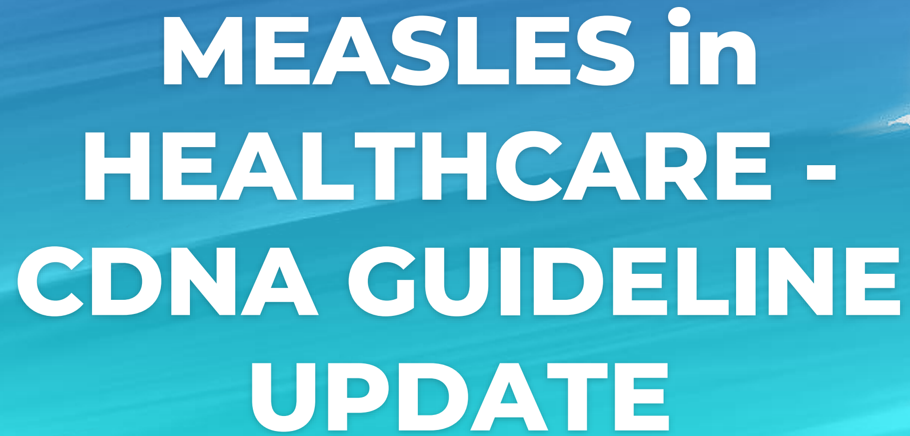

MEASLES in
HEALTHCARE -
CDNA GUIDELINE
UPDATE

- Content of National Guideline is still under revision.
- Cannot guarantee presentation contains final content of revised Guideline.

Measles

Source of image: WHO. Measles. https://www.who.int/health-topics/measles#tab=tab_1

- Paramyxovirus
- Humans only reservoir
- Highly infectious by airborne route, direct contact, fomites
- Incubation 7 – 18 days
- Prodrome – fever, conjunctivitis, coryza, cough
- Rash – non-pruritic, maculopapular
- Infectious 24hrs prior to onset – 4 days after rash

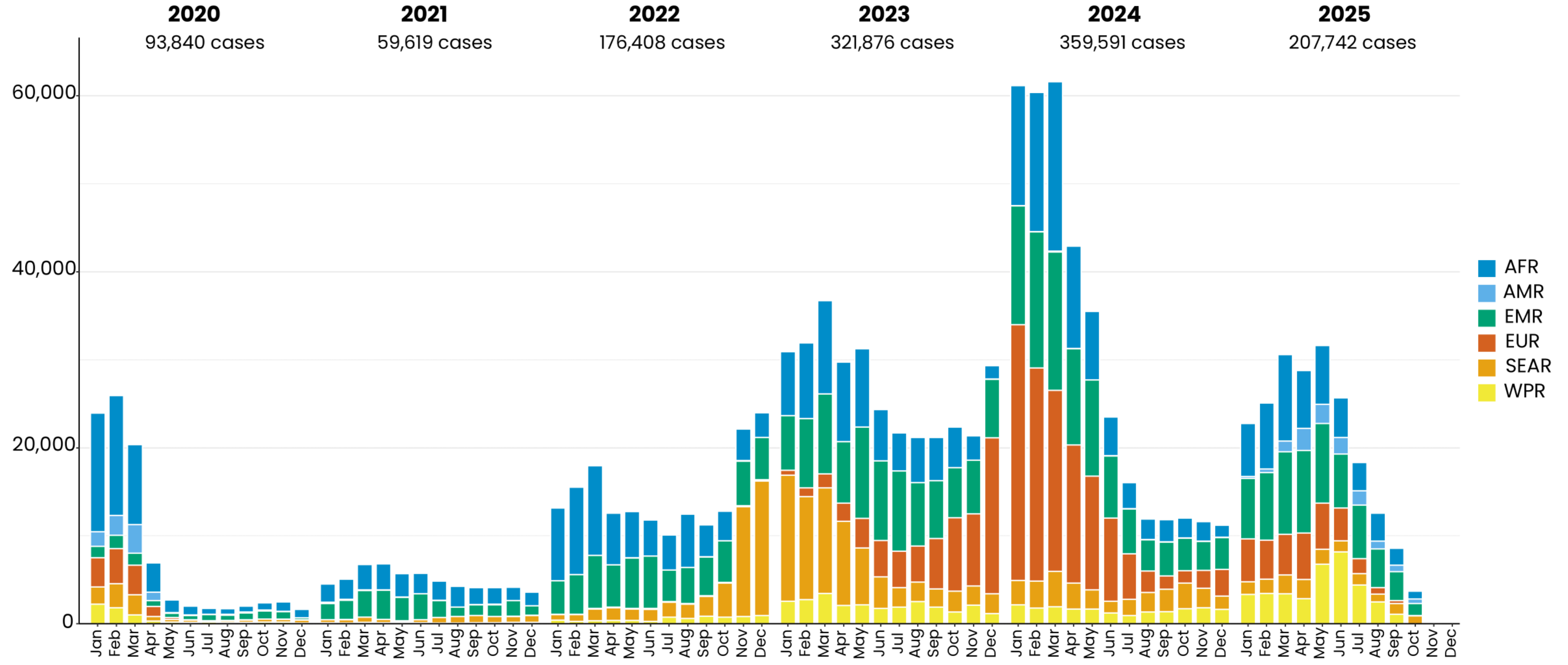
Top 10 countries with measles outbreaks

Country	Number of Cases
Yemen	17,059
Mongolia	12,197
Pakistan	11,463
Nigeria	10,959
India	8,035
Indonesia	7,419
Russian Federation	4,573
Mexico	4,550
Afghanistan	4,525
Canada	3,844

Source: World Health Organization

cdc.gov

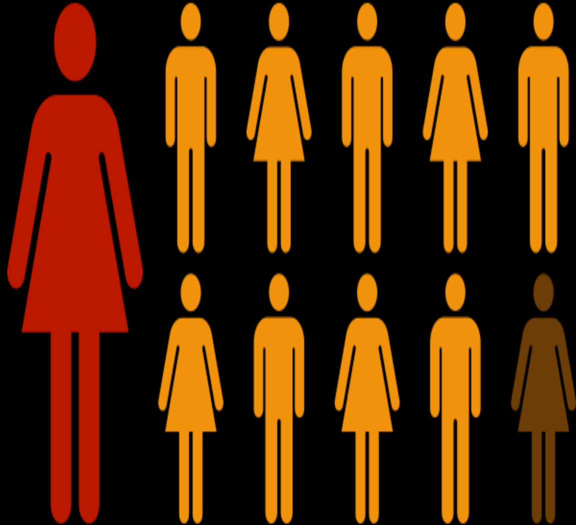
- Measles cases and deaths have increased significantly since 2022
- Low-income nations ->high burden countries
- 10.3 million cases and 107500 deaths since 2023



Based on data received 2025-11 - Data Source: IVB Database - This is surveillance data, hence for the last month(s), the data may be incomplete.

MEASLES

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

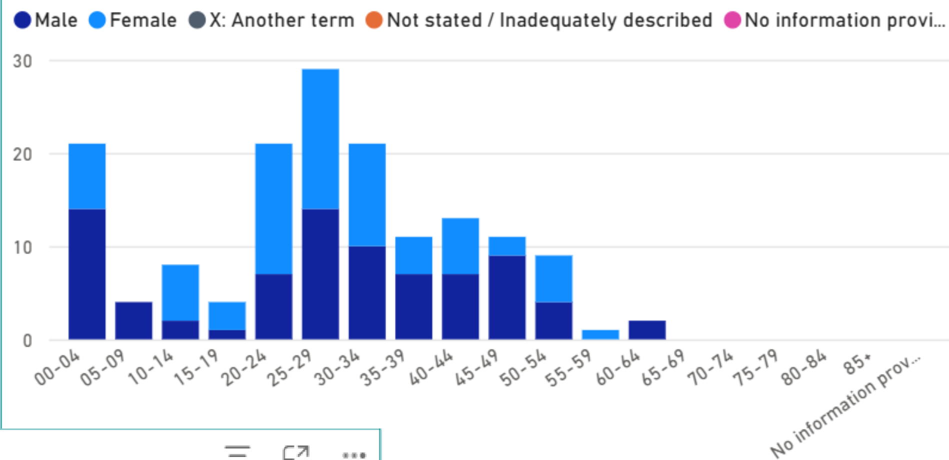


It is so contagious that if one person has it, **9 out of 10 people** of all ages around him or her will also become infected if they are not protected.

- **WHY?**
- Covid 19 pandemic disruption of immunisation
  - Global coverage – 83%
- Vaccine hesitancy
- International travel
- High contagiousness of the disease

- Children under 5 most vulnerable to severe complications and death
  - 1 / 20 develop pneumonia
  - 1 /1,000 develop which can lead to convulsions and can leave the child deaf or with intellectual disability
  - Malnutrition, HIV/AIDS
- Later risk of disease and death from infectious diseases

National communicable diseases surveillance dashboard



Notifications Received By Jurisdiction

State	010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ACT	1	21	0	1	7	2	2	2	3	2	0	0	0	1	1	0
NSW	25	90	170	34	67	9	18	30	19	62	11	0	1	6	18	28
NT	2	5	2	0	52	0	0	2	0	31	0	0	0	0	0	1
QLD	14	18	4	52	72	21	15	8	14	74	6	0	0	5	9	31
SA	2	4	6	16	16	4	11	1	2	4	0	0	0	3	6	6
TAS	0	0	0	0	5	0	3	0	1	1	0	0	0	1	0	0
VIC	15	39	11	41	77	30	39	21	26	58	4	0	6	4	17	35
WA	11	17	6	14	43	8	11	17	38	52	4	0	0	6	6	54
Total	**70**	**194**	**199**	**158**	**339**	**74**	**99**	**81**	**103**	**284**	**25**	**0**	**7**	**26**	**57**	**155**

- Most cases linked to overseas travel
- Some community transmission
- Disproportionately affecting young adults aged 20-34 years
- High-risk groups for serious complications
  - Infants and children under five
  - Pregnant women
  - Individuals with compromised immune systems

Measles

- Measles elimination achieved in Australia in 2014
- Imported cases

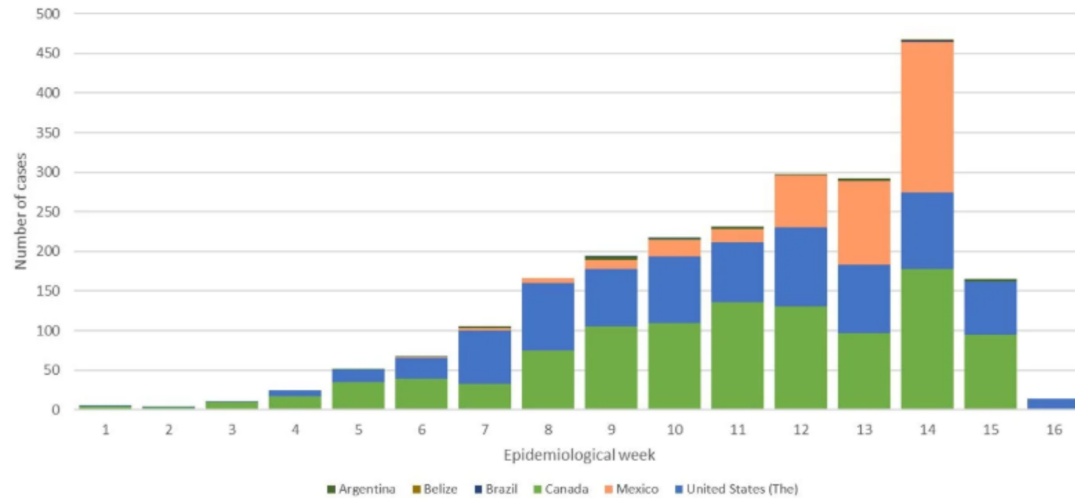
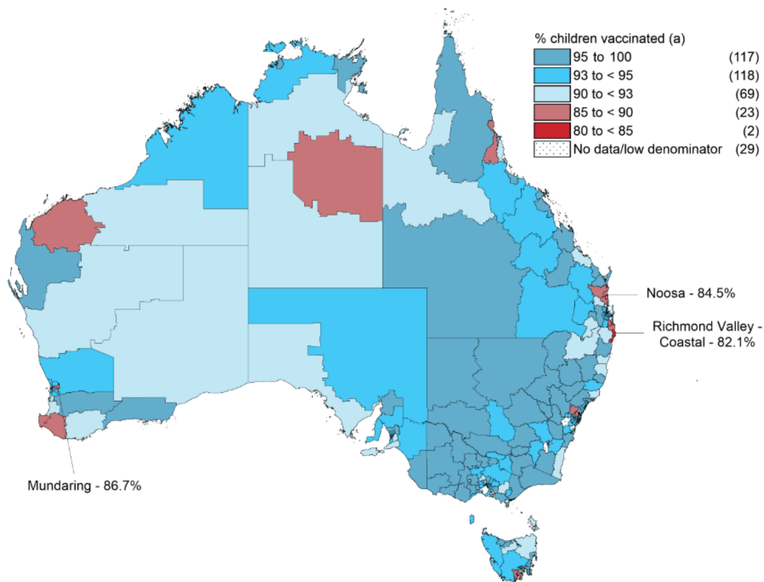


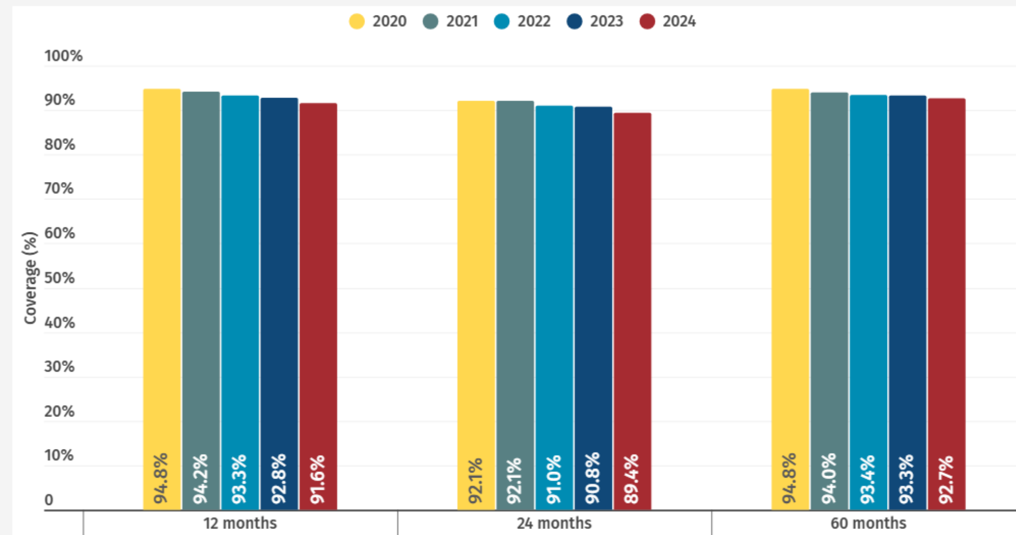
Figure source: WHO. Measles – region of the Americas. https://www.who.int/emergencies/disease-outbreak-news/item/2025-DON565

Vaccination rates

Measles, mumps, rubella (MMR) vaccine coverage at 24 months of age (2 doses) by Statistical Area 3, Australia and major capital cities, 2020



All children



Potential for outbreaks given subpopulations with low levels of vaccination and generally declining vaccination rates

Source of figures:
NCIRS. Vaccine coverage maps | NCIRS
NCIRS. Annual Immunisation Coverage Report 2024 – Summary | NCIRS

Case definition

	OLD	NEW
Confirmed case	Isolation or detection of virus OR **detection of antigen** OR **IgM at ref lab** OR IgG seroconversion or significant rise in antibody level except if vaccinated 8 day to 8 weeks prior	Isolation or detection of virus OR IgG seroconversion or significant rise in antibody level except if vaccinated 8 days to 8 weeks prior
	Fever AND rash lasting 3 or more days AND (cough OR coryza OR conjunctivitis) **AND** **Direct exposure to an infectious case during incubation period**	
Probable case	IgM (not at reference lab) in absence of vaccine 8 days to 8 weeks prior AND Fever AND rash lasting 3 or more days AND (cough OR coryza OR conjunctivitis)	IgM in absence of vaccine AND Fever AND rash lasting 3 or more days AND (cough OR coryza OR conjunctivitis)
		Fever AND rash lasting 3 or more days AND (cough OR coryza OR conjunctivitis) AND Direct exposure to an infectious case OR **linkage to a geographic area with measles activity** within incubation period

- =one of the following unless negated by negative serology* or immunocompromise
- Born before 1966 in Australia
- Documented 2 doses measles vaccine from 12 months of age and at least 4 weeks apart
- Documented laboratory evidence of prior infection
- Measles-specific IgG positive

*do not test IgG if one of the criteria is met and there is no immunocompromise

Post-exposure prophylaxis

- MMR within 72hrs of exposure
  - 83-100% effective*
- IG within 6 days of exposure
  - 76-100% effective*

*Based on 3 large outbreak studies in USA, Australia, Austria using MMR, NHIG and IVIG. Ref: Montroy et al 2025, Vaccine, https://doi.org/10.1016/j.vaccine.2025.126706

IG for contacts at higher risk of severe disease:

Immunoglobulin PEP under discussion for new guideline

Contact	IG formulation
Infants <6 mths	NHIG
Infants 6-11 mths if not timely for MMR	NHIG
Immunocompromised	<30kg – NHIG >30kg - IVIG
Pregnant	IVIG

- NHIG 0.5 mL/kg (max 15mL)
- IVIG 400 mg/kg

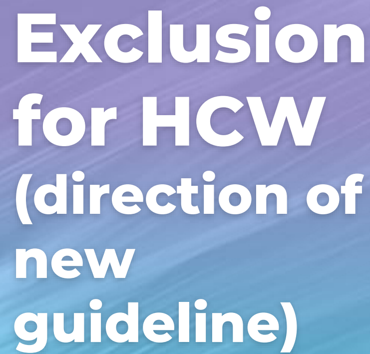
Reasoning:

- Declining levels of measles antibodies in blood products

Refs:
Williamson et al 2024, Vaccines, doi: 10.3390/vaccines12070818
Modrof et al 2017, JID, https://doi.org/10.1093/infdis/jix428
Young et al 2016, Human Vaccine Imm Ther, 10.1080/21645515.2016.1234554

Staff unable to show vaccination status and no history of past disease

- Exclude from work?
  - Does year of birth matter?
- What if given measles vaccine within 72 hours of exposure?
  - What if this did not occur?



Exclusion for HCW (direction of new guideline)

- Non-susceptible* – can work
- Susceptible with single pre-exposure dose – can work if MMR within 72hrs (or IG within 6 days if pregnant)
- Exclude other susceptible contacts from 5 days after 1st exposure to 18 days after last exposure regardless of PEP
- Multiple cases in facility – consider exclusion immunocompromised staff til 14 days after rash onset in last case

*DOB <1966 or Documentation (AIR, GP confirmation or personal record) of measles vaccines, past infection or positive IgG is required

Serology

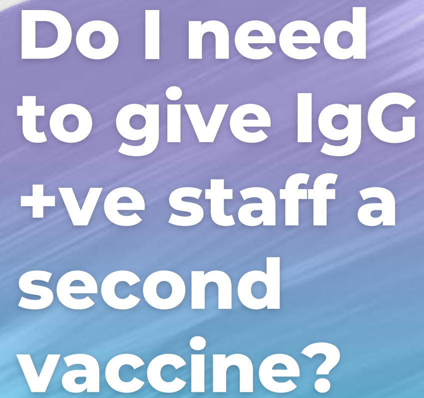
Is there any role of serology in exposed staff?

Do I need to give IgG +ve staff with one prior vaccine a second vaccine?

Do I need to repeat serology post vaccination if IgG -ve?

How do I treat an equivocal IgG result?

- Staff exclusions likely to impact operations – serology to reclassify **susceptible** staff



Do I need to give IgG +ve staff a second vaccine?

- MMR safe if someone is already immune
- No need to give further vaccines if IgG positive – meet definition of non-susceptible

Do I need to repeat serology post vaccination if IgG -ve?

Situation	Response
No previous documented vaccination.	No further serology. Schedule next vaccine at least 4 weeks after the first.
One prior vaccine. Had serology as missed PEP window.	No further serology. Now have two documented doses.
Two prior vaccines. Had serology as intervening immunocompromise. Now immunocompetent.	No further serology. Schedule additional vaccine at least 4 weeks after the first.
Two prior vaccines. Had serology as slow to find evidence of previous vaccination.	Repeat serology may assist to determine if a fourth vaccine is needed. No serology after a fourth dose if given.

How do I treat an equivocal IgG result?

- Some measles-specific antibodies detected but susceptibility uncertain* – consider susceptible
- Provide MMR (unless contraindicated) at appropriate interval from any previous doses - if PEP is second dose – can work.
- Second MMR 4 weeks after the first if no documented doses

*Discordance between EIA and PRNT (gold standard) at low levels of antibodies

Ref: Latner et al. 2020 J Clin Micro, https://doi.org/10.1128/jcm.00265-20
Lutz et al. 2023, BMC Infect Dis, https://doi.org/10.1186/s12879-023-08199-8

If a staff member has had 2 vaccinations, can they still get measles?

Healthcare Workers and Post-Elimination Era Measles: Lessons on Acquisition and Exposure Prevention

Shruti K. Gohil,[1] Sandra Okubo,[2] Stephen Klish,[2] Linda Dickey,[3] Susan S. Huang,[1] and Matthew Zahn[2]

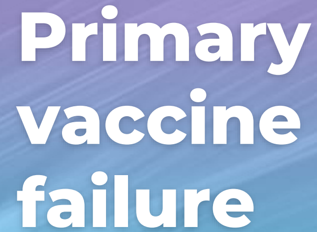
[1]Division of Infectious Diseases, University of California Irvine School of Medicine, Orange, [2]Epidemiology and Assessment Program, Orange County Health Care Agency, Santa Ana, and [3]Epidemiology and Infection Prevention, University of California Irvine Medical Center, Orange, California

Background. When caring for measles patients, N95 respirator use by healthcare workers (HCWs) with documented immunity is not uniformly required or practiced. In the setting of increasingly common measles outbreaks and provider inexperience with measles, HCWs face increased risk for occupational exposures. Meanwhile, optimal infection prevention responses to healthcare-associated exposures are loosely defined. We describe measles acquisition among HCWs despite prior immunity and lessons from healthcare-associated exposure investigations during a countywide outbreak.

Methods. Primary and secondary cases, associated exposures, and risk factors were identified during a measles outbreak in Orange County, California from, 30 January 2014 to 21 April 2014. We reviewed the effect of different strategies in response to hospital exposures and resultant case capture.

Results. Among 22 confirmed measles cases, 5 secondary cases occurred in HCWs. Of these, 4 had direct contact with measles patients; none wore N95 respirators. Four HCWs had prior evidence of immunity and continued working after developing symptoms, resulting in 1014 exposures, but no transmissions. Overall, 13 of 15 secondary cases had face-to-face contact with measles patients, 8 with prior evidence of immunity.

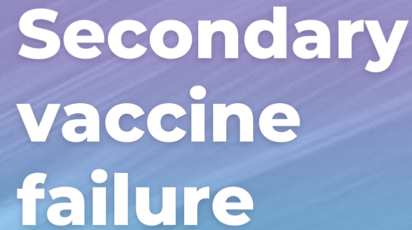
Conclusions. HCWs with unmasked, direct contact with measles patients are at risk for developing disease despite evidence of prior immunity, resulting in potentially large numbers of exposures and necessitating time-intensive investigations. Vaccination may lower infectivity. Regardless of immunity status, HCWs should wear N-95 respirators (or equivalent) when evaluating suspected measles patients. Those with direct unprotected exposure should be monitored for symptoms and be furloughed at the earliest sign of illness.



Primary vaccine failure

- MMR 96% effective after 1 dose, 99% after 2 doses* (Measles | The Australian Immunisation Handbook)
- Vaccine failure factors – poor cold chain, incorrect route or schedule
- Individual factors - residual maternal antibodies, individual non-responder risk (?atopic / allergic disease, ?obesity) (Primary vaccine failure to routine vaccines: Why and what to do? – PMC)

*Effectiveness estimates based on Australian notification data



Secondary vaccine failure

- Waning immunity
  - Consider EIA sensitivity and that IgG is not indication of T cell response
  - Increasing evidence that waning occurs in a population that is not exposed to wild type virus*
- Cases of SVF – less infectious

Tranter et al. Emerg Infect Dis. 2024;30(9):1747-1754. https://doi.org/10.3201/eid3009.240150

*Refs:
Dine et al. J Infect Dis 2004; 189 Suppl 1:S123–30
Robert et al. Lancet Public Health. 2024 Oct;9(10):e766-e775. doi: 10.1016/S2468-2667(24)00181-6.
Schenk Lancet Infect Dis. 2021 Feb;21(2):286-295. doi: 10.1016/S1473-3099(20)30442-4

Measles Staff Surveillance

Please complete the questionnaire below. If you have any questions please contact IMPS on 3646 1485 during business hours.

Have you had any of the following in the last 24 hours?

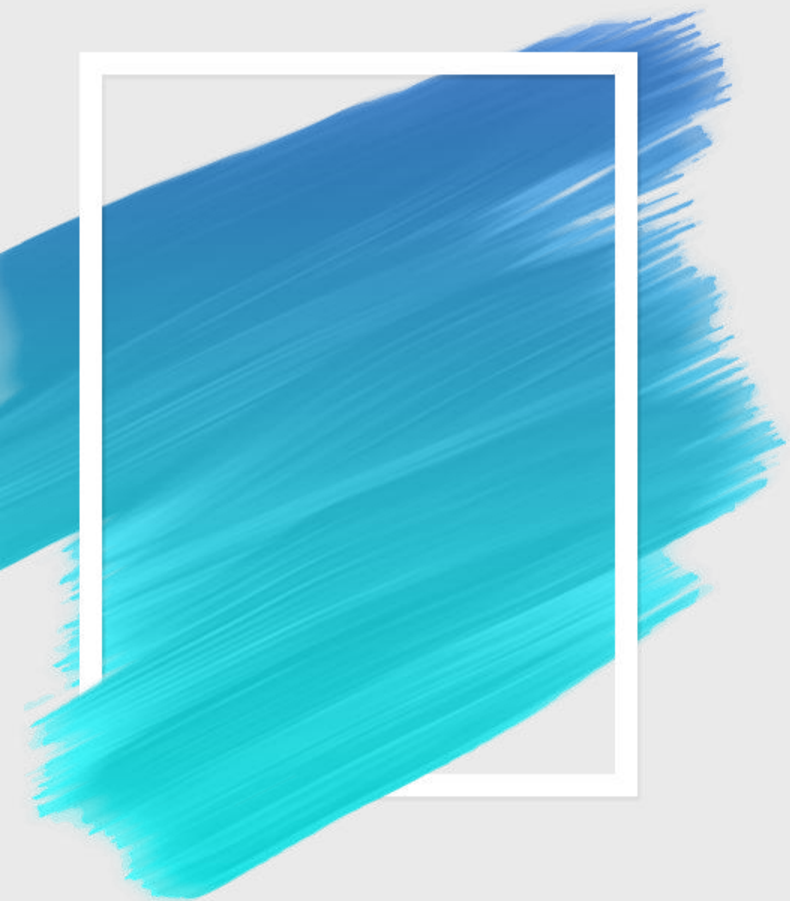
	Yes	No	
Fever / feeling hot or cold (chills) *	◉	○	reset
New onset cough *	◉	○	reset
Red or watery eyes (conjunctivitis) *	◉	○	reset
Runny nose *	○	○	reset
Generally feeling unwell (malaise) *	○	○	reset
White spots inside your mouth (Koplik spots) *	○	○	reset

You have flagged as needing review.

Between the hours of 8:00AM and 4:00PM please contact RBWH Infection Control on 3646 1482.

If it is outside of these hours please call ETC Triage reception on 3646 7109.

Submit



Measles Vaccine Side Effects

Adverse events after receiving a measles-containing vaccine are generally mild and well tolerated.[1] Adverse events are much less common after the 2nd dose of MMR or MMRV vaccine than after the 1st dose.

People who receive MMR vaccine may develop a fever 7–10 days (range 5–12 days) after vaccination. This can last 2–3 days. The fever may be associated with malaise and/or a non-infectious rash. Up to 15% of young children receiving MMR vaccine develop a high fever (>39.4°C).[1,18]

Anaphylaxis after receiving an MMR vaccine is very rare (1.8–14.4 per million doses).

Thrombocytopenia has been very rarely associated with the rubella or measles component of MMR vaccine. It is usually self-limiting and occurs in 3–5 per 100,000 doses of MMR vaccine.[19,28,29] This is considerably

It is uncertain whether people can develop encephalopathy after MMR vaccination. If they do, it is at least 1000 times less frequent than encephalopathy as a complication from natural infection.[1]

What testing should be done?

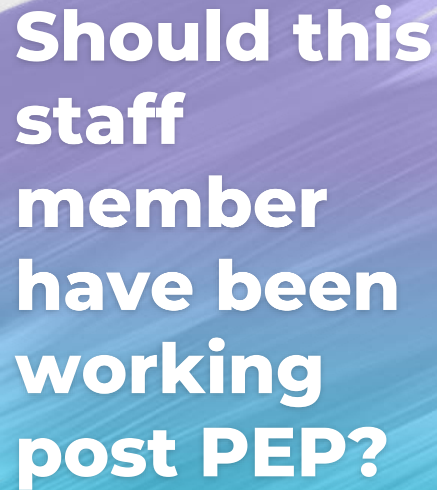
Does she have measles?

Can this staff member go back work?

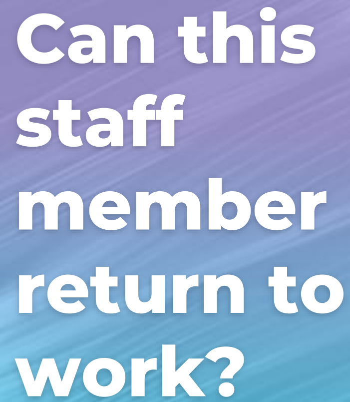
- PCR is key particularly in recently vaccinated individuals
  - NP swab and urine
- Serology not helpful in this situation

PCR results

- Negative – not measles – test for other compatible illness
- Positive
  - Vaccine strain? – likely vaccine reaction
  - Wild type? – confirmed measles infection



- Current guidelines indicate if PEP provided with appropriate timeframe –can work
- Direction of revised SoNG – If had one previous documented dose, could work. If zero doses, needs exclusion.

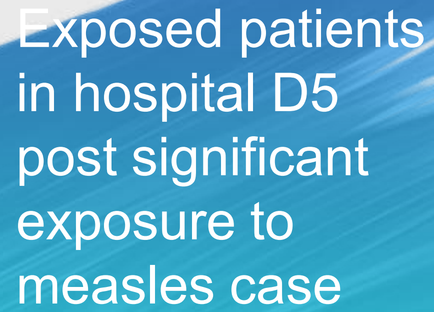


Can this staff member return to work?

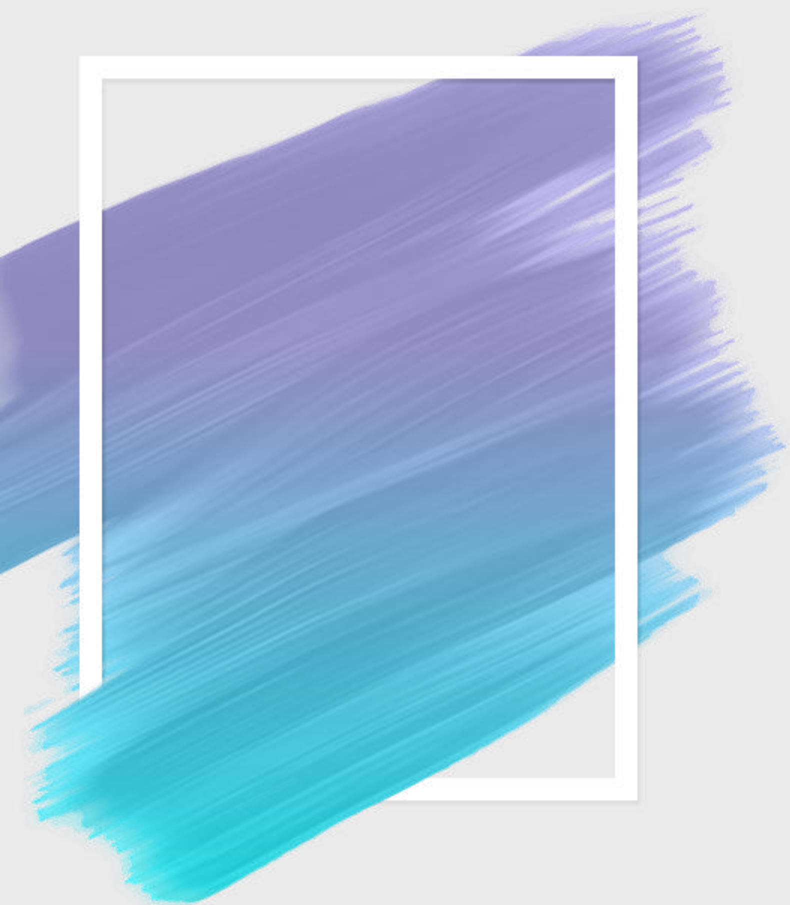
- Measles vaccine rash not transmissible.
- If is not measles, is now non-susceptible, can return to work once well

Level of risk acceptance

- Actually 3 prior vaccines........
- D7 IgG positive post vaccine
-
- ? Non responder -1% chance



Exposed patients in hospital D5 post significant exposure to measles case



Level of risk acceptance

Air Handling Considerations

- Shared ventilation areas
  - Size of area
  - Air exchange rate
- Filtration of air/UV treatment or other strategies
- Exhausting of air

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