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DEGLI STUDI DI BARI
ALDO MORO

CORSO DI IGIENE

**Scuola
di
Medicina**

Rubella



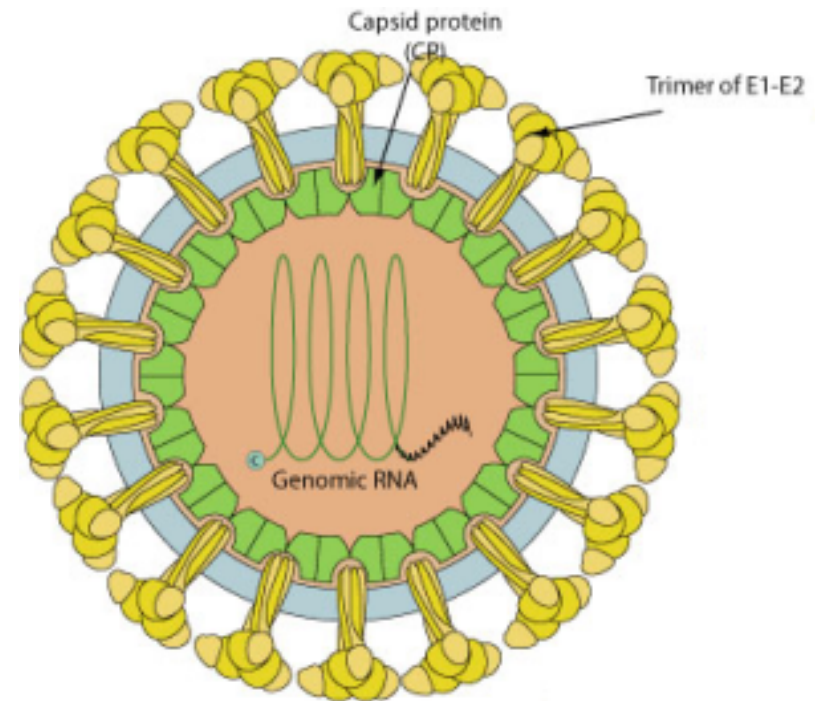
Rubella

- From Latin meaning "little red"
- Discovered in 18th century - thought to be variant of measles
- First described as distinct clinical entity in German literature
- Congenital rubella syndrome (CRS) described by Gregg in 1941
- Rubella virus first isolated in 1962 by Parkman and Weller



Rubella Virus

- Togavirus
- RNA virus
- One antigenic type
- Inactivated by lipid solvents, trypsin, formalin, ultraviolet light, low pH, heat, and amantadine



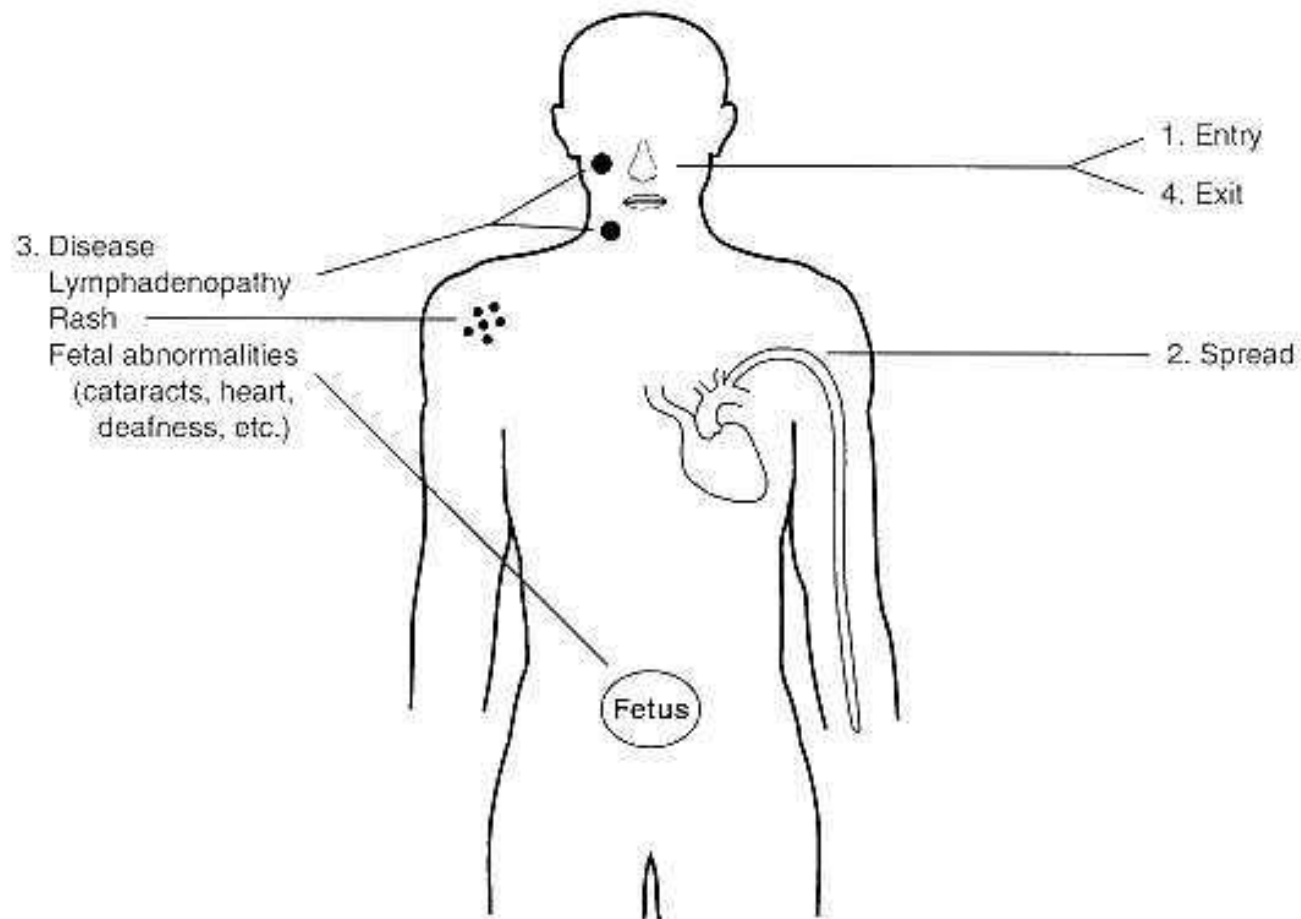


Rubella Pathogenesis

- Respiratory transmission of virus
- Replication in nasopharynx and regional lymphnodes
- Viremia 5 to 7 days after exposure with spread throughout body
- Transplacental infection of fetus during viremia



Rubella Pathogenesis





Rubella Clinical Features

- **Incubation** period 14 days (range 12-23 days)
- Prodrome is rare in children
- **Prodrome** of low-grade fever in adults
- **Maculopapular rash** 14 to 17 days after exposure
- **Lymphadenopathy** occurs before rash and lasts for several weeks



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Rubella rash





Rubella Complications

- Arthralgia or arthritis (adult female) - up to 70%
- Arthralgia or arthritis (children) - rare
- Encephalitis - 1/6,000 cases
- Hemorrhagic manifestations (e.g. thrombocytopenic purpura) - 1/3000
- Orchitis, neuritis, progressive panencephalitis - rare



Rubella Laboratory Diagnosis

- Isolation of rubella virus from clinical specimen (e.g., nasopharynx, urine)
- Serologic tests available vary among laboratories
- Positive serologic test for rubella IgM antibody
- Significant rise in rubella IgG by any standard serologic assay (e.g., enzyme immunoassay)

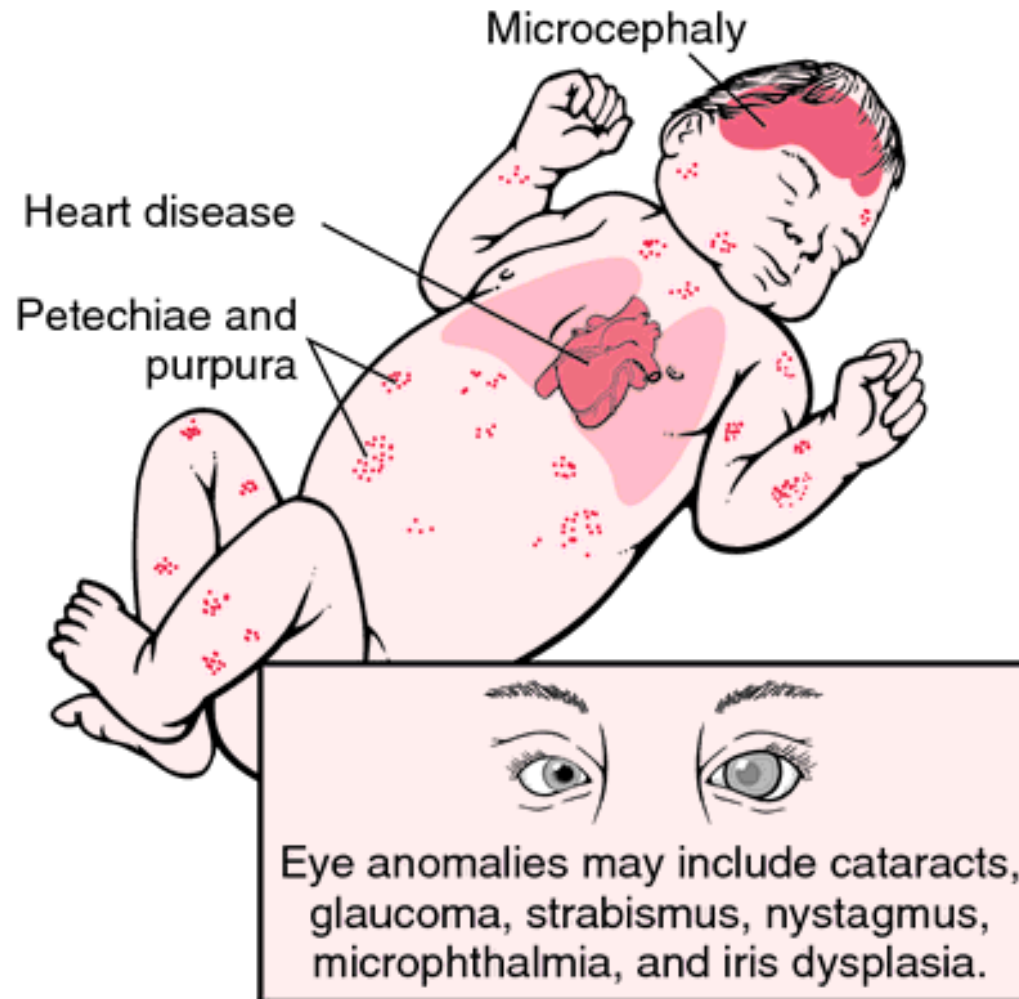


Congenital Rubella Syndrome

- Infection may affect all organs
- May lead to **fetal death** or premature **delivery**
- Severity of damage to fetus depends on gestational age
- **Up to 85% of infants affected if infected during first trimester**
- Deafness
- Eye defects
- Cardiac defects
- Microcephaly
- Mental retardation
- Bone alterations
- Liver and spleen damage



Congenital Rubella Syndrome





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Congenital Rubella Syndrome





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CRS



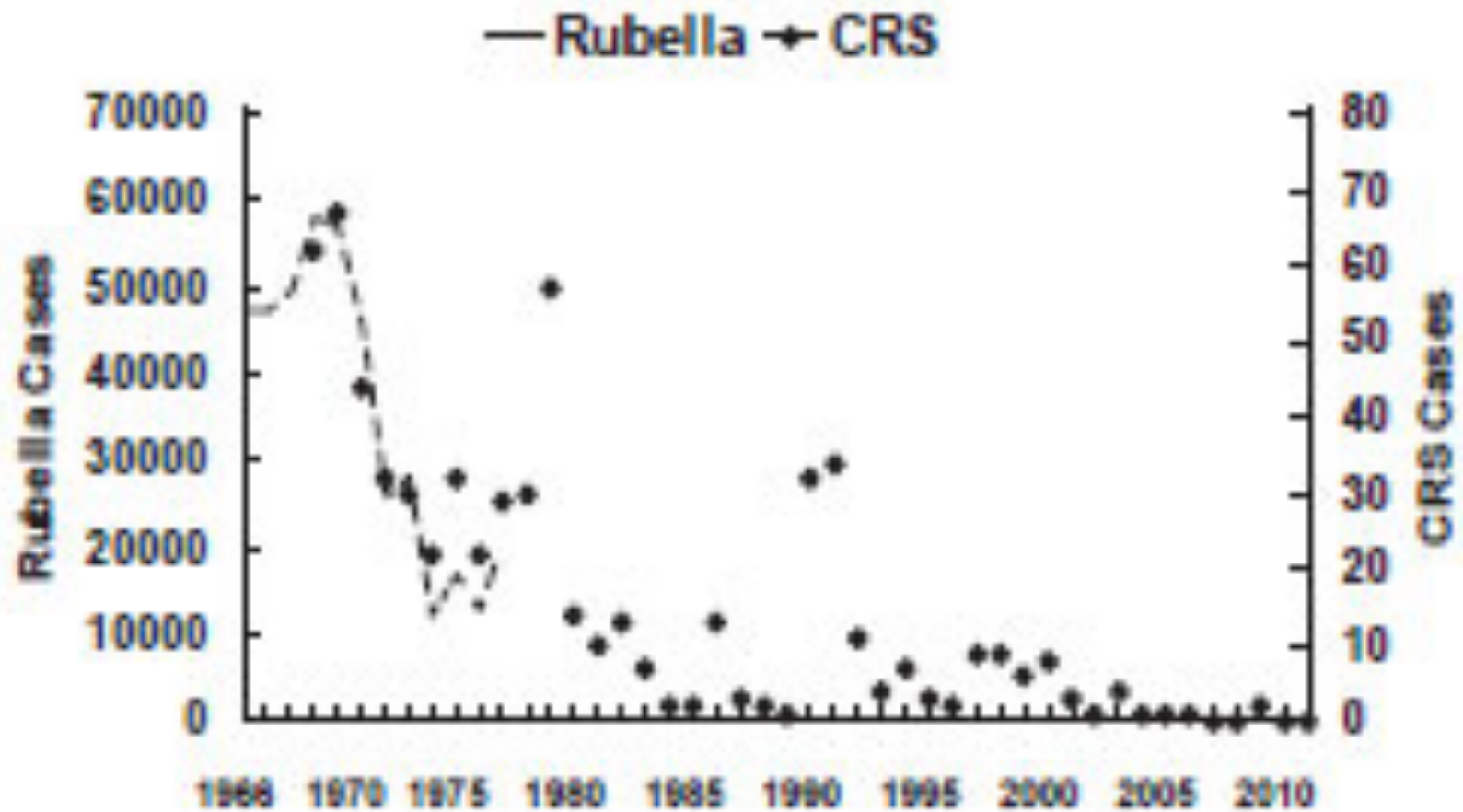


Rubella Epidemiology

- **Reservoir**
 - human
- **Transmission**
 - respiratory (Subclinical cases may transmit)
- **Temporal pattern**
 - peak in late winter and spring
- **Communicability**
 - 7 days before to 5-7 days after rash onset
 - Infants with CRS may shed virus for a year or more

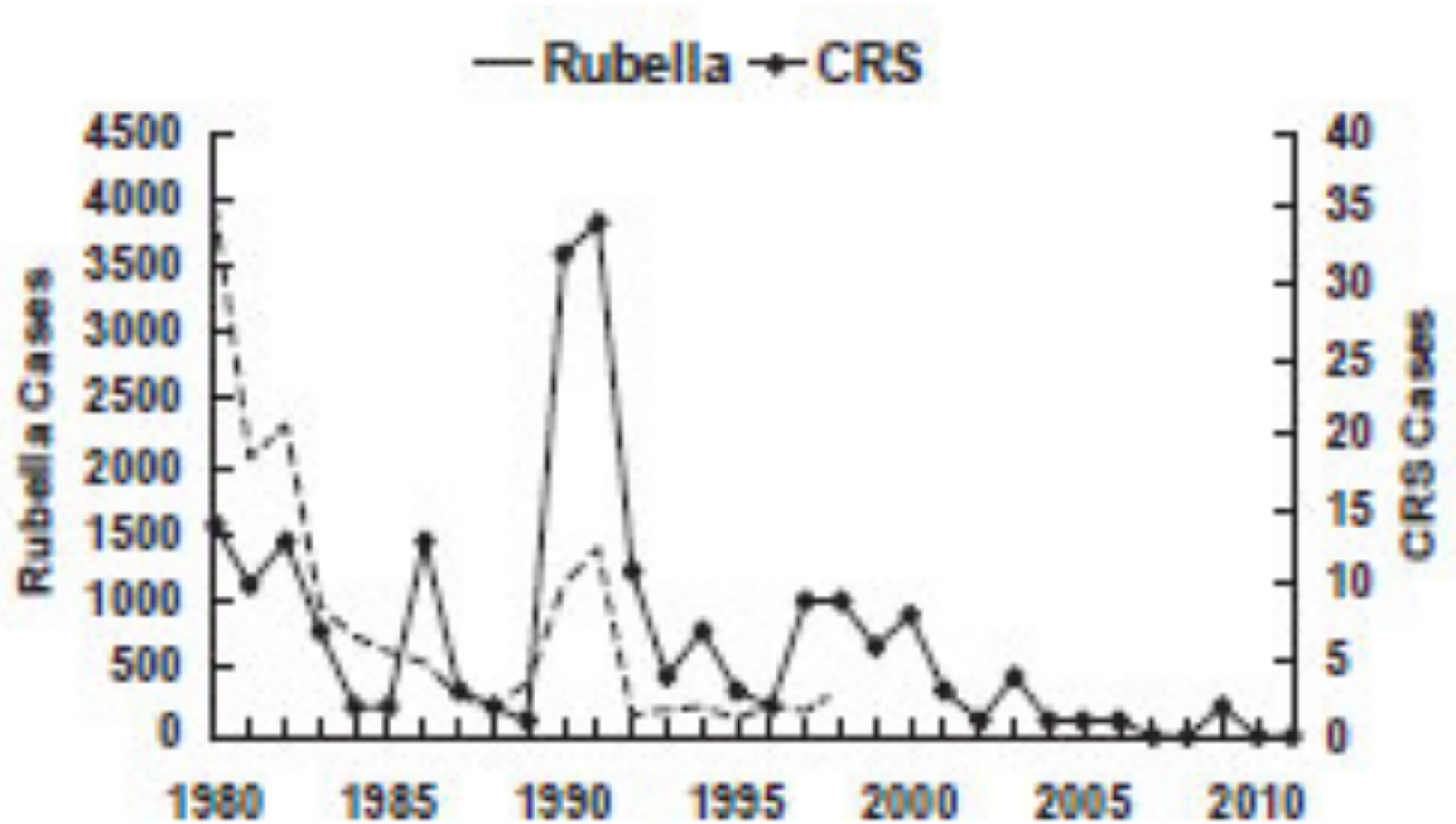


Rubella - United States, 1966-2011





Rubella - United States, 1980-2011





Rubella and CRS in the United States

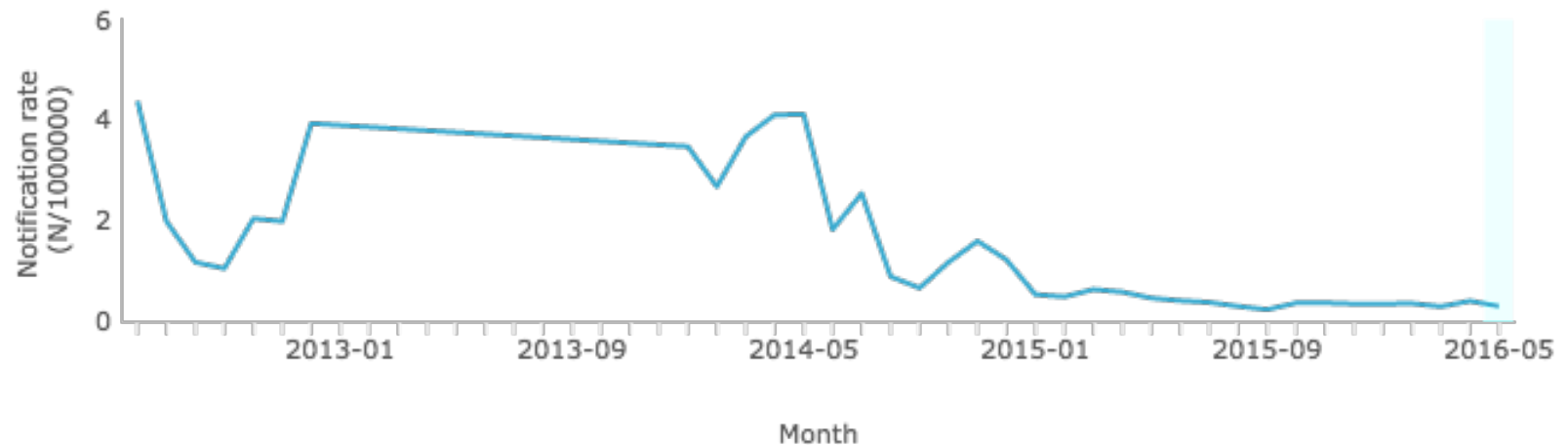
- Most reported rubella in the U.S. in the mid-1990s has occurred among foreign-born Hispanic young adults
- **Indigenous transmission of rubella determined to have ended in 2004**
- In 2010 PAHO announced region of the Americas achieved rubella and CRS elimination goal



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Rubella Epidemiology, Europe, 2013-2016

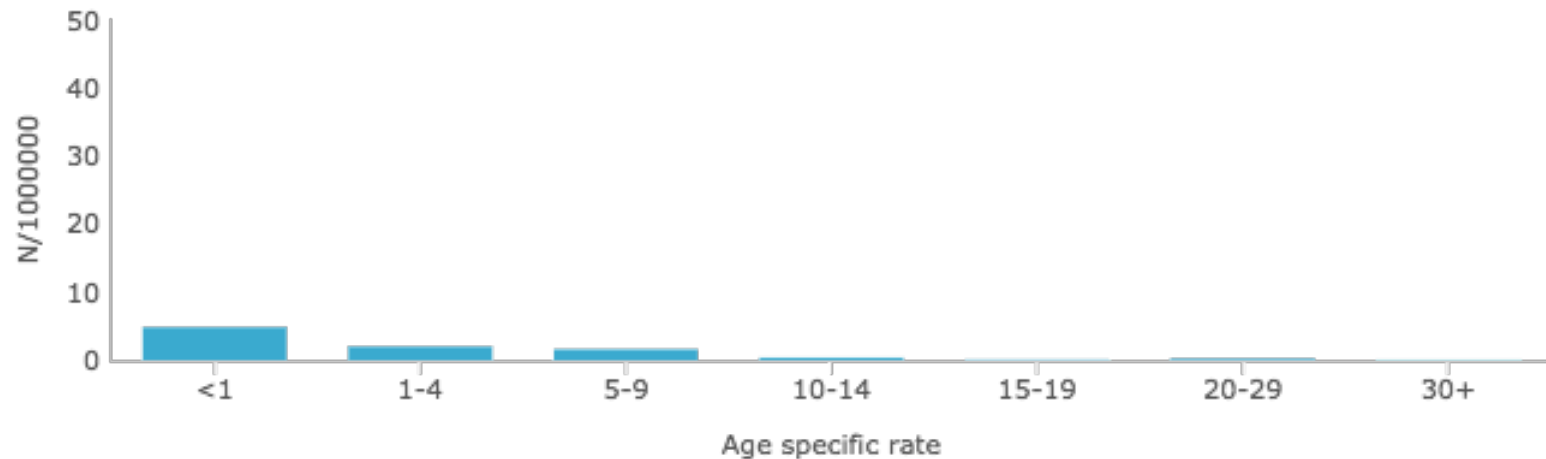




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Distribution of rubella cases per age groups, Europe, 2013-2016





Rubella Vaccine

- **Composition**
 - live virus (RA 27/3 strain)
- **Efficacy**
 - 95% or more
- **Duration of Immunity**
 - lifelong
- **Schedule**
 - at least 1 dose
- Should be administered with measles and mumps as MMR or with measles, mumps and varicella as MMRV



Rubella Vaccine (MMR) Indications

- All infants 12 months of age and older
- Susceptible adolescents and adults without documented evidence of rubella immunity
- Emphasis on nonpregnant women of childbearing age, particularly those born outside the U.S.
- Emphasis on males and females in college, places of employment, and health care settings



Rubella Immunity

- Documentation of one dose of rubella-containing **vaccine** on or after the first birthday
- **Serologic evidence** of immunity
- Birth before 1957 (except women of childbearing age)
- **women who might become pregnant**
 - Birth before 1957 is not acceptable evidence of rubella immunity
 - Only serology or documented vaccination should be accepted



MMR Vaccine Contraindications and Precautions

- History of anaphylactic reactions to neomycin
- History of severe allergic reaction to any component of the vaccine
- Pregnancy
- Immunosuppression
- Moderate or severe acute illness
- Recent blood product
- Personal or family (i.e., sibling or parent) history of seizures of any etiology (MMRV only)



MMR Adverse Events

- Arthralgias (susceptible women)
 - 25%
- Rash, pruritis, purpura
 - not common



MMR Adverse Reactions

- Fever
 - 5%-15%
- Rash
 - 5%
- Thrombocytopenia
 - 1/30,000-40,000 doses
- Lymphadenopathy
 - rare
- Allergic reactions
 - rare



Rubella Vaccine Arthropathy

- Acute arthralgia in about 25% of vaccinated, susceptible adult women
- Acute arthritis-like signs and symptoms occurs in about 10% of recipients
- Rare reports of chronic or persistent symptoms



Vaccination of Woman of Childbearing Age

- Ask if pregnant or likely to become so in next 4 weeks
- Exclude those who say "yes"
- For others
 - explain theoretical risks
 - vaccinate



Vaccination in Pregnancy Study 1971-1989

- 321 women vaccinated
- 324 live births
- No observed CRS
- Maximum theoretical risk of 1.6%, based on confidence limits (1.2% for all types of rubella vaccine)



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