

# Boosting Blood Health! A Quick Dive into Patient Blood Management and Iron Therapy in Malaysia

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## What is Patient Blood Management ?

Patient Blood Management (PBM) is an evidence-based, multidisciplinary approach aimed at improving patient outcomes by refining the use of blood and blood products. PBM focuses on 3 main pillars which are detection and management of anemia, minimizing blood loss and optimizing patient specific physiological tolerance of anemia. This approach has become an integral part of modern transfusion medicine, particularly in managing patients with conditions such as anemia, surgical blood loss, trauma, and chronic diseases.

# The Role of Iron in Patient Blood Management

A central component of PBM is addressing anemia, which is common in hospitalized patients, especially those undergoing surgery or dealing with chronic conditions. Iron deficiency is one of the most prevalent causes of anemia. Iron is essential for the production of hemoglobin, the protein in red blood cells that carries oxygen throughout the body. When iron levels are low, hemoglobin production is impaired, leading to reduced oxygen delivery and overall fatigue and weakness.

## Available Iron Preparations in Malaysia

In Malaysia, the management of iron deficiency anemia can be achieved through both oral and intravenous iron preparations. These options vary in terms of absorption rates, side effects, and clinical indications.

### Oral Iron Preparations

Oral iron supplements are typically the first-line treatment for iron deficiency anemia due to their convenience and lower cost. However, their effectiveness can be limited by gastrointestinal side effects and reduced absorption in certain conditions.

Some commonly available oral iron preparations in Malaysia include:

**1. Ferrous Sulfate** (*Iberet Folic*)

- *Iron content:* 525 mg tablet provides about 105 mg of elemental iron.
- Common side effects: Constipation, nausea, and abdominal discomfort.

**2. Ferrous Fumarate** (*New Obimin, Iron Tablet*)

- *Iron content:* 200 mg tablet provides about 66 mg of elemental iron.
- Common side effects: Less gastrointestinal irritation compared to ferrous sulfate.

**3. Ferrous Gluconate** (*Sangobion*)

- *Iron content:* 250 mg tablet provides about 30 mg of elemental iron.
- Common side effects: Fewer gastrointestinal side effects compared to other iron salts but still can cause mild nausea or constipation.

**4. Iron Polysaccharide Complex** (*Maltofer*)

- *Iron content:* 370 mg tablet provides about 100 mg of elemental iron.
- Common side effects: Less likely to cause gastrointestinal upset.

### Intravenous Iron Preparations

For patients who cannot tolerate oral iron or when rapid increment of hemoglobin level is necessary, intravenous iron preparations are used. Some intravenous iron preparations available in Malaysia include:

### 1. **Iron Sucrose** (*Venofer*)

- *Iron content:* 100 mg of elemental iron per 5ml ampoule.
- *Indication:* Used in patients with chronic disease-related anemia or iron deficiency anemia that does not respond to oral therapy. Test dose needed.
- *Administration:* IV injection/infusion.
- *Maximum dosage:* 7mg/kg. Often given as 200mg three times per week or 500mg per week as a single infusion.

### 2. **Iron Dextran** (*Cosmofer*)

- *Iron content:* 100 mg of elemental iron per 2ml ampoule.
- *Indication:* Suitable for patients with significant iron deficiency anemia, particularly in pregnancy. Test dose needed.
- *Administration:* IV injection/infusion or IM.
- *Maximum dosage:* 20mg/kg

### 3. **Iron Isomaltoside** (*Monofer*)

- *Iron content:* 500 mg of elemental iron per 5ml vial.
- *Indication:* Typically used in patients with chronic kidney disease or those undergoing dialysis. Test dose NOT needed.
- *Administration:* Given via slow intravenous infusion.
- *Maximum dosage:* 20mg/kg

## **Ganzoni Formula for Calculating Intravenous Iron**

In patients requiring intravenous iron, a common method for calculating the correct dose of iron is the *Ganzoni Formula*, which helps estimate the total iron deficit. This formula is particularly useful for determining the iron dose needed by the patient.

*The formula is as follows:*

$$\text{Iron Deficit (mg)} = \text{Body Weight (kg)} \times [\text{Target Hb} - \text{Actual Hb (g/dL)}] \times 2.4 + \text{Iron Store (mg)}$$

Where; Iron Store is the amount of iron already available in the body, which can be estimated as 500 mg for most adults.

In a nutshell, both oral and intravenous iron preparations are widely available in Malaysia, with a

variety of options to suit different clinical needs. The Ganzoni formula offers a reliable method for calculating the required dose of intravenous iron, ensuring that patients receive the optimal amount for repletion.

Patient Blood Management aims to optimize the care of patients through better blood utilization and the judicious use of iron preparations plays a key role in managing iron deficiency anemia. Healthcare providers must carefully consider the patient's condition, comorbidities, and response to therapy when selecting the most appropriate iron preparation and determining the correct dosage. By adopting a comprehensive approach to PBM, we can enhance patient outcomes, reduce reliance on blood transfusions and improve the overall quality of care in transfusion medicine.

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