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Chickenpox Fact Sheet

Introduction

Chickenpox (*varicella*) is a highly contagious viral disease caused by the varicella-zoster virus (VZV), also known as human (*alpha*) herpesvirus 3, a member of the Herpesviridae family. VZV infects only humans and is prevalent worldwide. After primary infection, the virus remains latent in nerve cells and may reactivate as shingles (*herpes zoster*) later in life.

Clinical Features

Chickenpox typically begins with a prodrome of mild fever, fatigue, weakness and loss of appetite, followed by an itchy rash within 1–2 days. The rash progresses from flat spots (macules) to raised bumps (papules), fluid-filled blisters (vesicles) and finally scabs. The rash typically starts on the scalp and face, spreading to the trunk and limbs, with more lesions on covered areas than exposed ones. Lesions may also appear on mucous membranes (e.g., mouth, respiratory tract, conjunctiva). The rash cycle, from onset to scab resolution, lasts approximately 2–4 weeks.

Chickenpox is usually mild in healthy children but can cause serious complications, including:

- Secondary bacterial skin infections (e.g., cellulitis, impetigo), potentially causing scarring
- Pneumonia (more common in adults)
- Encephalitis, which may lead to persistent neurological sequelae or, rarely, death
- Sepsis
- In pregnancy: Congenital varicella syndrome (foetal malformations) or premature birth
- In newborns: Severe disseminated varicella if exposed perinatally

High-risk groups for complications include:

- Foetuses of pregnant women with chickenpox
- Newborns
- Immuno-compromised individuals (those with cancer, organ transplants, or HIV)
- Adults with chickenpox

After recovery, VZV remains dormant in nerve cells and may reactivate in 10–20% of individuals as shingles, causing a painful, unilateral rash and potential long-term nerve pain (postherpetic neuralgia).

Transmission

Chickenpox is highly contagious, spreading through:

- Airborne droplets from coughing or sneezing by infected individuals
- Direct contact with vesicle fluid from chickenpox or shingles rashes
- Indirect contact with items contaminated by vesicle fluid or respiratory secretions

The secondary attack rate is high, with 61–100% of susceptible household contacts contracting the disease.

A person with shingles can spread VZV to susceptible individuals, causing chickenpox.

Incubation Period

The incubation period is typically **10–21 days**, with most cases developing symptoms within **14–16 days** after exposure to an infected person.

Period of communicability

A person with chickenpox is contagious from **1–2 days before rash onset** until **all vesicles have crusted over**, typically 7–10 days after rash appearance.

Immune response

Natural chickenpox infection generally confers lifelong immunity in immune-competent individuals. Newborns of immune mothers receive temporary protection via maternal antibodies for the first few months of life. Vaccinated individuals may occasionally develop breakthrough varicella, a milder form with fewer lesions and lower complication rates.

Diagnosis

Chickenpox is primarily diagnosed clinically based on the characteristic rash, which evolves from macules to vesicles and scabs over several days. Laboratory confirmation may be required in atypical cases, vaccinated individuals, or immune-compromised patients. Diagnostic methods include:

- **Polymerase Chain Reaction (PCR)**: Most sensitive and specific for detecting VZV DNA
- **Serological Testing**: Detects VZV-specific IgM or IgG (less commonly used)

Treatment

Chickenpox is usually self-limiting in healthy individuals. Supportive care includes:

- **Itch relief**: Calamine lotion, antihistamines
- **Infection prevention**: Keeping fingernails trimmed to avoid scratching and secondary bacterial infections
- **Fever management**: Acetaminophen (paracetamol); **aspirin or aspirin-containing drugs are contraindicated** due to the risk of Reye's syndrome

Antiviral Therapy

- **Acyclovir** is being used in high-risk groups (e.g., adults, immunocompromised individuals, pregnant women) or those with complications to reduce disease severity and duration. It is most effective when started within 24–48 hours of rash onset.
- **Dosages for chickenpox**:
  - **Adults**: 800 mg orally, 5 times daily for 5–7 days
  - **Children** (over 2 years, <40 kg): 20 mg/kg/dose (max 800 mg) 4 times daily for 5 days
  - **Children** (<2 years): Consult a paediatrician (typically 10–20 mg/kg/dose)
- **Dosages for shingles**:
  - **Adults**: 800 mg orally, 5 times daily for 7–10 days
  - **Children** (>6 years): 800 mg 4 times daily for 5–7 days

Patients with complications may need hospital care.

Prevention

Immunization

Pre-exposure prophylaxis

In Sri Lanka, the varicella vaccine is not included in the national immunisation program but is available in the private sector. The current practice schedule for chickenpox vaccination in the Sri Lankan private sector is as follows:

- Children aged 12 months to 12 years usually receive two doses (0.5 ml subcutaneous) at least 3 months apart (commonly the first dose at 12–18 months and the second at 4–6 years).
- Individuals aged 13 years and older at high risk of exposure are given two doses, 4–8 weeks apart.
- The vaccine can be safely co-administered with other vaccines, such as MMR, at different anatomical sites.

Varicella vaccine schedules vary by country, with some recommending a single dose and others two doses.

Post-exposure prophylaxis

Varicella vaccine administered within 3–5 days of exposure may prevent disease or reduce severity. Varicella-zoster immune globulin (VZIG), if given within 3–5 days of exposure, offers protection to individuals who cannot be provided the live vaccine, such as premature infants, immune-compromised persons, and pregnant women.

Shingles prevention

The recombinant herpes zoster vaccine (two doses, at least 2 months apart) is recommended by WHO for older adults and those with chronic health conditions in settings where herpes zoster is a significant public health concern.

Antiviral Therapy

Acyclovir, if administered early in the incubation period, may reduce the severity or duration of illness, although its use as routine prophylaxis remains debated.

Isolation and Quarantine

- Infected individuals should be isolated until all vesicles have dried and crusted, typically within 7–10 days.
- Persons with breakthrough varicella (occurring more than 42 days after vaccination) should remain isolated until no new lesions appear within 24 hours.
- Infected individuals should avoid school, workplaces, or public places during the infectious period.
- Susceptible contacts who cannot be provided with post-exposure prophylaxis should be quarantined for up to 2 weeks, covering the potential communicability period.

Hygiene and Disinfection

- Avoid sharing personal items such as towels and utensils.
- Disinfect items contaminated with respiratory secretions or vesicle fluid.

Case Investigation

Chickenpox is a notifiable disease in Sri Lanka. All cases reported to the Medical Officer of Health (MOH) are investigated promptly to prevent further spread, similar to other notifiable diseases.

Cases, including breakthrough cases, should be advised on isolation: they should remain excluded from school for a period as mentioned above until no new lesions appear within 24 hours and all lesions are crusted.

Contact tracing is essential. Susceptible individuals—those with no previous varicella infection or vaccination—should be identified.

- Immuno-compromised and pregnant contacts should be referred for clinical evaluation and

may require VZIG.

- Immuno-competent susceptible contacts may receive varicella vaccine.
- Antiviral medication may be considered for some contacts at risk of developing complications.
- Quarantine may be implemented for up to 2 weeks for exposed susceptible contacts with no post-exposure prophylaxis taken.

Special chickenpox surveillance forms should be completed in addition to routine field investigation documentation by the MOH or PHI. Pregnant women diagnosed with varicella should be followed up, and any suspected cases of congenital varicella syndrome must be reported to the Epidemiology Unit

Outbreak Management

Outbreak response strategies depend on the nature of the setting.

Non-residential settings (e.g., schools, workplaces):

- Actively identify cases and exclude them until all lesions are crusted and no new lesions appear for 24 hours (typically 7–10 days).
- Trace and assess all contacts. Educate susceptible individuals on post-exposure prophylaxis.
- Susceptible individuals who cannot undergo post-exposure prophylaxis should be quarantined for up to 2 weeks.
- Pregnant, immune-compromised, or unvaccinated persons with contraindications should be excluded from the setting from the start of the outbreak until 21 days after the last reported case.

Residential settings (e.g., dormitories, prisons):

- In this setting, instead of isolating the cases from the setting, the setting should be isolated from other settings. Otherwise, the same principles apply.

Herpes Zoster

- Those with localised herpes zoster (shingles) may remain in the setting if lesions are fully covered. If covering is not possible and close contact cannot be avoided, exclusion is advised until crusting.
- Individuals with disseminated herpes zoster should be excluded until all lesions have crusted.