

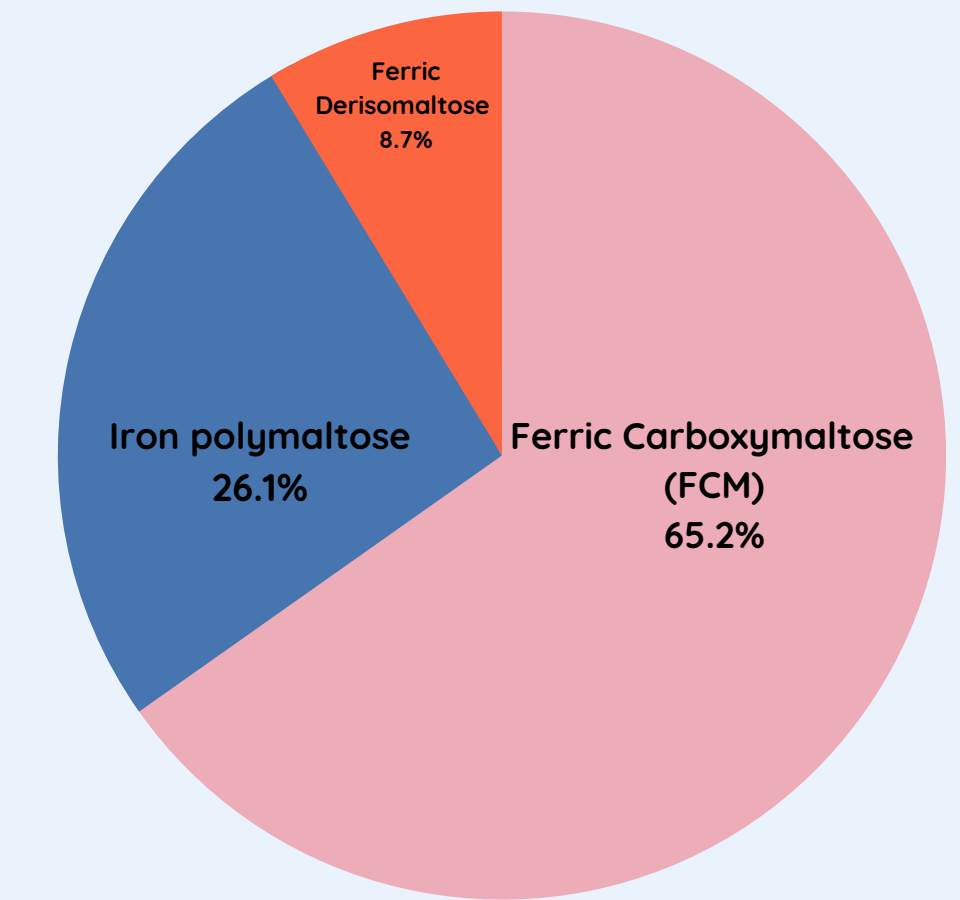
What's all the hype about? Iron Induced Hypophosphataemia

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Objective:

A report highlighting the little known but common adverse effect of hypophosphataemia following intravenous (IV) iron infusion for Iron Deficiency anaemia (IDA).



Hypophosphataemia (<0.75mmol/L) is more likely to occur with Ferric Carboxymaltose (FCM) than with other parenteral iron¹

Clinical Features

A 48 year old female presented to hospital with painful cramps, dizziness and fatigue. Blood works revealed a critically low level of serum phosphate 0.3mmol/L (0.75-1.50). All other parameters were within range. A medication history completed by the pharmacist identified that the patient had recently received a 1500mg dose of Ferric Carboxymaltose (FCM) by IV infusion four days prior. After exclusion of other causes and detection of high urinary phosphate, hypophosphataemia was attributed to the FCM infusion.

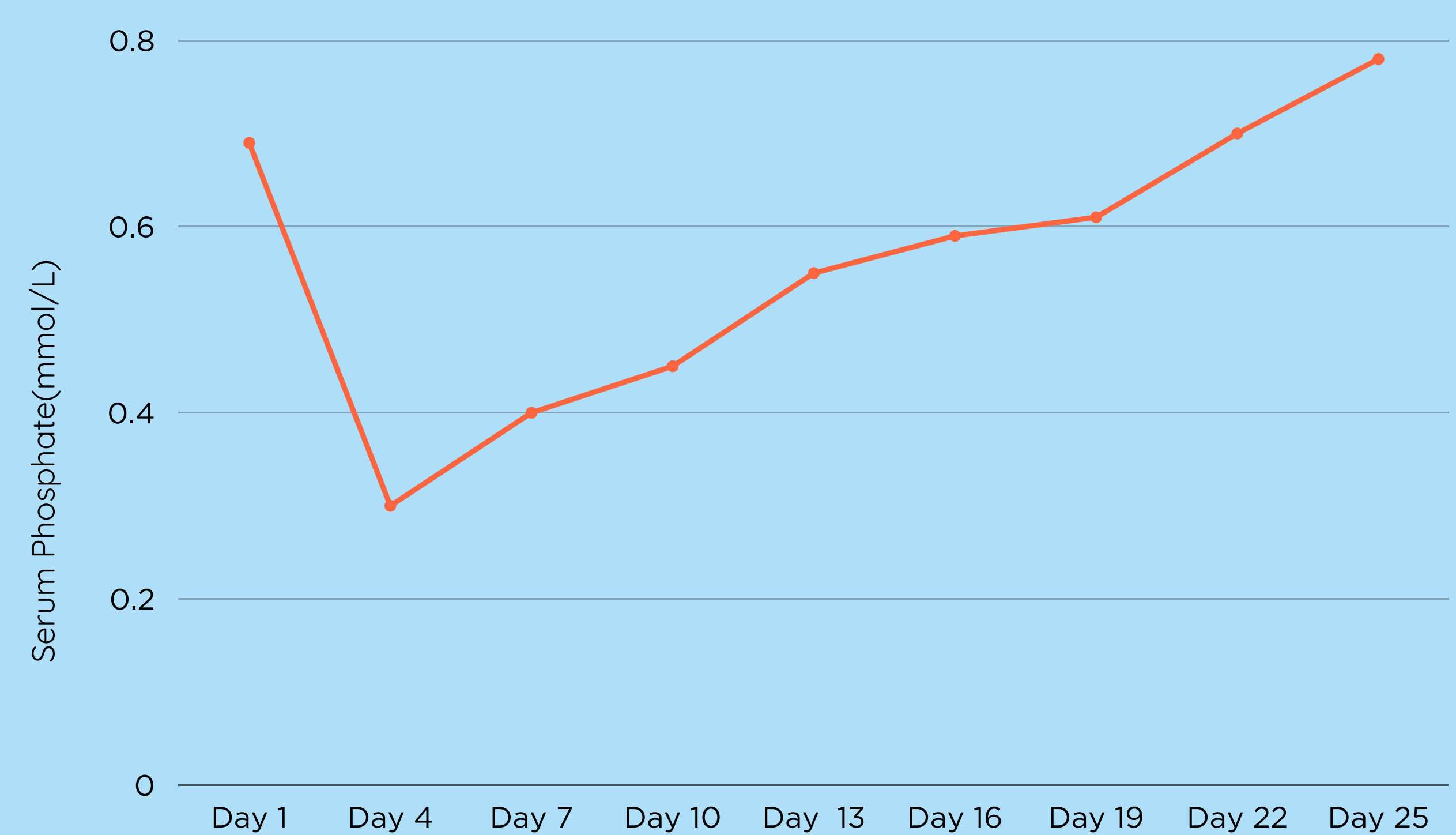


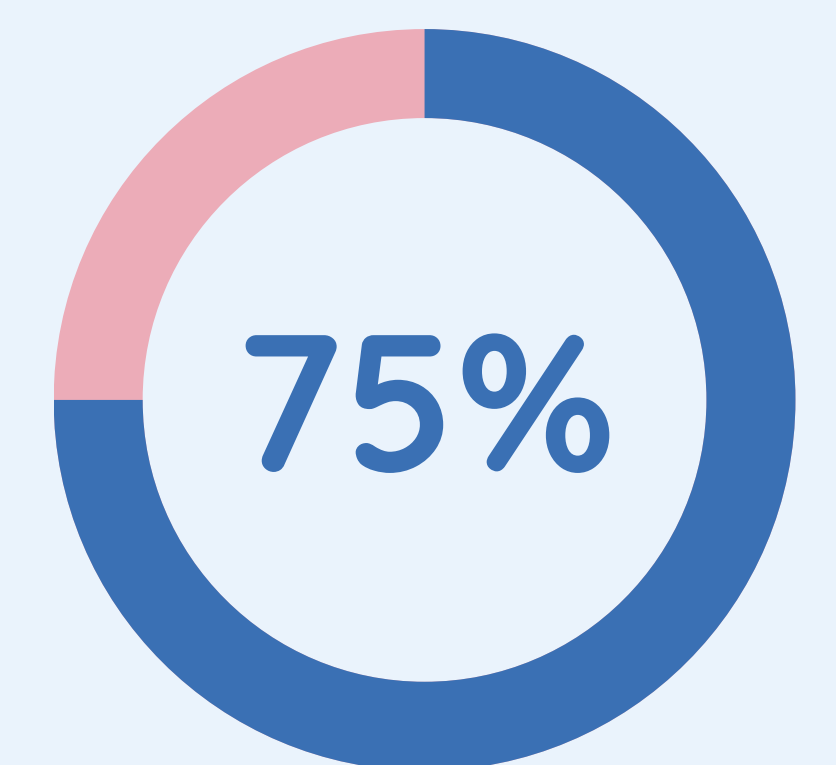
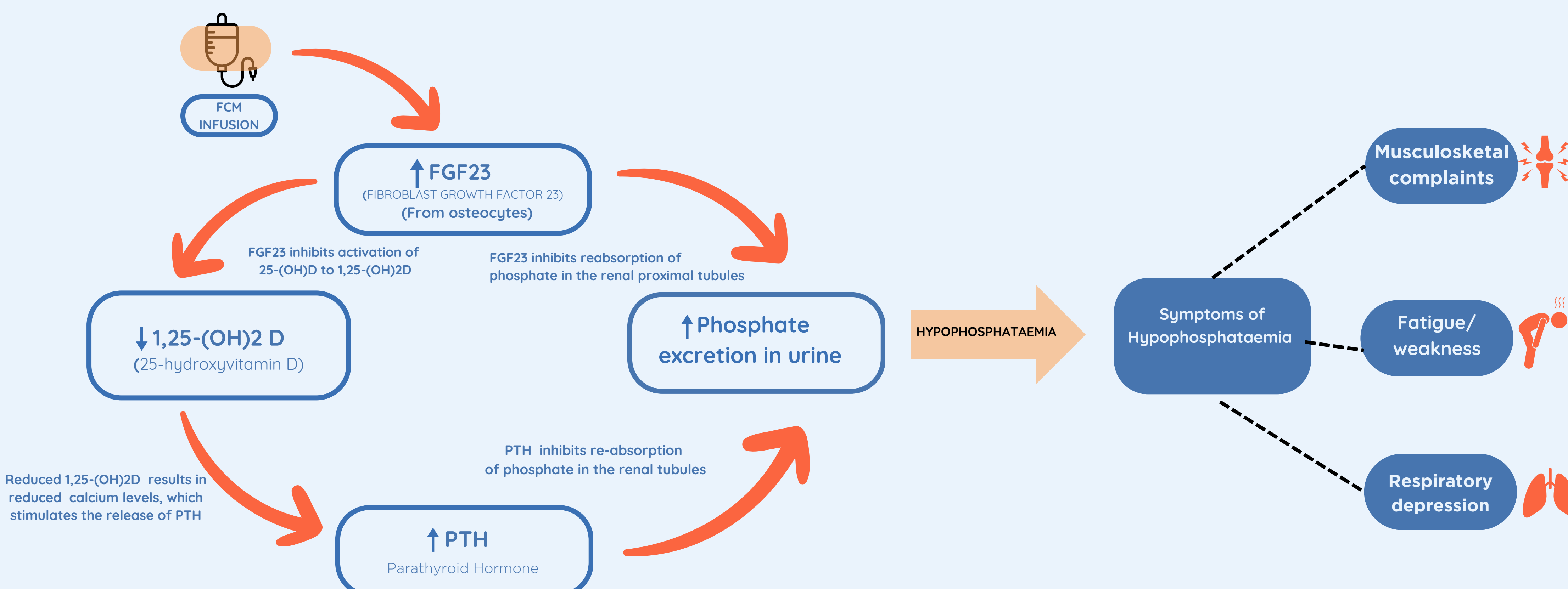
Figure 1
This graph demonstrates the serum phosphate level at time of FCM infusion (Day 1) also at presentation (Day 4), during admission and after discharge (Day 10).

Case Progress

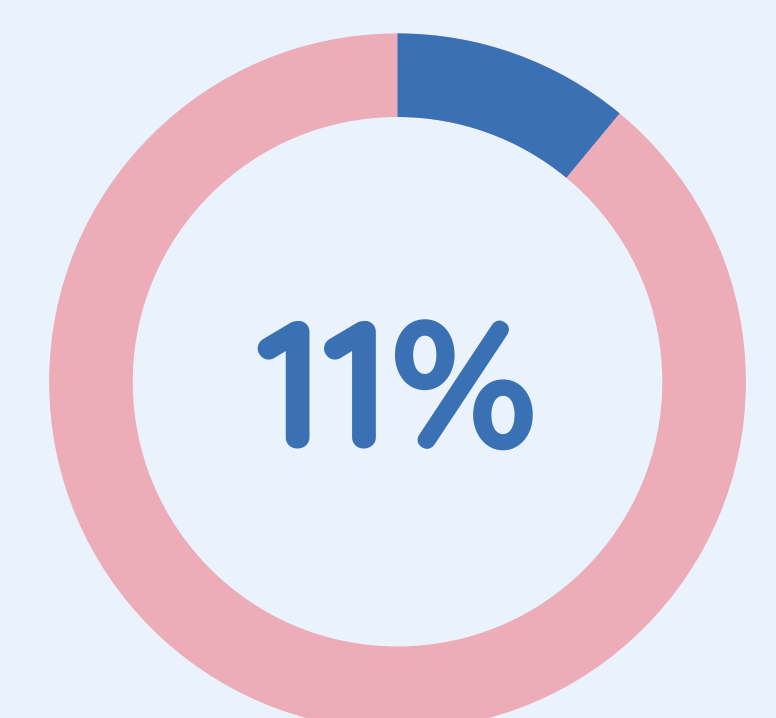
The patient's hypophosphataemia was corrected with 10mmol IV phosphate infused over 2 hours . The patient was then discharged with oral phosphate and calcitriol with close monitoring of phosphate levels. Phosphate levels had normalised (0.79mmol/L) on blood works 2 weeks later and therapy was ceased.

Literature Review

Whilst the exact mechanism is unknown, it is thought FCM increases levels of Fibroblast Growth factor 23 (FGF23), which acts as a negative regulator of serum phosphate by promoting urinary phosphate excretion and suppressing 1,25-dihydroxyvitamin D synthesis. There is a higher incidence of hypophosphataemia with FCM infusion compared with other formulations. Patients at risk include those with chronic kidney disease, inflammatory bowel disease and abnormal uterine bleeding. Symptoms include musculoskeletal pain, weakness and fatigue and can mimic symptoms of IDA.

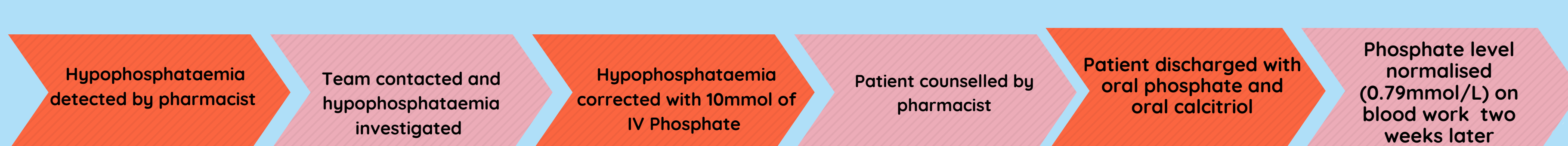


Patients experience hypophosphataemia after FCM infusion (<0.75mmol/L)²



Patients experience severe hypophosphataemia (<0.35mmol/L) after FCM infusion²

Pharmacist Intervention and Outcome



Discussion

This case demonstrates the vital role pharmacist play in identification, management and monitoring of IV iron induced hypophosphataemia in patients a risk. Patients should be educated on signs and symptoms that could develop to alert clinicians of critically low phosphate levels following iron infusion.

References:

1. Ifie E, Oyibo SO, Joshi H, Akintade O. Symptomatic hypophosphataemia after intravenous iron therapy: an underrated adverse reaction. Endocrinol Diabetes Metab Case Rep. 2019 Aug 3;2019
2. Ferric Carboxy Maltose and Low Blood Phosphorous-Safety Updates Website: Therapeutic Goods Administration URL: <https://www.tga.gov.au/news/safety-updates/ferric-carboxymaltose-and-low-blood-phosphorous>



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