Clinical Procedure for the Management of Priapism

Document Control:

For Use In:	Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL)		
	All clinical areas		
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V.1	10/12/2019	Neil Burgess	To originate document
V1.1	27/07/2020	Melissa Gabriel	Monitoring compliance wording added.
V2	18/06/2024	Hany Hussein	Follow up plan added. Reformatting as per new trust template requirements.

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document:

- Miss Charlotte Dunford, Consultant Urologist (NNUH)
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- Mr. Petre Ilie, Consultant Urologist (QEHKL)
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Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL); please refer to local Trust's procedural documents for further guidance.

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1. Introduction

1.1. Rationale

Priapism, a prolonged and often painful erection unrelated to sexual stimulation, represents a urological emergency requiring prompt intervention to prevent potential complications such as erectile dysfunction and tissue damage. Priapism demands immediate attention due to its potential long-term consequences if not managed effectively. Given its diverse aetiologies, ranging from idiopathic to secondary causes such as sickle cell disease, leukaemia, or trauma, a systematic approach is essential for optimal patient outcomes.

1.2. Objective

This guidance has been created to provide healthcare providers with a systematic approach to identifying, assessment and management of Priapism in accordance with current evidence based clinical practice. Standardised care practices have been developed to alleviate patient discomfort, and restore erectile function, thus enhancing both physical and psychological well-being with a resultant improvement in overall outcomes.

1.3. Scope

This guidance applies to all adult male patients over 18 years of age presented with Priapism, prolonged and often painful erection unrelated to sexual stimulation.

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
PCO2	Partial pressure of Carbon dioxide
PO2	Partial pressure of Oxygen
LFT	Liver function tests
U&Es	Urea and Electrolytes
CRP	C-Reactive protein
FBC	Full blood count

2. Responsibilities

All medical staff and allied healthcare professionals involved in the care of patients with priapism should be aware of the recommendations contained in this guidance. Staff must always ensure they have appropriate training and gained the necessary competencies before undertaking invasive procedures.

3. Policy Principles

3.1. Definition

Priapism is defined as a pathologically prolonged penile erection (>4 hours) in the absence of sexual stimulation.

3.2. Types of Priapism

- Low flow priapism (ischaemic, veno-occlusive priapism) an erection with little or no cavernous arterial inflow.

- High flow priapism (non-ischaemic, arterial).
- Stuttering (intermittent).

3.3. Incidence

- The incidence of all types of priapism is 1.5 cases per 100,000 person years.
- Low-flow priapism is the most common type and represents 95% of all cases of priapism.
- Low-flow priapism causes a compartment syndrome of the corporal bodies with poor circulation and progressive hypoxia, hypercarbia and acidosis.
- At 12 hours the corpora have interstitial oedema with destruction of the sinusoidal endothelium. This leads to exposure of the basement membrane and platelet adherence at 24 hours.
- At 48 hours there is clot formation in the sinusoidal space with loss of contractility, cell apoptosis, necrosis, and fibrosis formation. These changes lead to irreversible erectile dysfunction after low-flow priapism.

3.4. Aetiology

- **Ischaemic**: idiopathic, haematological (e.g. sickle cell), medication, (vasoactive erectile agents, antipsychotics, anticoagulants, antidepressants, anti-hypertensives, hormone therapy).
- **Arterial**: Blunt perineal trauma, metastatic malignancy, acute spinal cord injury.
- **Stuttering**: Commonest cause is sickle cell disease.

3.5. Assessment

3.5.1. History

- The duration of the priapism episode should be established and categorized into one of three time periods:
    - (i) duration <48h
    - (ii) duration 48-72h
    - (iii) duration >72h.
- History-taking is key in the diagnosis of priapism and can often determine the underlying type of priapism. Key questions include:
    - Onset and duration of the erection.
    - Presence and degree of pain.
    - Prior episodes of priapism and treatment.
    - Current erectile function.
    - Medications.
    - Use of recreational drugs.
    - Trauma to the pelvis or perineum.

- Symptoms to suggest an underlying pelvic malignancy.
- Prior history of blood dyscrasias.

- Prior history of neurologic conditions, especially those affecting the spinal cord.
- Low-flow priapism is typified by progressive penile pain.

3.5.2. Examination

- It is important to differentiate between ischaemic priapism and non-ischaemic priapism.
- **Ischaemic priapism** presents as a painful rigid erection with a progressive increase in the pain as the duration of the priapism increases.
- **Non-ischaemic priapism** is painless or uncomfortable. There may be evidence of perineal or penile trauma.
- An abdominal examination and a digital rectal examination are required as there may be an underlying pelvic malignancy.
- A neurological examination should also be performed and documented.

3.5.3. Investigations

1.1.1.1. **Blood tests**

U+E's, FBC, LFT's, CRP, Clotting screen.

- A sickle cell screen and haemoglobin electrophoresis if sickle cell disease suspected.
- Urine and blood toxicology should be performed if there is a history of drug abuse.
- A penile blood gas can be used to differentiate low-flow and high-flow priapism if they cannot be differentiated on history and physical examination alone.
- In low-flow priapism there is typically hypoxia (pO2 < 30mmHg), hypercarbia (pCO2 > 60mmHg) and acidosis (pH < 7.25) on the penile blood gas analysis.

Typical blood gas values:
Normal arterial blood: pO2 > 90mmHg, pCO2 > 40mmHg, pH 7.4

Normal venous blood: pO2 40mmHg, pCO2 50mmHg, pH 7.35
Low flow priapism (corporal aspirate): pO2 < 30mmHg, pCO2 > 60mmHg pH < 7.25

1.1.1.2. **Imaging**

Colour duplex ultrasonography.
Colour duplex ultrasonography can be utilised to differentiate low-flow and high-flow priapism if needed.
Patients with low-flow priapism will have no blood flow in the cavernous arteries with return of blood flow after successful detumescence.

Magnetic resonance imaging
Magnetic resonance imaging is of limited utility in the setting of low-flow priapism. Possible indications include:

- To assess the viability of the corpus cavernosum in refractory cases and aid in the decision to proceed with an early penile prosthesis.
- Evaluation for corporal metastasis causing venous outflow obstruction.
- Demonstration of the extent of tissue thrombus and corporal smooth muscle infarction.
- Prior to surgical intervention, but this imaging would typically not change management.

Penile arteriography
Should only be used as part of an embolization procedure in the setting of high-flow priapism; it has no place in the evaluation of low-flow priapism.

3.6. Management

Low-flow priapism is an emergency condition and intervention should proceed in a stepwise fashion with increasing invasiveness. As the duration of ischaemia is the most significant predictor of future erectile function, management should ideally begin within four to six hours of onset. Patients should be informed that erectile function outcomes decline significantly after 24 hours of continuous priapism and that complete erectile dysfunction is expected for a continuous priapism lasting longer than 36 hours. Treatment for erections of 36 hours duration is aimed at pain resolution, not potency preservation.

3.6.1. Ischaemic priapism:

< 4 hours duration	**Non-invasive measures:** Ice compresses and exercise successfully causes detumescence in 25% of patients with low-flow priapism due to intracavernosal injection. **Oral medications**: terbutaline, 5-10 mg followed by another 5-10 mg 15 minutes later if required, (should be used with caution in patients with cardiovascular disorders, including ischemic heart disease, hypertension, and cardiac arrhythmias; hyperthyroidism and diabetes mellitus) can cause detumescence in 40% of patients with short duration (less than four hours) low-flow priapism caused by intracavernosal injection.
4 – 24 hours	**Intracavernosal aspiration / irrigation:** Aspiration alone may relieve priapism in 24-36% of cases. However, adding irrigation can cause successful detumescence in 67% of patients with low-flow

	priapism due to intracavernosal injection who have failed prior non-invasive measures. Following a local anaesthetic penile block, using 10- 20 ml of Lidocaine 1% without adrenaline, a large 19-gauge needle or butterfly is inserted into the corpus cavernosum, either through the lateral penile shaft or through the glans penis into the tip of the corpus cavernosum **Intracavernosal therapy:** Dilute phenylephrine (10mg in 10mLs normal saline (1mg/mL), Inject 0.5mLs (500mcg) every 5 mins for up to 1 hour (side effects: hypertension, reflex bradycardia, tachycardia and irregular cardiac rhythms).

If no resolution or > 24 hours	Distal surgical shunt procedure.
If no resolution	Proximal surgical shunt procedure.
If no resolution or > 36 hours	Consider immediate penile prosthesis insertion.

3.6.2. Non-Ischaemic priapism

Confirm diagnosis with blood gas analysis. This is not an emergency; therefore, definitive management can be considered. Selective arterial embolization has a high success rate.

3.6.3. Stuttering priapism

Manage acute episodes as with ischaemic priapism. Prevention includes gonadotrophin receptor agonists or antagonists +/- anti-androgens. Phosphodiesterase type 5 inhibitors can prevent priapism especially in idiopathic or due to sickle cell disease. These drugs should only be commenced when the penis is in flaccid state and not acutely.

In addition to irrigation, aspiration, injection of sympathomimetic medication, other specific systemic therapies for the management of sickle cell anaemia-related priapism include:

- Intravenous hydration.
- Narcotic analgesia.
- Supplemental oxygen administration.
- Alkalinisation with bicarbonate.

3.7. Follow Up

- Following the acute management of priapism, it's essential to establish a comprehensive follow-up plan to monitor the patient's progress, assess for complications, and address any underlying conditions contributing to priapism.
- All patients will require review at 6 weeks in the Andrology clinic to assess the degree of late-onset erectile dysfunction.

4. Monitoring Compliance

To ensure that this document is compliant with the above standards any adverse outcomes will be entered onto Datix and reviewed by the Departmental Governance Team who will ensure that these are investigated and are discussed at relevant governance meetings to review the results and make recommendations for further action.

5. Appendices

There are no appendices for this document.

6. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Surgical	**Department**	Urology
Name of person completing form	Hany Hussein	**Date**	18/06/2024

Equality Area	**Potential Negative Impact**	**Impact Positive Impact**	**Which groups are affected**	**Full Impact Assessment Required YES/NO**
Race	None	None	NA	NO
Pregnancy & Maternity	None	None	NA	NO
Disability	None	None	NA	NO
Religion and beliefs	None	None	NA	NO
Sex	None	None	NA	NO
Gender reassignment	None	None	NA	NO
Sexual Orientation	None	None	NA	NO
Age	None	None	NA	NO
Marriage & Civil Partnership	None	None	NA	NO
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?				

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.