

A 3-year-old boy is brought to the physician for evaluation of a rash. He has had a "runny nose," dry cough, and fever for the past week and developed a facial rash 2 days ago. The rash is slightly itchy and has spread to his chest, back, and extremities. He is irritable and uninterested in playing. The boy has received no vaccinations and takes no medications. A few weeks ago, he went on a camping trip to North Carolina but has not traveled outside the country. His temperature is 40.6 C (105 F), pulse is 130/min, and respirations are 24/min. Examination shows a tired-appearing boy with watery and injected bilateral conjunctivae. Tiny white round lesions are present in the conjunctiva and buccal mucosa next to the first and second upper molars. The oropharynx and tonsils are erythematous. Small, rubbery, mobile lymph nodes are palpated along the anterior and posterior cervical chains. The nontender, blanching, maculopapular rash is shown below.



What is the most likely diagnosis in this patient?

- ☐ A. Erythema infectiosum
- ☐ B. Kawasaki disease
- ☐ C. Measles
- ☐ D. Pharyngoconjunctival fever

injected bilateral conjunctivae. Tiny white round lesions are present in the conjunctiva and buccal mucosa next to the first and second upper molars. The oropharynx and tonsils are erythematous. Small, rubbery, mobile lymph nodes are palpated along the anterior and posterior cervical chains. The nontender, blanching, maculopapular rash is shown below.



What is the most likely diagnosis in this patient?

- ☐ A. Erythema infectiosum
- ☐ B. Kawasaki disease
- ☐ C. Measles
- ☐ D. Pharyngoconjunctival fever
- ☐ E. Rocky Mountain spotted fever
- ☐ F. Roseola
- ☐ G. Rubella
- ☐ H. Scarlet fever

Submit

A 3-year-old boy is brought to the physician for evaluation of a rash. He has had a "runny nose," dry cough, and fever for the past week and developed a facial rash 2 days ago. The rash is slightly itchy and has spread to his chest, back, and extremities. He is irritable and uninterested in playing. The boy has received no vaccinations and takes no medications. A few weeks ago, he went on a camping trip to North Carolina but has not traveled outside the country. His temperature is 40.6 C (105 F), pulse is 130/min, and respirations are 24/min. Examination shows a tired-appearing boy with watery and injected bilateral conjunctivae. Tiny white round lesions are present in the conjunctiva and buccal mucosa next to the first and second upper molars. The oropharynx and tonsils are erythematous. Small, rubbery, mobile lymph nodes are palpated along the anterior and posterior cervical chains. The nontender, blanching, maculopapular rash is shown below.



What is the most likely diagnosis in this patient?

- ☐ A. Erythema infectiosum [0%]
- ☐ B. Kawasaki disease [3%]
- ☒ C. Measles [85%]
- ☐ D. Pharyngoconjunctival fever [0%]

What is the most likely diagnosis in this patient?

- ☐ A. Erythema infectiosum [0%]
- ☐ B. Kawasaki disease [3%]
- ☒ C. Measles [85%]
- ☐ D. Pharyngoconjunctival fever [0%]
- ☐ E. Rocky Mountain spotted fever [4%]
- ☐ F. Roseola [2%]
- ☐ G. Rubella [5%]
- ☐ H. Scarlet fever [1%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Measles (rubeola)	
Clinical presentation	Prodrome: <ul style="list-style-type: none"> Fever, malaise & anorexia Conjunctivitis, coryza, cough, Koplik spots Exanthem: <ul style="list-style-type: none"> Blanching, reddish-brown maculopapular rash Cephalocaudal & centrifugal spread Usually spares palms/soles
Diagnosis	<ul style="list-style-type: none"> Polymerase chain reaction Acute & convalescent serology for anti-measles IgM & IgG
Prevention	<ul style="list-style-type: none"> Live attenuated measles vaccine
Treatment	<ul style="list-style-type: none"> Supportive care Vitamin A for hospitalized children
	<ul style="list-style-type: none"> Otitis media Pneumonia Neurologic

Explanation:

User Id: [REDACTED]

Measles (rubeola)	
Clinical presentation	Prodrome: <ul style="list-style-type: none">• Fever, malaise & anorexia• Conjunctivitis, coryza, cough, Koplik spots Exanthem: <ul style="list-style-type: none">• Blanching, reddish-brown maculopapular rash• Cephalocaudal & centrifugal spread• Usually spares palms/soles
Diagnosis	<ul style="list-style-type: none">• Polymerase chain reaction• Acute & convalescent serology for anti-measles IgM & IgG
Prevention	<ul style="list-style-type: none">• Live attenuated measles vaccine
Treatment	<ul style="list-style-type: none">• Supportive care• Vitamin A for hospitalized children
Complications	<ul style="list-style-type: none">• Otitis media• Pneumonia• Neurologic<ul style="list-style-type: none">• Encephalitis (within days)• Acute disseminated encephalomyelitis (within weeks)• Subacute sclerosing panencephalitis (within years)• Gastroenteritis

© USMLEWorld, LLC

Measles (rubeola) is an **extremely contagious** disease that is spread by infected **droplets** from respiratory secretions. The virus can remain **airborne** for several hours, and unvaccinated patients can contract it by entering a room that an infected person has exited (eg, waiting room, day care center).

This child is suffering from the characteristic prodrome of fever, cough, coryza, non-purulent conjunctivitis, and Koplik spots. **Koplik spots** are pathognomonic of measles. They appear typically in the buccal mucosa and sometimes the conjunctivae and vaginal mucosa. On days 3-5 of illness, the erythematous, macular exanthem is sometimes pruritic; begins on the face; and spreads in a **cephalocaudal and centrifugal** pattern to the rest of the body. The rash persists for a week, coalesces, and

Measles (rubeola) is an **extremely contagious** disease that is spread by infected **droplets** from respiratory secretions. The virus can remain **airborne** for several hours, and unvaccinated patients can contract it by entering a room that an infected person has exited (eg, waiting room, day care center).

This child is suffering from the characteristic prodrome of fever, cough, coryza, non-purulent conjunctivitis, and Koplik spots. **Koplik spots** are pathognomonic of measles. They appear typically in the buccal mucosa and sometimes the conjunctivae and vaginal mucosa. On days 3-5 of illness, the erythematous, macular exanthem is sometimes pruritic; begins on the face; and spreads in a **cephalocaudal and centrifugal** pattern to the rest of the body. The rash persists for a week, coalesces, and darkens to a **reddish-brown** color, as seen in this patient.

The diagnosis is supported by a fourfold rise in antibody titers and confirmed by **polymerase chain reaction**. Treatment is primarily nonspecific symptomatic relief with antipyretics and hydration as no specific antiviral therapy is available. **Vitamin A** can be given to patients who are deficient in this vitamin or hospitalized children at high risk for complications (Table).

(Choice A) Erythema infectiosum (fifth disease) is caused by human parvovirus B19. Children develop fever and an **erythematous malar rash** (eg, "slapped cheeks") but not Koplik spots or conjunctivitis.

(Choice B) **Kawasaki disease** is characterized by fever for ≥ 5 days, mucous membrane changes, extremity changes, nonexudative conjunctivitis, cervical lymph node ≥ 1.5 cm, and a polymorphous rash. The Koplik spots and lack of vaccinations are suggestive of measles.

(Choice D) Pharyngoconjunctival fever is caused by an adenovirus and consists of pharyngitis, non-purulent conjunctivitis, and fever. Rash and Koplik spots do not occur with adenovirus infection.

(Choice E) Fever and conjunctival injection can occur in Rocky Mountain spotted fever, but the non-pruritic macular rash begins on the distal extremities (including palms/soles) and spreads centripetally.

(Choice F) Roseola (exanthema subitum, sixth disease) is caused by human herpes virus 6. In contrast to measles, in which the fever peaks with rash onset, the maculopapular rash in roseola appears as the fever resolves.

(Choice G) Rubella (German measles, "3-day measles") is similar to measles but is relatively mild and shorter in duration. The **rubella rash** spreads cephalocaudally but

given to patients who are deficient in this vitamin or hospitalized children at high risk for complications (Table).

(Choice A) Erythema infectiosum (fifth disease) is caused by human parvovirus B19. Children develop fever and an **erythematous malar rash** (eg, "slapped cheeks") but not Koplik spots or conjunctivitis.

(Choice B) **Kawasaki disease** is characterized by fever for ≥ 5 days, mucous membrane changes, extremity changes, nonexudative conjunctivitis, cervical lymph node ≥ 1.5 cm, and a polymorphous rash. The Koplik spots and lack of vaccinations are suggestive of measles.

(Choice D) Pharyngoconjunctival fever is caused by an adenovirus and consists of pharyngitis, non-purulent conjunctivitis, and fever. Rash and Koplik spots do not occur with adenovirus infection.

(Choice E) Fever and conjunctival injection can occur in Rocky Mountain spotted fever, but the non-pruritic macular rash begins on the distal extremities (including palms/soles) and spreads centripetally.

(Choice F) Roseola (exanthema subitum, sixth disease) is caused by human herpes virus 6. In contrast to measles, in which the fever peaks with rash onset, the maculopapular rash in roseola appears as the fever resolves.

(Choice G) Rubella (German measles, "3-day measles") is similar to measles but is relatively mild and shorter in duration. The **rubella rash** spreads cephalocaudally but does not darken as does measles. The fever is also lower and no Koplik spots are seen.

(Choice H) Scarlet fever is caused by *Streptococcus pyogenes* and presents with fever and a blanching, **sandpaper-like, erythematous rash**. Conjunctivitis and Koplik spots do not occur in scarlet fever.

Educational objective:

The prodrome of measles includes cough, coryza, conjunctivitis, and Koplik spots. Koplik spots are bluish-white lesions on buccal mucosa and are pathognomonic to measles. The classic reddish-brown rash appears on days 3-5 on the face and spreads downward to the rest of the body.

References:

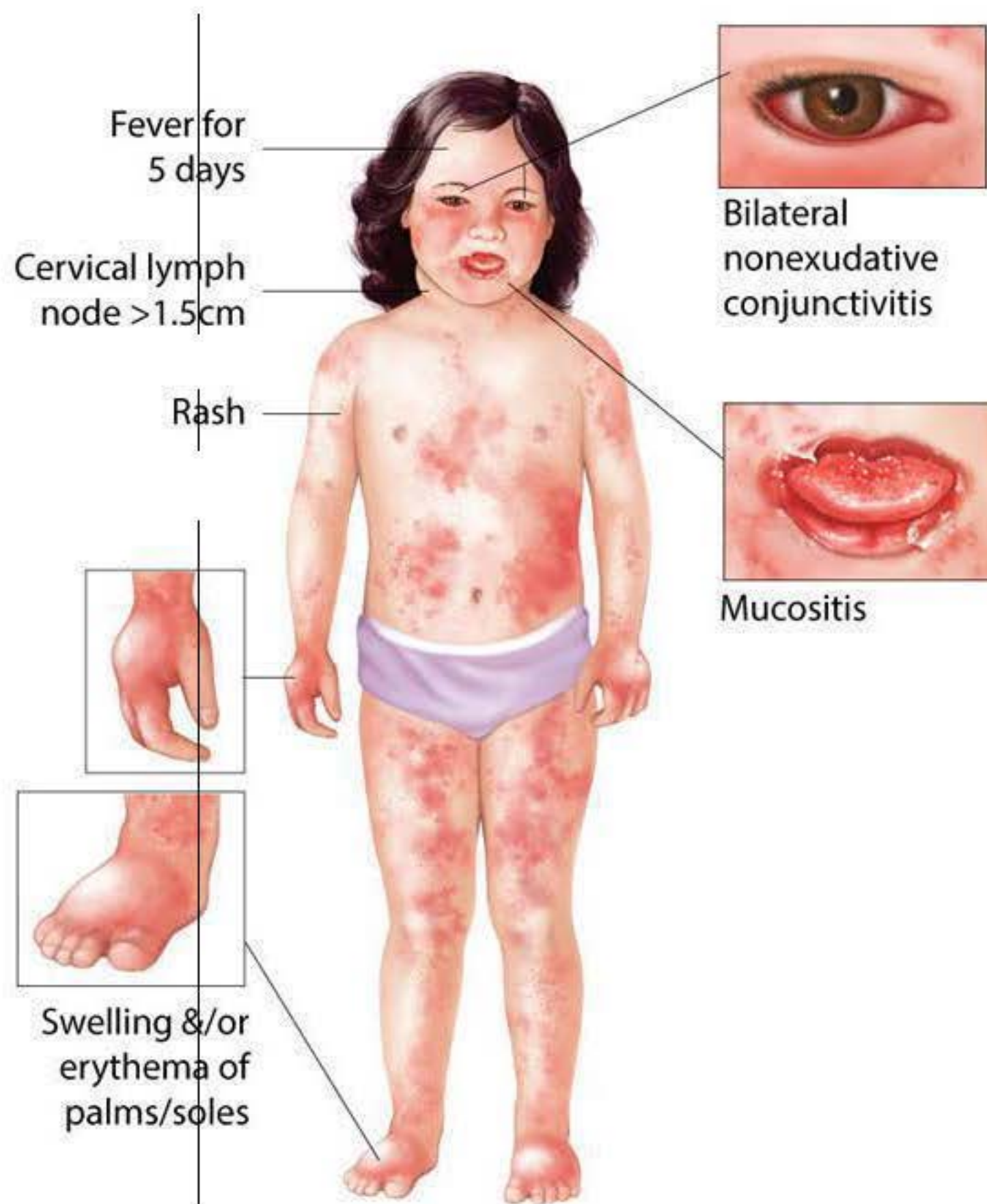
1. **Vitamin A for treating measles in children.**
2. **Measles.**

Media Exhibit

sease



Kawasaki disease



©UWorld

Media Exhibit



Media Exhibit

fever

