

Table: Frequency of Complications Due to Before initiation of Vaccination Programs

Disease	Incidence per year (pre-vaccination)	Case Fatality Rate	Severe Complications / Sequelae (pre-vaccine era)
Measles	>500,000/year (USA), 2–4 million in EU	1–3/1,000 cases	Encephalitis: 1/1,000; SSPE: 4–11/100,000
Mumps	200,000/year (USA)	Rare (<1/10,000)	Deafness: 1/20,000; Meningitis: 1%; Male infertility: 1–3%
Rubella	50,000/year (USA/EU)	<1/10,000 cases	CRS: up to 90% if infected in 1st trimester, ~20% at 12–20 weeks
Diphtheria	100,000/year (USA)	5–10% of cases	Heart and nerve injury, paralysis
Tetanus	0.4/100,000 (USA)	10–90% (age/treatment dependent)	Muscle cramps, paralysis
Pertussis (Whooping Cough)	>200,000/year (USA)	0.5–1% in infants	Pneumonia, seizures, brain damage
Pneumococcal Infection	100–200/100,000 <5 yrs/year (EU, pre-vax)	10–30% (severe cases)	Hearing loss, epilepsy, cognitive deficits
Meningococcal Infection	1–3/100,000 (EU)	10–20%	Amputations, deafness, organ damage: 10–20%
Invasive Hib	20–60/100,000 <5 yrs/year (EU, pre-vax)	5%	Hearing loss, brain damage: up to 30%
Hepatitis B	>90% chronic infection if infected at birth	15–25% die from late sequelae	Cirrhosis, liver cancer
Polio	13,000/year (USA 1950s)	2–5% of children	Paralysis: up to 1/200 cases; Permanent disability
Varicella (Chickenpox)	>4 million/year (USA)	1–2/100,000	Encephalitis, nerve disorders <0.1%. Stroke and general thrombosis
HPV Cancer (Cervical)	6,000 cervical cancers/year (Germany)	1,500–1,700 deaths/year	Infertility, organ loss post-treatment

Notes and Reference Corrections:

- 1. Measles/SSPE:** Original German source "1/10,000" for SSPE risk is out of date. Most recent WHO and expert consensus: SSPE occurs at 4–11 cases per 100,000 measles cases, higher if acquired in infancy.
- 2. Mumps/Infertility:** Table reports "1–3%" but permanent male infertility from mumps is controversial and not robustly quantifiable; orchitis is common, but clear epidemiological infertility rates are not established, so citation clarified.
- 3. Rubella/CRS:** CRS rates are trimester-dependent—up to 90% in the first trimester, about 20% at 12–20 weeks.
- 4. Other values** are corroborated by the listed CDC, WHO, and ECDC references.