

A 2-year-old boy is brought to the clinic by his parents due to 6 days of high-grade fever and rash and a day of difficulty breathing. The rash began on the patient's face and subsequently spread to his trunk and extremities. Prior to the onset of rash, he had a nonproductive cough, tearing of eyes, runny nose, and intermittent nasal congestion. The family lives in a rural town in Zambia and is in the United States to visit relatives. The child has received no immunizations. Temperature is 38.7 C (101.7 F) and respirations are 44/min. Physical examination shows a diffuse erythematous, maculopapular rash all over the body that spares the palms and soles. Auscultation of the chest reveals bilateral crackles. The child is admitted to the local hospital for further care. Which of the following has been shown to reduce morbidity and mortality of patients with this infection?

- ☐ A. Vitamin A
- ☐ B. Vitamin B₆
- ☐ C. Vitamin B₁₂
- ☐ D. Vitamin E
- ☐ E. Vitamin K

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- ☒ A. Vitamin A [80%]
- ☐ B. Vitamin B₆ [7%]
- ☐ C. Vitamin B₁₂ [2%]
- ☐ D. Vitamin E [8%]
- ☐ E. Vitamin K [4%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Measles virus (rubeola)	
Transmission	<ul style="list-style-type: none">Airborne
Clinical presentation	<ul style="list-style-type: none">Prodrome (eg, cough, coryza, conjunctivitis, fever, Koplik spots)Maculopapular exanthem<ul style="list-style-type: none">Cephalocaudal & centrifugal spreadSpares palms/soles
Prevention	<ul style="list-style-type: none">Live attenuated measles vaccine
Treatment	<ul style="list-style-type: none">Supportive

[Proceed to Next Item](#)

Explanation:

User Id: [REDACTED]

Measles virus (rubeola)	
Transmission	<ul style="list-style-type: none">• Airborne
Clinical presentation	<ul style="list-style-type: none">• Prodrome (eg, cough, coryza, conjunctivitis, fever, Koplik spots)• Maculopapular exanthem<ul style="list-style-type: none">◦ Cephalocaudal & centrifugal spread◦ Spares palms/soles
Prevention	<ul style="list-style-type: none">• Live attenuated measles vaccine
Treatment	<ul style="list-style-type: none">• Supportive• Vitamin A for hospitalized patients

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This unvaccinated child has a high **fever** and a diffuse **morbilliform** rash following a **prodrome** of cough, conjunctivitis, and coryza. These clinical findings are consistent with **measles** (rubeola). The rash characteristically begins on the face and spreads **cephalocaudally**. It lasts approximately a week, and patients' other symptoms improve as the rash resolves.

Treatment of measles is typically supportive only. However, patients who are immunocompromised or pregnant, at extremes of age (eg, infants or the elderly), or who are vitamin A deficient are at greater risk for complications such as pneumonia, encephalitis, or blindness. Treatment with **vitamin A** reduces the morbidity and mortality rates for patients with severe measles (eg, those requiring hospitalization) through the promotion of antibody-producing cells and regeneration of epithelial cells (eg, in the gut, lungs, and retina).

(Choice B) Vitamin B₆ (pyridoxine) deficiency can result in neurologic impairment (eg, confusion, irritability, seizure) and skin and mucous membrane breakdown (eg, stomatitis, cheilosis).

Treatment

- Supportive
- Vitamin A for hospitalized patients

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(Choice B) Vitamin B₆ (pyridoxine) deficiency can result in neurologic impairment (eg, confusion, irritability, seizure) and skin and mucous membrane breakdown (eg, stomatitis, cheilosis).

(Choice C) Vitamin B₁₂ (cobalamin) deficiency results in macrocytic anemia and hypersegmented neutrophils.

(Choice D) Vitamin E deficiency leads to hemolytic anemia and neurologic abnormalities such as ataxia.

(Choice E) Vitamin K deficiency causes coagulopathy and leads to easy bruising or bleeding from the mucosa and in deep tissues.

Educational objective:

The treatment of measles is supportive; however, vitamin A reduces morbidity and mortality rates in children with severe measles and should be administered to hospitalized patients.

References:

1. [Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: systematic review and meta-analysis.](#)
2. [Measles 50 years after use of measles vaccine.](#)