Chickenpox Clinical Manifestations & Treatment

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- **Varicella is a highly contagious, usually self-limited systemic infection characterized by fever and a generalized pruritic rash lasting approximately 5 days.**

  *** A prodromal phase in children is unusual, but malaise and fever for 1 to 2 days before the onset of rash is a common manifestation in adults.**

  *** the rash is more intense on the trunk and head than on the extremities, and it typically evolves as a series of "crops" during have 250 to 500 superficial skin lesions, many of which are vesicular**

  ***not uncommonly, a few lesions may develop in the mouth, conjunctiva, or other mucosal sites.**

*Residual scarring is exceptional but can occur, and depigmented areas of skin may develop in dark-skinned patients.

*A self-limited increase in hepatic transaminase levels without jaundice .

*rarely, thrombocytopenia and neutropenia may transiently occur.

*Severe infections are more likely to develop in adults than in children,

- Often, children with severe varicella will present with severe abdominal pain.

  this is not surprising because VZV may invade the gastric mucosa or the liver.

  *VZV also establishes latency in the enteric nervous system and may reactivate there.

- Primary varicella pneumonia accounts for many of the fatalities ascribed to varicella, particularly in immunocompromised patients and adults.
- The chest radiograph typically reveals a diffuse nodular or miliary pattern that is most pronounced in the perihilar region.
- Blood gas analyses and pulmonary function tests indicate a diffusion defect that may persist in some cases for months after recovery.

Incubation Period & Prodrome

- Incubation: 10–21 days (typically 14–16 days) after exposure.
- Prodromal symptoms (1–2 days before rash)
  - Low-grade fever (38–39°C), malaise, headache, anorexia.
  - Rash onset marks the transition from prodrome to active disease.

Rash Evolution (Hallmark of Varicella)

- Appearance : Centripetal distribution (starts on trunk/face, then spreads outward).
- Stages (all present simultaneously, a key diagnostic feature):
  1. Macules (flat, red spots) → appear in crops (new lesions every 1–2 days).
  2. Papules (raised bumps) within hours.
  3. Vesicles (tiny, fluid-filled "dew drops on rose petals") – highly characteristic
     - Size: 2–4 mm, fragile, surrounded by erythema.
     - Key point: Vesicles are superficial and rupture easily.
  4. Pustules (cloudy fluid) → crust over in 1–2 days.
  5. Scabs (healing phase, takes 5–7 days to fall off).
- Total duration: New lesions appear for 3–5 days_ full healing in 7–14 days

****- Sparing of palms/soles (if present, think coxsackievirus or rickettsialpox).
- Axillary & groin folds often densely involved (warmth + moisture → viral replication).
- Pseudo-Koebner" phenomenon: Linear lesions from scratching (mimics lichen striatus).

Mucosal & Special Site Involvement

- Oral mucosa
  - Vesicles rupture instantly → shallow ulcers with yellow base (no fibrin membrane, unlike herpangina).
  - Most common sites Buccal mucosa, palate, uvula.
- Conjunctiva
  - Follicular conjunctivitis (rare, but may precede rash).
  - Corneal vesicles (high-risk for secondary infection).
- Genital mucosa
  - Painful erosions (may mimic HSV, but no grouped vesicles).

Rash Evolution – Hour-by-Hour Changes

- 0–6h Macule → erythematous papule (firm, like insect bite).
- 6–12hCentral clear vesicle develops (pinhead-sized, glistening).
- 24h Vesicle clouds over (neutrophil infiltration).
- 48h Collapses → umbilicated pustule → crust (golden-yellow, then dark brown).
- Day 3–5 New waves of lesions appear while older ones crust (crops = diagnostic).

Morphological Nuances of Lesions

- Vesicles ("Dew Drops on a Rose Petal")
  - Shape:** Perfectly **round/oval, not irregular or umbilicated (unlike smallpox).
  - Roof:Thin-walled, collapses easily when touched (vs. herpes simplex's tense vesicles).
  - Fluid: Clear→ turns cloudy (pustular) in 24–48h → crusts.
  - Erythematous base: Always present (helps distinguish from papular urticaria

- <u>Hemorrhagic Variant (Rare, high-risk patients)</u>:
  "Black pox" Vesicles fill with blood → dark red/black crusts (DIC, immunocompromise).

Distribution & Spread – Subtle Patterns

. Subtle Diagnostic Clues

- Guttate psoriasis-like" appearance In very early stages, red macules resemble streptococcal guttate psoriasis.
- Respect for midline Lesions often stop abruptly at midline (unlike eczema, which crosses).
- Islands of sparing: Small patches of normal skin amid dense rash (unlike smallpox's confluent rash).

Rare but Telling Variants

- Modified varicella (Breakthrough infection in vaccinated):
  - <50 lesions**, mostly maculopapular (few vesicles), milder course.
- Vaccine-associated rash
  - 2–5 pink papules** at injection site (not true varicella, resolves in days).

- False vesicles

  - Sweat duct obstruction** (miliaria) → tiny clear droplets (no erythema).
  - Scabies burrows** (linear, no systemic symptoms).
- Pseudo-vesicles
  -Dermatitis herpetiformis(grouped, symmetrical, IgA deposits).

True varicella vesicles are fleeting(evolve within hours).
Dew drop" clarity + erythematous base = pathognomonic
Mucosal ulcers lack fibrin (vs. herpangina/HSV).
*New crops stop by Day 5 (if still appearing, consider immunocompromise).

- **The minimum number of skin lesions in a varicella (chickenpox)**
- **Classic varicella typically presents with 250–500 vesicles in an immunocompetent individual.**
- **However, mild or modified cases (e.g., in vaccinated individuals or those with partial immunity) may have fewer than 50 lesions, sometimes just maculopapular rashes without progressing to vesicles.**
- **In rare cases, breakthrough varicella (after vaccination) may present with <50 lesions, often papules rather than full vesicles.**

- **Absolute minimum: Some cases may have just a few vesicles (even <10), especially in vaccinated individuals.**

- Yes, it's possible to have chickenpox (varicella) without a rash

Review > J Infect Dis. 1992 Aug:166 Suppl 1:S30-4. doi: 10.1093/infdis/166.supplement_1.s30.

Varicella-zoster virus reactivation without rash

D H Gilden [1], A N Dueland, M E Devlin, R Mahalingam, R Cohrs

Affiliations + expand

PMID: 1320648 DOI: 10.1093/infdis/166.supplement_1.s30

CASE STUDY

Complication of chickenpox infection without skin rashes

21 MARCH, 2014 | BY NT CONTRIBUTOR

Neurology. 2014 Jan 7;82(1):90–92. doi: 10.1212/01.wnl.0000438228.48470.86

Varicella-zoster virus trigeminal ganglioneuritis without rash

Marius Birlea [1], Maria A Nagel [1], Nelly Khmeleva [1], Alex Choe [1], Bette Kleinschmidt-DeMasters [1], Robert

Treatment

* Traditionally, nonspecific measures, such as frequent bathing to discourage bacterial skin infection, antihistamines given orally, calamine lotion applied locally, and cutting fingernails short to discourage scratching, have been used to treat varicella.

* Fever is controlled best with acetaminophen rather than aspirin, which may predispose to Reye syndrome.

the issue of whether treatment with ibuprofen is associated with group A streptococcal superinfection in varicella has not been resolved, and therefore avoidance of its use for symptomatic treatment of varicella seems to be the best app roach.

* Patients with severe or potentially severe VZV infections should be treated with intravenous acyclovir 30 mg/kg per day for adults and adolescents and 1500 mg/m2 per day for children, both given in three divided doses

* Orally administered acyclovir is less reliable for immunocompromised patients

Early intravenous therapy should be instituted for patients at high risk for development of severe VZV infection, such as children with leukemia and other malignancies, and those who have undergone organ or bone marrow transplantation, to prevent the dissemination of VZV. not only may this therapy be potentially lifesaving in immunocompromised patients, but it also prevents considerable morbidity from VZV infection.

In zoster patients, the use of intravenous acyclovir is associated with more rapid healing of skin lesions and resolution of acute pain than if no specific treatment is
given.

- considerable controversy has ensued about the role of orally administered acyclovir for the treatment of varicella and zoster in otherwise healthy children because most of these infections are self-limited.

  Customarily, however, adults, who are at greater risk for development of severe infection, are treated

  Oral dosages used are 80 mg/kg per day (in four divided doses) for children and 4 g/day (in five divided doses) for adults.

  some evidence indicates that early administration of oral acyclovir may decrease the acute pain associated with zoster. however, the need to administer specific therapy for zoster in otherwise healthy children for whom pain is not a particular problem rarely occurs. Usually, however, children with zoster are treated in order to speed recovery.

***Modest benefit was derived from acyclovir; children hyperkeratotic VZV lesions may develop after varicella, presumably being a chronic form of zoster in which the infection is low grade but persistent.**

*** Valacyclovir may be used in children older than age 2 years with chickenpox. The dose of valacyclovir is 20 mg/kg per dose orally**

- # Red book

The decision to use antiviral therapy and the route and duration of therapy should be determined by host factors and extent of infection

In immunocompetent hosts, most virus replication has stopped by 72 hours after onset of rash; the duration of replication may be extended in immunocompromised hosts.

Oral acyclovir and valacyclovir are not routinely recommended for otherwise healthy younger children with varicella, because their use results in only a modest decrease in symptoms.

Antiviral therapy should be considered for otherwise healthy people at increased risk of moderate to severe varicella, such as unvaccinated people older than 12 years, those with chronic cutaneous or pulmonary disorders, those receiving long-term salicylate therapy, or those receiving short or intermittent courses of corticosteroids.

- # Red book

Some experts also recommend use of oral acyclovir or valacyclovir for secondary household cases in which the disease usually is more severe than in the primary case or in children who have immunocompromised household contacts.

Acyclovir or valacyclovir therapy should also be considered for children with zoster and the continuing development of new lesions.