity, specificity, positive predictive value, negative predictive value) Q2: Clinical utility (e.g., time to diagnosis, patient management, quality of life, time to treatment, direct patient benefits and harms) Q3: Cost-effectiveness (e.g., cost per quality-adjusted life-year gained, incremental cost-effectiveness ratio) Q4: Recommendations regarding the use penile Doppler ultrasound (e.g., best practices, contraindications, appropriate patient populations and clinical settings) Q5: Recommendations regarding best practices for diagnosing Peyronie disease (e.g., which tests or assessment tools to use)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, nonrandomized studies, economic evaluations, evidence-based guidelines

Results

No relevant literature was identified about the diagnostic test accuracy and clinical utility of point-of-care penile Doppler ultrasounds (PDUs) for patients suspected of having Peyronie disease (PD). Additionally, no economic evaluations were identified about the cost-effectiveness of point-of-care PDUs for patients suspected of having PD. Two evidence-based guidelines were identified about the use of PDU as a test for PD.^{2,3} Three evidence-based guidelines were identified about the diagnosis of PD.¹⁻³ No relevant health technology assessments, systematic reviews, randomized controlled trials, or nonrandomized studies were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

Overall Summary of Findings

Three evidence-based guidelines were identified.¹⁻³ The guideline from Canadian Urological Association suggests the use of colour duplex ultrasonography to diagnose PD.² The guideline from American Urological Association recommends performing an in-office intracavernosal injection test with or without duplex Doppler ultrasound.³

Three guidelines¹⁻³ recommend the use of various tools and methods to diagnose PD, including appropriate clinicians³ and multiple assessment methods, such as an investigation of an individual's medical and/or sexual history,^{1,3} the use of PD specific questionnaire,^{1,2} physical examination,^{1,3} and objective assessment using the intracavernous injection method.^{1,3} The guideline from European Association of Urology recommends against using ultrasound, CT, or MRI to evaluate plaque size and deformity in routine clinical practice.¹ Refer to [Table 2](#) for a detailed summary of recommendations.

Table 2: Summary of Recommendations in Included Guidelines

Summary of recommendations	Quality of evidence and/or strength of recommendations
European Association of Urology (2023)¹	
"Take a medical and sexual history of patients with PD, include duration of the disease, pain on erection, penile deformity, difficulty in vaginal/anal intromission due to disabling deformity and ED." (p. 89)	Strength of recommendation: Strong
"Take a physical examination, including assessment of palpable plaques, stretched or erect penile length, degree of curvature (self-photography, vacuum-assisted erection test or pharmacological-induced erection) and any other related diseases (e.g., Dupuytren's contracture, Ledderhose disease) in patients with PD." (p. 89)	Strength of recommendation: Strong
"Use the IC method in the diagnostic work-up of PD to provide an objective assessment of penile curvature with an erection." (p. 89)	Strength of recommendation: Weak
"Use the PD specific questionnaire especially in clinical trials, but mainstream usage in daily clinical practice is not mandatory." (p. 89)	Strength of recommendation: Weak
"Do not use US, computed tomography or magnetic resonance imaging to assess plaque size and deformity in routine clinical practice." (p. 89)	Strength of recommendation: Weak
Canadian Urological Association (2018)²	
"CDU may be offered." (p. 3)	Strength of recommendation: Grade C Level of evidence: Level 4
"The PDQ is responsive to changes in symptoms and disease progression, measuring severity in the three domains of physical/psychological symptoms, penile pain, and symptom bother." (p. 3)	Strength of recommendation: Grade C Level of evidence: Level 3
American Urological Association (2015)³	
"Clinicians should engage in a diagnostic process to document the signs and symptoms that characterize PD. The minimum requirements for this examination are a careful history (to assess penile deformity, interference with intercourse, penile pain, and/or distress) and a physical exam of the genitalia (to assess for palpable abnormalities of the penis)." (p. 4)	NA



Summary of recommendations	Quality of evidence and/or strength of recommendations
"Clinicians should perform an in-office ICI test with or without duplex Doppler ultrasound prior to invasive intervention." (p. 4)	NA
"Clinicians should evaluate and treat a man with PD only when they have the experience and diagnostic tools to appropriately evaluate, counsel, and treat the condition." (p. 4)	NA

CDU = colour duplex ultrasonography; ED = erectile dysfunction; IC = intracavernosal; ICI = intracavernosal injection; PD = Peyronie disease; PDQ = Disease Questionnaire Peyronie's; NA = not applicable; US = ultrasound.

References

Health Technology Assessments

No literature identified.

Systematic Reviews

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Economic Evaluations

No literature identified.

Guidelines and Recommendations

1. Salonia A et al. EAU guidelines on sexual and reproductive health. European Association of Urology; 2023. <https://d56bochluxqnz.cloudfront.net/documents/full-guideline/EAU-Guidelines-on-Sexual-and-Reproductive-Health-2023.pdf> Accessed May 18.
Refer to: 8.2.2.2 Recommendations for diagnosis of Peyronie's disease (p. 89)
2. Bella AJ, Lee JC, Grober ED, Carrier S, Benard F, Brock GB. 2018 Canadian Urological Association guideline for Peyronie's disease and congenital penile curvature. *Can Urol Assoc J*. 2018 May;12(5):E197-E209. [PubMed](#)
Refer to: Patient evaluation and Investigations (p. 3)
3. Nehra A, Alterowitz R, Culkin DJ, et al. Peyronie's Disease: AUA Guideline. *J Urol*. 2015 Sep;194(3):745-753. [PubMed](#)
Refer to: Guideline Statements, Diagnosis (p. 4)

Appendix 1: References of Potential Interest

Guidelines and Recommendations

Unclear Methodology

Guidelines for professional ultrasound practice. London (GB): the Society of Radiographers; 2021. https://www.bmus.org/static/uploads/resources/2021_SoR_and_BMUS_guidelines_v1.0_.pdf Accessed 2023 May 18.

Refer to: 5.2.7.3 The penis, Peyronie's disease (p. 95)

Management of PD

Chung E, Ralph D, Kagioglu A, et al. Evidence-based management guidelines on Peyronie's disease. *J Sex Med.* 2016 06;13(6):905-923. [PubMed](#)

Review Articles

McCauley JF, Dean RC. Diagnostic utility of penile ultrasound in Peyronie's disease. *World J Urol.* 2020 Feb;38(2):263-268. [PubMed](#)

Bilgutay AN, Pastuszak AW. Peyronie's disease: a review of etiology, diagnosis, and management. *Curr.* 2015 Jun 01;7(2):117-131. [PubMed](#)