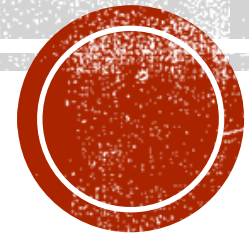
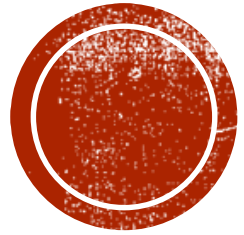


MEASLES OUTBREAK

Dr. Haya Altawalah

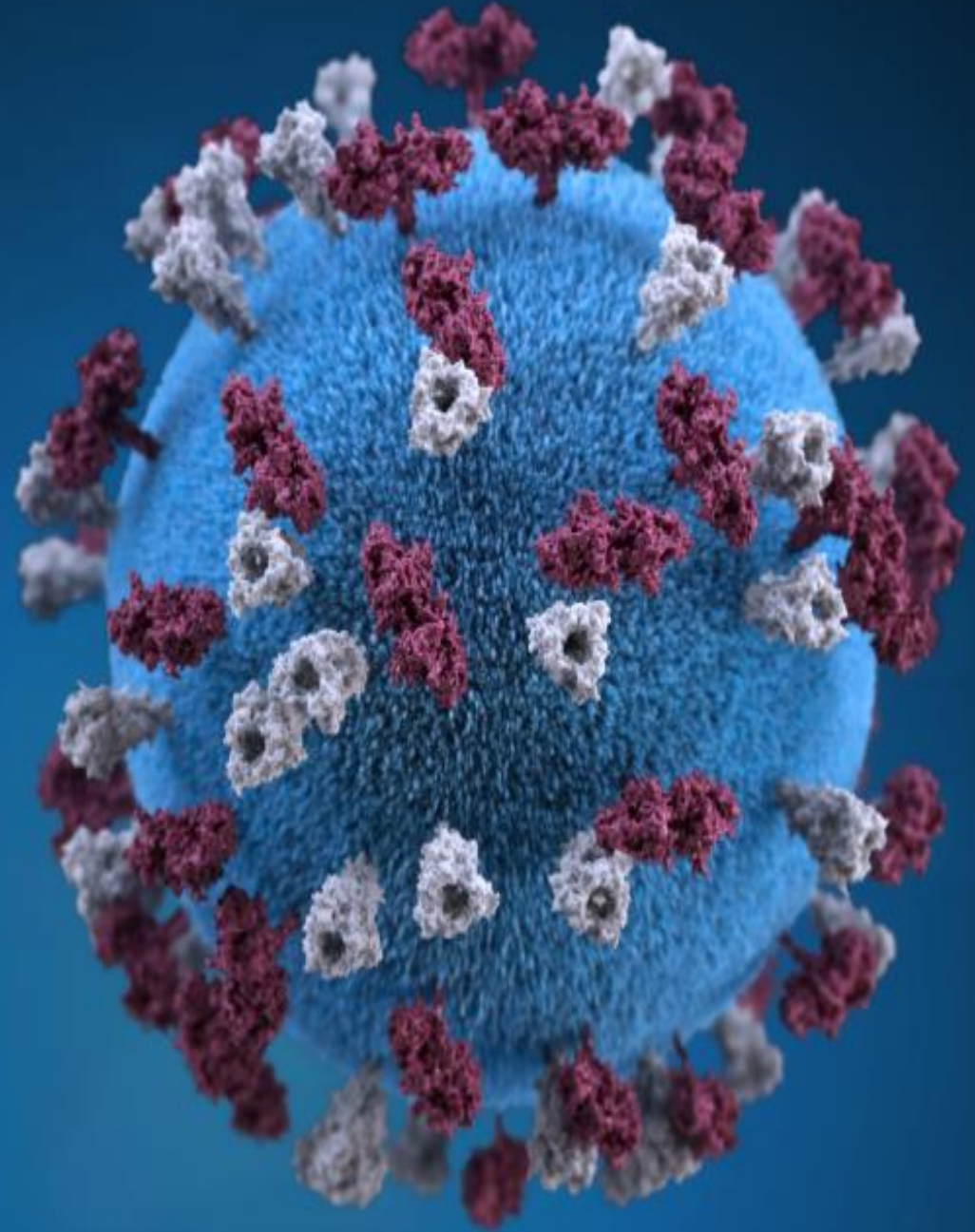




MEASLES VIRUS:



- -SS RNA enveloped virus
- Belongs to Paramyxoviridae
- Humans as natural host
- No animal reservoirs

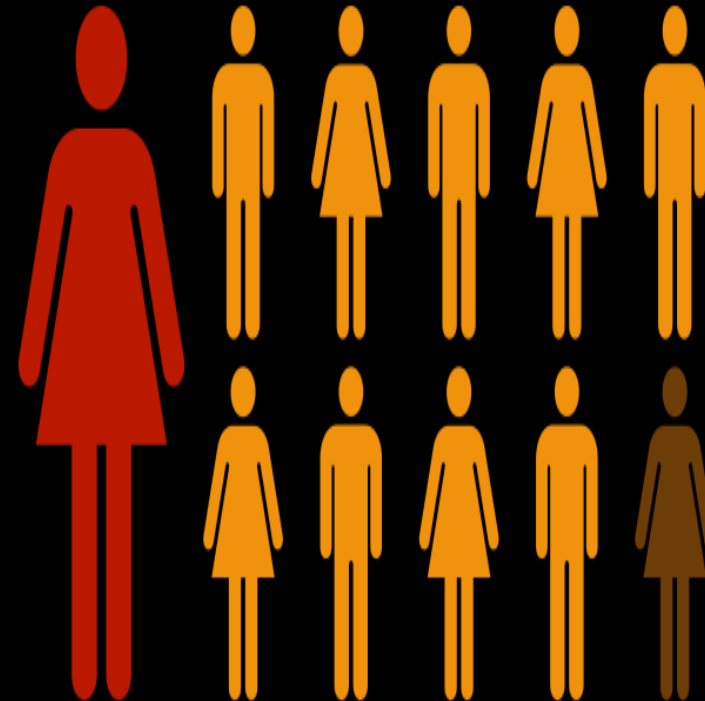




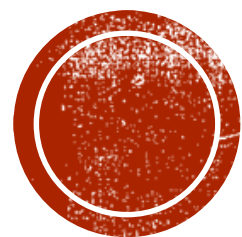
MEASLES

- Infection of
 - respiratory system, immune system and skin
- Highly contagious
 - up to 90%
- Infectivity period:
 - 4 days before – 4 days after onset of rash
- IP:
 - 7–14 days

is **highly contagious** and spreads through the air when an infected person **coughs or sneezes**.



It is so contagious that if one person has it, **9 out of 10 people** of all ages around him or her will also become infected if they are not protected.

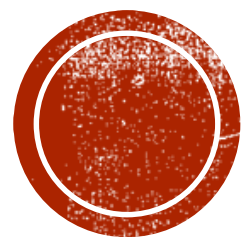


PRESENTATION:



- Fever
- Malaise
- Cough, coryza, and conjunctivitis -three “C”s
- Pathognomonic enanthema (Koplik spots) followed by
- Maculopapular rash
 - Centripetal spread






COMPLICATIONS:




- Otitis media
- Bronchopneumonia
- Laryngotracheobronchitis
- Diarrhea
- Acute encephalitis
 - results in permanent brain damage
- Subacute sclerosing panencephalitis (SSPE)
 - Rare, but fatal degenerative disease of CNS
 - Behavioral and intellectual deterioration
 - Seizures




Ministry of Health and Family Welfare
Government of India

NATIONAL HEALTH PORTAL
Gateway to authentic health information
www.nhp.gov.in
NHP Voice Web (Toll Free): 1800-180-1104

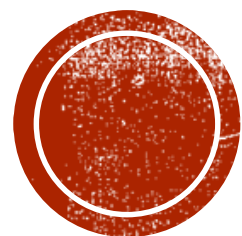


Complications of Measles



- Pneumonia
- Severe diarrhea
- Encephalitis
- Blindness
- Ear infection

Website: <http://www.nhp.gov.in/> Toll Free no.: 1800-180-1104



AT RISK GROUPS:



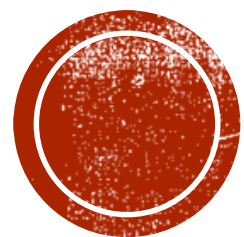
Infants and children
aged <5 years

Adults aged >20 years

Pregnant women

People with
compromised immune
system

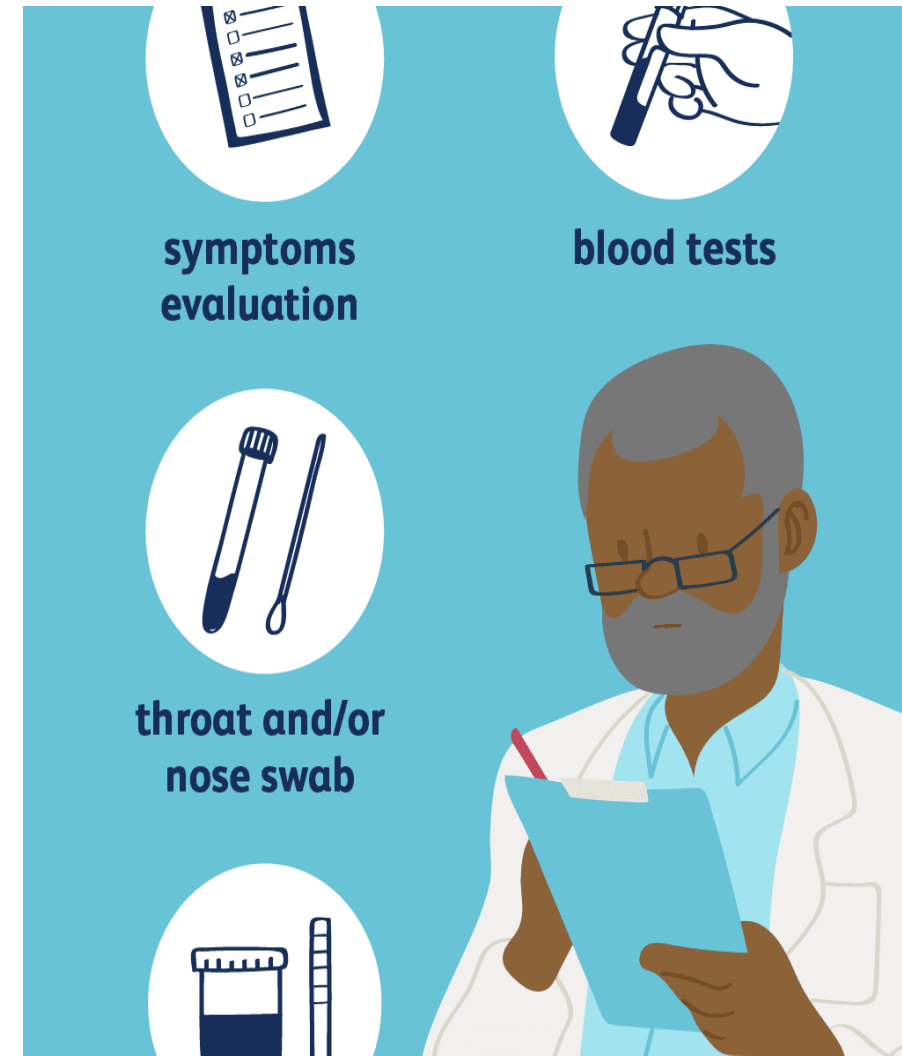


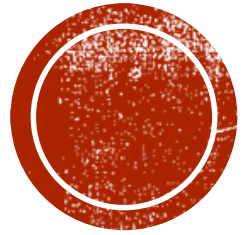


LAB DIAGNOSIS:



- **Serology:**
 - IgM in serum
 - 3rd and 28th day
- **Molecular:**
 - RT-PCR
 - Respiratory
 - Saliva
- **Genotyping:**
 - Source
 - Distinguish between wild-type and vaccine related measles virus infection



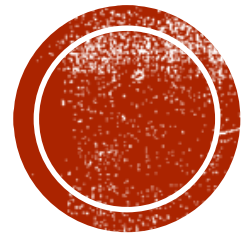


MANAGEMENT:



- Symptomatic
 - Antipyretics
 - Bed rest
 - Adequate fluid intake
- Contact tracing



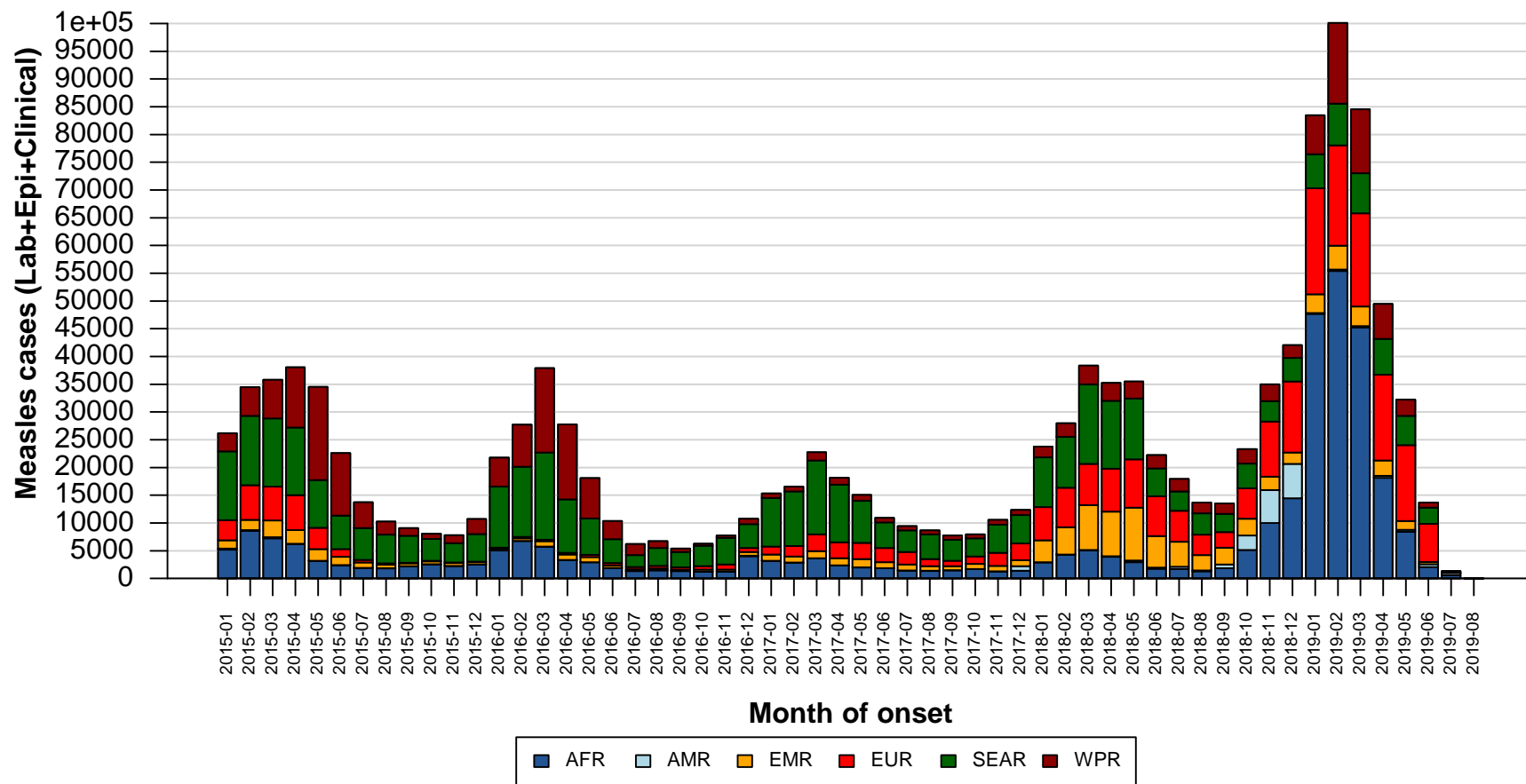


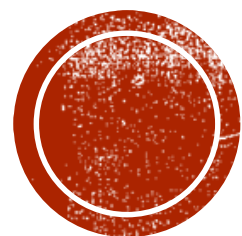
BURDEN OF DISEASE:



- Measles remains a leading cause of vaccine-preventable infant mortality
 - High mortality (10%)
- In 2000:
 - 31 to 39.9 million illnesses worldwide
 - 733,000 to 777,000 deaths,
 - Making it the 5th most common cause of death in children under 5 years of age.
- Measles is still commonly transmitted (endemic or large outbreaks) worldwide.



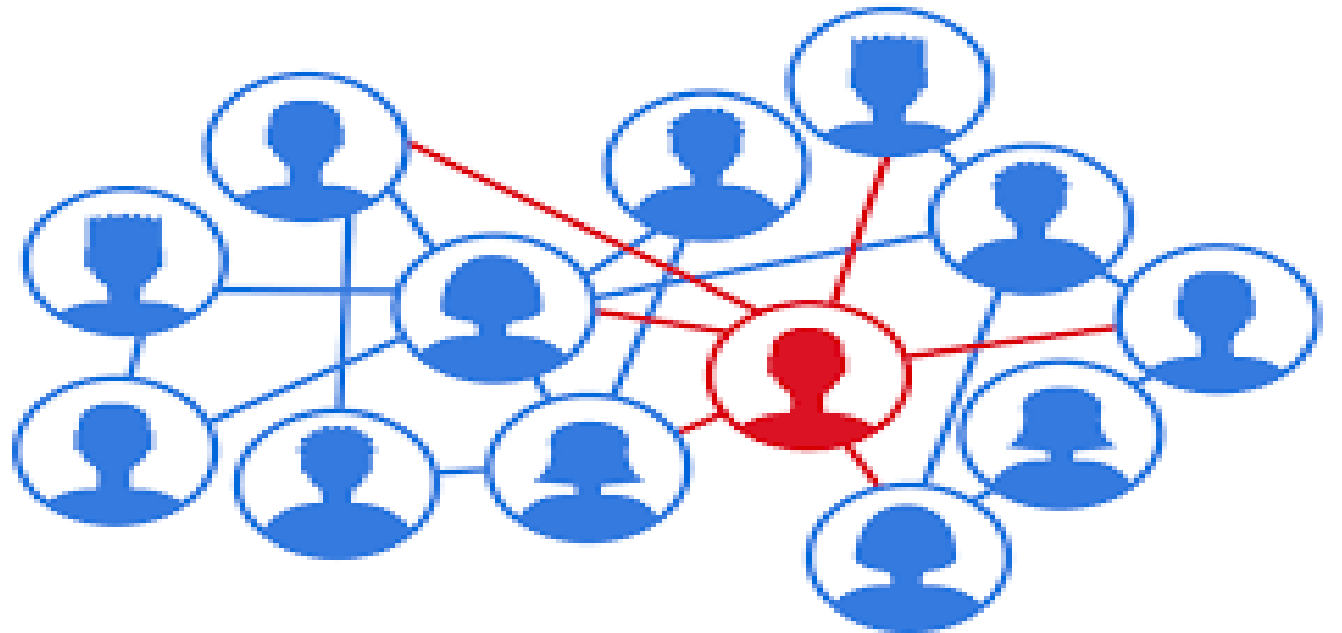


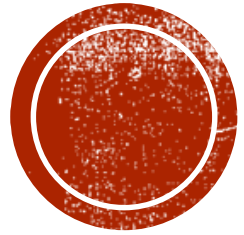


RISK FACTORS:



- **Virus:**
 - Highly contagious
 - Remains active and contagious in the air or on infected surfaces for up to 2 hours.
 - 4 days before and 4 days after onset of rash Prodromal stage
- **Host:**
 - Extreme of ages
 - Immune status
- **Environment:**
 - Low vaccination coverage
 - Traveling
 - Poor health services
 - Civil strife
 - Low awareness
 - Misinformation
 - Vaccine hesitancy



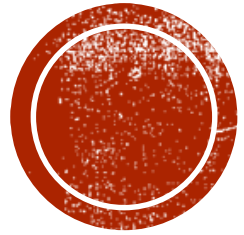


VACCINE:



- MMR
 - Live attenuated
 - At 1 and 2 year of age (minimum of 1 month between doses)
 - Contraindicated in:
 - Immune suppressed
 - Pregnant women
 - Confirmed anaphylactic reaction
- Very safe and effective
- Two doses of MMR vaccine are about 97% effective at preventing measles
- one dose is about 93% effective





WHY NOT GET THE VACCINE:



- Fear for side effects (51%)
- Presence of underlying chronic conditions (12.2%)
- Skip scheduled appointment (12.2%)
- Refusal of vaccination (10.3%)
- Acute illnesses (7.2%)
- Allergy to eggs (4.6%)
- Other causes:
 - lack of access
 - poor health systems
 - complacency

Determinants of low measles vaccination coverage in children living in an endemic area.

Lo Vecchio A¹, Cambriglia MD², Fedele MC³, Basile FW², Chiatto F², Miraglia Del Giudice M³, Guarino A².

Author information

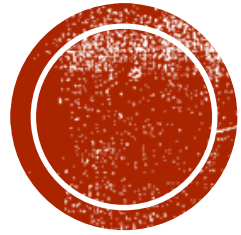
- 1 Department of Translational Medical Sciences, Section of Pediatrics, University of Naples Federico II, Via Pansini 5, 80131, Naples, Italy. andrealovecchio@gmail.com.
- 2 Department of Translational Medical Sciences, Section of Pediatrics, University of Naples Federico II, Via Pansini 5, 80131, Naples, Italy.
- 3 Department of Woman, Child, and General and Specialized Surgery, University of Campania Luigi Vanvitelli, Naples, Italy.

Abstract

Measles outbreaks were recently reported in Europe due to low immunization rates. In this scenario, identifying the reasons of no vaccination is crucial to set up strategies to improve immunization rate. A cross-sectional study was conducted to investigate the determinants of missed vaccination in children living in Southern Italy, during the 2016 outbreak. A standardized face-to-face questionnaire was used to record demographic data, immunization status, and reasons for missed vaccination. A total of 1141 children (median age 86 months, male 47.2%) was enrolled, 77.8% of the children were adequately vaccinated for age, 6.3% were incompletely vaccinated for age, and 15.9% did not receive any vaccine dose. Vaccination rate and reasons for not vaccinating significantly varied according to age, with children ≤ 24 months showing the lowest rate (67.8%). Reasons for not vaccinating included fear for side effects (51%), presence of underlying chronic conditions (12.2%), skip scheduled appointment (12.2%), refusal of vaccination (10.3%), acute illnesses (7.2%), and allergy to eggs (4.6%). The presence of underlying condition was a risk factor for inadequate immunization ($p < 0.0001$). Only 4.7% of conditions were true contraindications to vaccine administration. Conclusion: We reported inadequate measles immunization rate in Southern Italy, with lowest rates in children ≤ 2 years or with underlying conditions. Only a minority had true contraindications to vaccine uptake. Implementation strategies addressed to health-care professionals and families should focus on the reported determinants to increase measles vaccination coverage. What is Known: • Measles is a viral, highly communicable disease, preventable by vaccine. • Measles elimination in Europe failed as demonstrated by outbreaks in several countries, due to low immunization rates. What is New: • Inadequate measles immunization rate due to false contraindications in Southern Italy, with lowest rates in children ≤ 2 years. • The presence of underlying disease is a risk factor for inadequate immunization.

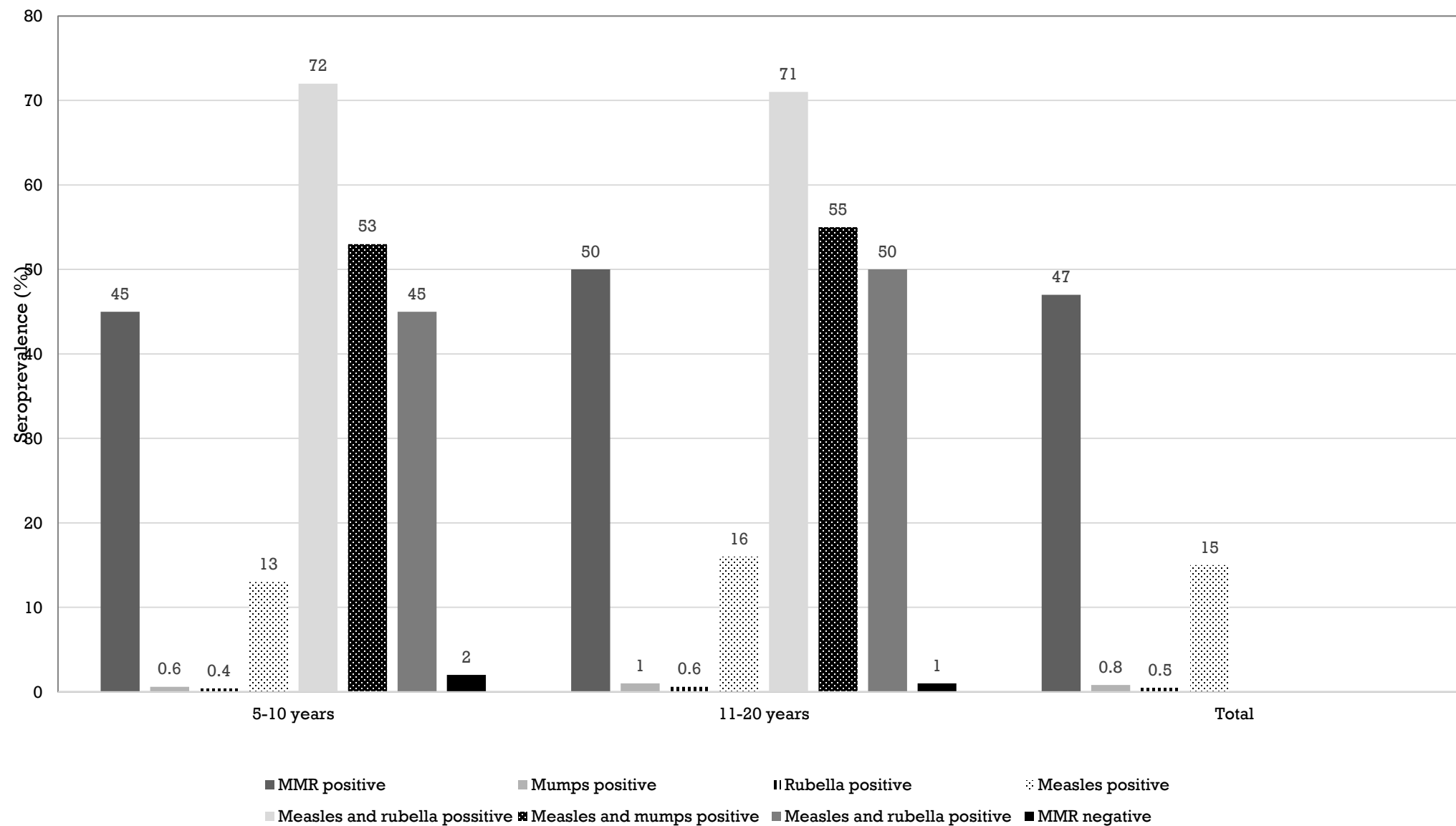
KEYWORDS: Immunization; Italy; MMR; Vaccine hesitancy

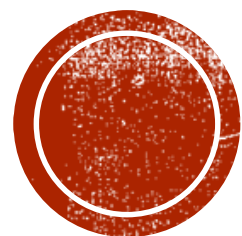




KUWAIT DATA:







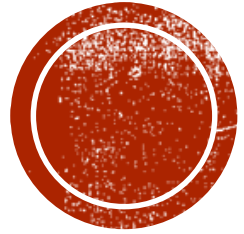
MEASLES OUTBREAK:



- Outbreaks are happening all over the world
- largest in Madagascar and Ukraine
- In 2019, there have been outbreaks in countries with overall high rates of vaccination
 - Thailand and the United States.
 - Within pockets of unvaccinated people

**OUTBREAK
ALERT**





STRATEGIES FOR MEASLES PREVENTION AND CONTROL: CURRENT RECOMMENDATIONS:

Response needs to be
fast and aggressive



Risk assessment



History

MMR status

Travel history

Contact history



Confirm
diagnosis

Clinical

Laboratory



Isolate

Manage
cases

Trace
contacts



- Avoid gathering places (e.g., schools, cultural or sporting events, etc.)
- Waiting room:
 - Special waiting room/area
 - Air out waiting rooms frequently and fully
- Keep cases together and isolated throughout their hospital stay, if needed
- Provide immunized health care staff
- Contacts:
 - Post exposure prophylaxis



- Post exposure prophylaxis:
 - **HNIG**
 - To prevent or attenuate an attack in:
 - Immune compromised patients and contacts
 - Pregnant women
 - Infants less than 9 months of age
 - Administered within **72 hours** up to 6 days
 - Another exposure, **more than 3 weeks** after first NHIG dose, a further NHIG should be considered
 - **MMR:**
 - Offered to immune competent and infants > 6 months of age
 - With in **3 days**



- **Immune competent:**
 - **Satisfactory evidence of protection:**
 - Continue to work
 - Report if fever or symptoms of measles in next **18 days**
 - (documentation of 2 MMR vaccine received and/or positive measles antibody test)
 - **No satisfactory evidence of protection:**
 - Excluded from work at **day 5**
 - Receive one MMR dose
 - Return to work **after 21 days** or measles IgG positive at least 14 days after MMR vaccine
- Who become ill should be excluded from work or school until full **4 days** after rash onset



Identify risk groups



Management of **immunosuppressed** exposed to measles:

| Age group | History | Immunosuppressed group A | Immunosuppressed group B |
|-----------------------------------|----------------------|---|--|
| Born before 1970 | Of measles infection | Assume immune | Regardless of history and even if known to be measles antibody positive previously, test again at time of exposure. Issue NHIG if measles antibody is negative or equivocal. If not possible to test within 3 days of exposure, offer NHIG. |
| | No measles infection | Test and issue only if measles antibody negative or equivocal | |
| Born between 1970 and 1990 | Of measles infection | Test and issue only if measles antibody negative or equivocal. | |
| | No measles infection | Test and issue only if measles antibody negative or equivocal. If not possible to test within 6 days of exposure, offer NHIG | |
| Born after 1990 | One measles vaccine | Test and issue only if measles antibody negative or equivocal. If not possible to test within 6 days of exposure, offer NHIG | |
| | Two measles vaccines | Test and issue only if measles antibody negative or equivocal. If not possible to test within 6 days of exposure, offer NHIG | |
| | Unvaccinated | Offer NHIG, ideally within 3 days | |



- Management of **pregnant** women exposed to measles:
 - NHIG issued within **6** days of exposure

| Age group | history | Management |
|----------------------------|----------------------|--|
| Born before 1970 | Of measles infection | Assume immune |
| | No measles infection | Assume immune |
| Born between 1970 and 1990 | Of measles infection | Assume immune |
| | No measles infection | Test and issue within 6 days only if measles antibody negative |
| Born after 1990 | One measles vaccine | Test and issue within 6 days only if measles antibody negative |
| | Two measles vaccine | Assume immune |
| | Unvaccinated | Test and issue if measles antibody negative. If not possible to test within 6 days of exposure, offer NHIG. |



- Management of **infants under 9 months** of age exposed to measles:

| Relavant infant history | Age of exposed infant (completed months) | | |
|---|--|------------|---------------------|
| | 0-2 months | 3-5 months | 6-8 months |
| Mother is the index case | HNIG | HNIG | MMR vaccine |
| Mother is known antibody negative or equivocal | HNIG | HNIG | MMR vaccine |
| Mother born before 1970 | Nothing | HNIG | MMR vaccine HNIG |
| Mother born between 1970 and 1984 and has had natural measles | Nothing | HNIG | MMR vaccine HNIG |
| Mother born between 1970 and 1984 and is unsure of her status | HNIG | HNIG | MMR vaccine HNIG |
| Mother has had measles vaccine or born after 1984 | HNIG | HNIG | MMR vaccine |
| Infant born before 32 weeks of gestation | HNIG | HNIG | MMR vaccine |



Notify authorities

**Intensify
surveillance**

Collect data

- Demographics
- Number of morbidity and mortality
- Analysis

**Start vaccination
activities**

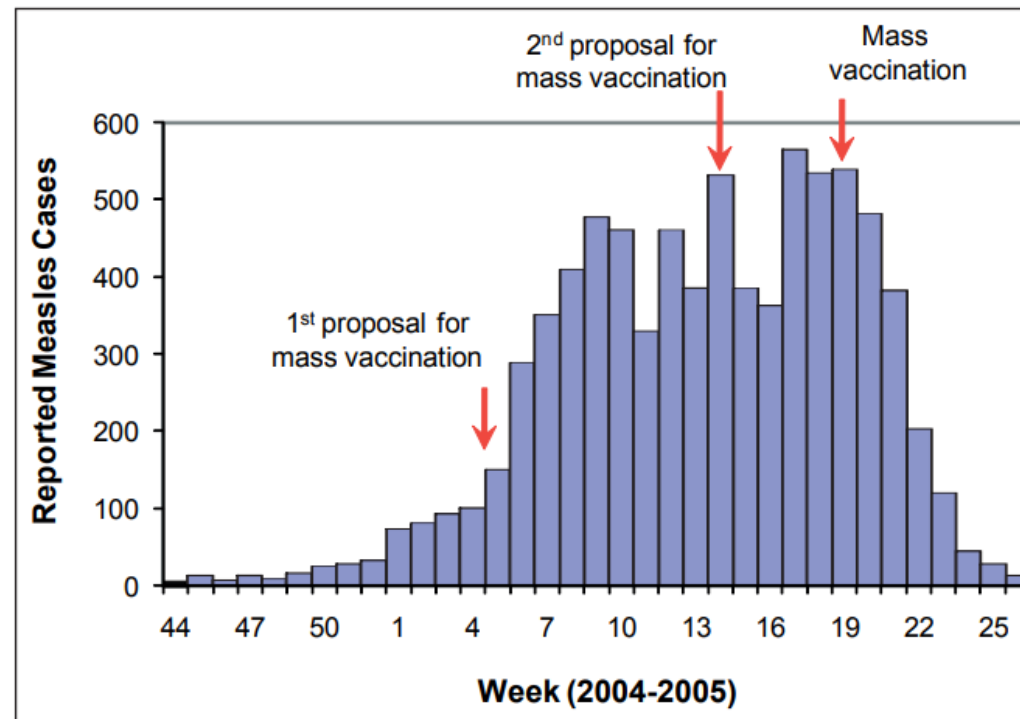


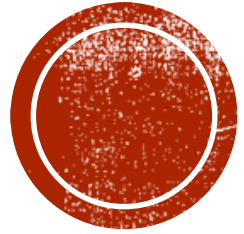
- Suspected outbreak:
 - Selective vaccination activities
 - Reinforcement of routine vaccination
- Confirmed outbreak:
 - Nonselective vaccination campaign



- Timing of intervention:

Figure 2: The epidemic curve for N'djamena, Chad in 2004-2005



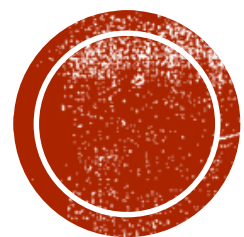


IS IT POSSIBLE TO ERADICATE MEASLES?



| | |
|---|---|
| Biological characteristics of measles virus: | <ol style="list-style-type: none"> 1. Highly contagious-----> requires up to 95% vaccine coverage is needed 2. Humans are the only reservoir 3. Infection leads to life long immunity 4. Outbreaks at regular intervals 5. One genotype available and is stable 6. Infectivity period 4 days before, 4 days after rash onset |
| Vaccine: | <ol style="list-style-type: none"> 1. Available 2. 1st dose 90% protection. 2nd dose 99% protection 3. Risk of vaccine failure to cold chain failure 4. Host factors affecting efficacy includes poor nutrition 5. Antibody titer following vaccine < natural infection and it decrease over time 6. Injection needs skilled personnel |
| Surveillance and laboratory identification: | Planned but costly and not implemented yet |
| Effective delivery of vaccination program: | <ol style="list-style-type: none"> 1. Catch-up/ keep-up/ follow-up <ol style="list-style-type: none"> 1. Costly 2. Affected by poor healthcare infrastructure 3. Limited access to certain areas |
| International commitment to eradication: | Needed |





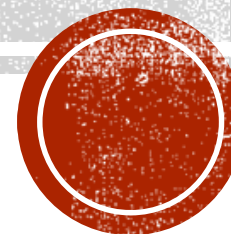
CONCLUSIONS:



- Measles vaccination resulted in a 80% drop in measles deaths between 2000 and 2017 worldwide
- During 2000-2017, measles vaccination prevented an estimated 21.1 million deaths making measles vaccine one of the best buys in public health
- Guarantee a 'second opportunity' for measles vaccination, either through campaigns or routine immunization.
 - Increase rate of vaccine coverage
- Establish an effective system to monitor coverage, and conduct measles surveillance with integration of epidemiological and laboratory information



THANK YOU



- <https://www.who.int/>
- <https://www.cdc.gov/>
- Human vaccines & immunotherapeutics 11:1, 21–26; January 2015; © 2015 Landes Bioscience
- Green book, chapter 21
- <https://www.unicef.org/stories/measles-explained-whats-behind-recent-outbreaks>
- www.who.int/vaccines-documents/ Response to measles outbreaks in measles mortality reduction settings

