Anemia in Pregnancy

Contents :

- Prevalence of anemia
- Effect of anemia to pregnancy
- Sign and symptom/ Quizs
- Management of Anemia
- Conclusions

The most frequent nutritional disorder

How many suffer from iron deficiency anemia?

2 billion peoples

1/3rd of the world's population

Milman N, Anemia still a major health problem in many parts of the world, Ann Hematol(2011) 90:369–377

Prevalence of anemia

	Pre-school children	Pregnant women	Non-pregnant women during child bearing age
World	**47%**	**42%**	**30%**
Malaysia	**32%**	**38%**	**30%**

WHO Global Database on Anemia,2008

Prevalence

- Developing countries
  - Africa 35% to 56%
  - Asia 37% to 75%
  - Latin America 37% to 52%
- Industralised countries- mean prevalence 18%
- HSNZ- 70.8%

Definition of anaemia

During Pregnancy		
Haemoglobin (g/dL)	WHO	< 11
	CDC	< 11 (1ST trimester)
		< 10.5 (2nd trimester)
		< 11 (3rd trimester)
Post partum		
Haemoglobin (g/dL)		<10

Prepartum anemia

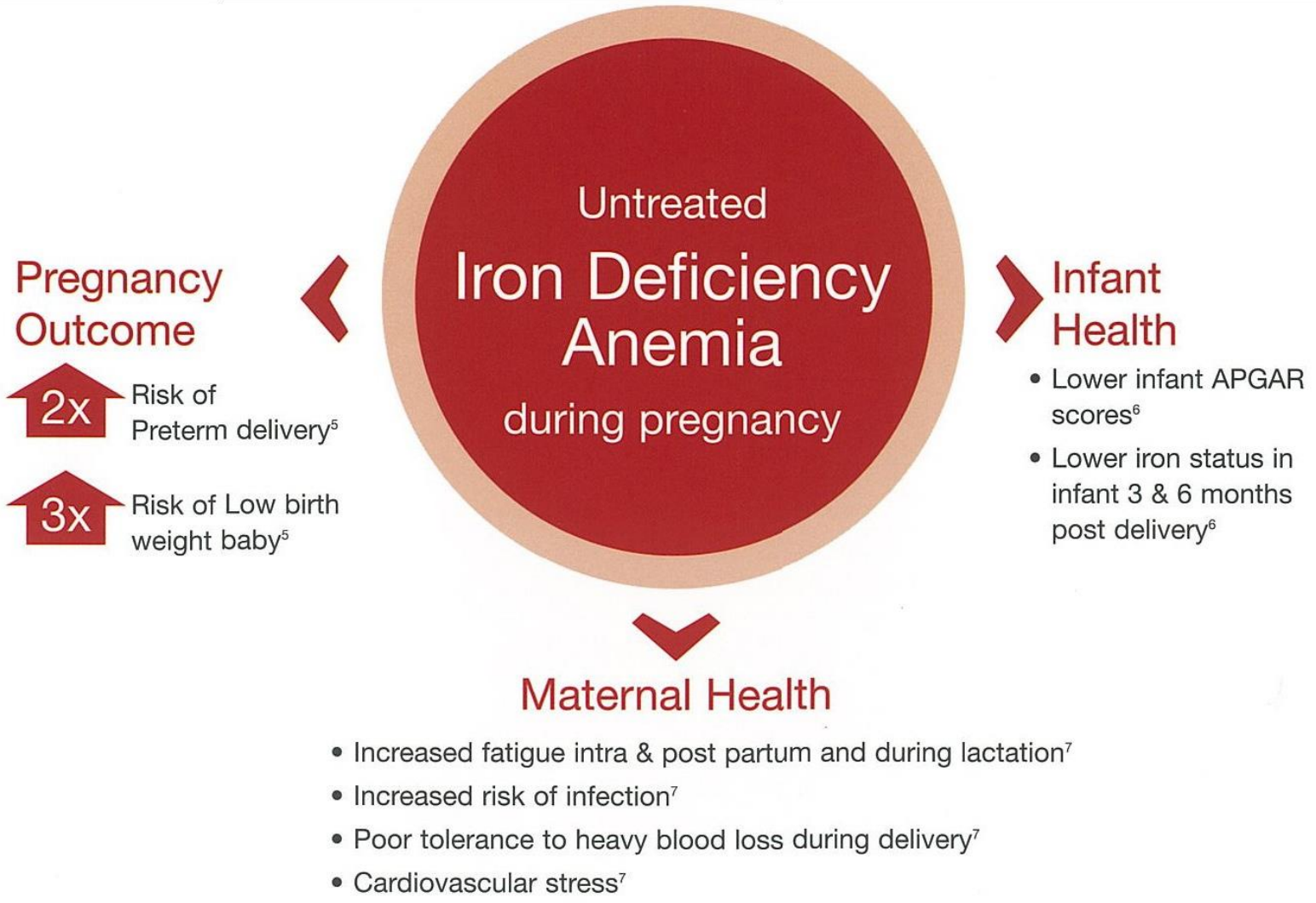
- Among fertile, non-pregnant women, ~40% have ferritin of ≤30 µg/L(low iron status)

- Prepartum IDA predisposes to postpartum IDA- some amt blood loss during labour, lactation, dilutional effect of pregnancy

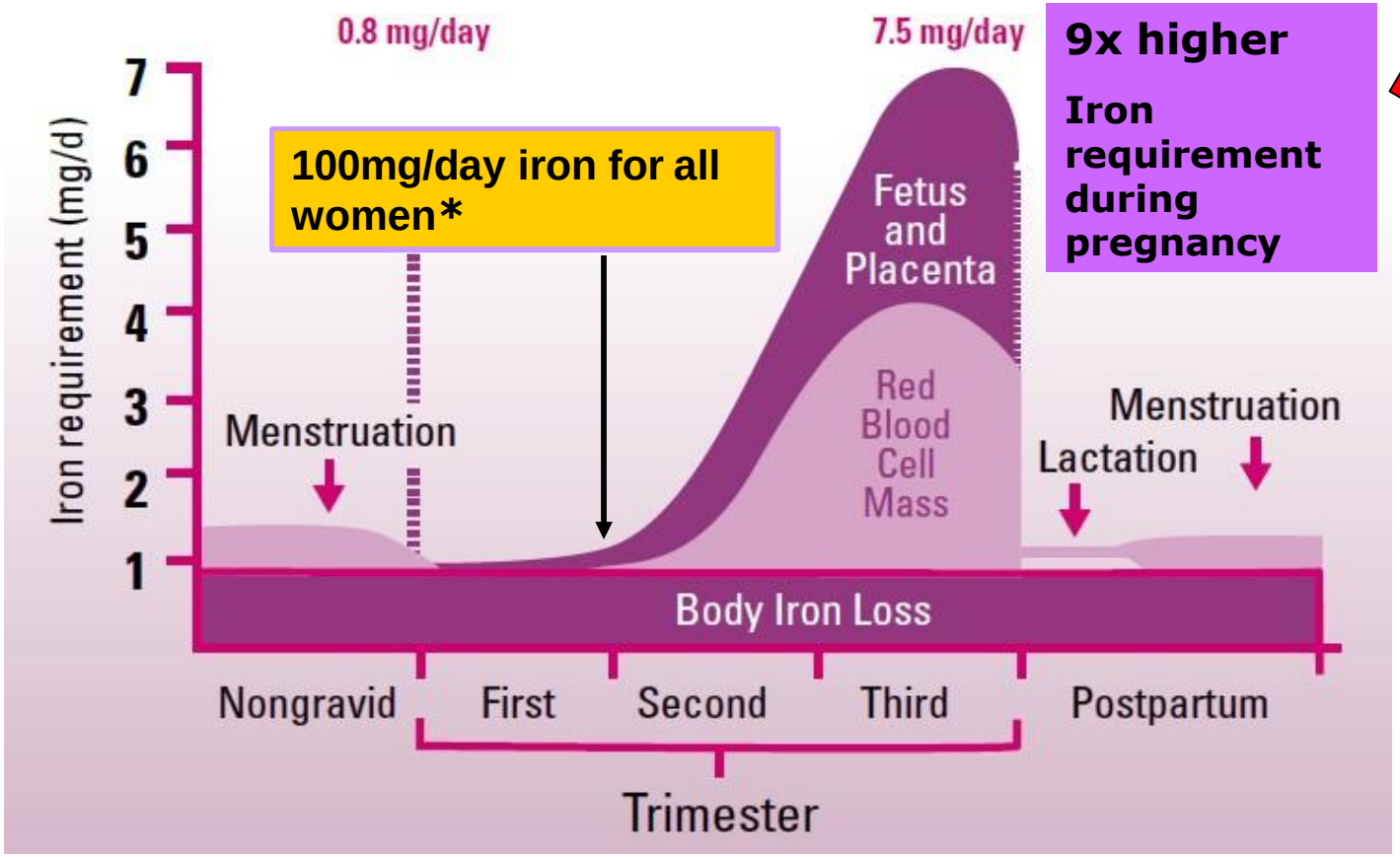
Test	Level	Remarks
Serum Ferritin (ug/L)	< 30	Low iron status
	< 15	Iron deficiency

Milman N ,Prepartum anemia:prevention and treatment, Ann Hematol(2008) 87:949–959

IDA During pregnancy



Iron requirement in pregnancy



Milman N Ann Hematol 2006; 85(9):559-565

* RNI Malaysia 2005 , National Coordinating Committee on Food and Nutrition (NCCFN),Ministry of Health Malaysia

Anaemia and post partum haemorrhage

- Anaemia increase the risk of PPH
- Unability of uterus to contract
- Risk of DIVC higher
- Risk of post partum hysterectomy higher

Post-partum Anemia

» Post-partum hemorrhage is the leading cause of maternal mortality. Therefore it is imperative to identify & treat anemia and ensure adequate Hb levels before labour.[3]

"More than 80 percent of maternal deaths are caused by haemorrhage,…… Most of these deaths are preventable when there is access to adequate reproductive health service"

1. Jamaiyah Haniffet al.Anemia in pregnancy in Malaysia:a cross-sectional survey.Asia Pac J Clin Nutr 2007;16(3): 527-536.

Post partum anemia

- Severe postpartum anemia is a complication of 5% of deliveries[1]
- Following delivery, women lose some amount of iron through breastfeeding and lactation[2]
- IDA has been associated with impaired cognitive function and behavioral disturbances in postpartum women[2]
- Mother's iron status should be evaluated prior to discharge to monitor postpartum anemia[2]

1. Bodnar LM,et,al. Who should be screened for postpartum anemia? An evaluation of current recommendations. Am J Epidemiol. 2002 Nov
2. Milman N, Iron and folic acid supplementation, Medical Tribune Oct 2010

Post partum anemia

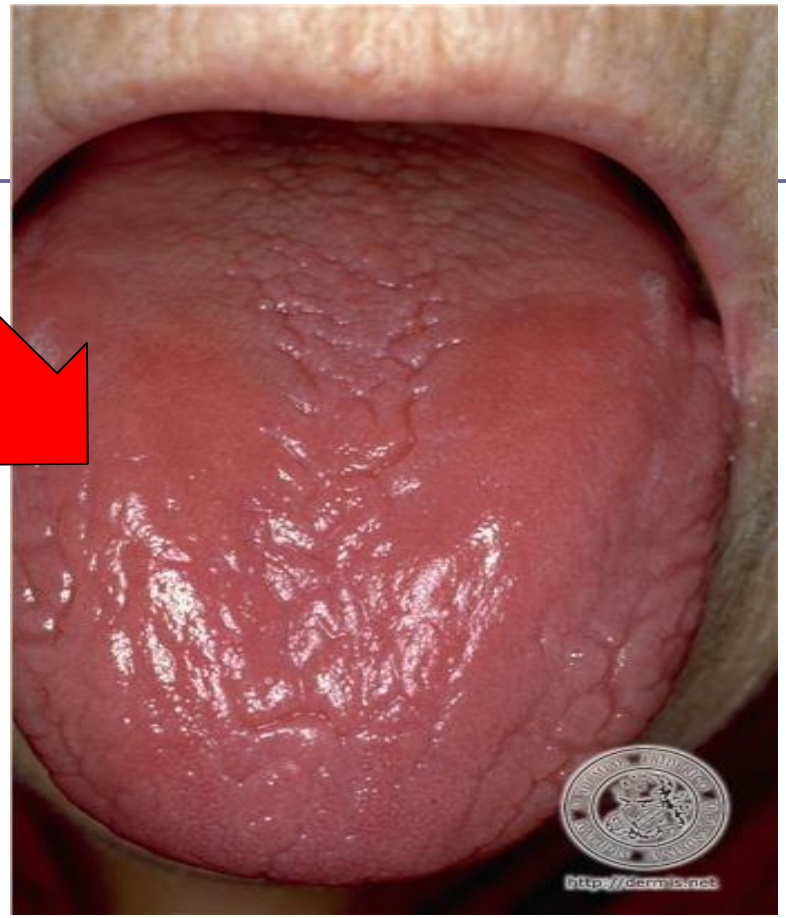
- Iron deficiency persists beyond the 4-6 weeks postpartum period[2]
  - 12% of women are iron deficient up to 12 months after delivery
  - 8% of women are iron deficient 13-24 months after delivery
- Iron supplementation should continue after delivery if iron status remains low or while the mother is breastfeeding[1]

1. Bodnar LM,et,al. Who should be screened for postpartum anemia? An evaluation of current recommendations. Am J Epidemiol. 2002 Nov
2. Milman N, Iron and folic acid supplementation, Medical Tribune Oct 2010

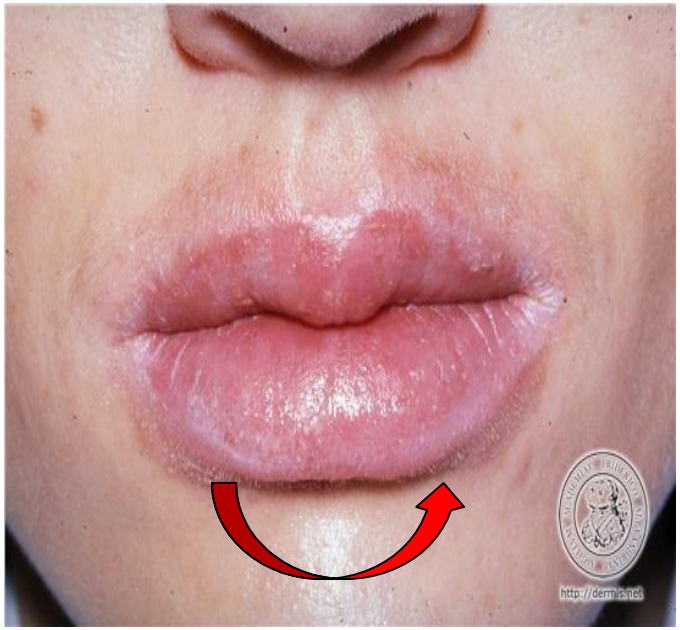
Sign & Symptoms of IDA

QUIZ??

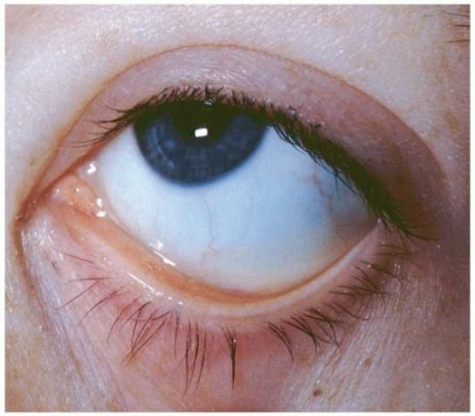
Just name the sign of anaemia..


http://derm-is.net

What is the sign call?



Clinical sign of anaemia



PALLOR

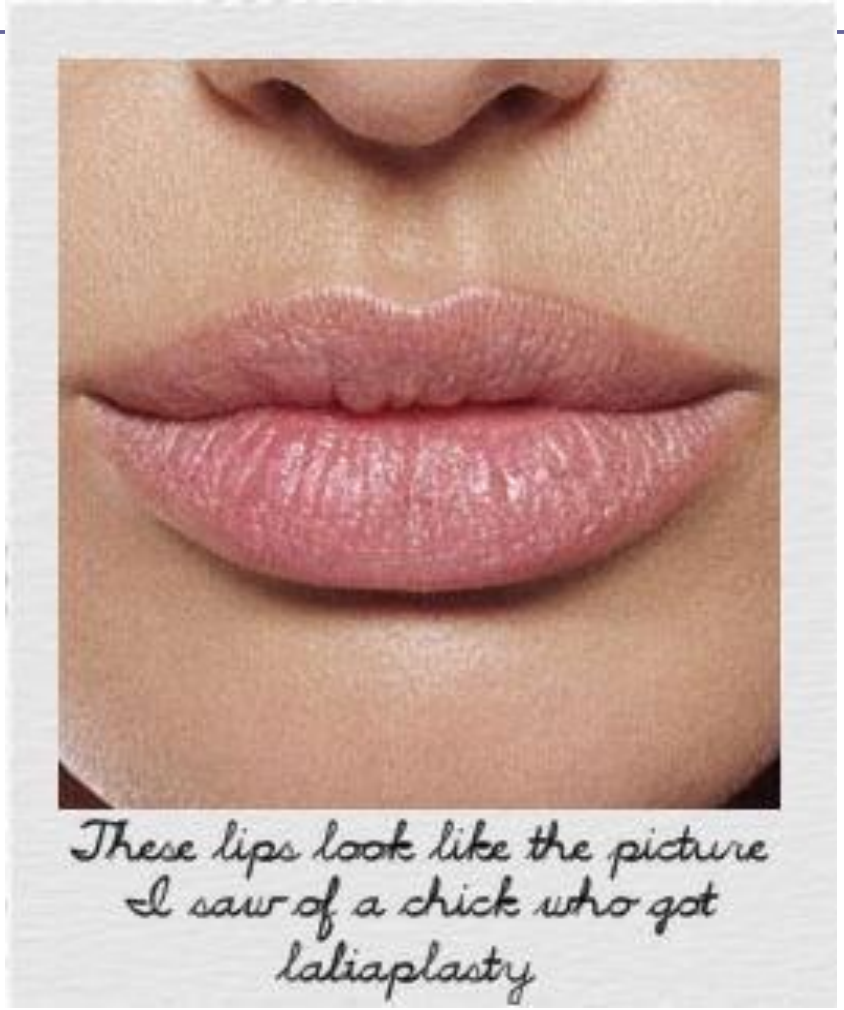
ATROPHIC GLOSSITIS

KOilonychia

ANGULAR STOMATITIS

CHEALITIS

Whose lips it is?



Iron deficiency anemia (IDA)- what is the indicator?

Hemoglobin concentration is a poor indicator of iron stores – final stage in the disease spectrum of iron deficiency[1]

Serum ferritin is a more sensitive indicator of iron deficiency[2]

A survey of 20- to 30-year-old healthy Danish women revealed[1,3]

- 4% had IDA
- 42% had a low iron status (serum ferritin < 30 µg/L)
- 10% had ID (serum ferritin < 15 µg/L)

Test	Level	Remarks
Serum Ferritin (ug/L)	< 30	Low iron status
	< 15	Iron deficiency

1. Milman N, et al. Ann Hematol 1995;70(4):251-21
2. Milman N ,Prepartum anemia:prevention and treatment, Ann Hematol(2008) 87:949–959
3. Milman N, et al. Eur J Haematol 2003;71(5):51-61

Criteria for Assessing Anemia

Test	Age	Gender	Deficiency value
Hemoglobin (g/dL)	0.5 - 10	M-F	<11
	11 - 15	M	<12
		F	<11.5
	> 15	M	<13
		F	<12
	Pregnancy		<11
Hematocrit (%)	0.5 - 4	M-F	<32
	5 - 10	M-F	<33
	11 - 15	M	<35
		F	<34
	> 15	M	<40
		F	<36

- Hemoglobin test - a test that measures hemoglobin which is a protein in the blood that carries oxygen
- Hematocrit test - the percentage of red blood cells in your blood by volume
- Hemoglobin and hematocrit levels usually aren't decreased until the later stages of iron deficiency(anemia)
- Anemia was further categorized into 3 level; mild 9-11g/dL,moderate 7-9 g/dL and severe <7g/dL.

IDA – Treatment & Management

Goals of treatment:

1. To **restore normal levels** of red blood cells and **hemoglobin levels** to normal.
2. To **replenish iron stores**.

How to treat anemia?

- Increase food intake that are rich in iron
- Take iron supplement
- Blood transfusion

IDA – Treatment & Management

Food that are rich in iron

*Women with iron deficiency in pregnancy should not attempt to correct it through means of diet alone.

Only 10% to 15% of dietary iron is being absorbed.

*Mayo Clinic. Iron deficiency anemia. Treatments and drugs.(accesses 7 Sept 2010)

IDA – Treatment & Management

- Iron Absorption Enhancers

- Vitamin C enhance absorption

Fruits: Citrus fruit and juice, kiwi, strawberries, tomatoes etc

- Iron Absorption Inhibitor

Iron binding polyphenol: red wine

Coffee & tea

Eggs

Milk

Try to eat food rich in iron together with orange juice or vitamin C tablet as vitamin C will help increase iron absorption !!

Iron Supplementation:

- Simple and effective to treat & prevent IDA.
- Ferrous iron salts (ferrous fumarate, ferrous sulfate and ferrous gluconate) are the preferred oral preparations of iron as it gives better bioavailability of elemental iron.
- Slow-release tablet are preferred as it is better tolerated and absorption is 29% greater than standard preparation
- Iron supplements should be taken at bedtime or between meals to ensure optimum absorption (Milman.N,2000).

Oral iron treatment

- **Prophylaxis ,100 mg/day elemental iron and 5mg folic acid**
- **Treatment, 180mg/day elemental iron and 5 mg folic acid**

- **High-dose iron therapy**
  - **preferably administered as sustained release iron preparations**
    - **to optimize absorption and reduce GI side effects**

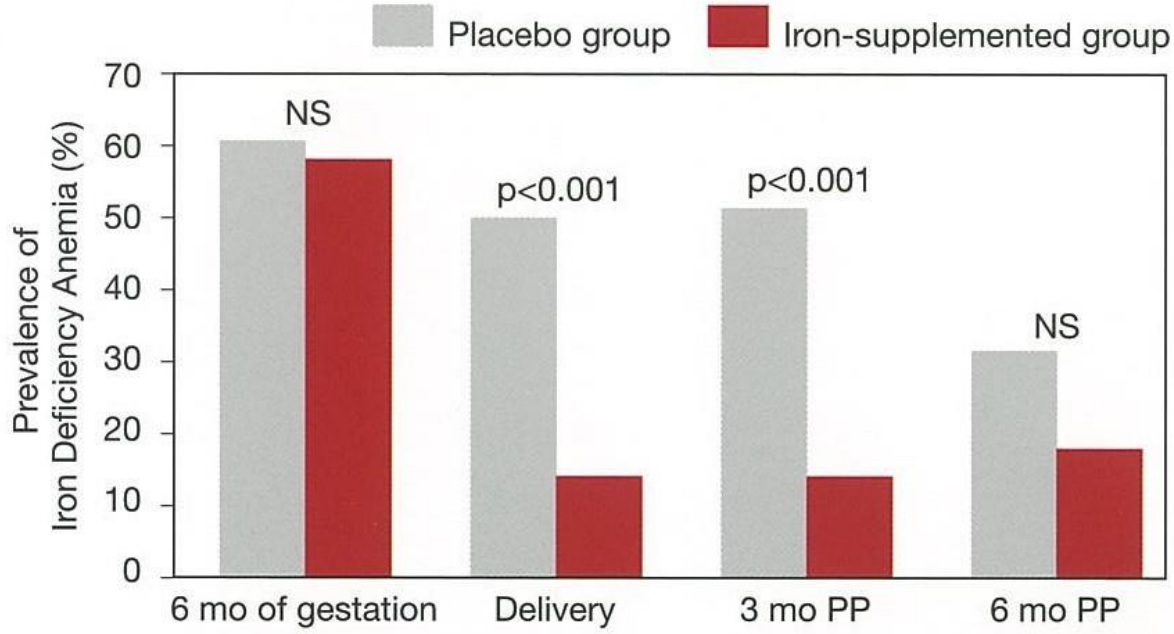
Milman N ,Prepartum anemia:prevention and treatment, Ann Hematol(2008) 87:949–959

Amount of elemental iron

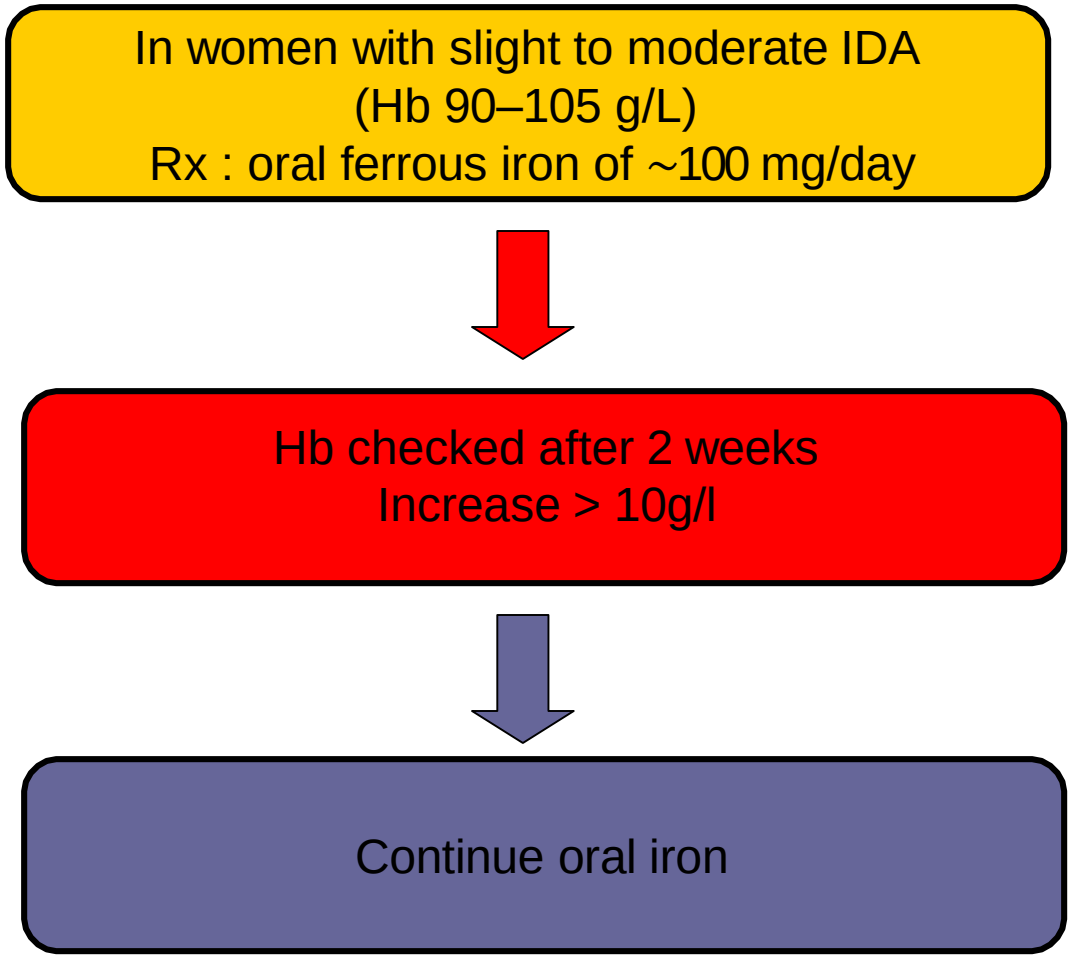
Preparation	Elemental iron (mg/tablet)
Ferrous fumarate (200mg)	60 mg
Iberet	105 mg of ferrous sulphate
Obimin/Obimin plus/ New obimin	30 mg of ferrous fumarate/ferrous sulphate

Iron supplementation reduces IDA

Iron supplementation has significantly reduced prevalence of anemia during pregnancy as well as in post-partum period[6]



Treatment of IDA in pregnancy



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Oral iron prophylaxis

- Would be convenient for the woman if iron supplements could be taken as combined multivitamin–mineral preparations
- Should be given as early as 10 weeks gestation or upon first visit to the clinic, when red blood cell mass begins increasing
- For ID women, supplementation should begin at the time pregnancy is planned.
  - should continue after delivery if iron status remains low, or
  - while the mother is breastfeeding.
- Slow-release tablets are better tolerated and absorption is 29% greater compared with standard ferrous sulphate preparations

Milman N, Iron and folic acid supplementation, Medical Tribune Oct 2010

Oral iron prophylaxis

- Iron prophylaxis should be tailored according to serum ferritin levels
  - 2007 Danish Advisory National Board of Nutrition

- In Southeast Asia, where the prevalence of ID is estimated to be >90%, dosages of 100 mg/day are needed for the majority of pregnant women

Measure serum ferritin before or in early pregnancy	
Serum Ferritin Level	**Recommendation**
> 70 µg/L	**No Iron supplementation needed**
30 - 70 µg/L	**40 mg Ferrous Iron daily taken between meals**
< 30 µg/L	**100 mg Ferrous Iron daily taken between meals**

Milman N, Iron and folic acid supplementation, Medical Tribune Oct 2010

Parenteral iron

- Insufficient or no response to oral iron
- Severe anaemia
- Insufficient absorption of oral iron due intestinal disease
- Need for rapid efficacy
- Intolerance of oral iron
- Poor compliance

Type of parenteral iron

- Iron dextran
  - Preparation: Iron Dextran (Imferon) - Intramascularly
  - Dose: Elemental iron needed (mg) = 0.66 x(Desired HB- Patient's Hb) x Weight (kg) + 500
  - Disadv- persistent pain, skin discoloration

- Iron sucrose
  - Preparation: venofer- Intravenously
  - Dose: Elemental iron (mg)= Normal Hb- patient's Hb) x weight (kg) x 0.24 + 500
  - Less side effect and better tolerated, improved ID in shorter period

Blood transfusion

- Hb < 8 g/dl and POA > 36 weeks
- Hb < 6 g/dl
- Moderate and severe anaemia in patient with known heart disease or severe respiratory disease
- Symptomatic anaemia
- Placenta Praevia with Hb < 10g/dl
- Patient who develop severe side effect to both oral and parenteral iron therapy

Impact of intervention

- restore personal health and raise **national productivity** levels by as much as **20%**
- Reduction in **maternal deaths** : anaemia contributes to **20%** of all maternal deaths

Maternal Iron & Folic Acid Supplementation Improve Lives !!

Iron deficiency anemia. https://apps.who.int/nut/ida.htm accessed on May 2011

In conclusion

- IDA is the most frequent form of anaemia in pregnant women
- Dietary measures are inadequate to reduce the frequency of prepartum IDA
- Pregnant women should be given 100mg/day iron regardless of ID status in 2ndand 3 rd trimester, prophylactically
- Treatment of IDA should aim at replenishing body iron deficits
- Treating and preventing IDA can improve national productivity by 20% and reduce maternal mortality