

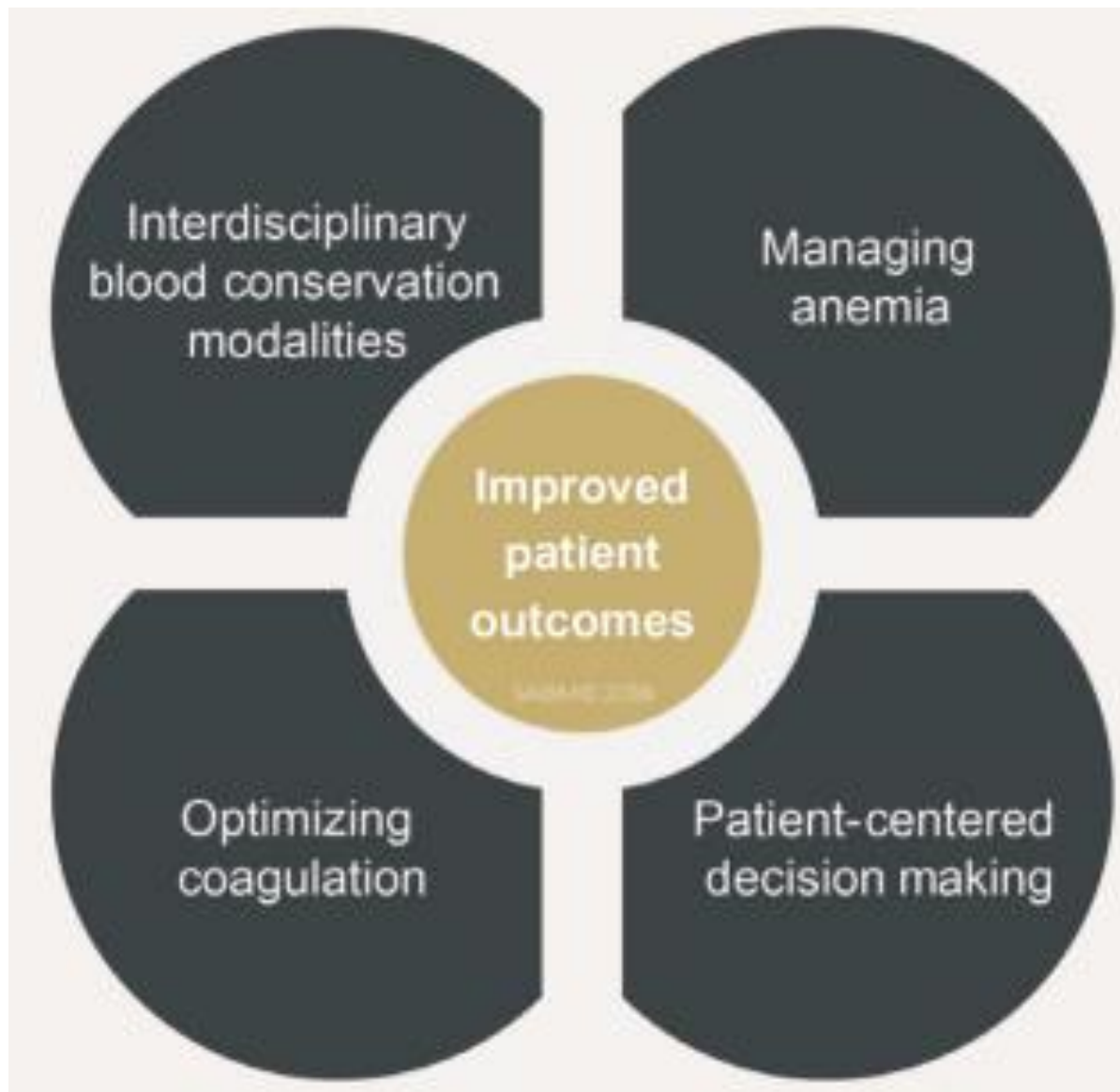


# Paediatric PBM

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- Member of APA P-POM subcommittee
- Clinical Lead for NHS BT Paediatric PBM NCA
- BBTS Paediatric Special Interest group



Society for the advancement of blood management administration and clinical standards for PBM. Goobie et al Pediatric Anaesthesia 2019

- Prevalence ~25-43%
- Higher in <5 years, lower socioeconomic groups, low body weight
- Iron deficiency commonest cause
- Can cause tiredness, SOB, pallor and decreased cognitive performance

- WHO 1968 Definition of Anaemia:

Age	Anaemic HB < g/L
Children 6 mths – 5 yrs	110
Children 5-11 yrs	115
Non pregnant women	120
Pregnant women	110
Men	130

# Haemoglobin Cut offs

Age	Normal Hb g/L
0-2 weeks	149 - 237
2 weeks – 2 months	134 - 198
2-6 months	94 - 130
6 months – 1 year	111 - 141
1 - 2 years	113 - 141
2 – 6 years	115 - 135
6-12 years	115 - 155
12 – 18 years F	120 - 160
12 – 18 years M	130 - 160

## Red Cell Indices

- RDW
- % red cell hypochromia
- MCH

An assessment of methods used in the investigation of iron status: findings in a population of young British South Asian children

Roderick F Hinchliffe,<sup>1,2</sup> Ajay J Vora,<sup>1,3</sup> Lynne Lennard<sup>2</sup>

JCP 2016

Utility of red cell distribution width in screening for iron deficiency

Roderick F Hinchliffe,<sup>1</sup> Graham J Bellamy,<sup>1</sup> Adam Finn,<sup>2</sup> Frank Bell,<sup>3</sup> Ajay J Vora,<sup>1</sup> Lynne Lennard<sup>4</sup>

Arch Dis Child 2013

## Relationship Between Preoperative Anemia and In-Hospital Mortality in Children Undergoing Noncardiac Surgery

David Faraoni, MD, PhD, FCCP, James A. DiNardo, MD, FAAP, and Susan M. Goobie, MD, FRCPC

December 2016 • Volume 123 • Number 6

ANESTHESIA & ANALGESIA

24% Anaemic

60% higher odds of  
requiring a blood  
transfusion

2 fold in hospital  
mortality for  
children with preop  
anaemia



# JAMA Pediatrics

Research

Original Investigation

## Association of Preoperative Anemia With Postoperative Mortality in Neonates

Susan M. Goobie, MD, FRCPC; David Faraoni, MD, PhD; David Zurakowski, PhD; James A. DiNardo, MD

July 2016

32% Anaemic

Anaemic  
in-hospital mortality  
7.5%

Non-anaemic  
in-hospital mortality  
1.4%

## **NICE: Blood transfusion Quality standard 2016**

People with iron-deficiency anaemia who are having surgery are offered iron supplementation before and after surgery.

## Guidelines on transfusion for fetuses, neonates and older children

Helen V. New,<sup>1,2</sup> Jennifer Berryman,<sup>3</sup> Paula H. B. Bolton-Maggs,<sup>4</sup> Carol Cantwell,<sup>2</sup> Elizabeth A. Chalmers,<sup>5</sup> Tony Davies,<sup>6</sup> Ruth Gottstein,<sup>7</sup> Andrea Kelleher,<sup>8</sup> Sailesh Kumar,<sup>9</sup> Sarah L. Morley<sup>10</sup> and Simon J. Stanworth,<sup>11</sup> on behalf of the British Committee for Standards in Haematology

2016

### Recommendations

- 1 The preoperative Hb should be optimised by treating iron deficiency anaemia (1C).
- 2 A perioperative Hb transfusion threshold of 70 g/l should be used in stable patients without major co-morbidity or bleeding (1C).
- 3 Tranexamic acid should be considered in all children undergoing surgery where there is risk of significant bleeding (1B).
- 4 Red cell salvage should be considered in all children at risk of significant bleeding undergoing surgery and where transfusion may be required, providing there are appropriately trained staff (2C).

## Patient Blood Management Guidelines: Module 6

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# Neonatal and Paediatrics



NATIONAL BLOOD AUTHORITY  
AUSTRALIA

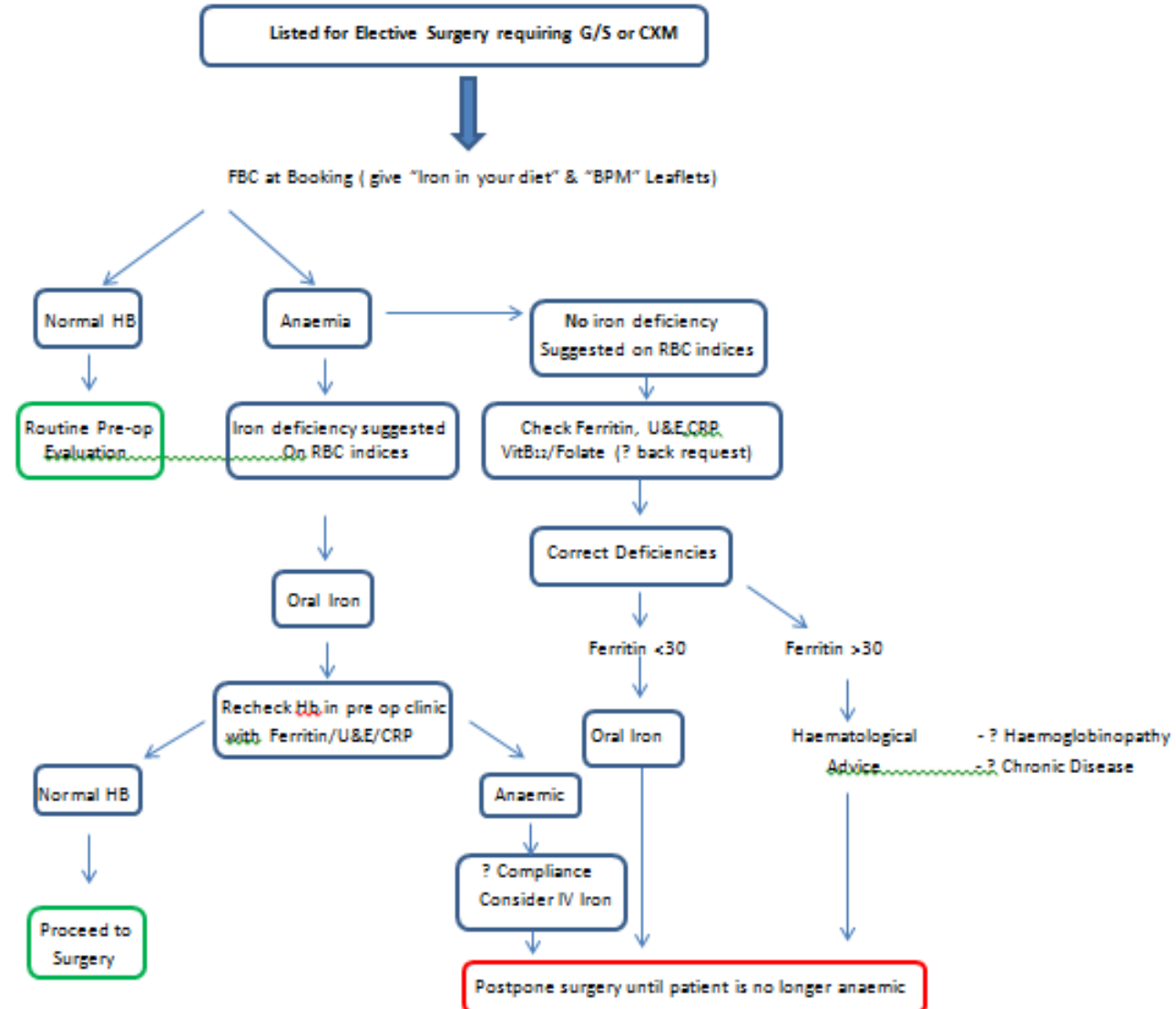
January 2017

# Paediatric iron Treatment

<b>Ferritin &lt;20 mcg/L</b> <b>Iron deficiency anaemia</b>	<b>Ferritin 20–50 mcg/L</b> <b>Possible iron deficiency anaemia</b>	<b>Ferritin &gt;50 mcg/L</b> <b>Unlikely iron deficiency anaemia</b>
<p>Review clinical history and identify cause (see Table H.1)</p> <p>Start treatment:</p> <ul style="list-style-type: none"><li>oral iron 3–6 mg/kg/day</li></ul> <p>Address causes of dietary iron deficiency:</p> <ul style="list-style-type: none"><li>increase dietary iron</li><li>if &lt;1 year of age, cease cow's milk and use an infant formula</li><li>if 1–2 years of age, reduce cow's milk to &lt;500 mL daily</li></ul> <p>Assess haematological response within 2–4 weeks</p> <p>Continue treatment for 3 months after Hb recovery</p> <p>If oral iron is ineffective or is not tolerated, consider other causes of anaemia (see Column 3) and use of IV iron</p>	<p>Review and address any causes of iron deficiency (see Table H.1 and Column 1)</p> <p>Correlate with MCV/MCH and CRP</p> <p>Consider therapeutic trial of iron:</p> <ul style="list-style-type: none"><li>oral iron 3 mg/kg/day</li></ul> <p>Assess haematological response within 2–4 weeks</p> <p>If anaemia persists, consider other causes (see Column 3)</p>	<p>Correlate with MCH/MCV and CRP Ferritin may be elevated in the setting of inflammation. However, iron deficiency may still be present, particularly where TSAT &lt;20%.</p> <p>Consider alternative causes of anaemia:</p> <ul style="list-style-type: none"><li>thalassaemia and other haemoglobinopathies</li><li>anaemia of chronic disease</li><li>haemolytic anaemia</li><li>B12 deficiency</li><li>folate deficiency</li><li>other</li></ul>

- IV iron
- Improved safety profile
- One off dose
- 100% Bioavailability
- 2 commonly used preparations (one licenced down to 14 years)
- Consider in patient with:
  - Poor compliance/tolerance
  - Surgery < 6 weeks

# Preoperative Anaemia Pathway





Blood and Transplant

## Patient Blood Management

Information for patients



*Blood and Transplant*

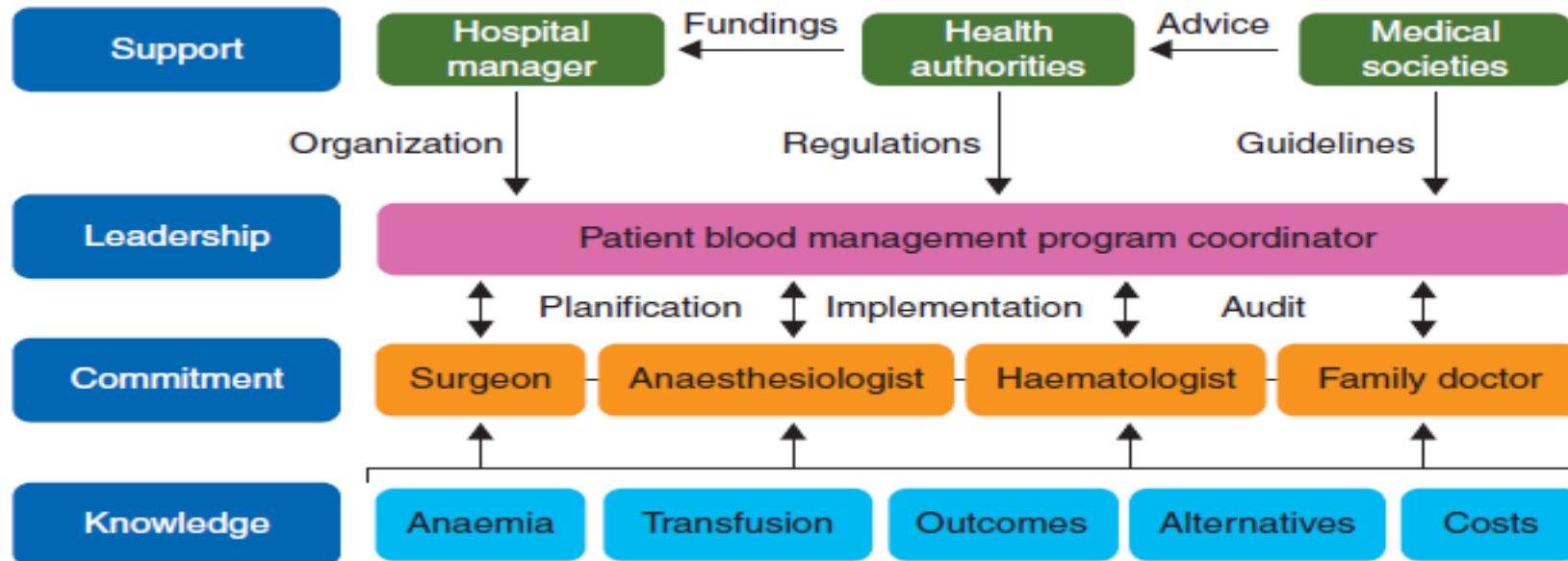
## Will I need a blood transfusion?

Patient information



# 'Fit to fly': overcoming barriers to preoperative haemoglobin optimization in surgical patients†

Munoz et al BJA 2015



- NHS BT NCA Paediatric PBM audit Spring 2020
- Survey for G/S and CXM guidelines

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