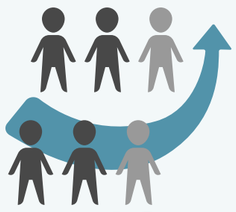
Transitioning from 10-dose to 5-dose vials: Measles (M) and Measles-Rubella (MR)

The M/MR vaccine is identical in 5-dose and 10-dose vials—with the same formulation, same reconstitution, same storage and handling, same delivery, same waste management, and same WHO prequalification (PQ) status. The only difference is the packaging.

Why transition to M/MR 5-dose vials?



Increased Coverage

Decreased Wastage

Supply Chain-Ready

Cost Effective

HCW-Friendly

There is abundant evidence that healthcare workers (HCWs) can be hesitant to open measles (M) and measles-rubella (MR) 10-dose vaccine vials due to fear of wastage—especially in settings with small session sizes. This hesitancy results in missed opportunities to vaccinate children and failure to prevent life-threatening disease. Transitioning to 5-dose vial presentations is a practical and low-cost service delivery option that can reduce missed opportunities for vaccination (MOV), increase timely coverage, decrease wastage, and bolster vaccination programs overall.

Research conducted by JSI and the Zambian health ministry[1] found that with the 5-dose vial intervention:

- MCV1 coverage increased by 4.9 percentage points and MCV2 coverage by 3.5 percentage points. The wastage rate was approximately 47% lower in facilities using 5-dose vials versus 10-dose vials (16.2% wastage for 5-dose vials versus 30.5% for 10-dose vials)
- The impact on cold chain storage was marginal. An analysis of cold chain equipment in intervention health facilities showed that there was sufficient space to accommodate the small increase in volume that occurred when switching from 10-dose to 5-dose MR vaccine vials. In addition, the reduction in wastage also contributed to alleviating additional cold chain capacity requirements
- Wastage-adjusted vaccine price per MR dose was only $0.03 higher for 5-dose vials than for the 10-dose. And in some small health facilities, vaccine purchase costs were lower when using 5-dose vials, as the reduction in wastage outweighed the higher per-dose vaccine price
- HCWs reported less hesitancy to open 5-dose vials and were more likely to vaccinate children for measles outside of scheduled vaccination days

The potential disadvantages are increased costs and cold chain needs, which the Zambia study found are relatively minimal and manageable (above).

- The expected reduction in wastage with 5-dose vials helps to offset the discrepancy in price per dose and cold chain requirements because countries need to purchase and store fewer doses.
- However, there is limited data on the impact of 5-dose vials on wastage rates; therefore, the impact on cold chain and vaccine costs is uncertain and will vary for each country. Furthermore, there is uncertainty around the incremental programmatic costs associated with switching to 5-dose vials, and costs will vary in different contexts[2].

When to transition?

Given what we know about countries' experience with 5-dose vials, most countries should consider MCV 5-dose as the best option for routine immunization. Some indicators that can support this decision are outlined below; these may be observed through missed opportunities for vaccination (MOV) surveys, outbreak investigations, vaccination session visits, health center register reviews, and/or interviews with healthcare workers (HCWs) in the field.

- HCWs are hesitant to open 10-dose vials and are concerned about wasting vaccines or running out of vaccines ahead of scheduled vaccination sessions
- HCWs/healthcare facilities only offer MCV shots one day per week or month
- To avoid opening vials and/or to reduce wastage, HCWs do not provide MCV shots on unscheduled days, or when fewer than six children are present at a session
- To avoid wasting doses in open vials, HCWs vaccinate too-young children
- HCWs routinely turn parents away from a health post and direct them to travel to larger sites for their children's MCV due to fear of wastage

How to transition?

Any country that procures M/MR vaccines through UNICEF can access the 5-dose vial presentation.

A Gavi-supported country can submit a formal request to transition to a 5-dose vial for routine MCV through Gavi's Country Portal as part of its annual vaccine renewal request.

A country can request a transition any other time during the year by submitting a standard switch request form to Gavi's Secretariat.

Gavi may also provide support in the form of a "switch grant" to facilitate the safe and effective transition by covering a portion of the one-time investments associated with a transition.

Before submitting a transition request, you should:

- Talk to your Gavi Senior Country Manager (SCM) to learn more about the transition process
- Assess country-specific implications of transition on cold chain, funding, and delivery of vaccines
  - Identify the level of additional funding that may be required for the transition, including both vaccine costs and operational costs
  - Assess cold chain impact and whether adequate cold chain capacity is available
  - Determine and address programmatic implications related to the use of 5-dose vials (see table below)
- Hold advocacy and consensus meetings at national and subnational levels
- Present the justification for the change to ICC or equivalent forum (e.g., NITAG)

Example overview: MR 5-dose routine immunization transition and impact on key variables

Switch from	Switch to	Program feasibility	Cold chain capacity	Disease burden reduction	Coverage	Wastage	Cost	Supply availability
MR 10-dose exclusive	MR 5-dose exclusive	Similar	Increase expected to be manageable (Zambia study saw marginal increase at intervention facilities)	Yes, driven by coverage increase	Increase driven by reduction in HCW hesitancy to open vials (Zambia study 3.5-5%)	Decrease given smaller vial size (Zambia study 16% for 5-dose vials vs. 31% for 10-dose vials)	MR 5-dose price per dose (ppd) is +US$ 0.13-0.20 more than 10-dose MR 5-dose wastage-adjusted ppd expected to be similar (Zambia study +US$ 0.03)	Yes, 5-dose supply available through UNICEF
	MR combination 10-dose and 5-dose	More complex						

[1] Krudwig, K., Knittel, B., Karim, A., Kanagat, N., Prosser, W., Phiri, G., Mwansa, F., & Steinglass, R. (2020). The effects of switching from 10 to 5-dose vials of MR vaccine on vaccination coverage and wastage: A mixed-method study in Zambia. Vaccine, 38(37), 5905–5913.

[2] The Zambia study found that the incremental non-vaccine costs per dose administered associated with switching from 10-dose to 5-dose vials is $0.11 per dose of vaccine administered.

Where to learn more?

Please refer to the WHO & UNICEF M/MR 5-dose fact sheet for more information.

Additionally, click here for a resource repository of information and tools related to M/MR 5-dose.

JULY 2022