# NHS FORTH VALLEY
# Hypercalcaemia Treatment
# Acute Care

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| **Approved** | 3/6/11 | |
| **Version** | 6 | |
| **Date of First Issue** | 01/04/2007 | |
| **Review Date** | 19/12/2016 | |
| **Date of Issue** | 19/12/2013 | |
| **EQIA** | **Yes** / No | 11/07/2011 |
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| **Group / Committee – Final Approval** | Forth Valley Cancer Board | |

**NHS Forth Valley**

**Consultation and Change Record**

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|---|---|
| **Contributing Authors:** | Dr Wright and Dr Hughes |
| **Consultation Process:** | |
| **Distribution:** | FV Intranet<br>FV Joint Formulary |

**Change Record**

| Date | Author | Change | Version |
|---|---|---|---|
| **1/6/11** | Joanne Robinson | Zoledronic Acid administration details added. | 5 |
| **19/12/13** | Joanne Robinson | • First line drug changed to Zoledronic Acid.<br>• Pamidronate removed from guideline.<br>• Removal of recommendation to use furosemide.<br>• Need to identify underlying risk factors<br>• Additional information regarding fluid administration | 6 |
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# HYPERCALCAEMIA of MALIGNANCY TREATMENT GUIDELINE

| | *Corrected Calcium level* |
|---|---|
| Mild | 2.7 – 3.0 mmol/L |
| Moderate | 3.1 – 3.3 mmol/L |
| Severe | >3.3 mmol/L |

**Hypercalcaemia most commonly occurs in patients with myeloma and bone metastases ie tumour induced, but it may also occur in non-malignant conditions eg hyperparathyroidism, sarcoidosis, thyrotoxicosis.**

**Symptoms:** (usually occur with corrected calcium >3mmol/L)

- Dehydration
- Weakness
- Polyuria
- Nausea/vomiting
- Weight loss
- Polydipsia
- Lethargy
- Constipation
- Depression
- Confusion
- Anorexia
- Renal failure
- Abdominal pain
- Hypertension
- Cardiac arrest

**Treatment:**

1. All patients should be started on IV Sodium Chloride 0.9%. The rate of infusion depends upon several factors, including the severity of hypercalcaemia, the age of the patient, and presence of co-morbid conditions, particularly underlying cardiac or renal disease. A reasonable regimen, in the absence of oedema, is the administration of 0.9% Sodium Chloride at an initial rate of 200 to 300 mL/hour that is then adjusted to maintain the urine output at 100 to 150 mL/hour. All patients should have fluid balance and urinary output monitoring and be regularly assessed for fluid overload during the first 24hours. The aim should be to treat dehydration and return patient to euvolaemic state.

2. Review regular medicines to identify drugs which may worsen hypercalcaemia eg thiazide diuretics, lithium, ranitidine, cimetidine, vitamins A & D and calcium supplements.

3. For patients with mild hypercalcaemia fluids alone may be sufficient to reduce the calcium level and no further treatment may be required. If the calcium has not normalized after 24 hours, go to step 4.

4. For patients with a serum calcium ≥3mmol/L, IV Zoledronic Acid should be prescribed according to the table below. If the patient is particularly symptomatic this may be started at the same time as the fluid hydration. The dose should be made up in the appropriate volume of Sodium Chloride 0.9% (see table). No dose reduction is required for patients with a serum creatinine <400 micromol/L.

| Drug | Dose | Fluid & Volume for Dilution | Infusion time |
|---|---|---|---|
| Zoledronic Acid | 4mg | 100ml Sodium Chloride | over 15 minutes |

5. Zoledronic Acid has not been studied in patients with a serum creatinine of greater than 400 micromol/ml. Treatment in this patient group should only occur where the benefit outweighs the potential risks.

6. The patient's electrolytes, calcium, phosphate, magnesium and renal function should be monitored daily.

7. **Zoledronic acid has a delayed effect and should start to reduce the calcium level in 2-3 days with maximal effect within 4-7 days.**

*8.* If corrected serum calcium continues to rise or has not returned to the reference range within 7 days of giving Zoledronic acid the dose may be repeated.

9. Adverse effects are usually mild and transient. Most common adverse effects are fever (within 48 hours of dose), influenza-like symptoms, hypocalcaemia and hypophosphataemia. Bisphosphonates can cause renal impairment.

10. Duration of response to bisphosphonates is usually 3-4 weeks. The hypercalcaemia will almost certainly recur if there is no treatment of the underlying cause. Bisphosphonates can be repeated whenever hypercalcaemia recurs, however evidence suggests that the effect may diminish with repeated doses.

*Please note that this guidance relates to treatment of hypercalcaemia of malignancy only, bisphoshonates may be given to prevent skeletal events/bone pain in certain tumour types, regardless of calcium level. If in doubt, contact haematologist or oncologist (as appropriate) for advice.*

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