VITAMIN

D

A

Prof Dr Najlaa Fawzi

VITAMIN D

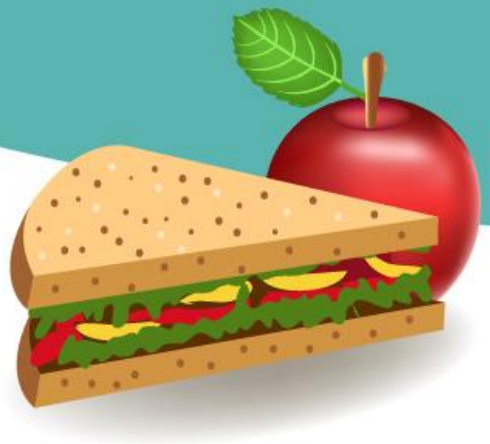
Functions of vitamin D

Vitamin D is needed at times of rapid growth that is, in infants and young children, adolescents, and pregnant women.

It has the following functions:

a) Promotion of absorption of calcium and phosphorous from the intestine.

b) Calcification of bone matrix

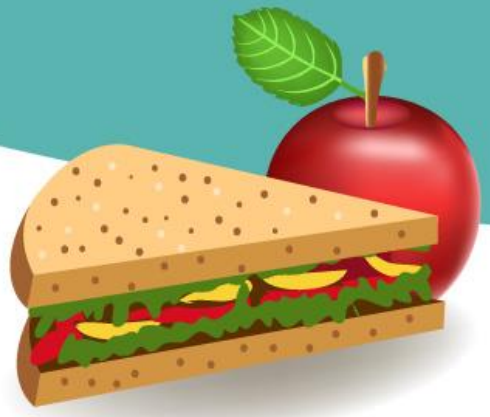


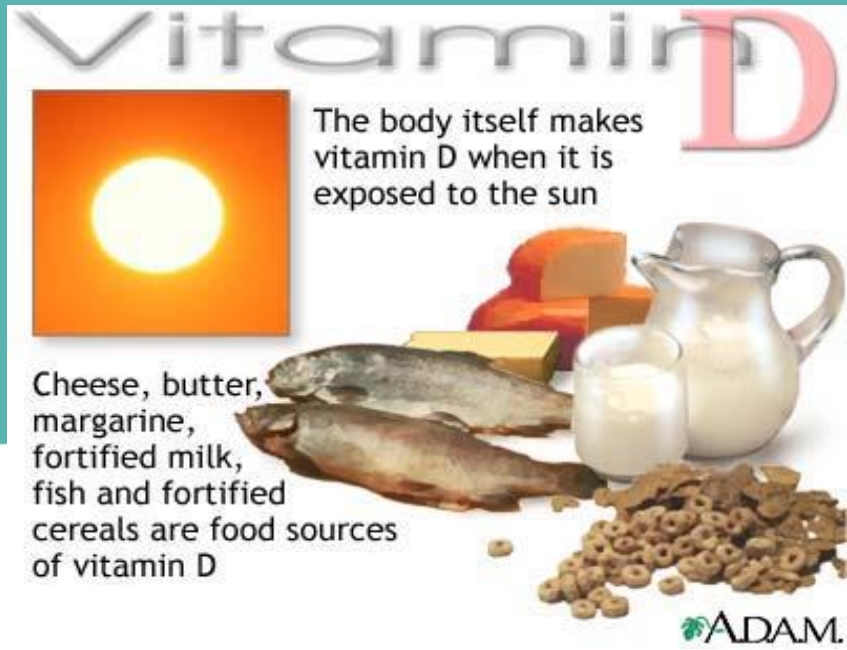
Sources of vitamin D

a-The ultraviolet rays (UVRs) activate the pro vitamin (7-dehydrocholesterol) in the deep layers of the skin , but it can be filtered by air pollution and glass.

b- Food sources are only of animal origin e.g., milk, butter, cheese, fatty fish (salmon and sardines), eggs, liver and cod-liver oil.

c- Fortified milk.





Vitamin D deficiency
(Rickets and osteomalacia)

Rickets is a systemic disease of the growing skeleton characterized by defective calcification of the bones during growth.

The term osteomalacia is applied to the same pathological condition when it affects a skeleton that has completed its growth

SIGNS You May Have a VITAMIN D DEFICIENCY

Top 10 Home Remedies

To explore more, visit

www.Top10HomeRemedies.com

Less sun => Less Vitamin D => Less Health

Less Sun

Less time outdoors

- Air Conditioning
- TV & internet & video games
- Live in smoggy cities
  or in suburbs with little walking
- Less work outdoors
- Fear skin cancer and wrinkles

Less sun when outdoors

- Sunscreen
- Protective clothing

Additional reasons at:
is.gd/lowvitamind

Henry Lahore 10/2015 VitaminDWiki
details at is.gd/sundisease

Less Health

ALS, Asthma, Autism, Breast Cancer, Cognitive Decline, Congestive Heart Failure, Cystic Fibrosis, Dental, Depression, Diabetes, Falls/fractures, Fibromyalgia, Kidney, Headache, Hypertension, Infection (anti-biotics), Influenza, Lupus, MS, Osteoarthritis, Osteopenia, Osteoporosis, RA, Rickets, Pain-Back, Parkinson's, Psorasis, Prostate Cancer, Pregnancy problems, Raynaud's, Tuberculosis, Ulcer -leg, Weight gain

Strong Proof
that increase in Vit D decreases incidence and/or treats

Allergy, Alzheimer's, Anemia, Bone, Cancers, Celiac, Chronic Fatigue, Chronic Pain, COPD, Fertility, Heart Disease, HIV, IBD, Metabolic Syndrome, MRSA, Myopathy, Sepsis, Thyroid

Associated
with low Vit D for most people with the disease

Acne, Ebola, Hearing, Liver, Rosecea, SAD, Shingles, Shin Splints, Suicide, Vision

Suspected
relationship with low Vitamin D

Ecological factors for Vitamin D deficiency:

- Biological
- Dietary
- Social
- Environmental

1- Biological factors

a- Order of the child: The later the child of an undernourished mother, the higher the probability of developing Vit. D deficiency.

b- Twins

c- Low birth weight

d- High parity will lead to osteomalacia

2-Dietary factors

a-Deficient intake of Vitamin D or calcium

b- Presence of phytic acid and oxalates in diet preventing calcium absorption.

c- Artificially fed babies

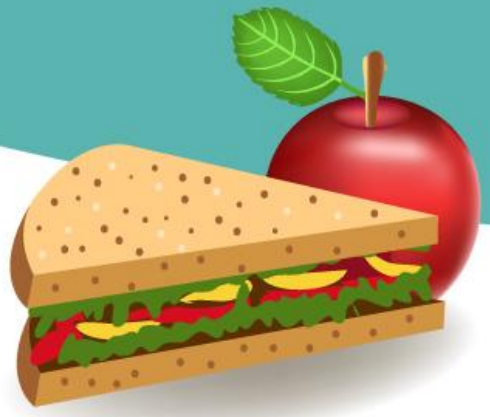
3- Social Factors

a-Poverty

b-Ignorance of mothers about proper feeding and rearing of children

c-Cultural factors as wrapping infants and preventing exposure to sunshine, and early marriages of girls who are still in need of dietary calcium.

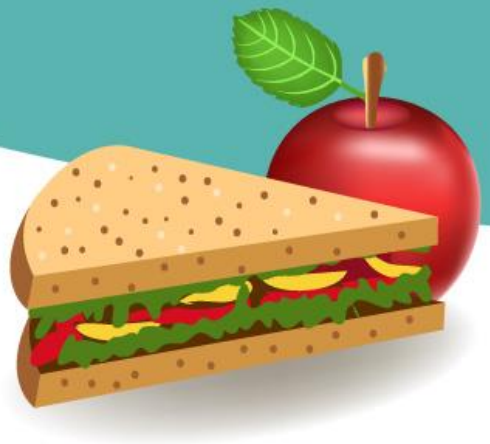
d-Living in dumpier areas.



4- Environmental factors

a-Amount of sunshine and ultraviolet rays (UVRs). In cloudy and dusty atmosphere the UVRs are absorbed .

b- High prevalence in rural areas due to ignorance, poverty and unhealthful social habits



Prevention of vitamin D deficiency

- Health & nutrition education
- Socioeconomic development
- Prevention and control of air pollution.
- Enrichment of milk or baby formula with vitamin D.
- Vitamin D supplements for the high-risk groups.

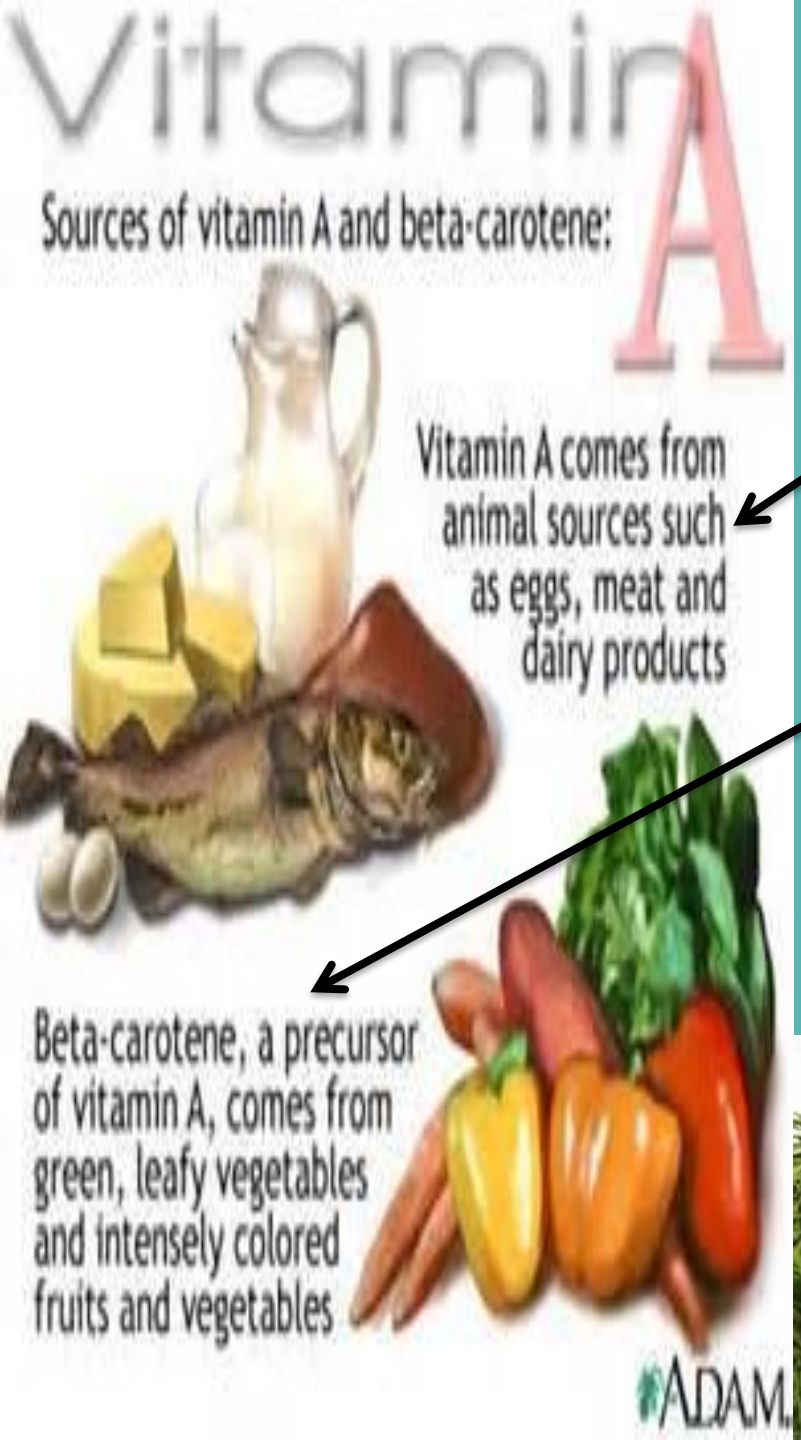

Vitamin A

Vitamin A

Requirements: **Retinol requirements are influenced by factors related to its**

two basic forms in food sources

and its storage in the body, illness and GIT or hepatic defect



Preformed vit A is available only in Foods of animal origin, rich sources of vit A

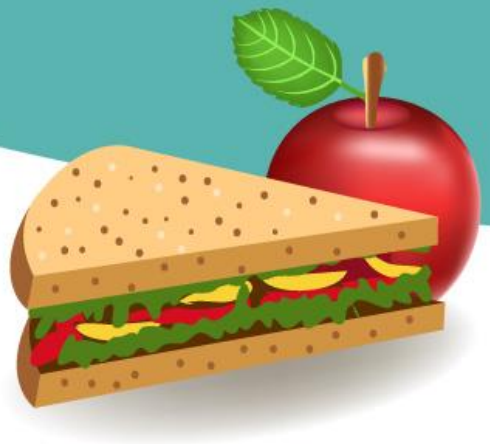
carotene – the pro vitamin A , which is a pigment in yellow and green plants that the body converts to vit A .

The established RDA standard for adults is 800 ug for women and 100 ug for men.

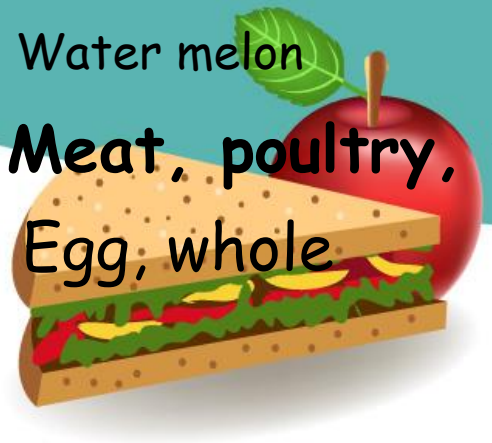
The units are currently measured in *retinol equivalents* (REs) , one RE is equal to 6µg of retinol and 6 ug of carotene.

FOOD SOURCES OF VITAMIN A

Bread, cereal ,rice, pasta: this food group is not an important source of vit A.



Vegetables	Quantity	Vitamin A (ug RE)
Carrots [raw]	1/2 cup	2379
Green beans	1/2 cup	102
Green peas	1/2cup	144
Spinach	1/2 cup	2187
Fruits		
Apricot [dried]	4 halves	490
Apricot [fresh]	3med	867
Banana	1med	69
Orange juice	1/2 cup	75
Water melon	1wedge	753
Meat, poultry, fish, eggs		
Egg, whole	1large	78



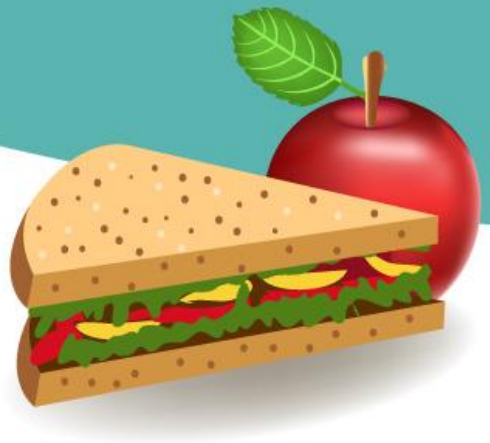
Milk, dairy products		
Cheddar cheese	28g	90
Milk, whole	1cup	101

CAUSES OF VITAMIN A DEFICIENCY

The major cause is diets which include few animal sources of pre-formed vitamin A.

In addition to dietary problems, there are other causes of vitamin A deficiency.

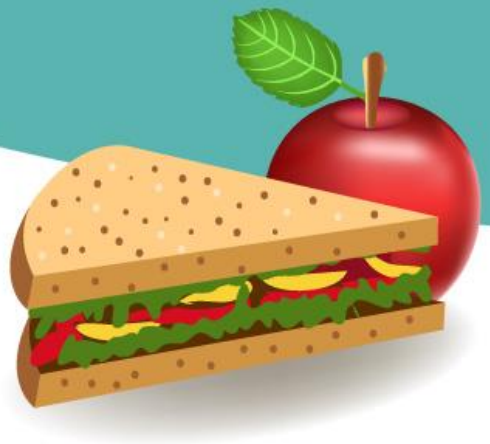
Iron deficiency can affect vitamin A uptake.



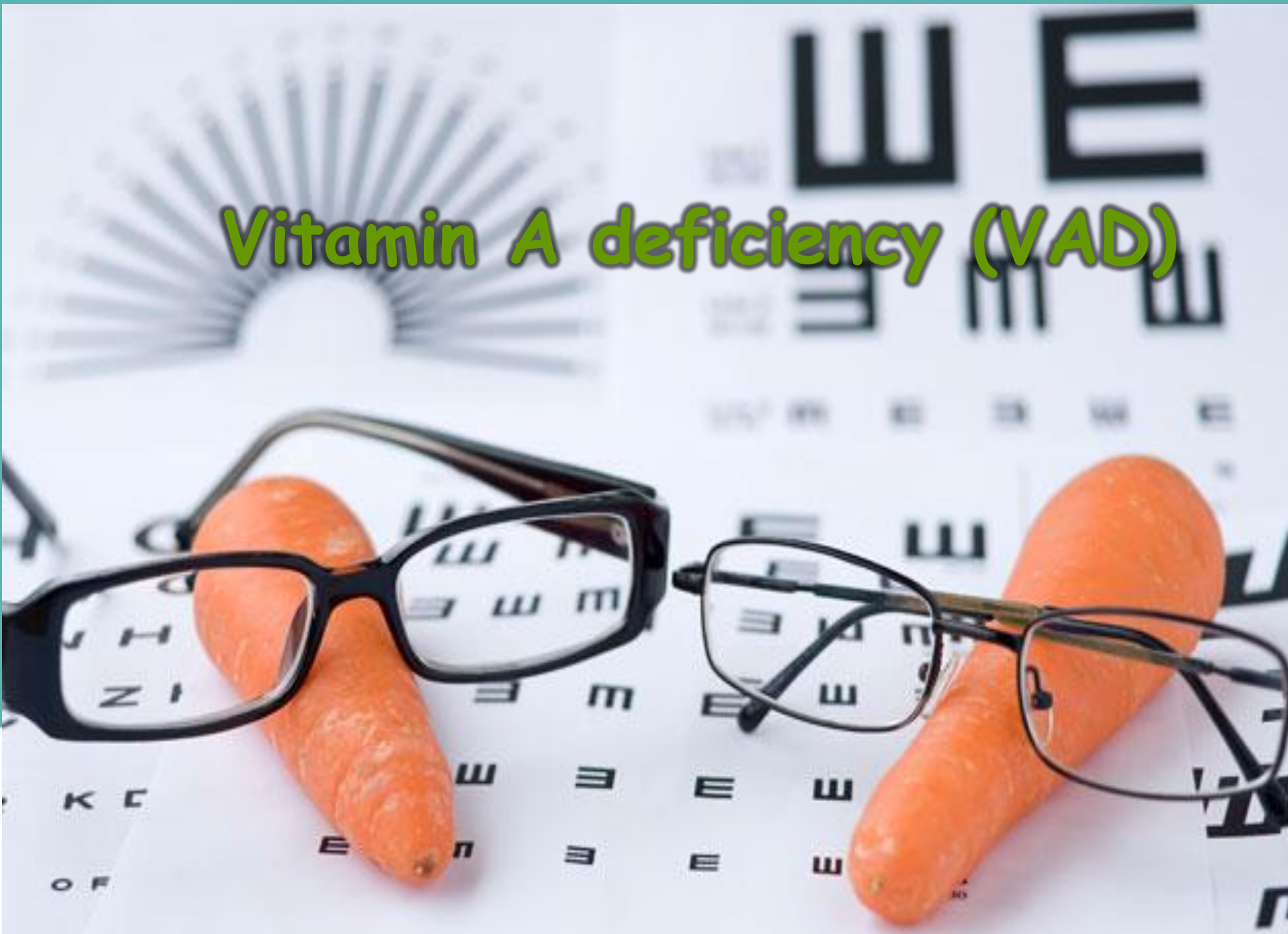
Secondary vit A deficiency occurs due to

1- poor absorption due to lack of bile or defective absorbing surface

2- inadequate conversion of carotene because of liver disease(liver cirrhosis) or intestinal diseases.



Vitamin A deficiency (VAD)

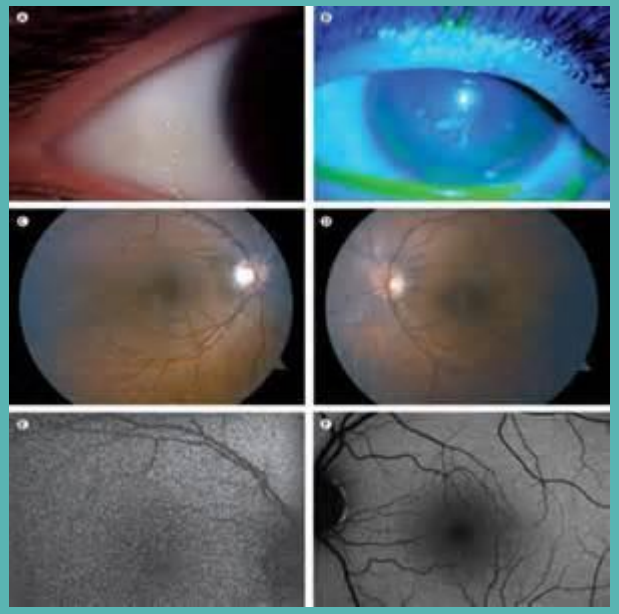


Vitamin A deficiency (VAD):

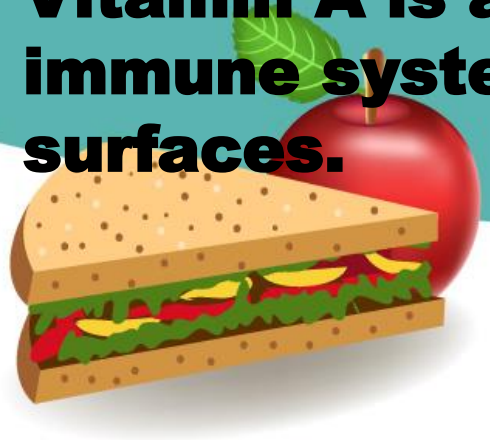
Deficiency of vitamin A is associated with significant morbidity and mortality from common childhood infections and is the world's leading preventable cause of childhood blindness, and increases the risk of disease and death from severe infections. In pregnant women VAD causes night blindness and may increase the risk of maternal mortality.

An estimated 250 million preschool children are vitamin A deficient and it is likely that in vitamin A deficient areas a substantial proportion of pregnant women is vitamin A deficient.

Severe vitamin A deficiency is associated with Xerophthalmia and ulceration of the cornea, a condition that can lead to total blindness.



Vitamin A is also involved in the function of the immune system and in maintaining epithelial surfaces.



A vitamin A deficient child faces a 25% greater risk of dying from a range of childhood ailments such as measles, malaria or diarrhoea

In fact, vitamin A supplementation was shown to reduce child mortality rates by 23% in areas with significant levels of vitamin A deficiency.

vitamin A deficiency as a public health problem

Requiring intervention when at least one of two specifications is met:

1) The prevalence of low serum retinol is within the range specified and another biological indicator (including night blindness, breast milk retinol, relative dose response, modified dose response, or conjunctival impression cytology),also indicates widespread deficiency; and/or

2) The prevalence of low serum retinol indicates widespread deficiency and at least four demographic and ecologic risk factors are met, including:

1-infant mortality rate higher than 75/1000 live births and under-5-year mortality rate of higher than 100/1000 live births.

2-full immunization coverage in less than 50% of children at 12-23 months of age.

3- less than 50% prevalence of breastfeeding in6-month-old infants.

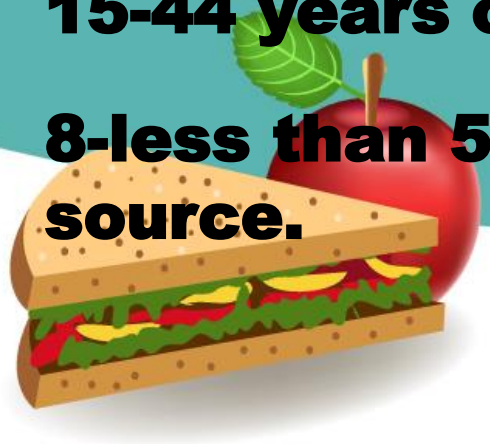
4-median dietary intake lower than 50% of recommended safe level of intake among75% of children 1-6 years of age.

5-two-week period prevalence of Diarrhea 20% or higher.

6-measles case fatality rate 1% or higher.

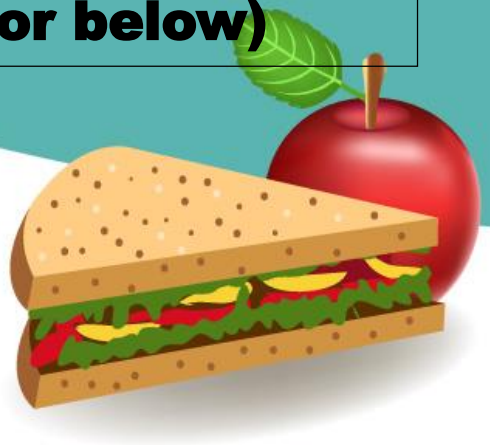
7-no formal schooling for 50% or more of women 15-44 years of age.

8-less than 50% of households with a safe water source.



Prevalence of low serum retinol (0.70 µ mol/l or below) to define a public health problem and its level of importance among children 6-71 months of age

	Degree of public health problem		
	Mild	Moderate	Severe
Prevalence of low serum retinol (0.70 µmol/l or below)	2-9%	10-19%	20 % or more



Assessment of serum retinol permits both the monitoring of trends of vitamin A deficiency as well as the evaluation of the impact of interventions.

Adequate vitamin A intake increases the chances of survival, reduces severity of childhood illnesses, and thereby eases the strain on health systems and hospitals

Improving the vitamin A status of pregnant women may reduce their risk of dying during pregnancy and childbirth, improves their resistance to infection, and helps reduce anemia.

PREVENTION:

To successfully fighting VAD, short-term interventions and proper infant feeding must be backed up by long-term sustainable solutions.

The collection of nutritional "well-being weapons" includes a combination of breastfeeding and vitamin A supplementation, coupled with long-term solutions, such as promotion of vitamin A-rich diets and food fortification.

Strategies to Control VAD

- **Promote vitamin A-rich foods (fruits, vegetables, red palm oil).**
- **Give infants and women low-dose iron supplements according to WHO protocols.**
- **Improve food security.**
- **Feed children properly.**
- **Prevent disease and treat disease early.**
- **Fortify foods.**

Since breast milk is a natural source of vitamin A, promoting breastfeeding is the best way to protect babies from VAD.

For deficient children, the periodic supply of high-dose vitamin A in swift, simple, low-cost, high-benefit interventions

Food fortification takes over where supplementation leaves off.6m -6y
Food fortification, for example sugar in Guatemala, maintains vitamin A status, especially for high-risk groups and needy families. Changing feeding habits of people and mothers nutritional education

Vitamin A Supplements

Infants< 6-12 months of age only if not breastfed (breast fed children in this group should be protected by post partum supplementation of their mothers.)	50,000 IU orally
Infants 6-12 months of age	100,000 IU orally, every 4-6 months
Children> 12 months of age	200,000 IU orally, every 4-6 months
Mothers (post-partum, lactating)	200,000 IU orally within 8 wks of delivery