



# SLMNA

SRI LANKA MEDICAL NUTRITION ASSOCIATION

*Linking Nutrition Research to Practice*

## NEWSLETTER

SLMNA OFFICIAL NEWSLETTER

June 2019



### MESSAGE FROM EDITORS

Welcome to the SLMNA newsletter. Clinical nutrition is an extremely important discipline which is integrally related with good living, health and wellbeing. Effective doctor-patient communication is a central clinical function, and the resultant communication is the heart and art of medicine and a central component in the delivery good nutrition. To a large degree, communication is the hallmark feature of our specialty, whether it's communicating with colleagues (of many different specialties), patients or families. We are frequently responsible for initiating and leading truly great conversations and that's the spirit we want to foster in everything we do as part of the SLMNA newsletter moving forward.

To the end, the SLMNA newsletter is changing in small ways that build on our previous successes in communication and collaboration for our association, its members and clinical nutrition profession. In the essence, we want to develop communication in all the ways and aid SLMNA members to improve patient care, today, tomorrow and generations to come.

This year will be based on the theme of Nutritional Advances in Critical Care, We invite our members to share innovative suggestions in improvement of the newsletter with regard to the timely topic.

*~ Anushka and Himali ~*

### Contents

1. Past events and upcoming events
2. Food of the month
3. Capture of the month
4. Article of the month
5. Case Discussion

## PAST EVENTS

### **1. The Annual General Meeting (AGM) of the Sri Lanka Medical Nutrition Association (SLMNA) was held on the 26th January 2019 at the auditorium at the Lady Ridgeway Hospital.**

The AGM was chaired by the President Dr.Renuka Jayatissa.

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## 2. Stake holder update conference to enhance nutrition in estate sector

The conference was done in collaboration of National Nutrition Secretariat, Sri Lanka Medical Nutrition Association and World Bank on 9th of March at Grand hotel Nuwaraeliya.



## 3. Community based capacity building programme

The community empowerment activity was carried out in 2 estates in Nuwara Eliya Pedro and Waltrim on 9th of March with participation of workers.



## 4. E-Learning

An E-learning programme on Food Composition by FAO, a 10 hour programme was carried out on 30th March 2019 at the Neuro-trauma Auditorium NHSL.

## 5. Dietetic course

The 5 day Dietetic course for the 6th trainee batch in MSc Human Nutrition was carried out at the Post Graduate Institute of Medicine, Colombo organized by SLMNA. The course was conducted by Prof. Seema Puri, Associate Professor in Dietetics, From University of New Delhi. After Successful completion of the course the participants were awarded certificates of completion at the Hotel Golden Rose on 10th April 2019. The event was graced by the President SLMNA Dr.Renuka Jayatissa and members of SLMNA.



## 6. Nutrition Review meeting of year 2018

Nutrition review meeting organized by the Ministry of Health, Nutrition and Indigenous Medicine in collaboration with SLMNA for year 2018 was successfully held at MRI auditorium 10th of April 2019 with the participation of island wide serving medical officers of nutrition.

Teaching Hospitals	OPD and clinic referrals	Ward Referrals	ICU referrals
National Hospital of Sri Lanka	2954	856	6620
Lady Ridgeway Hospital for Children	1957	1789	970
Colombo South Teaching Hospital	856	629	843
Colombo North Teaching Hospital	2374	870	167
Teaching Hospital Kandy	1271	449	233
Teaching Hospital Peradeniya	876	369	55
Sirimavo Bandaranayake Specialized Children's Hospital- Peradeniya	1760	284	53
Teaching Hospital Kurunegala	1021	319	578
Teaching Hospital Anuradhapura	1046	514	364
Teaching Hospital Batticaloa	413	303	109
Teaching Hospital Karapitiya	756	350	93

Special Care Units	OPD and clinic referrals	Ward Referrals	ICU referrals
Apeksha Hospital	2440	5475	3429
Castle Street Hospital for women	2213	1734	64
Sri Lanka Navy Hospital	898	195	46
De soyza Maternity Hospital for women	2223	-	274
National Institute of Mental Health	119	506	-
Rheumatology and Rehabilitation Hospital Ragama	628	345	-
National Institute for Nephrology, Dialysis and Transplantation	801	415	95

Other Hospitals	OPD and clinic referrals	Ward Referrals	ICU referrals
BH Panadura	595	116	155
DGH Mathale	672	621	269
DGH Hambanthota	898	197	95
GH Kalutara	1070	163	233
DGH Matara	266	27	-
GH Nuwaraeliya	393	172	222
DGH Negambo	452	136	199
GH Sri Jayawardhanapura	-	1266	376
BH Gampola	389	135	61

## UPCOMING EVENTS

1. *Critical Care Workshop*
2. *Nutrition in Emergencies Workshop*

# FOOD OF THE MONTH

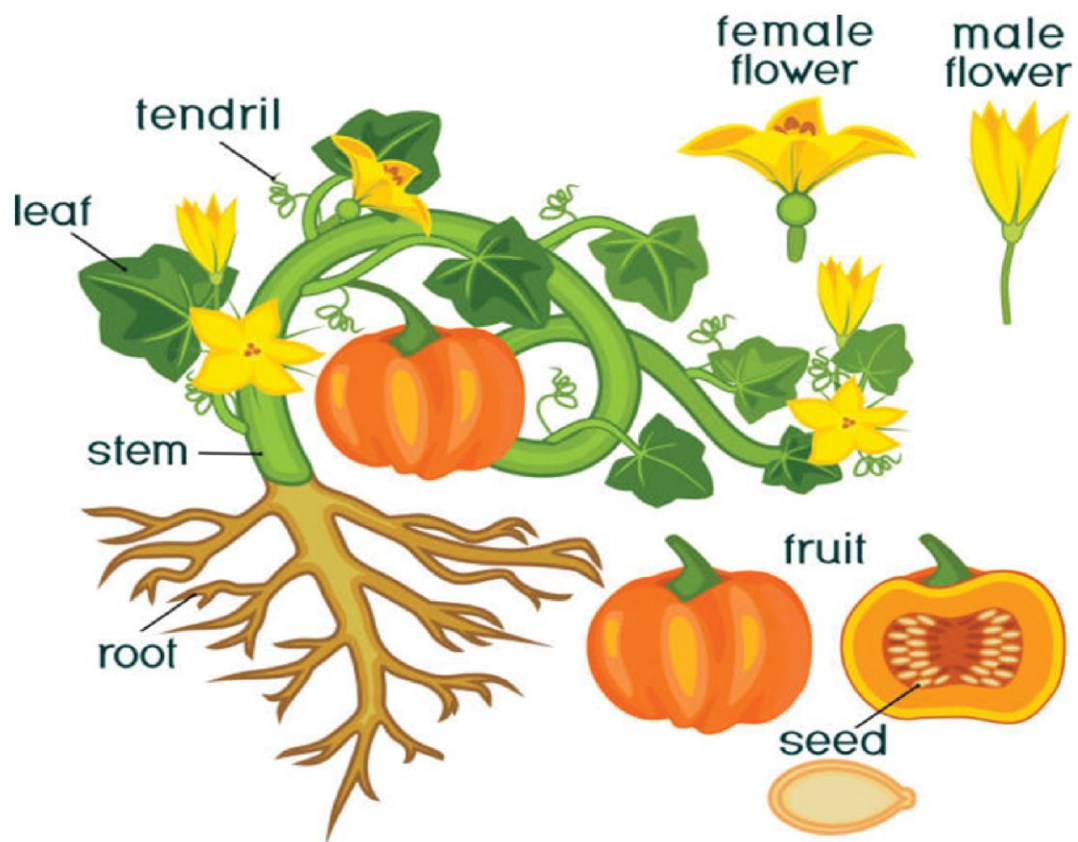
## PUMPKIN

*Cucurbita maxima*

Dr. Udari Arunodika

MBBS, Post Graduate Trainee of Msc in Human Nutrition

Pumpkin is a cultivar of squash plant. It is a golden goose of nutrients. Pumpkin fruit, seed and greens are a powerful nutritional pack.



*Pumpkin belongs to Cucurbitaceae family. It is native to Central America.*

Pumpkins range in weight from less than 0.5 kg to more than 50 Kg. It can be cultivated in dry as well as intermediate zones. In Sri Lanka it is cultivated in two seasons “Yala” and “Maha”.

# Amazing Pumpkin

The most important part of the pumpkin is its low fat and protein rich seeds. The second most important part is its fruit. The immature fruit is cooked as a vegetable, while the mature fruit is sweet and use to make confectionery and beverages, sometimes alcoholic.

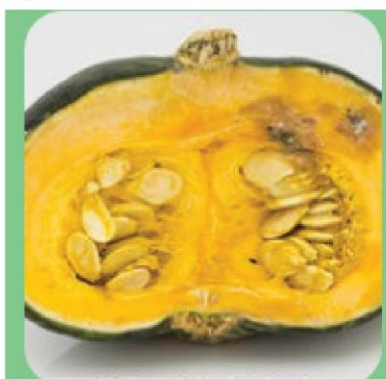
Several varieties of pumpkin are cultivated in Sri Lanka, including local varieties such as Ash Pumpkin, Malaysian, Batana, Villachchi, Moragollagama, Samson, Meemini, Ruhunu, Janani and there are imported hybrid varieties such as Arjuna, Suprima, Abhishek, Lara, Pragathi.

Sri Lanka's indigenous medical system uses parts of the pumpkin fruit as well as leaves in their treatments for abscesses, ulcers, burns, urinary tract diseases, scalds and worm infestation.



The Nutritional value of pumpkin fruit is high and varies from one species or cultivar to another. Pumpkin is rich in Vitamin C, B1, B6, K and in minerals such as potassium, sodium, chromium, phosphorus, magnesium, zinc, copper, iron, molybdenum and selenium. It contains various biologically active components such as polysaccharides, par-aminobenzoic acid, fixed oils, sterols, proteins and peptides. Pumpkin pulp has large amounts of carotenoids such as  $\beta$  carotene,  $\beta$  cryptoxanthin and  $\alpha$  carotene. Pumpkin seeds contain remarkably high proportion of essential amino acids and useful amounts of essential fatty acid, linolenic acid.

Water soluble carbohydrate profile of pumpkin composed of glucose, fructose, sucrose, sorbitol, mannitol, stachyose, raffinose, verbascose, kestose and nystose. These are nutritionally important as prebiotic carbohydrates.



## Safety

\*Cut raw pumpkin should be used by 3 - 5 days should otherwise be and discarded.

\*If pumpkin has soft spots or black spots, or moldy inside should be thrown away.

## Quality

\*Select pumpkin with an intact rind and stem.

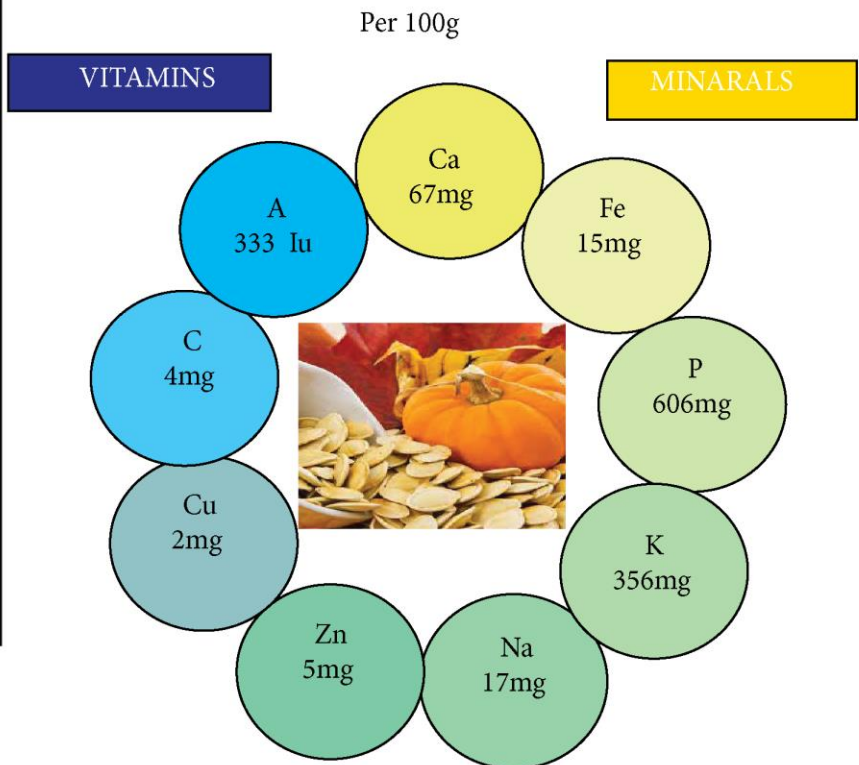
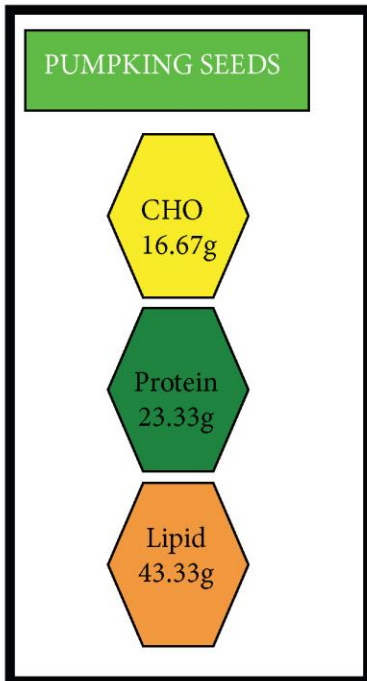
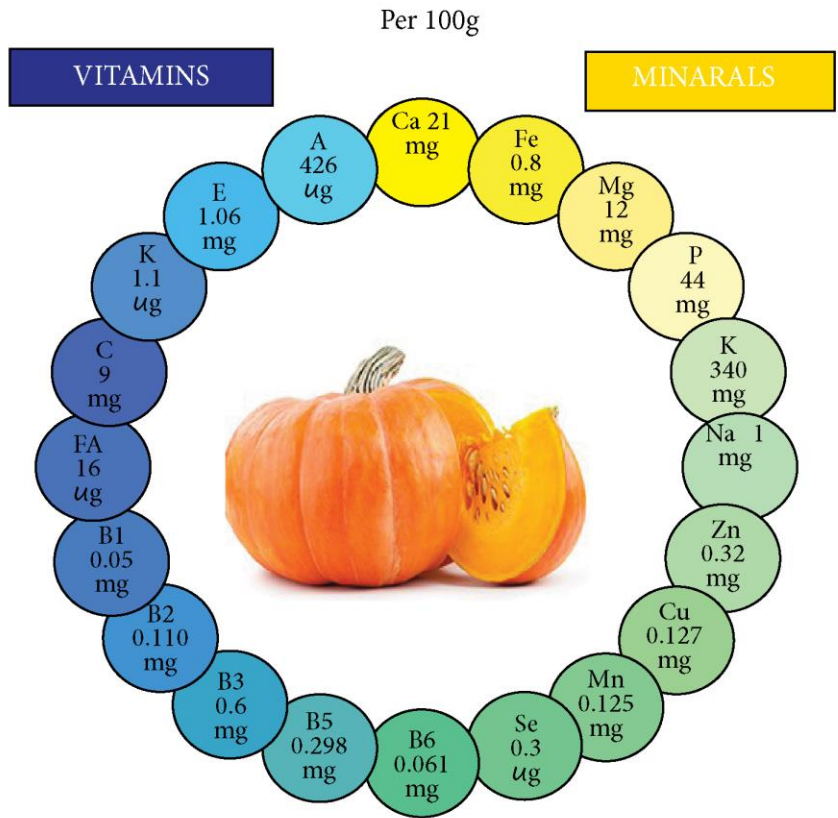
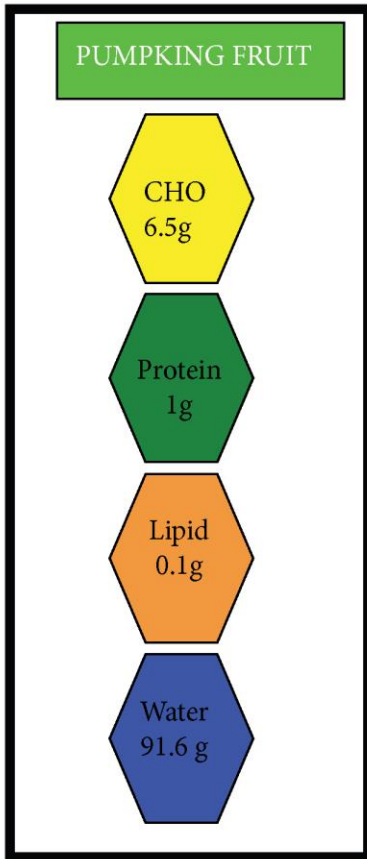
\*If stem is missing or rind has been punctured, it will not be stored for long.

\*should be hard and fully coloured and should feel solid.

## Storage

\*Can be stored in a cool dark place for 3 months or longer if the rind and stem stay intact.

\*Store all produce 3 - 6 inches off the floor.





# Pumpkin and Health



## Protective from chronic diseases

Antioxidant property of vitamins and minerals give the protection from chronic diseases including degenerative diseases, cardiovascular diseases and cataract. Antioxidant property delays aging. Phenolic compounds are associated with the antioxidant activity and play an important role in the stabilization of the lipid peroxidation.



## Anti carcinogenic effect

Diets high in pumpkin seeds lower the risk of gastric, breast, lung and colorectal cancers, to be gained from the various carotenoid pigments found in pumpkin seed oil. The carotenoids from pumpkin fruits have been linked to the prevention of prostate cancer.

## Boosts the immunity

Vitamins including vitamin A and vitamin C, boost the immunity.

## Antimicrobial Activity

Various broad spectrum anti microbial components have been isolated from pumpkins. It has been reported that exudates of pumpkin fruits possess anti fungal activities via inhibition of pathogenic fungal proteases.

## Protects the eye sight

Vitamin A, Lutein and Zeaxanthin in pumpkin will help to provide a good vision.

## Promotes weight loss

Low calory density of pumpkin helps in weight reduction.

## Makes heart healthy

Sterols and fibers in pumpkin reduce the absorption of cholesterol.

## Make skin healthy

Antioxidants in pumpkin provides a glowing healthy skin.

## Helps to maintain healthy bones

Pumpkin seeds are a rich source of Magnesium, which helps to maintain healthy bones.

## Anti Diabetic Activity

These effect might be due to either increased pancreatic insulin secretion from the existing  $\beta$  cells or insulin release from the bound form. Phenolic phytochemicals of pumpkin have anti diabetic effects in terms of  $\beta$  glucosidase and  $\alpha$  amylase inhibition.



## Treatment of Genito-urinary tract diseases

Pumpkin seed oil has also been reported to be an effective treatment for symptomatic Benign Prostatic Hyperplasia. Its actions have been suggested to be due to phytosterols, which are known to inhibit 5  $\alpha$  reductase. It was reported that the oil preparation could reduce bladder pressure, increase bladder compliance and reduce urethral pressure.

## Hypotensive Activity

Pumpkin has hypotensive effects in terms of Angiotensin 1 converting enzyme inhibitory activities.

## Anthelminthic action

Pumpkin seed extracts may be used to control of Gastrointestinal nematode infections.

## Anti-inflammatory substances

Pumpkin considered as a good source of anti inflammatory substances, which can help in many diseases such as Arthritis.

## Anti-depressant Activity

Pumpkin may ease depression, as seeds contain L-tryptophan, which raises the levels of serotonin in brain.

# Scrummy Pumpkin



*Spicy pumpkin soup*



*Baked, spicy pumpkin fries*



*Pumpkin smoothie*



*Pumpkin Pan cake*



*Roasted pumpkin seed snack mix*



*Pumpkin pudding*

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## CAPTURE OF THE MONTH

**“Alone we can do so little;  
together we can do so much”**

-Helen Keller-



# ARTICLE OF THE MONTH

## ANEMIA IN PREGNANCY

**Dr. Shashika Liyanage**  
MBBS, MSc (Human Nutrition)

Iron deficiency is the most common deficiency in the world, more than 2 billion people globally affected by it. According to the National Nutrition and Micronutrient Survey of Pregnant Women in Sri Lanka 2015,

- Prevalence of anemia among pregnant women is 31.8 percent.
  - 9.9% due to iron deficiency
- Several studies done in Sri Lanka have concluded that anemia in pregnancy is still a public health problem in Sri Lanka, in spite of the interventions have been carried out to prevent anemia in pregnant women.

### Definition:

Anemia is defined as a hemoglobin level of less than 11g/dl, irrespective of the period of gestation. It is subdivided according to severity.

Severity	Hemoglobin
Mild	10- 10.9 g/dl
Moderate	7 - 9.9 g/dl
Severe	< 7 g/dl

### Physiological changes in pregnancy

#### Plasma volume expansion and Red cell mass expansion

During pregnancy the plasma volume increases by 40-50% and the red blood cell volume increases only by 20-30%. Ultimately, marked increase in total blood volume.

These changes occur mostly in the second trimester and prior to 32 weeks gestation. Due to hemodilution, the net result is a decrease in hematocrit or hemoglobin. The rise in plasma volume is more marked in multiple gestations, already reduced iron stores, restrict elevations in the red cell mass, an effect that becomes more evident later in the pregnancy. Erythropoietin, which stimulates red blood cell production, increases throughout pregnancy and reaches approximately 150 percent of their pregnancy levels at term.

### Iron requirement in pregnancy

In the first trimester, daily needs decrease due to the absence of menstruation. This represents a saving of approximately 0.56 mg of iron per day, or 160 mg for the pregnancy. Ongoing losses from the gut, skin and urine (which continue throughout the pregnancy) are calculated at approximately 14 mg/kg/day (about 230 mg for the pregnancy).

### Causes of anemia in pregnancy

- The main cause is nutritional anemia. Out of all nutritional anemia's iron deficiency is the commonest. The absorption of iron is less in the first trimester and increases from the second trimester onwards. Anemia is the

end-point of iron deficiency and indicates depletion of iron stores in the body. Therefore a non-anemic woman could be deficient in iron. Additionally, there may be multiple nutritional deficiencies co-exist. (e.g. folate, vitamin B12)

- Hereditary: Thalassemia, hemolytic anemia's (spherocytosis & G6 PD deficiency)
- Chronic conditions - TB / Rheumatoid Arthritis / Bone marrow depression, malignancies, chronic renal disease

### Causes of anemia in pregnancy

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2. Hereditary: Thalassemia, hemolytic anemia's (spherocytosis & G6 PD deficiency)
3. Chronic conditions - TB / Rheumatoid Arthritis / Bone marrow depression, malignancies, chronic renal disease.
4. Poor dietary habits- Inadequate intake of iron rich foods and poor absorption of iron (Intestinal disorders, Bad dietary habits that prevent iron absorption ex: Drinking tea after main meals).

5. Chronic blood loss due to helminthiasis, Heavy menstrual periods before pregnancy, Antipartum hemorrhage, hemorrhoids.
6. Poor compliance to iron, folic acid supplements during pregnancy.

### Risk factors for anemia in pregnancy

1. Teenage pregnancy
2. Multiple pregnancies
3. High parity
4. Short birth interval

### Complications of iron deficiency anemia in pregnancy

#### A. Maternal complications:

1. General health problems such as, headache, lethargy, fatigue. Poor work capacity and performance and disturbances of postpartum cognition and emotions. In severe cases associated with cardiac failure
2. Spontaneous abortions
3. Peripartum blood loss and placental abruption
4. Post-partum hemorrhage

#### B. Fetal complications:

1. Pre mature delivery
2. increases the risk of iron deficiency in the first 3 months of life,
3. Low birth weight
4. Fetal death

### Screening of anemia in pregnancy

Full Blood count should be assessed at booking visit and 28 weeks of gestation to see Hemoglobin levels in each and every pregnant mother. Women with high risk for anemia another full blood count should be done around 20-22 weeks of gestation.

### Biochemical parameters used to diagnose iron deficiency anemia in pregnancy

#### 1. Full Blood Count

Low Hemoglobin, Low MCV, MCH, and MCHC.

High RDW (red cell distribution width)

#### 2. Blood picture

Hypochromic microcytic with pencil shaped cells and target cells

3. A serum ferritin concentration <15 micrograms /L

4. Transferrin saturation <15%

5. Serum iron <60 micrograms/dl

6. Total iron-binding capacity <15%

7. Zinc protoporphyrin (ZPP).

ZPP increases when iron availability decreases, as zinc, rather than iron, is incorporated into

the protoporphyrin ring.

This gives an indication of availability of iron to the tissues.

8. Trial of therapeutic iron therapy for 2 weeks

A trial of iron therapy is simultaneously diagnostic and therapeutic. Ferritin should be checked first if the patient is known to have a haemoglobinopathy. But otherwise microcytic or normocytic anemia can be assumed to be caused by iron deficiency until proven otherwise. A rise in Hb > 0.5g/dl should be demonstrable by 2 weeks and confirms iron deficiency.

### Management of iron deficiency anemia in pregnancy

The aim of management is to achieve a hemoglobin level >10g/dl by the time of delivery.

All women should be given advice regarding diet in pregnancy with details of foods rich in iron along with factors that may promote or inhibit the absorption of iron. Dietary changes alone are not sufficient to correct an existing iron deficiency in pregnancy and iron supplements are necessary.

- Women with mild anemia should receive 60 mg elemental iron daily with reinforcement of advice regarding compliance and diet

- The therapeutic dose of oral iron for women with moderate to severe anemia is 120 mg elemental iron per day (taken as two separate doses of 60 mg).

- Antihelminthic treatment and dietary advice should be given

#### 60 mg of elemental iron equals

- 300 mg of ferrous sulfate
- 180 mg of ferrous fumarate
- 500 mg of ferrous gluconate.

Women should be adequately counselled to how to take oral iron supplements correctly. This should be on an empty stomach, 1 h before meals, with a source of vitamin C (ascorbic acid) to maximize absorption. Other medications like calcium supplements or antacids, tea or coffee should not be taken at the same time. Repeat HB 2 to 4 weeks after treatment.

## Response to oral iron

The hemoglobin concentration should rise by approximately 20 g/l over 3–4 weeks. A repeat Hb at 2 weeks is required to assess response to treatment. The timing of further checks will depend upon the degree of anemia and period of gestation. Once the Hb is in the normal range, treatment should be continued for a further 3 months and at least until 6 weeks postpartum to replenish iron stores.

## Parenteral iron therapy

Parenteral iron can be considered from the second trimester onwards and during the third trimester for women with confirmed iron deficiency who fail to respond to or are intolerant of oral iron. Intravenous iron is the appropriate treatment for those patients with active inflammatory bowel disease where oral preparations are not tolerated or contraindicated.

- Parenteral iron therapy is indicated when there is absolute non-compliance with, or intolerance to, oral iron therapy or proven malabsorption.

- Parenteral iron therapy for iron deficiency anemia in pregnancy, causes faster increases in Hb and better replenishment of iron stores in comparison with oral therapy. Facilities for management of anaphylaxis must be available.

- The dose is calculated based on the hemoglobin deficit and body weight, according to manufacturer's recommendation.

- Total iron deficit =  $\text{Body weight(kg)} \times (\text{TargetHb} - \text{Actual Hb})/\text{g/l} \times 2.4 + \text{Iron stores.}$

- 500mg of iron stores recommended if body weight above 35 kg.

- The maximum recommended daily and weekly doses must not be exceeded.

## Contraindications to IV iron therapy.

1. First trimester of pregnancy.
2. Previous hypersensitivity to IV iron.
3. Acute infection/inflammation.
4. Clinical or biomedical evidence of liver damage.
5. Asthma
6. Acute renal failure
7. Active Rheumatoid Arthritis

## Parenteral iron preparations available:

1. Iron Sucrose
2. Iron Sorbitol- Efficacy same as the Iron Sucrose. Adverse events such as pain, swelling and blackening at the site of injection were common with Iron Sorbitol.
3. Iron Dextran- severe anaphylactic reactions were reported with intravenous iron dextran. Low molecular weight Iron Dextran can be given intramuscularly. However injections tend to be painful and there is significant risk of permanent skin staining. Therefore its use is discouraged.

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# CASE DISCUSSION

## Importance of nutrition in Tuberculosis

By Dr. Pearl Mallawaarachchi MBBS, MSc(Human Nutrition)

### Introduction

Tuberculosis (TB) is one of the major causes that result in illness and death all over the world mainly in developing countries. In Sri Lanka according to the epidemiology unit data 2015, the estimated prevalence of all forms of TB was 103 per 100,000 population. Most cases of TB reported at the patients' economically productive period. The infection can affect lungs, central nervous system, bones, and joints lymphatic, circulatory and genitourinary systems.

Tuberculosis meningitis is a critical illness having a fatal outcome and can lead to permanent damage. Therefore the disease needs rapid diagnosis and treatment. Amidst all the treatment nutrition also plays a major role. Nutritional deficiencies can inhibit the effort to treat TB by interfering with the action of medication by reducing the pharmacodynamics effectiveness.

There is both fat and lean mass loss which persists for several months after initiation of anti TB treatment. Though treatment leads to increase in body weight it is mostly due to fat mass. Anaerobic and resistant exercises also important to increase the fat free mass when the patient is recovering.

Depending on the nutritional status of the patient 35-40kcal/kg/d of energy and 1.2-1.5g/kg/d of proteins should be delivered. Adequate energy helps in weight gain during TB treatment.

Determination of whether malnutrition leads to the TB or TB leads to malnutrition is difficult. Malnutrition leads to impairment of cell mediated immunity, phagocytic function, antibody concentration and cytokine activity. In regards to micronutrients, patients present with reduced retinol levels, vitamin C, E, zinc, iron and selenium compared to healthy person. Reduced levels of above micronutrients are associated with impaired immunity. Isoniazid is an antagonist of vitamin B6 and rifampicin may interfere with folate and vitamin B12. These both drugs are associated with reduced vitamin D levels in the blood. Vitamin D deficiency is associated with past and latent tuberculosis infection.

For metabolic pathways, cellular immune function vitamin A, C, D, E, B6, folic acid, zinc, copper, iron and selenium needed. Deficiency of one or many micronutrients can decrease the resistance to infection. Vitamin B6 supplemented in recently infected patients, to patients who have high risk of disease progression or to patients who are with low B6 levels.

### Case history

31 y old female admitted to NHSL with fever, headache, vomiting and joint pains for 1 week duration. She was diagnosed to have TB meningitis and anti-tuberculosis treatment (ATT) started. She was emaciated with BMI of 18kgm<sup>-2</sup> and MUAC of 23.5cm. Her food intake was markedly reduced initially during the illness.

According to her 24h recall her calorie intake was 25% of requirement and protein intake was around 0.5g/kg/d.

On third day following admission she was given a nutritional plan to deliver 40kcal/d of energy 1.5g/kg/d of protein with high quality proteins. Standard polymeric formula added to supplement the calorie and protein deficit. Added vitamin B6 25mg/d, vitamin A, D, E, C, folic acid, zinc, copper and selenium.

She gradually improved with medication. Prescribed food and supplements continued. Appetite was improved following ATT and she was willing to take prescribed nutrition plan following counselling. After 10 days she had 2kg weight gain and BMI was 18.9kgm<sup>-2</sup>. MUAC was 24.2cm. She was clinically well, happy and had a well-nourished appearance with comparison to the admission.

### Discussion

The importance of nutrition for TB treatment is not well understood in our health system. Micronutrient supplementation not considered as important. Especially ATT can cause micronutrient deficiency. Nutritional deficiencies reduce the drug effectiveness in a patient with TB. Proper nutrition plan, counselling and correction of malnutrition play a major role in recovery of the patients.

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