Measles

Microorganism

- The measles virus is an enveloped RNA virus belonging to the Morbillivirus genus
- It is a **strictly human pathogen**
- The vast majority of cases occur in unvaccinated or incompletely vaccinated individuals
- In France, measles is a **notifiable disease** (mandatory reporting required)

Transmission

- Transmission is exclusively **respiratory** and occurs **only between humans**

Infectivity

- Measles is one of the **most contagious infectious diseases**: in a non-immune population, one infected individual can transmit the virus to 12 to 18 susceptible individuals.
- An infected person is **contagious** from 5 days before to 5 days after the onset of the rash.

Incubation

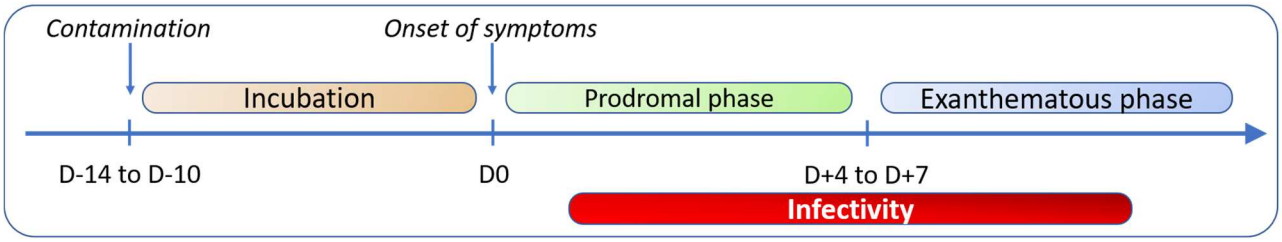
- The incubation period typically ranges from **10 to 14 days**, with extremes between 8 and 18 days

Présentation clinique

Measles infection typically progresses through **two distinct phases:**

Prodromal phase (invasion)	• Characterized by high-grade fever (> 38.5°C), fatigue, general malaise, and upper respiratory and ocular catarrhal symptoms: rhinitis, conjunctivitis, and often cough. • Koplik spots may be observed on the buccal mucosa. • This phase usually lasts less than 4 days
Exanthematous phase	• Morbilliform rash with the following features: o Begins on the face and head, then spreads downward over approximately 3–4 days to involve the entire body o Maculopapular, non-pruritic, and blanching on pressure o Rash typically leaves areas of unaffected skin between lesions • The rash fades gradually within less than one week • Fever usually persists during the initial days of the rash

Measles infection confers lifelong immunity



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Complications can occur and are the main contributors to the severity of measles. They are more frequent in certain population groups

Risk factor for complication		
• Age < 5 years • Age > 30 years	• Immunosuppression • Pregnancy	• Malnutrition • Chronic underlying diseases

Complications

- Bacterial superinfections
  - ENT: laryngitis, otitis media
  - Respiratory: bacterial pneumonia
- Severe (malignant) measles
- Organ-specific involvement
  - Neurological complications
    - Post-infectious encephalitis
    - Measles inclusion body encephalitis (MIBE)
    - Subacute sclerosing panencephalitis (SSPE)
  - Pulmonary involvement: Primary measles pneumonia

Diagnostic

- **Methods**

Molecular biology (PCR, etc…)	• Detection of the viral RNA • Performed on upper respiratory specimens, saliva (using Oracol kit), or urine samples. • Viral RNA is detectable **from the onset of the rash and up to 10–12 days afterward**.
Serology	• Detection of IgM and IgG antibodies. • Performed on a blood sample. It can also be conducted using saliva (collected using the Oracol kit). • IgM antibodies become detectable **3 days after the onset of the rash and remain detectable for up to 1 month**. • Seroconversion is defined by the appearance of IgG antibodies

- **Strategy**
  - PCR on upper respiratory specimens or saliva samples
  - Serology for IgG and IgM antibodies using blood or saliva samples

Treatment

- There is no **specific treatment** for measles. Management is **symptomatic**
- **Hospitalization** is mandatory for individuals with risk factors for severe disease or complications

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Prévention

- **Prevention relies on:**
  - Vaccination
  - Exclusion of infected individuals (school exclusion, work leave)
  - Implementation of respiratory precautions during hospitalization and throughout infectivity.
- Mandatory reporting must occur without waiting for biological confirmation to allow for verification of immunity in contact persons.

Vaccine

- **Mandatory** for all infants born after January 1, 2018.
- The measles vaccine is combined with those for rubella and mumps, referred to as **MMR** (Measles, Mumps, Rubella).
- The primary vaccination schedule consists of two doses :
  - One dose at 12 months of age, followed by
  - One dose between 15 and 18 months.
  - In epidemic situations, vaccination may begin earlier for children in group settings, with a three-dose schedule.
- **Catch-up** vaccination is recommended for individuals born since 1980 who have not been vaccinated: Two doses, administered at least 1 month apart, regardless of prior measles history

Contraindications to vaccination

- The MMR vaccine is a live attenuated vaccine **contraindicated in immunocompromised individuals and pregnant women**
- Pregnancy should be avoided for 1 month following vaccination due to the presence of a rubella strain in the vaccine

Prophylaxie post-exposition

In the case of exposure to a non-vaccinated or incompletely vaccinated individual

- **Vaccination :**
  - The administration of one dose of MMR is recommended, ideally within 72 hours following exposure, starting at 6 months of age.
  - Children aged 6 to 11 months: continue the vaccination schedule (second dose at 12 months, third dose between 16 and 18 months).
  - Individuals over 1 year old born after 1980: update the vaccination schedule to complete a total of two doses of the trivalent vaccine
- Administration of **polyvalent immunoglobulin** is recommended, based on specialized advice, within 6 days following exposure for individuals with risk factors for complications and those for whom vaccination is contraindicated

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