

# Preoperative anaemia A case study

Iron deficiency anaemia (IDA) is an important public health problem in Australia with 57,518 potentially preventable hospitalisations for IDA in 2017-18.<sup>1</sup>



30% people having elective surgery have suboptimal iron stores or anaemia.<sup>(1)</sup>



8% children under five-years-old (equivalent to over 100,000 children) in Australia have anaemia with iron deficiency the most common cause.



67% of pregnant women screened each month across three Australian health services were found to be iron deficient.<sup>(2)</sup> A Canadian study found 76% of pregnant women were iron deficient.<sup>(3)</sup>



25% of women of reproductive age experience heavy menstrual bleeding making them a high risk group for iron deficiency anaemia.<sup>(4)</sup>



50% of patients with heart failure are iron deficient, which may be due to a combination of both absolute and functional iron deficiency.<sup>(5)</sup>



70% of people with chronic kidney disease (CKD) stage 5 needing dialysis are anaemic<sup>(6)</sup> primarily due to erythropoietin deficiency but iron deficiency may exacerbate this.



Nearly 90% of Aboriginal infants and young children were anaemic due to iron deficiency at least once between the ages of six months and two years.<sup>(7)</sup>



80% of anaemic patients with coeliac disease are also iron deficient. <sup>(8)</sup>



32% of individuals over the age of 80-years-old are anaemic. The main cause of this is iron deficiency anaemia. (9)



## Case study

#### Presentation



Evelyn Rossi is a 69-year-old widow who is awaiting a knee replacement. She visits her general practitioner (GP) with shortness of breath (SOB) and to discuss a letter from the preoperative clinic.

Both Evelyn and the GP received the letter detailing how to assess and optimise haemoglobin presurgery.

Evelyn is pale, but her physical examination is non-remarkable.

Her history includes a myocardial infarction and gastro-oesophageal reflux for which she takes atenolol, low-dose aspirin and esomeprazole. She has had no major surgical procedures. She has no gastro-intestinal symptoms apart from mild loss of appetite for a few months. Her weight is stable.

Evelyn lives alone but her daughter visits regularly. She prepares her own meals and eats small amounts of red meat and chicken.

## What laboratory investigations would you perform?

The GP orders a full blood count, iron studies, C-reactive protein (CRP) and renal function tests, and orders a chest x-ray to investigate Evelyn's SOB. The blood results are also forwarded to the hospital's preoperative clinic.

Test	Range	Result	A week later Evelyn returns for her
Hb g/L	135-175	108	results. Red cell indices and iron
MCV fL	80-98	78	studies are consistent with IDA.
MCH pg	27-33	26	CRP and renal functions are
RDW %	12-15	17	normal. Her chest x-ray is clear
Ferritin mcg/L	30-300	8	and the conclusion is SOB due to
Comments:	Microcytic, hypochromic blood picture with		anaemia.
	elliptocytes		



### What would be your first line treatment?

Evelyn is advised to take iron tablets with at least 100 mg of elemental iron. A two-week follow-up appointment is made. She is referred to a gastroenterologist for investigation of the cause of her IDA.

Evelyn does not tolerate the oral iron and has been nauseous despite taking them before bed. The GP suggests alternate days dosing.

The surgery booked for 4 weeks, is deferred in order to optimise Evelyn's haemoglobin. The GP discusses with the cardiologist cessation of her low-dose aspirin prior to surgery to reduce her bleeding risk.



Evelyn's inability to tolerate oral iron necessitates referral to the haematology clinic for consideration of an intravenous iron infusion.

Evelyn receives an outpatient iron infusion with a good response.

Gastroenterology examinations are clear and her IDA is attributed to poor diet and reduced absorption due to esomeprazole.

Evelyn has her surgery eight weeks after her original date. Her preoperative ferritin was 146 mcg/L and her haemoglobin was 139 g/L, which reduced to 94 g/L postoperatively. She did not require a red cell transfusion perioperatively and her ferritin levels were considered adequate to support erythropoiesis and recover from her blood loss.

For this and other case studies related to IDA visit <a href="https://bloodsafelearning.org.au/">https://bloodsafelearning.org.au/</a>

<sup>&</sup>lt;sup>1</sup> Australian Institute of Health and Welfare 2019. Admitted patient care 2017–18: Australian hospital statistics. Health services series no. 90. Cat. no. HSE 225. Canberra: AIHW.