Evidence Assessment: Summary of a Systematic Review

Who is this summary for?
For Doctors and Health Personnel, Administrators and Managers of health facilities, Community Health Workers and partners involved in immunization programs.

Routine vitamin A supplementation for the prevention of blindness due to measles infection in children

Key findings

- Two doses of vitamin A given on two consecutive days to hospitalised children with measles significantly increased the blood concentration of vitamin A after one week.
- There was no significant difference in weight gain between the vitamin A group and the placebo group six weeks and six months post-administration of three doses of vitamin A.
- None of the included studies reported on blindness or ocular morbidities

Background

Measles infection in children has been associated with vitamin A deficiency and blindness. The control of blindness in children is considered a high priority within the World Health Organization's VISION 2020: The Right to Sight Program. Studies have reported the beneficial effect of vitamin A in reducing morbidity and mortality in children with measles. This review examined vitamin A use in preventing blindness in children infected with measles without features of vitamin A deficiency.

Questions

What is the efficacy of vitamin A in preventing blindness in children with measles without prior clinical features of vitamin A deficiency?

Routine vitamin A supplementation for the prevention of blindness due to measles infection in children in Cameroon: Measles is a public health problem in Cameroon. In 2015, 88 health districts experienced epidemics with total of 1,650 suspected cases and 650 positive cases confirmed. Vitamin A is routinely administered to patients suffering from measles in Cameroon. This intervention can considerably improve the management of patients suffering from measles.

Table 1: Summary of the systematic review		
	What the review authors searched for	**What the review authors found**
Studies	Randomized controlled trials	Four randomized controlled trials studies met the inclusion criteria.
Participants	Children 18 years or younger diagnosed with measles, with no prior clinical features of vitamin A deficiency	Participants were aged five months to 17 years with measles.
Interventions	Vitamin A versus placebo or no vitamin A	The intervention given in both studies was vitamin A. In one study administered standard WHO recommended dosage (54.5 mg for children < 12 months, 109 mg for children > 12 months) on days two, eight and week six, while Another study administered a single dose of 200,000 IU (210 µmol). Co-interventions consisted essentially of standard treatment administered to both groups in both studies. In addition, the formulation used by one study contained vitamin E (40 µG/ml). None of the studies reported ocular morbidities, although one indicated that eye examination was done at baseline and subsequent follow-up. Both studies reported other measles related complications seen and serum retinol levels post-intervention. One study measured nutritional status post-intervention.
Controls	Placebo or no vitamin A	Placebo or no vitamin A
Outcomes	**Primary outcomes** Blindness as defined by the WHO: corrected visual acuity in the better eye of less than 3/60 **Secondary outcomes** 1. Night blindness 2. Conjunctival xerosis 3. Bitot's spot 4. Corneal xerosis 5. Xerophthalmia 6. Corneal ulceration 7. Corneal scars 8. Serum retinol level 9. Nutritional status 10. Adverse events i) Vitamin A toxicity ii) Other adverse events	Extent of pneumonia, duration of fever,cough diarrhea and pneumonia, incidence of herpes stomatitis and laryngotracheobronchitis. Serum zinc, serum vitamin E, serum retinol, serum retinol-binding protein (RBP), serum albumin and pre-albumin, weight gain, nutritional status
Date of the most recent search: 27 November 2013		
Limitations: This is a high quality systematic review**, AMSTAR =11/11**		
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Table 2: Summary of findings

Vitamin A compared with placebo or no vitamin A for prevention of blindness			
Patient or population: children with measles infection and no clinically demonstrable vitamin A deficiency **Settings:** resource-limited countries **Intervention:** vitamin A **Comparison:** placebo or no vitamin A			
Outcomes	**Relative effect (95% CI)**	**No of Participants (studies)**	**Quality of the evidence (GRADE)**
Serum retinol (1 week post-intervention) (mean X (µG/dL) ± standard error (SE)	9.5 [2.2-16.7]	17 (1)	Moderate
Serum retinol (2 weeks post-intervention) (mean X (µG/dL) ± standard error SE)	2.7 [0.3-5.6]	155 (1)	Moderate
Serum retinol (6 weeks post-intervention) (mean X (µG/dL) ± standard error SE)	2.6 [5.3-39]	39 (1)	Moderate
Serum retinol (mean change 1 week post-intervention (mean X (µG/dL) ± standard error SE)	8.6 [1.2-16.0]	17 (1)	Moderate
Weight gain 6 weeks' post-intervention (mean X (kg) ± standard error SE)	0.4 [0.04-0.8]	48 (1)	Moderate
Weight gain 6 months post-intervention (mean X (kg) ± standard error SE)	0.5 [0.1-1.1]	38 (1)	Moderate
Other ocular morbidities (night blindness, conjunctival xerosis, Bitot's spot, corneal xerosis, xerophthalmia, corneal ulceration, corneal scars)	Not reported		
Adverse events	Not reported		

Applicability

The trials were conducted in South Africa (2 trials), and Zambia (2 trials). These interventions may be relevant to other low resources settings such as Cameroon.

Conclusions

There is not enough evidence to determine if Vitamin A supplementation in children with measles prevents blindness

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