

Vaccines for Health Workers: Measles, Mumps, Rubella & Varicella (Chicken Pox)



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Introduction

- Vaccines prevent & reduce the spread of infectious and communicable diseases
- Vaccines are the most effective and cost-efficient method to reduce these illnesses
- Healthcare Personnel (HCP) are at risk for exposure, infection, and transmission of diseases to patients and community
- Vaccine-preventable diseases are more severe in adults
- Most who are vaccinated with MMR and Varicella will be protected for life.



Vaccine Benefits *

- Boost immune system to respond to and prevent disease despite possible exposure
- Save millions of lives each year, worldwide
- Now have vaccines to prevent > 20 life-threatening diseases
- Component of primary health care and a human right toward health
- Part of a global effort to prevent, detect and respond to outbreaks (1 in 5 children, no access)
 - Goal by 2030, save 50 million lives
- WHO: https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1 ,
- CDC: <https://www.cdc.gov/globalhealth/immunization/data/fast-facts.html>



Illness Prevention

- **MEASLES (M)**: fever, cough, runny nose, and red, watery eyes, commonly followed by a rash that covers the whole body.
 - Can lead to seizures (often associated with fever), ear infections, diarrhea, and pneumonia. Rarely, measles can cause brain damage or death.
- **MUMPS (M)**: fever, headache, muscle aches, tiredness, loss of appetite, and swollen and tender salivary glands under the ears.
 - Can lead to deafness, swelling of the brain and/or spinal cord covering, painful swelling of the testicles or ovaries, and, very rarely, death. In adult males may impact fertility.



Illness Prevention

- **RUBELLA (R)**: fever, sore throat, rash, headache, and eye irritation. It can cause arthritis in up to half of teenage and adult women.
 - Rubella exposure during pregnancy, a miscarriage and birth defects may occur.
- **Varicella**: itchy rash, fever, tiredness, loss of appetite, and headache. It can lead to skin infections, pneumonia, inflammation of the blood vessels, swelling of the brain and/or spinal cord covering, and infections of the bloodstream, bone, or joints
 - Later in life, Shingles (i.e., herpes zoster) can occur which include painful, burning blisters along a nerve – now have vaccine for those > 60 years of age, typically.



Global Immunization: Worldwide Disease Incidence (2020)*

Measles

- Worldwide cases/year: > 350,000
- Worldwide deaths/year: 140,000

Mumps

- Worldwide cases/year: > 500,000
- Worldwide deaths/year: unavailable

Rubella

- Worldwide cases/year: about 15,000
- Worldwide deaths/year: unavailable

Varicella (Chickenpox)

- Worldwide cases/year: 40 million to 50 million
- Worldwide deaths/year: > 4,200

*Children's Hospital of Philadelphia: <https://www.chop.edu/centers-programs/vaccine-education-center/global-immunization/diseases-and-vaccines-world-view#:~:text=Immunizations%20currently%20prevent%202%20million,vaccine%2Dpreventable%20diseases%20each%20year>



Side Effects MMR/Varicella Vaccines*

- Sore arm from the injection or redness where the shot is given, fever, and a mild rash.
- Swelling of the glands in the cheeks or neck or temporary pain and stiffness in the joints (mostly in teenage or adult women) sometimes occur.
- More serious reactions happen rarely, can include seizures (often associated with fever) or temporary low platelet count that can cause unusual bleeding or bruising.
- Those who should **not** receive vaccine:
 - If pregnant or suspected to be pregnant;
 - With serious immune system problems, as it may cause an infection that may be life-threatening; and
 - Active untreated TB

* <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/mmr.html>



Agency Recommendations for HealthCare Personnel (HCP)

- Centers for Disease Control & Prevention (CDC)
 - Measles, Mumps, Rubella, Varicella for **ALL** HCP
- World Health Organization (2021)
 - Measles: **All** Healthcare Personnel
 - Rubella & Mumps: if included in National Immunisation Programme
 - Most vaccines include all 3, MMR
 - Varicella: For susceptible HCP, i.e., patient care
- National Health Ministries/Departments
 - Advisory Committee on Immunization Practices (ACIP)



Recommendation for MMR & Varicella

- Either Serologic evidence of immunity or documentation of prior vaccination
- 2-dose MMR & Varicella, live vaccines
- Cost of vaccines with or without serology testing is still less expensive than illness among workers and patients, including medical costs and lost work time
 - Lost work time can range 7-25 days depending on infection
- **Reference:** Baker, L., 2014. Immunisations—New Vaccines, Schedules, Catch-ups and Contra-indications. Prevention of Infection; Immunisations, pp.221-229.

Select Countries Regarding Immunization Policies for HCP*

Country	MMR	Varicella	Pertussis
Turkey	Yes	Yes	Yes (Tdap)
Israel	Yes	Yes	Yes
Brazil	Yes	Yes	Yes (Tdap)
Spain	Yes	Yes	Yes
Europe	Yes	Yes	Yes
Canada	Yes	Yes	Yes
South Australia	Yes	Yes	Yes
USA	Yes	Yes	Yes

* ME Miller (2018). Occupational health policy proposal to provide recommended vaccines to health care personnel. Draft report to Red Cross Children's Hospital



Occupational Health and Safety Act (OHSA) of 1993

- Section 8 requires:

General duties of employers to their employees

1) Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health and safety of his employees.

- Section 12 requires

General duties of employers regarding listed work

1) Subject to such arrangements as may be prescribed, every employer whose employees undertake listed work or are liable to be exposed to the hazards emanating from listed work, shall, after consultation with the health and safety committee established for that workplace ...



OHSA Section 12 cont'd

- (a) ***identify the hazards and evaluate the risks*** associated with such work constituting a hazard to the health of such employees, and the steps that need to be taken to comply with the provisions of this Act;
- (b) as far as is reasonably practicable, ***prevent the exposure of such employees to the hazards concerned*** or, where prevention is not reasonably practicable, minimize such exposure, and
- (c) having regard to the nature of the risk associated with such work and the level of exposure of such employees to the hazards, ***carry out an occupational hygiene programme and biological monitoring***, and subject such employees to medical surveillance.



Western Cape Gov't Department of Health Policy

- Safety, Health, Environment, Risk and Quality (SHERQ) Policy of 2016:
- “provide a healthy and safe environment...improved and maintained through the identification and mitigation of associated risks in the workplace” and to ensure “measures aimed at preventing occupational injuries and diseases are implemented.” (Section 6, Objectives)



Recommendations

- All Healthcare Personnel (HCP) with responsibilities that involve patient care or contact in patient care wards should be included in the immunisation program -> *preferably at no cost to the worker*
- Those without documentation of illness or vaccine for Measles, Mumps and Rubella (MMR) or Varicella; should receive vaccinations, without serology;
- This program could be initiated first with new hires; and
- Documentation and recordkeeping of history, serology and immunisations should be maintained by the Occupational Health Clinic personnel.



Resources

- WHO Recommendations and Implementation Guide
 - <https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/integration/health-worker-vaccination>
- Recommended Vaccines for Adults (includes Healthcare Workers)
 - <https://www.cdc.gov/vaccines/adults/rec-vac/index.html>
- Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP)
 - <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6007a1.htm>