Pituitary Tumour and other Pituitary Emergency

Document Control:

For Use In:	AMU, Accident and emergency and all other clinical areas		
	By all medical staff		
Search Keywords	Pituitary tumour, apoplexy, pituitary surgery, neurosurgery, headache, hyponatraemia		
Document Author:	Endocrine Specialist Nurse		
Document Owner:	Endocrinology		
Approved By:	Clinical Guidelines Assessment Panel		
Ratified By:	Clinical Safety Effectiveness Sub-Board		
Approval Date:	3rd October 2023	**Date to be reviewed by:** This document remains current after this date but will be under review	3rd October 2026
Implementation Date:	N/A		
Reference Number:	9098		

Version History:

Version	Date	Author	Reason/Change
V1.0	17/04/2013	Dr F Swords, Consultant Endocrinologist	To originate document
V2.0	21/03/2016	Dr F Swords, Consultant Endocrinologist	To review and update
V3.0	24/06/2016	Dr F Swords, Consultant Endocrinologist	To review and update
V4.0	13/07/2016	Dr F Swords, Consultant Endocrinologist	Minor changes
V5.0	06/08/2019	Sondra Gorick, Endocrine Specialist Nurse	To review and update
V6.0	07/01/2020	Sondra Gorick, Endocrine Specialist Nurse	To review and update
V7.0	September 2023	Clare Day	Minor changes to contact details Document transferred across to new Trust Procedural Document

			Template

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Note which Trust, where 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Printed copies of this document should be considered out of date.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:

- Endocrine Consultants
- Endocrine Specialist Nurses
- Clinical Governance Meeting of the Directorate of Endocrinology

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 Hospital NHS Foundation Trust; please refer to local Trust's procedural documents for further guidance, as noted in Section 5.

Pituitary Tumour and other Pituitary Emergency

Contents Page

Quick Reference Guide - Overview....4
Quick Reference Guide – Overview Continued 5
1.Quick reference guideline/s....5
2.Introduction 8
2.1.Rationale 8
2.2.Objective 8
2.3.Scope 8
2.4.Glossary 8
3.Responsibilities 9
4.Processes to be followed 9
4.1.Special circumstances:....9
4.1.1.Post operative patients....9
4.2.Patients with meningism, altered GCS, visual field disturbance, headache or any new neurological signs....10
4.3.Emergency pituitary neurosurgical e referrals 11
5.Audit of the proces....12
6.Appendices....13
6.1.Appendix 1 - MDT referral process....13
7.Equality Impact Assessment (EIA) 14

Pituitary Tumour and other Pituitary Emergency

Quick Reference Guide - Overview

After bloods, but do not wait for results

Quick Reference Guide – Overview Continued

Most patients will need discussion with the specialist pituitary neurosurgical team in London This will be done via MDT for routine patients and on-call referral for urgent patients.

Prolactin levels are required urgently and before discussion with the neurosurgical team for stable patients.
Out of hours this will be discussed by endocrinology with the on-call consultant biochemist. In normal working hours, please telephone lab and mark request as urgent on ICE.

1. Quick reference guideline/s

Pituitary	• Inform NNUH endocrinology team immediately.

disease suspected:	• Emergency (and routine) pituitary neurosurgical care is provided by National Hospital for Neurology and Neurosurgery (not Addenbrooke's) but contact should always be to endocrinology first. • Specialist Trainees are available on dect phone 2763 or on call endocrine consultant 4512 between 9am - 5pm Monday to Friday, but outside of these hours, please contact the on-call endocrinology consultant directly via switchboard – available 24/7.
Take a thorough history	• In particular of any weight loss, dizziness, nausea, headaches, confusion, visual disturbance or galactorrhoea. • Check whether the patient is known to have pituitary disease, and if they have had previous or recent pituitary surgery – if so document when and where was this done
Examine the patient carefully	• Look for signs of meningism, visual field loss, raised intracranial pressure (including fundoscopy), volume status and neurological signs.
Take bloods	• For urea and electrolytes, full blood count, glucose, cortisol and prolactin urgently. • Hyponatraemia, hyperkalaemia and hypoglycaemia are common with pituitary tumours, or apoplexy. Hyponatraemia is also common following pituitary surgery
Arrange imaging	• Request immediate chest X-ray and ECG. CT head should also be performed immediately in any patient presenting with abnormal neurological signs, visual disturbance, or severe headache without other obvious cause
Consider emergency hydrocortisone	• If the patient is unwell, nauseated, has vomited, or is clinically suspected of hypovolaemia or hypocortisolaemia, give 100mg hydrocortisone IM immediately (as soon as the blood has been taken, but do not wait for the results).
Discuss with the on call Endocrinology consultant	• The endocrinology consultant will determine whether prolactin is required urgently and liaise with biochemistry to arrange this. • They will advise on the next steps. • Most patients will need discussion with the specialist pituitary neurosurgical team in London. This will be done via MDT for routine patients and on-call referral for urgent patients. • CT scans are performed on emergency cases in the first instance out of hours in all cases. However, the endocrinology team will advise whether an MRI is also required after discussion with the neurosurgeons. • MRI scans are available 24/7 but are reserved for confirmed

	true pituitary emergencies after discussion with the neurosurgical team.

Other tests	• All patients with suspected pituitary disease and visual field loss require urgent prolactin estimation, MRI scan and formal visual perimetry as soon as possible. • Pituitary tumours secreting very high levels of prolactin usually respond well to medical treatment even in patients with visual field loss. Prolactin levels are therefore required urgently and before discussion with the neurosurgical team for stable patients. • Out of hours this will be discussed by endocrinology with the on-call consultant biochemist. In normal working hours, please telephone lab and mark request as urgent on ICE. • Bloods should also be sent for liver function test, bone profile, TSH, free T4, IGF-I, LH, FSH, testosterone/oestradiol and SHBG but these tests are non-urgent and so can be analysed within working hours. • Transfer to a neurosurgical centre should not be delayed pending those results.

2. Introduction

2.1. Rationale

Patients with pituitary disease often present with nonspecific symptoms and are usually initially seen by non-specialists who may have little experience of these conditions.

This guidance has been written to ensure that:

- Patients are assessed appropriately, and the most important initial tests are taken prior to treatments that can affect their interpretation,
- to ensure that the optimal emergency treatment is provided to these patients,
- to ensure that expert advice is sought as early as possible to optimise their ongoing treatment.

2.2. Objective

Ensure all patients with potential pituitary disease and endocrine or neurosurgical emergencies are assessed and managed uniformly and appropriately.

2.3. Scope

See quick reference pages for initial patient assessment.

Always discuss patients with suspected pituitary disease with the on call Endocrinology consultant via switchboard (24/7) or the on call StR (DECT 2763 9:00AM 08:30 pm). Pituitary neurosurgery is provided by the specialist team at the National hospital for neurology and neurosurgery but patients must be discussed with endocrinology first in all cases.

2.4. Glossary

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

Term	Definition
ECG	Electrocardiogram
MRI	Magnetic Resonance Image
U&E's	Urea and Electrolytes
CT	Computerised Tomography
TSH	Thyroid Stimulating Hormone
Free T4	Free Thyroxine 4 test
IGF-1	Insulin Growth Factor 1
LH	Luteinizing Hormone
FSH	Follicle Stimulating Hormone
SHBG	Sex Hormone Binding Globulin
IM	Intramuscular
StR	Specialist Registrar
SIADH	Syndrome of Inappropriate Antidiuretic Hormone
DDAVP	Desmopressin Acetate
DI	Diabetes Insipidus
IV	Intravenous
CSF	Cerebrospinal Fluid

TAU	TAU protein
GCS	Glasgow Coma Scale

3. Responsibilities

i. Lead Consultant for Endocrinology – Support in producing the document and lead for the Endocrine business meeting.

ii. Lead for Clinical Governance in Endocrine & Diabetes – For approval at speciality level.

iii. Clinical Director for Endocrine & Diabetes – for overall approval

iv. Senior Endocrine Specialist nurse – author of document and distribution once fully approved.

4. Processes to be followed

4.1. Special circumstances:

4.1.1. Post operative patients

Determine the date, details and location of recent pituitary surgery.
Document a careful drug history in particular their steroid requirements.
Send paired blood and spot urine sample for osmolalities, and urine sodium in all patients complaining of thirst, polyuria or in whom serum sodium is abnormal.

a) **Hyponatraemia post pituitary surgery**

This is common after pituitary surgery. Important causes in this patient group include glucocorticoid deficiency, SIADH and cerebral salt wasting, though other causes are of course possible.

Glucocorticoid deficiency

If the patient has not been taking hydrocortisone, or if their dose has been reduced, this is the most likely cause. Send a yellow top blood sample for urgent cortisol and treat the patient empirically with 100mg hydrocortisone IM immediately, and every 6 hours until the result is known and senior endocrine advice has been given.

SIADH

Following pituitary neurosurgery, SIADH commonly occurs at about day 7-10. It is vital to exclude glucocorticoid deficiency and hypovolaemia before this diagnosis can be made. If these two conditions have been excluded, send serum and urine osmolalities, thyroid function (TSH and free thyroxine in pituitary patients) and a spot urine sodium, and if SIADH is confirmed, treat conventionally with fluid restriction. Please refer to the trust guideline on management of hyponatraemia.

Over treatment with DDAVP

Occasionally patients may have started regular treatment for diabetes insipidus (DI) post operatively e.g., with daily intranasal or oral desmopressin, but their DI was transient and has now resolved. This may lead to hyponatraemia with fluid retention. Stop the DDAVP, and the patient will normally excrete their excess water load. Liaise closely with the Endocrinology team (on call StR DECT 2763 9:00 AM to 8:30 PM) and monitor serum sodium closely.

Cerebral salt wasting

This is occasionally seen following pituitary neurosurgery and is typified by high urinary sodium >>30mmol/l in the hyponatraemic, hypovolaemic patient. If this diagnosis is confirmed with the Endocrinology consultant, IV fluid replacement is required.

b) **Hypernatraemia following pituitary surgery**

This usually occurs due to volume loss, and due to DI. Patients will usually complain of extreme thirst, polyuria and nocturia. If they have been able to drink well, their serum sodium may be normal or near normal. If they have not had access to free fluids, e.g., if they have problems with communication or mobility, serum sodium will rise. Occasionally, e.g., following surgery for extensive craniopharyngiomas or very large pituitary tumours, hypothalamic damage may damage the thirst centre as well as causing DI. These patients will be hypernatraemic, hyperosmolar, with dilute polyuria, but may not complain of thirst.

Send urine and serum osmolalities and discuss result with Endocrinology consultant. DI will usually respond to a single dose of desmopressin (DDAVP) 1microgram given subcutaneously and free access to oral fluids.

c) **CSF Leaks**

If patients complain of a salty taste at the back of their mouth or of a clear nasal discharge exacerbated by leaning forward, this may represent a CSF leak. Collect a sample of the fluid if possible into a grey topped and universal plain tube, and send for glucose estimation (in an ideal world, collect a sample into a universal container and send it to the lab for beta 2transferrin (TAU protein) detection as this is the most sensitive test to confirm CSF), (microscopy, culture and sensitivities- this is not necessary as the sample will be contaminated by nose micro-organisms). If meningitis is suspected, a lumber puncture is required. Discuss with the on-call endocrinology consultant. If this is confirmed to be CSF, the patient will be transferred back to the neurosurgical centre that undertook their surgery for lumbar drain insertion and possible surgical repair.

4.2. Patients with meningism, altered GCS, visual field disturbance, headache or any new neurological signs

Patients with suspected pituitary disease or following pituitary surgery who have **any** of the complications above require an urgent CT scan and may also require CSF examination. Discuss the patient and CT results with the on-call endocrinology consultant via switchboard 24/7. The patient will be discussed with the pituitary

neurosurgical team immediately to determine whether they require immediate treatment with antibiotics for suspected meningitis, or an MRI scan and immediate or next day transfer to the neurosurgical centre for possible surgical intervention.

4.3. Emergency pituitary neurosurgical e referrals

- These should be made via the endocrinology team at all times.
- The pituitary neurosurgical team is based at the National Hospital for Neurology and Neurosurgery, (also known as Queen Square) part of University College London Hospital. All pituitary neurosurgical emergencies need to be discussed with this team. **Do not refer them to the general neurosurgical team at Addenbrooke's.**
- NNUH Imaging is sent electronically via IEP to UCLH.
- Out of hours contact accident and emergency radiology on ext 2067 / 2068. Trained out of hours radiographers in IEP can transfer images, in case of an emergency. If no answer, call CT1/2 scanner room ext 5273 and speak to Ct radiographer.
- If there are any problems overnight, then they will need to contact the PACS team the following day (9-5, ext 3525) –on call service is not provided.
- Urgent referrals should be made by contacting the on-call neurosurgical service at the National Hospital of Neurology and Neurosurgery via on-call mobile phone (07960 664901) or via online referral (referapatient.org)
- Urgent referrals are also usually communicated by endocrinology consultant to neurosurgeons directly by email and mobile phone
- All new patients also need to be referred to the next pituitary MDT for formal discussion, though this will be performed retrospectively by the endocrinology team for urgent cases. See appendix 1.

Routine referrals should be listed for the joint virtual pituitary MDT at National Hospital for Neurology and Neurosurgery (on first Tuesday of month at 8:30am). Afterwards a direct referral made to one of the Neurosurgeons (Mr Neil Dorward, Mr Hani Marcus, or Miss Anouk Borg. To list patients, please email NNUH pituitary MDT coordinator nnu.tr.pituitary@nnuh.nhs.uk with a referral form.

5. Audit of the proces

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Incidents	Datix	Clinical Governance Lead for Endocrinology	Clinical Governance for Endocrinology	Monthly

All patients to be discussed with Endocrinology team prior to neurosurgical referral.

All patients referred to the appropriate neurosurgical team.

The audit results are to be discussed at the Endocrine Business Meeting and this group will review the results and recommendations for further action.

6. Appendices

6.1. Appendix 1 - MDT referral process

All MDT referrals to: uclh.referrals.pitmdtm@nhs.net
Contact: Dan Wood (Daniel.wood16@nhs.net) Tel: 020 3448 8837

MDT's are held on the 1st Tuesday of each month via Video Conferencing and commences at 8.30 a.m.

The N&N MDT Co-ordinator will send all referrals for MDT, and a full separate list of patients to be discussed each month, once the outcomes are complete and signed off by the chair, they are returned on this document by the NHNN MDT Co-ordinator for completion of information sharing.

7. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Medical	**Department**	Endocrinology
Name of person completing form	Neetha Joseph	**Date**	24th May 2023

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	No	No	None	No
Pregnancy & Maternity	Yes, many hormone levels change during pregnancy it is the referring clinician's responsibility to only refer patients for tests where pregnancy will not affect the results	No	All pregnant women	No
Disability	No	No	None	No
Religion and beliefs	No	No	None	No
Sex	No	No	None	No
Gender reassignment	No	No	None	No
Sexual Orientation	No	No	None	No
Age	This document is for adults (over 16) only	No	None	No
Marriage & Civil Partnership	No	No	None	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.