Always follow local guidelines and discuss with Senior if unsure
Especially patients with significant fluid / electrolyte losses or those with co-morbidities such as Heart / Renal Failure

Normal range: 2.2 - 2.7mmol/L

Normal range ionized: 1.1 - 1.3mmol/L - reported on ABG

SIGNS AND SYMPTOMS

- Polyuria and Thirst
- Anorexia and Nausea
- Abdominal pain
- Muscle weakness
- Nephrolithiasis
- Neprocalcinosis
- Mood disturbance
- Confusion

- Dysrhythmias:
  - Shortened QT
- Cardiomyopathy
- Hypertension
- Pancreatits
- Peptic ulceration
- Renal impairment
- Coma

MILD 2.7-3.0 mmol/L	MODERATE 3.0-3.5mmol/L	SEVERE >3.5mmol/L
Usually asymptomatic	Symptomatic if acute rise	Symptomatic
Does not require urgent correction	Prompt correction indicated	Urgent correction required

SEVERE > 3.5 is a MEDICAL EMERGENCY as at risk of DYSRHYTHMIA or COMA - CONTACT SENIOR IMMEDIATELY

CAUSES

ENDOCRINE / MALIGNANCY

Primary Hyperparathyroidism or Malignancy
- 90% cause

MEDICATION / VITAMINS

High Vitamin D
High Vitamin A
Medications:
- Thiazide diuretics
- Lithium
- Theophylline toxicity

Milk-alkali syndrome

OTHER

Endocrine / Malignancy:
- Thyrotoxicosis
- Tertiary Hyperparathyroidism
- Adrenal insufficiency
- Phaeochromocytoma
- Familial hypocalciuric hypercalcaemia
- Myeloma
- Sarcoid

Dehydration

IMMEDIATE MANAGEMENT

If patient is oligo/anuric or has advanced CKD or severe AKI seek Senior advice immediately

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REHYDRATION
IV 0.9% SALINE 4-6 LITRES OVER 24 HOURS

↓

MONITOR FLUID OVERLOAD
Consider Loop Diuretics if occurs

DIALYSIS
Consider if severe renal failure

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POST REHYDRATION IF HYPERCALCAEMIA PERSISTS
IV BISPHOSPHONATES (on Senior advice)

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ZOLEDRONIC ACID 4mg over 15 minutes	PAMIDRONATE 30-90mg at 20mg/hr	IBANDRONIC ACID 2-4mg

Dose to be adjusted to degree of Hypercalcaemia

Consider dose reduction / slower rate of infusion in renal failure

Monitoring
- Daily serum calcium monitoring
- Can cause hypocalcaemia if low Vitamin D or PTH suppressed

CONSIDER MYELOMA / MALIGNANCY SCREENING

Always consult BNF for dose / administration and contraindications for all above medications