Epidemiology of Chickenpox In preganancy

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Epidemiology of Varicella

Global distribution: Endemic worldwide.

- Temperate climates: mostly in children (preschool & school-age); <5% adults susceptible.
- Tropical climates: later onset, more adult cases; peaks in dry/cool months.

Seasonality: Late winter–early spring (temperate).

Impact of COVID-19: Temporary reduction; incidence in Poland by 2022 returned to pre-pandemic levels.

Vaccination impact:

- US introduced childhood vaccination in 1996 , marked decline in incidence, hospitalizations, and deaths.
- As of 2019: 18% of countries have routine vaccination; 6% target high-risk groups.
- United States (before vaccine): >4 million cases annually; 10,500–13,500 hospitalizations; 100–150 deaths, mostly children.

Epidemiology of Varicella

International variation:

- US & Europe: lower adult incidence, higher vaccination coverage (mandatory for school entry).
- Japan: routine vaccine since 2014, but not mandatory → lower coverage; R_0 = 8–10, insufficient for control.

Transmission and risk:

- Travelers without immunity remain at risk.
- HZ less transmissible but can cause varicella in susceptibles.
- Severe disease risk: infants, adults, immunocompromised.
- Future concerns: Reduced varicella incidence may increase herpes zoster in younger groups , highlights need for HZ vaccination and CMI assessment.

Herpes Zoster in Pregnancy

Clinically, HZ is diagnosed based on its characteristic presentation of a unilateral dermatomal distribution of grouped vesicles, often preceded by a prodromal phase of pain and segmental discomfort typical of zoster

Typical clinical presentation of herpes zoster: asymmetrical dermatomal eruption on the posterior aspect of the trunk limited by the midline

Erythematous plaque covered by multiple small, grouped vesicles on the posterior aspect of the trunk limited by the midline

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life

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Review

Varicella-Zoster Virus Prevalence among Pregnant Women: A European Epidemiological Review

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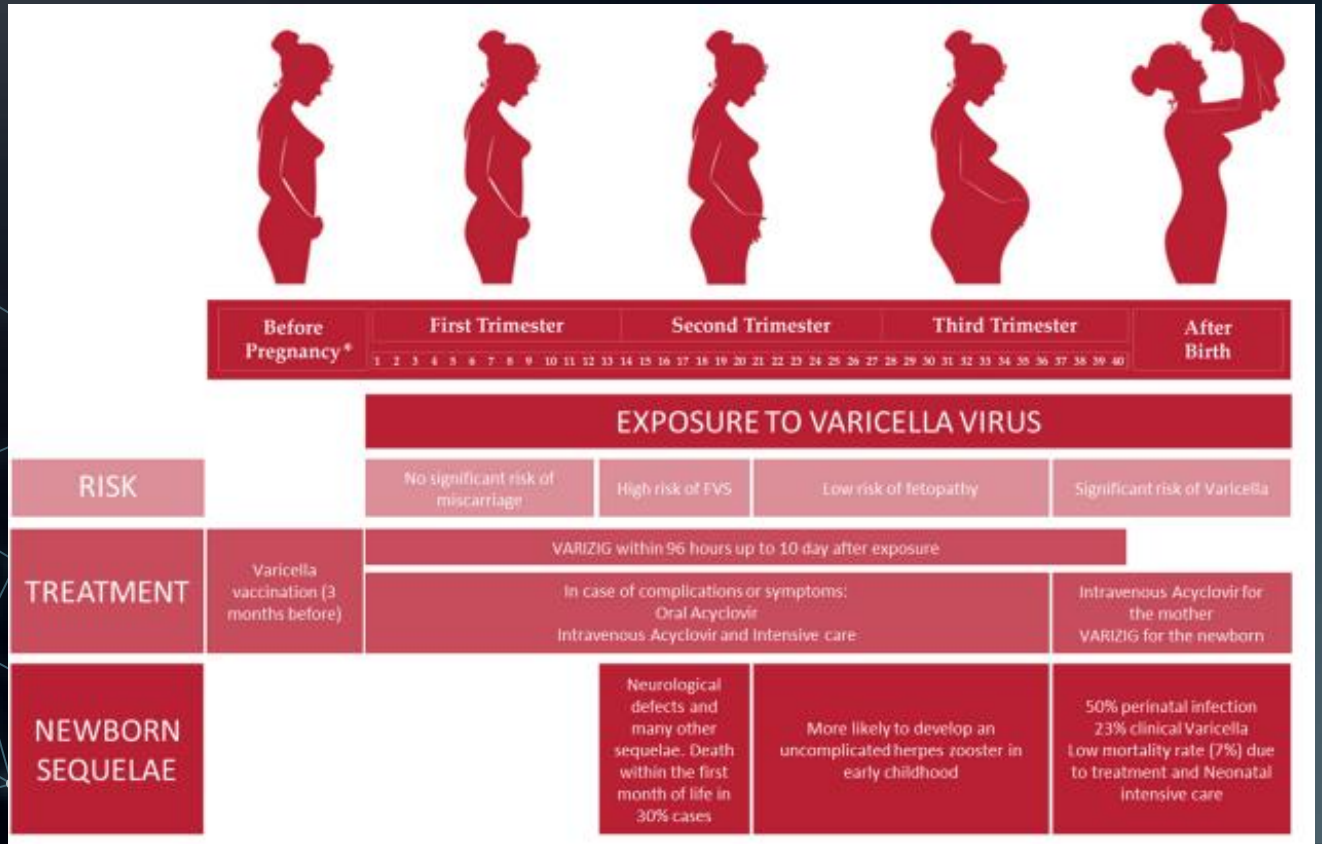
Maternal chickenpox

- Maternal chickenpox in the last 4 weeks of pregnancy poses a serious risk to the newborn.
- Perinatal infection occurs in ~50% of cases; 23% of newborns show clinical signs.
- Transmission routes: placenta, vesicular fluid during delivery, or respiratory droplets.
- Current mortality rate: ~7% (previously 30%) due to antiviral therapy, intensive care, and anti-VZV immunoglobulin.
- Maternal infection from 5 days before to 2 days after delivery high risk of severe neonatal varicella due to absence of maternal antibodies.

- Infants born from these mothers could present vesicular lesions or develop them within 5 days after delivery, but the prognosis is good



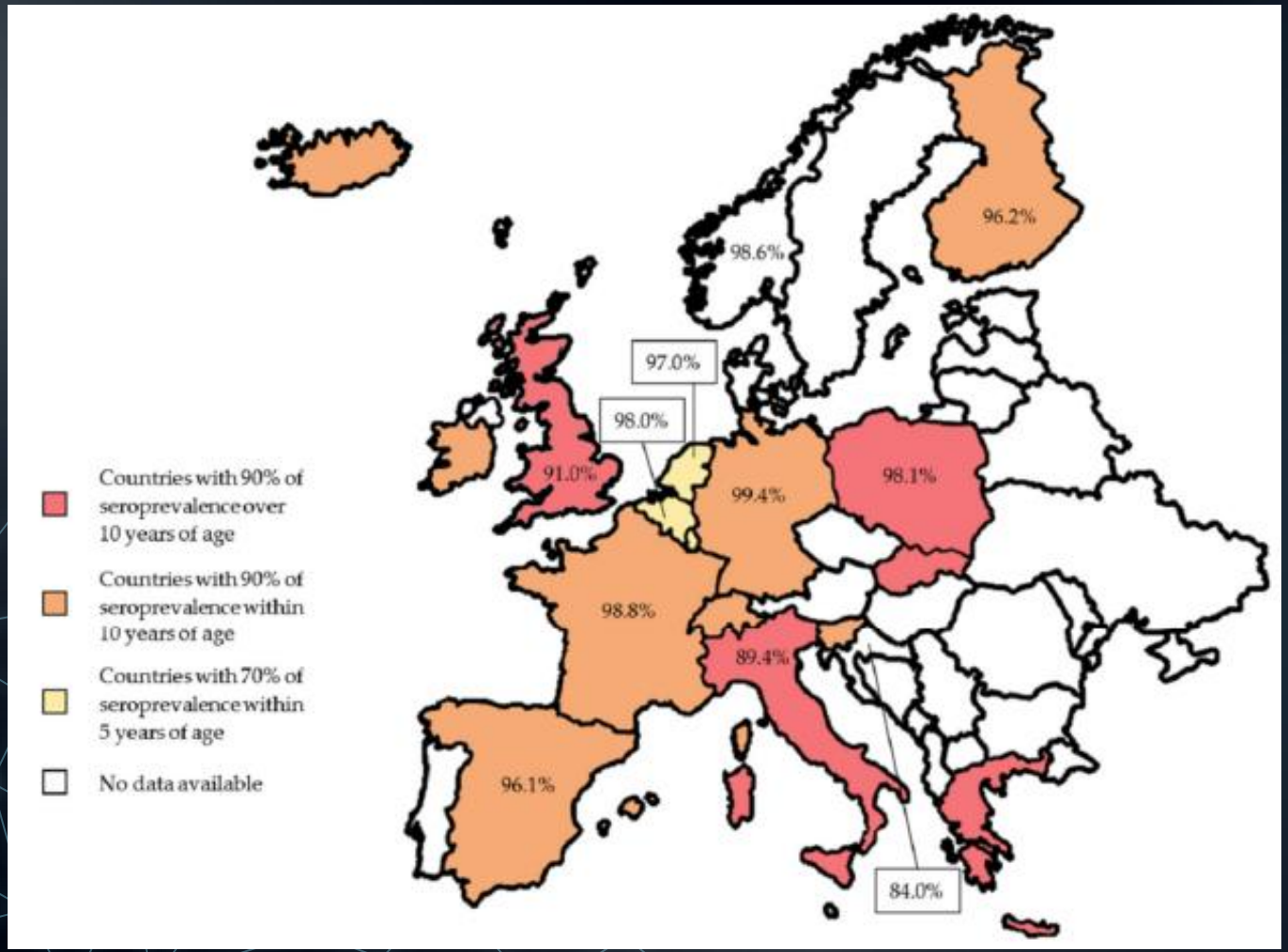
Management of VZV infection in pregnant seronegative women: risk, treatment and newborn sequelae related to the different pregnancy trimesters. * Before pregnancy: anti-VZV preconception screening is highly recommended in order to evaluate maternal serological status.

European Epidemiology of VZV Infection

- Before varicella vaccine: >80% of European children had anti-VZV-IgG by age 10 (except Greece).
- By age 15: >90% seroprevalence in most countries (slightly lower in Greece & Italy).
- Most children/adolescents seroconvert before adulthood.

➢ ***Europe clusters:***

- Group 1: Belgium, Luxembourg, Netherlands → 70% by age 5
- Group 2: Finland, France, Germany, etc. → 90% by age 10
- Group 3: Greece, Italy, Poland, Slovakia, UK → 90% reached later (Figure 2)



Seroprevalence in Europe with a specific focus on pregnant women. According to general seroprevalence, Europe could be divided into three clusters, shown in red, orange, and yellow, while pregnant women with seropositivity are displayed with percentage data. Data source: Belgium, Croatia, Finland, France, German, Italy, Netherlands, Norway, Poland, Spain, and the UK.

- In the UK, incidence: 1.6–4.6 per 1000 pregnancies.
- Higher incidence among non-British ethnic groups.
- Talukder et al.: VZV seropositivity lower in Bangladeshi women compared to British women.
- Consistent with previous findings: immigrant populations show lower seroprevalence than native Europeans.
- Geographical pattern: higher seroprevalence in Northern/Western Europe than in Eastern/Southern Europe

Percentage of VZV-susceptible women in European countries.

Country	Susceptible Women (%)	Sample Collection Period
Belgium	2.0	2006–2008
Croatia	16.0	2007–2011
Finland	3.8	2000
France	1.2	2005
Germany	0.6	2006–2018
Italy	10.6	2008–2009
Netherlands	3.0	2004, 2007
Norway	1.4	1998–2009
Poland	1.9	2018–2019
Spain	3.9	2003
UK	9.0	2001–2004

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Varicella Zoster Virus (Chickenpox) Infection in Pregnancy

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Chickenpox in pregnancy

01 Pregnancy Outcomes

- No link with 1st trimester spontaneous abortion
- Vertical transmission: ~24% (clinical/serology), ~8% (PCR) before 24 weeks

02 Fetal Effects

- IUGR in ~23%
- Low birth weight almost universal
- Preterm birth: 14.3% vs. 5.6% in controls

03 Major Risks

Highest morbidity/mortality with:

- Congenital Varicella Syndrome (CVS)
- Maternal Varicella Pneumonia
- Neonatal Varicella

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Review

Varicella Zoster Virus Infection and Pregnancy: An Optimal Management Approach

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Varicella-zoster virus (VZV) is an α-herpesvirus causing two main conditions: primary infection as chickenpox, mainly in children, and reactivation as herpes zoster, typically in adults. Chickenpox during pregnancy can lead to serious maternal complications, most commonly varicella pneumonia, while fetal outcomes depend on the gestational stage: first-trimester infection does not increase miscarriage risk, but infection in the first or second trimester may cause congenital varicella syndrome. Reactivation of VZV in pregnancy generally does not harm the fetus but may increase maternal morbidity. About 20% of newborns from mothers with primary infection may develop neonatal herpes zoster without complications. Early treatment of maternal herpes zoster is recommended to accelerate lesion healing, reduce pain, and shorten disease duration. This review discusses strategies for optimal management of VZV infection during pregnancy.

Maternal VZV and Herpes Zoster in Pregnancy

- Maternal VZV infection increases risk of severe maternal complications: encephalitis, pneumonitis.
- Fetal risks: congenital varicella syndrome, severe neonatal complications, especially near delivery.
- Herpes zoster (HZ) in pregnancy usually resembles general population, but closer monitoring is needed for disseminated or neurological involvement

Thanks For Your Attention