

**BLOOD SCIENCES
DEPARTMENT OF CLINICAL BIOCHEMISTRY**

Title of Document: **Hypercalcaemia Guideline for Primary Care**
 Q Pulse Reference N^o: BS/CB/DCB/PROTOCOLS/39
 Authoriser: Fiona Davidson

Version N^o: 4
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Hypercalcaemia

Definition

Elevated Adjusted Calcium > 2.6 mmol/l (adjusted for albumin), taken without using a cuff.

Mild (usually no symptoms) 2.6 – 3.0 mmol/l

Moderate (start to develop symptoms) 3.0 – 3.4 mmol/l

Severe (often associated with malignancy) > 3.4 mmol/l

Symptoms and signs

Remember “Stones, bones, moans and groans”.

Bone pain, fractures associated with underlying bone disorders

Fatigue, muscle weakness

Polyuria, polydipsia, kidney stones

Nausea, vomiting, constipation, pancreatitis, peptic ulcers

Depression, confusion and coma

Can potentiate digoxin and shorten QT, Hypertension

Causes

90 % of cases are due to Primary Hyperparathyroidism or Malignancy.

(In hospital in-patients 65% is due to malignancy)

• **Primary Hyperparathyroidism**

Incidence 1-6/1000

50 – 60 years old

Female:Men 5:1

Benign adenoma 80%

Can be part of MEN syndromes

• **Malignancy**

a) Humoral Hypercalcaemia of malignancy (80%)

PTH related peptide mediated

Lymphoma and leukaemia, Breast, Squamous cell Lung, Head & neck

Squamous cell, Ovarian, Renal Cell Carcinoma

b) Lytic Bone lesions (20%)

Multiple Myeloma, Breast, Renal, Thyroid, Lung Cancers Less likely
 lymphoma and leukaemia

c) 1,25 hydroxy vitamin D production

Lymphoma especially Non Hodgkins Lymphoma

d) Ectopic PTH is rare

Ovarian, lung, thyroid papillary, rhabdomyosarcoma, pancreatic carcinoma

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•**Less common**

- Familial Hypocalciuric Hypercalcaemia (FHH)
- Medications – Antacids, Vit D, Thiazides, Lithium
- Renal Failure – Tertiary Hyperparathyroidism
- Immobilization in Paget's Disease
- Granulomatous disease via activation of Vit D (Sarcoid, TB)
- Non PTH related endocrine disease i.e. Addison's, Phaeo, T4

Familial Hypocalciuric Hypercalcaemia

A benign condition.

Inherited in an autosomal dominant pattern.

There is a defect in the calcium sensing receptor in the kidney and parathyroid glands.

FHH presents with high plasma calcium but low urinary calcium, with a high or normal PTH.

A spot urine calcium excretion $\leq 22 \mu\text{mol/l}$ is likely to signify FHH when hypercalcaemia is present.

Using this cut off has a sensitivity 95% and specificity 92%

As genetic testing and family studies can be undertaken now, the endocrinologists would like to see any case of suspected Familial Hypocalciuric Hypercalcaemia.

Calcium excretion index instructions

Fast the patient overnight.

In the morning obtain the SECOND voided urine.

Collect in universal container.

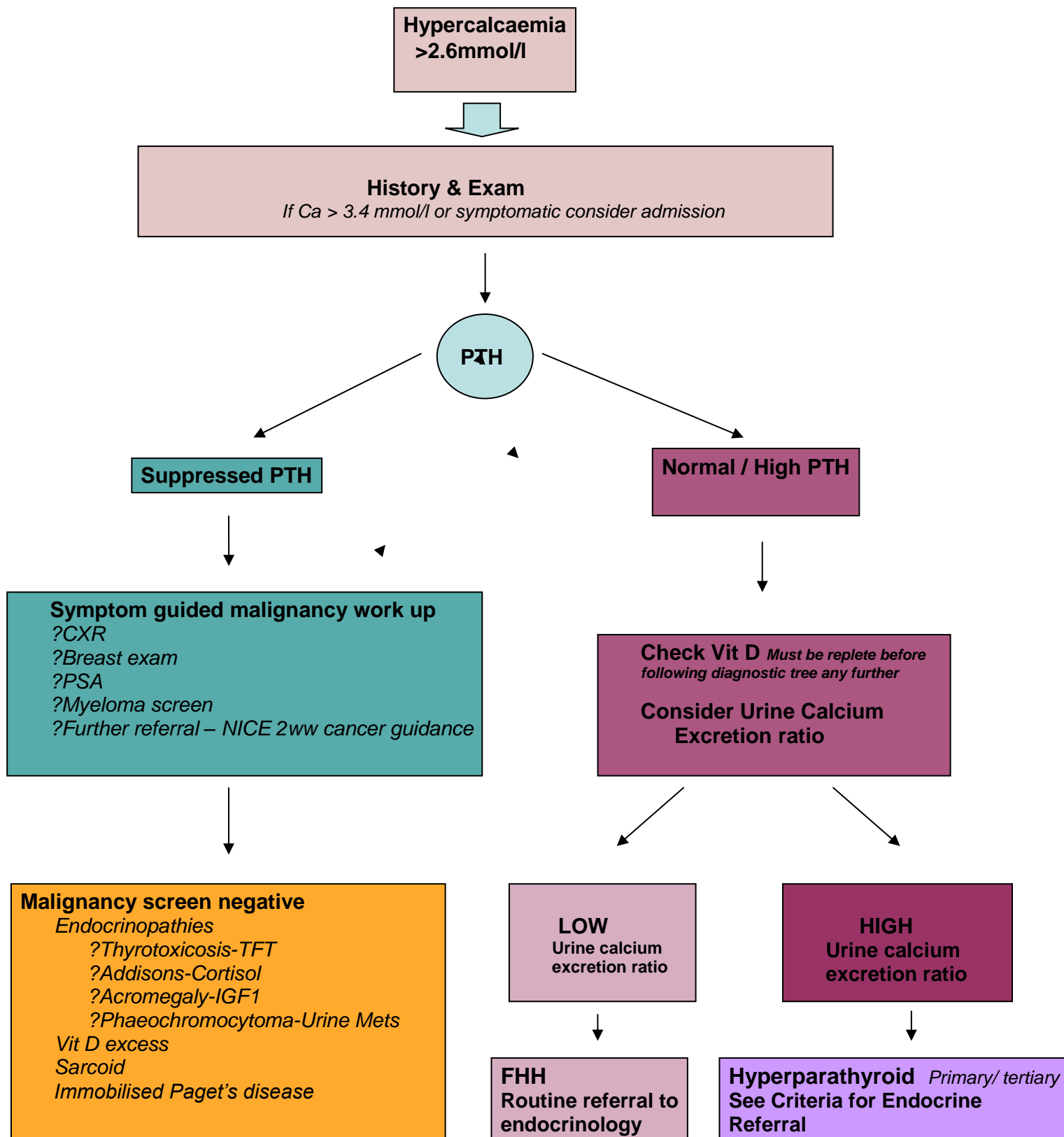
Request Calcium and Creatinine on urine sample.

MUST be paired with a blood sample for Calcium and Creatinine.

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Management

Refer to [://cks.nice.org.uk/hypercalcaemia](http://cks.nice.org.uk/hypercalcaemia) for further details.

1. **Calcium > 3.4 mmol/l**. Consider admission if severe or symptomatic.
2. **Calcium < 3.4 mmol/l**
Review medications that may cause hypercalcaemia e.g. Thiazide diuretics, lithium, Ca/Vit D or Vit A and review fluid status.
Repeat to confirm and if persistent request PTH (EDTA tube) with vitamin D.
3. **PTH > 1.6 pmol/l and Calcium > 3.0 mmol/l**
Primary Hyperparathyroidism.
Send urgent e-referral to endocrinology, for immediate advice on management contact the endocrinology department.
4. **PTH > 2.6 pmol/l and calcium 2.61- 3.0 mmol/l**
Probable Primary Hyperparathyroidism
Exclude Vitamin D deficiency
If Vitamin D normal follow referral criteria as below
If Vitamin D < 50 nmol/l then replace. Monitor calcium 2 weeks after initiating treatment.
Recheck PTH/Ca after 3 months and follow pathway if PTH > 2.6 pmol/l
5. **Indications for routine referral to endocrinology**
 - <70 years old
 - Calcium >2.79 mmol/l
 - eGFR 30-44 (CKD 3b)
 - Symptomatic (including renal stones)
 - History of osteoporosis or fracture

If referral indicated;
Prior to the appointment arrange a urinary calcium excretion index.

If referral not indicated;
If referral criteria are not met the patient can be managed in primary care.
Repeat calcium in 3 months. If calcium stable, then monitor annually.
Every 2-3 years consider a 3 site DEXA scan.
If referral criteria met at later review - refer to endocrinology.
6. **PTH 1.6 - 2.6 pmol/l and calcium 2.61- 3.0 mmol/l**
Possible Primary Hyperparathyroidism.
Consider other causes of hypercalcaemia / co-existing pathology.
Exclude Vitamin D deficiency.
If Vitamin D < 50 nmol/l then replace. Monitor calcium 2 weeks after initiating treatment.
Refer to endocrinology if symptomatic or if there is a history of osteoporosis or fracture.

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7. PTH <1.6 pmol/l

Non parathyroid cause. Malignancy needs to be considered.

If cancer suspected - 2ww referral to appropriate specialist as per NICE cancer guidelines.

Consider screen for Myeloma, PSA, breast exam, CXR or endocrine causes.

References

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