GLOBAL HEALTH PRESS

MUMPS

is characterized by painful enlargement of the parotid gland(s), although other glands may also be affected

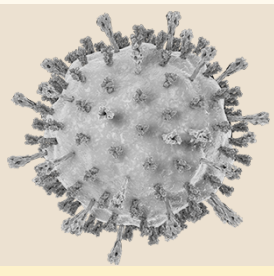
What is mumps ?

An acute, contagious viral disease exclusive to humans, mumps primarily affects the **parotid and glands,** occasionally involving the **testes, ovaries, pancreas, and central nervous system**. The disease was first described by Hippocrates and remains a notable cause of outbreaks among children and young adults.

Microbiology & Pathogenesis

Causative agent:

- Mumps virus, a ***Rubulavirus*** in the *Paramyxoviridae* family.



Structure:

- Single-stranded, negative-sense RNA genome (~15,000 nucleotides) encoding seven genes.

Key antigens:

- HN (hemagglutinin-neuraminidase) and F (fusion) surface glycoproteins elicit neutralizing antibodies.

Pathogenesis:

- Infection initiates via **droplet spread,** often in the upper respiratory tract. Subsequent **viremia** allows dissemination of glandular and neural tissues. Virus shedding in saliva begins about **11 days post-exposure,** continuing for roughly two weeks.

11 DAYS

Notable complications:

- Orchitis, oophoritis, pancreatitis, meningoencephalitis, and permanent sensorineural hearing loss (1–10 per 100,000).

Epidemiology (2025)

- Though markedly reduced by immunization, **mumps remains endemic globally with hundreds of thousands of cases annually.**
- Outbreaks persist even in highly vaccinated settings due to **waning two-dose immunity** and **genotype G predominance.**
- Mumps vaccination is routine in **≈63% of countries**, but disease burden persists in regions with suboptimal coverage.
- Geospatial heterogeneity observed—**densely populated and subtropical Asian zones** show elevated risk; **breakthrough infections** among children and young adults are common despite MMR coverage.
- Overall: Sustained global transmission reflects **heterogeneous vaccine uptake and incomplete herd protection.**

Transmission & Clinical Disease

1. **Mode:** Person-to-person via respiratory droplets; infectious from **3–4 days before to 2 days after** symptom onset.
2. **Incubation:** Typically **16–18 days** (range 14–24).
3. **Clinical presentation:** Prodrome with fever, headache, and malaise followed by **parotid gland swelling** (uni-/bilateral).
4. **Complications:** Occur in up to 10–20% of symptomatic adults—**orchitis** in post-pubertal males, **meningitis/encephalitis** (~0.1%), **hearing loss**, and rarely **sterility**.
5. Approximately **25–40% of infections are subclinical.**

Prevention

Non-vaccine prevention is challenging due to presymptomatic viral shedding. Standard infection control includes:

- Isolation during acute illness (5 days post-onset).
- Hygiene measures to reduce droplet spread in schools, barracks, and universities.

Vaccines

- **Type:** Live attenuated vaccines.
- **Key strains:** *Jeryl Lynn (JL)* and *RIT-4385* (industrialized nations); *L-Zagreb* (low-resource countries).
- **Effectiveness:** Two doses confer **~95–100% seroconversion,** though protection may wane within 10–15 years.
- **Efficacy evidence:** Finland's nationwide MMR program nearly eliminated endemic mumps by 1997.
- **Safety:** Excellent overall; rare **aseptic meningitis** historically linked to Urabe Am9 strain (discontinued).

References

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Main currently licensed mumps vaccines worldwide, based on data from licensing authorities and leading peer-reviewed sources (CDC, EMA, WHO, and major scientific publications):

Brand Name	Manufacturer	Strain Used	Region(s)	Efficacy/Effectiveness
M-M-R II	Merck (USA)	Jeryl Lynn	US, Canada, much of EU/Aus/NZ	95–98% 2-dose efficacy; strong real-world impact; low risk of aseptic meningitis
Priorix	GSK (Belgium)	RIT-4385 (JL major clone)	Europe, most non-US high-income countries	Comparable to JL: >95% seroconversion after 2 doses
Tresivac (MMR)	Serum Institute of India (SIIL)	L-Zagreb	India, much of Africa, SE Asia, some parts of Latin America	96–98% efficacy reported in post-marketing studies; no known meningitis risk
S79/Erdun MMR	Various (China NCPC, Sinovac, etc.)	S79, JL derivatives	China	~94% seroconversion; implemented in all provincial EPI programs
Trimovax	Sanofi-Pasteur (France)*	Urabe Am9*	Formerly Latin America, replaced	Highly effective (>97%), but withdrawn in many regions due to aseptic meningitis
Leningrad-3/L-Zagreb	Microgen (Russia), SIIL (India)	Leningrad strains	Balkan region, Russia, Central Asia	>95% protection; widely used in PAHO/UNICEF campaigns

Note:

- Urabe *Am9* no longer actively recommended due to neurological ADE risk; replaced by JL-based products in most countries.
- *Rubini* strain (Berna, Switzerland; former EU) is **not included** due to demonstrated low clinical efficacy and is now obsolete per licensing authorities.
- All vaccines are live attenuated and nearly always administered as part of trivalent (MMR) or tetravalent (MMRV) combinations.
- Two-dose schedules universally required for outbreak control and long-term protection.

Effectiveness evidence:

- Nationwide elimination (Finland, USA) and sharp reduction documented wherever high coverage of JL / RIT-4385 / L-Zagreb vaccines achieved.
- Real-world evidence confirms breakthrough risk increases after >10–15 years, especially in high-contact/campus-age groups.

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