



## Complete Summary

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### GUIDELINE TITLE

The management of priapism

### BIBLIOGRAPHIC SOURCE(S)

Erectile Dysfunction Guideline Update Panel. The management of priapism. Baltimore (MD): American Urological Association, Inc.; 2003. Various p. [25 references]

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

Priapism

### GUIDELINE CATEGORY

Diagnosis  
Evaluation  
Management  
Treatment

### CLINICAL SPECIALTY

Emergency Medicine  
Family Practice  
Internal Medicine  
Urology

## **INTENDED USERS**

Physicians

## **GUIDELINE OBJECTIVE(S)**

To provide physicians with a consensus of principles and strategies for the management of priapism based on the current state of both clinical practice and the medical literature

## **TARGET POPULATION**

Male patients with priapism

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Diagnostic Evaluation to Differentiate Ischemic from Nonischemic Priapism**

1. Patient history
2. Physical examination
3. Laboratory/radiologic assessment (complete blood count, reticulocyte count, hemoglobin electrophoresis, psychoactive medication screening, urine toxicology, blood gas testing, color duplex ultrasonography, penile arteriography)

### **Treatment/Management**

#### *Ischemic Priapism*

1. Therapeutic aspiration (with or without irrigation)
2. Intracavernous injection of sympathomimetics (e.g., phenylephrine, epinephrine, norepinephrine, metaraminol)
3. Systemic treatment of underlying disease (e.g., sickle-cell disease) plus intracavernous treatment for patients with underlying disorders or hematologic pathology
4. Surgical shunts, including distal shunts (e.g., Winter, Ebbehøj, and Al-Ghorab procedures); the cavernospongiosus shunt (i.e., Quackels procedure); and cavernosaphenous shunt (i.e. Grayhack procedure)

#### *Nonischemic Priapism*

1. Observation as initial management technique
2. Arterial embolization using autologous clot and absorbable gels
3. Surgery performed with intraoperative color duplex ultrasonography

### *Stuttering (Recurrent) Priapism*

1. Treatment for ischemic priapism
2. Gonadotropin-releasing hormone (GnRH) agonists or antiandrogens
3. Intercavernosal self-injection of phenylephrine

#### **Therapies Not Recommended**

1. Oral systemic therapy (e.g., terbutaline) for the treatment of ischemic priapism
2. Corporal aspiration in the management of nonischemic priapism

#### **MAJOR OUTCOMES CONSIDERED**

- Resolution of priapism
- Recurrence of priapism
- Erectile dysfunction (impotence)
- Side effects/complications of treatment

## **METHODOLOGY**

#### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Hand-searches of Published Literature (Primary Sources)  
Searches of Electronic Databases

#### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

Literature searches were performed using the MEDLINE database. All searches were restricted to articles written in English and published between 1966 and January 2001, which reported data from human subjects. The search was performed using a group of MeSH headings related to erectile dysfunction. An initial extraction process reviewed the articles and characterized their content in order to retrieve the subset of articles concerning priapism. Additional relevant articles (e.g. publications prior to 1966) were added at the recommendation of individual Panel members. More detailed data extraction was performed on the articles dealing with priapism (see Appendix 2 of the original guideline). Of the 217 articles reviewed, 195 were ultimately considered acceptable. Reasons for rejecting articles during this stage included inadequate description of methods or definitions, lack of relevant data, or coverage of the same data set in a later publication.

#### **NUMBER OF SOURCE DOCUMENTS**

195 articles

#### **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Not stated

## **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

Not applicable

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review with Evidence Tables

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Due to the nature of the disease and the status of the literature, a meta-analysis was deemed inappropriate for this topic. Instead, the guideline developers created a series of clinically important and potentially answerable questions (see Appendix 4 of the original guideline document) and the data extracted from the articles were organized to answer these questions. The evidence tables developed from this process focused on three primary outcomes: resolution of the priapism (flaccid penis for at least 24 hours), recurrence of priapism (after 24 hours of flaccidity) and erectile dysfunction. Additional tables detailing side effects were developed for some treatments.

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Deficiencies in the literature made it impossible to develop strictly evidence-based guidelines. Most of the recommendations in this guideline are based upon expert consensus following review of the literature. Where possible, expert consensus is supplemented with review of limited data.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

Following review and approval by the Erectile Dysfunction Guideline Update Panel of the American Urological Association (AUA), the draft guideline was submitted

for peer review to 64 urologists and other health care professionals. The Panel made revisions based on peer review comments and the document was submitted to and approved by the Practice Guidelines Committee and the Board of Directors of the American Urological Association.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

*Note from the National Guideline Clearinghouse: the recommendations without the associated supporting text have been excerpted from the guideline. For full context, please refer to the original guideline document.*

#### **Recommendation 1:**

In order to initiate appropriate management, the physician must determine whether the priapism is ischemic or nonischemic. (Based on Panel consensus.)

#### **Recommendation 2:**

In patients with an underlying disorder, such as sickle cell disease or hematologic malignancy, systemic treatment of the underlying disorder should not be undertaken as the only treatment for ischemic priapism. The ischemic priapism requires intracavernous treatment, and this should be administered concurrently. (Based on Panel consensus.)

#### **Recommendation 3:**

Management of ischemic priapism should progress in a step-wise fashion to achieve resolution as promptly as possible. Initial intervention may utilize therapeutic aspiration (with or without irrigation) or intracavernous injection of sympathomimetics. (Based on Panel consensus and review of limited data.)

#### **Recommendation 4:**

If ischemic priapism persists following aspiration/irrigation, intracavernous injection of sympathomimetic drugs should be performed. Repeated sympathomimetic injections should be performed prior to initiating surgical intervention. (Based on Panel consensus and review of limited data.)

#### **Recommendation 5:**

For intracavernous injection of a sympathomimetic agent, the Panel recommends use of phenylephrine because this agent minimizes the risk of cardiovascular side effects that are more common for other sympathomimetic medications. (Based on Panel consensus and review of limited data.)

#### **Recommendation 6:**

For intracavernous injections in adult patients, phenylephrine should be diluted with normal saline to a concentration of 100 to 500 mcg/mL, and 1 mL injections made every 3 to 5 minutes for approximately one hour, before deciding that the treatment will not be successful. Lower concentrations in smaller volumes should be used in children and patients with severe cardiovascular disease. (Based on Panel consensus.)

**Recommendation 7:**

During and following intracavernous injection of sympathomimetic drugs, the physician should observe patients for subjective symptoms and objective findings consistent with known undesirable effects of these agents: acute hypertension, headache, reflex bradycardia, tachycardia, palpitations, and cardiac arrhythmia. In patients with high cardiovascular risk, blood pressure and electrocardiogram monitoring are recommended. (Based on Panel consensus.)

**Recommendation 8:**

The use of surgical shunts for the treatment of ischemic priapism should be considered only after a trial of intracavernous injection of sympathomimetics has failed. (Based on Panel consensus.)

**Recommendation 9:**

A cavernoglanular (corporoglanular) shunt should be the first choice of the shunting procedures because it is the easiest to perform and has the fewest complications. This shunting procedure can be performed with a large biopsy needle (Winter) or a scalpel (Ebbehøj) inserted percutaneously through the glans. It can also be performed by excising a piece of the tunica albuginea at the tip of the corpus cavernosum (Al-Ghorab). Proximal shunting using the Quackels or Grayhack procedures may be warranted if more distal shunting procedures have failed to relieve the priapism. (Based on Panel consensus and review of limited data.)

**Recommendation 10:**

Oral systemic therapy is not indicated for the treatment of ischemic priapism. (Based on Panel consensus and review of limited data.)

**Recommendation 11:**

In the management of nonischemic priapism, corporal aspiration has only a diagnostic role. Aspiration with or without injection of sympathomimetic agents is not recommended as treatment. (Based on Panel consensus and review of limited data.)

**Recommendation 12:**

The initial management of nonischemic priapism should be observation. Immediate invasive interventions (embolization or surgery) can be performed at the request of the patient, but should be preceded by a thorough discussion of

chances for spontaneous resolution, risks of treatment-related erectile dysfunction and lack of significant consequences expected from delaying interventions. (Based on Panel consensus and review of limited data.)

**Recommendation 13:**

Selective arterial embolization is recommended for the management of nonischemic priapism in patients who request treatment. Autologous clot and absorbable gels, which are non-permanent, are preferable to coils and chemicals, which are permanent, in the interventional radiologic management of nonischemic priapism. (Based on Panel consensus and review of limited data.)

**Recommendation 14:**

Surgical management of nonischemic priapism is the option of last resort and should be performed with intraoperative color duplex ultrasonography. (Based on Panel consensus and review of limited data.)

**Recommendation 15:**

The goal of the management of a patient with recurrent (stuttering) priapism is prevention of future episodes while management of each episode should follow the specific treatment recommendations for ischemic priapism. (Based on Panel consensus.)

**Recommendation 16:**

A trial of gonadotropin-releasing hormone (GnRH) agonists or antiandrogens may be used in the management of patients with recurrent (stuttering) priapism. Hormonal agents should not be used in patients who have not achieved full sexual maturation and adult stature. (Based on Panel consensus.)

**Recommendation 17:**

Intracavernosal self-injection of phenylephrine should be considered in patients who either fail or reject systemic treatment of stuttering priapism. (Based on Panel consensus.)

**CLINICAL ALGORITHM(S)**

An algorithm is provided in the original guideline document for the diagnosis and treatment of priapism.

**EVIDENCE SUPPORTING THE RECOMMENDATIONS**

**TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence is not specifically stated for each recommendation. Recommendations are based on review of the literature and the panel members' own expert opinions or consensus.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

Priapism is a medical emergency. Although not all forms of priapism require immediate intervention, ischemic priapism is associated with progressive fibrosis of the cavernosal tissues and erectile dysfunction. Thus, early evaluation, identification, and treatment of ischemic priapism decrease the likelihood of prolonged ischemia and permanent damage to the corpora cavernosa if treatment is absent or delayed.

### POTENTIAL HARMS

#### Medical Treatment

- Sympathomimetic agents (e.g. epinephrine) are direct activators of both alpha and beta adrenergic receptors and may produce significant cardiovascular side effects when released into the systemic circulation.
- Penile injection of sympathomimetics may cause fibrosis of the corpora, pain, penile necrosis, and urinary retention.

#### Shunting Procedures

- In most cases, shunts will close with time. However, long-term patency of the shunt may lead to erectile dysfunction. Erectile dysfunction rates are higher for the proximal shunts, Quackels and Grayhack, (about 50%) than for the distal shunts (25% or less). Patient selection and time to treatment may be the main explanation for these differences. Each surgical shunting procedure may have its own constellation of adverse events.
- Reports of serious adverse events include urethral fistulae and purulent cavernositis following the Quackels shunt and pulmonary embolism following the Grayhack procedure.

#### Hormonal Agents

- Hormonal agents, specifically gonadotropin-releasing hormone (GnRH) agonists, reduce libido, although most patients are still able to engage in sexual activity. The use of diethylstilbestrol has more risks, including gynecomastia and embolic events.
- Hormonal therapy for stuttering priapism has a contraceptive effect and interferes with normal sexual maturation. Therefore, these agents are contraindicated in persons (children) who have not completed their growth and sexual maturation and those trying to conceive.

## CONTRAINDICATIONS

### CONTRAINDICATIONS

Hormonal therapy for stuttering priapism has a contraceptive effect and interferes with normal sexual maturation. Therefore, these agents are contraindicated in

persons (children) who have not completed their growth and sexual maturation and those trying to conceive.

## QUALIFYING STATEMENTS

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- This guideline does not establish a fixed set of rules or define the legal standard of care for the treatment of priapism. Above all, it does not preempt physician judgment in individual cases. Variations in patient subpopulations, physician experience and available resources will necessarily influence choice of clinical strategy. Adherence to the recommendations presented in this document cannot assure a successful treatment outcome.
- Because the literature review only considered reports of cases in which the duration of erections were longer than four hours, the recommendations made may not apply to erections of shorter duration.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

### IMPLEMENTATION TOOLS

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better

### IOM DOMAIN

Effectiveness  
Patient-centeredness  
Timeliness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Erectile Dysfunction Guideline Update Panel. The management of priapism. Baltimore (MD): American Urological Association, Inc.; 2003. Various p. [25 references]

**ADAPTATION**

Not applicable: Guideline was not adapted from another source.

**DATE RELEASED**

2003

**GUIDELINE DEVELOPER(S)**

American Urological Association Education and Research, Inc. - Medical Specialty Society

**SOURCE(S) OF FUNDING**

American Urological Association, Inc. (AUA)

**GUIDELINE COMMITTEE**

Erectile Dysfunction Guideline Update Panel

**COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

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*Consultants:* Hanan S. Bell, PhD; Patrick M. Florer; Charles B. Hathaway, PhD

**FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

**GUIDELINE STATUS**

This is the current release of the guideline.

**GUIDELINE AVAILABILITY**

Electronic copies: Available in Portable Document Format (PDF) from the [American Urological Association, Inc. \(AUA\) Web site](#).

**AVAILABILITY OF COMPANION DOCUMENTS**

None available

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI on June 24, 2003. The information was verified by the guideline developer on August 25, 2003.

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