

INTRODUCTION OF 5 DOSE VIALS OF MEASLES RUBELLA (MR)VACCINE IN ZAMBIA TO UNDERSTAND THE EFFECT OF DOSE PER CONTAINER ON SYSTEMS AND COST

Natasha Kanagat (JSI), Kirstin Krudwig (JSI), Barb Knittel (JSI), Guissimon Phiri (Zambia Ministry of Health), Diane Masket (JSI), Ali Karim (JSI)

BACKGROUND

The Dose Per Container Partnership (DPCP) is a project, funded by the Bill & Melinda Gates Foundation and implemented by JSI Research & Training Institute, Inc. and partners, which aims to improve complex vaccine product decision-making processes by including DPC considerations. Understanding and assessing the trade-offs between cost and immunization/health systems impact enables informed decision making as country and global managers seek to optimize equitable, timely, safe and cost effective coverage.

METHODS

Household Coverage Survey: A household coverage survey using a two-stage cluster design was conducted. The survey gathered information from caretakers about two cohorts of children aged 12 to 23 months for estimating first dose MCV coverage and children aged 24 to 35 months for estimating second dose MCV coverage. In addition, timeliness data of first dose MCV and second dose MCV were collected and analyzed based on vaccination cards.

Key Informant Interviews: Key informant interviews (KIs) were conducted at a sub-set of health facilities and district offices across all 14 districts to examine factors associated with missed opportunities, safety, equitable coverage and health worker preferences for vial sizes. Key informants included health workers providing immunizations, District Maternal and Child Health (MCH) Coordinators and Logisticians, Principal Nursing Officers-MCH.

Routine Immunization Session Observation: The qualitative data collection teams conducted 20 systematic observations of vaccine handling and vaccination practices at health facilities. This included observing refrigerators for functionality and temperature, vaccine storage, handling and stock-keeping practices, transportation, vial discard, safe injection and vaccination sessions at the facility or outreach to observe the attitude, behavior and practices of health workers.

Administrative Data Review: The team collected twelve months of retrospective administrative data from the health management information system on all health facilities in the implementation and control districts. The team used this data to calculate coverage, wastage, and stock issued indicators.

Costing Survey: Data were collected using a structured quantitative questionnaire to gather information on the resources used for the logistics systems and immunization service delivery to estimate the costs of the current system where 10 dose vials are in use.

Routine Monitoring: DPCP is collecting monthly data from all HFs to look at coverage, wastage, session size and session frequency.

Similar methods will be used at endline to assess the effect of switching from 10 dose vials to 5 dose vials.

“YES THERE ARE DAYS WHEN MCV AND BCG IS NOT GIVEN DURING OUTREACH, FOR EXAMPLE YOU FIND TWO BABIES WHO HAVE BEEN DELIVERED. ARE YOU GOING TO OPEN THAT VIAL FOR BCG JUST FOR THOSE TWO? SO IN SUCH CASES WE EXPLAIN TO THEM THAT WE CAN’T OFFER THEM BCG OR MCV AT THAT PARTICULAR MOMENT. WE THEN ADVISE THEM TO COME TO THE CENTER, ESPECIALLY ON THE LAST THURSDAY OF THE MONTH.”

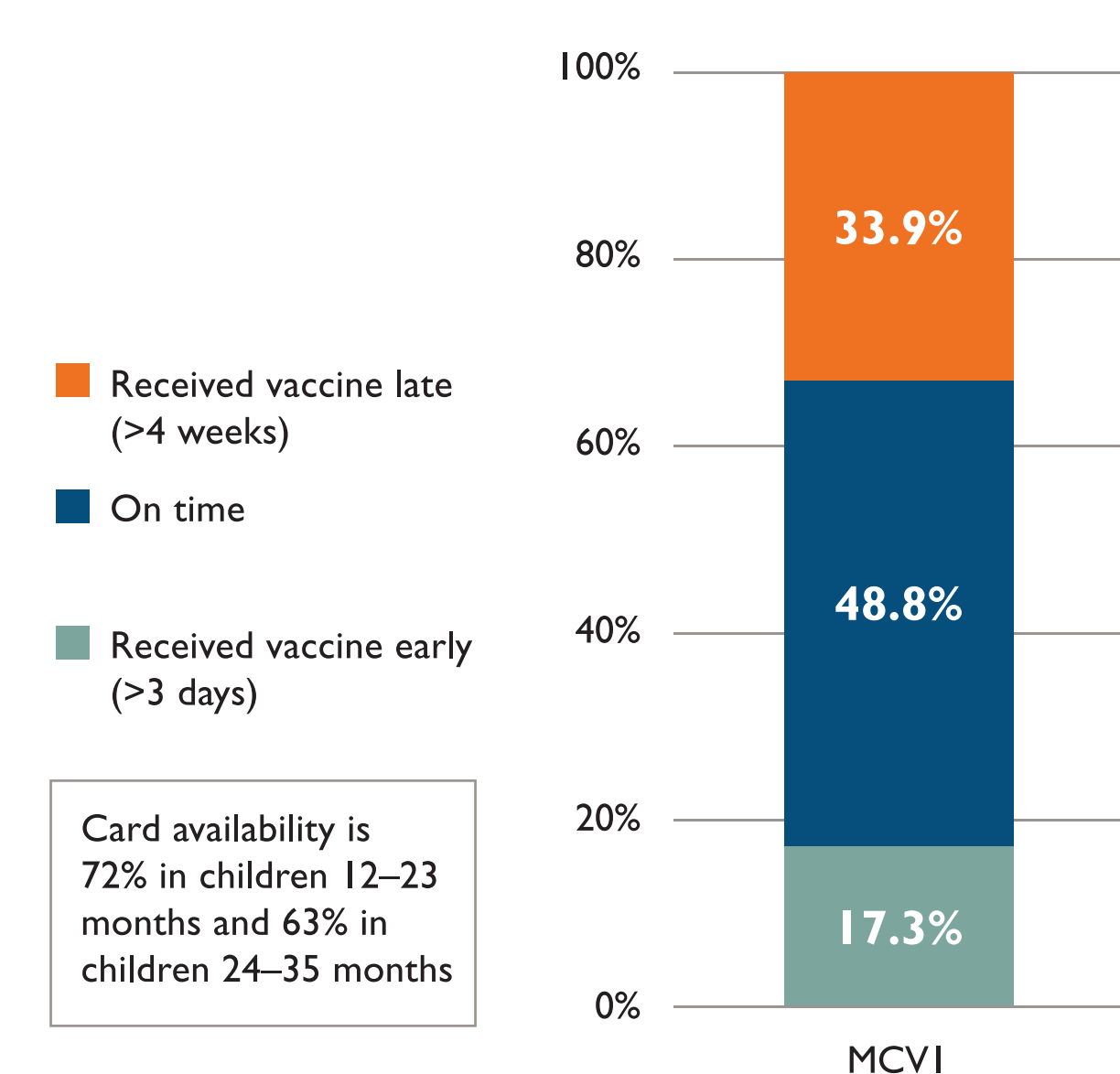
KII, Chitamba – when asked about denying vaccinations in order to reduce wastage

OBJECTIVES OF THE IMPLEMENTATION RESEARCH

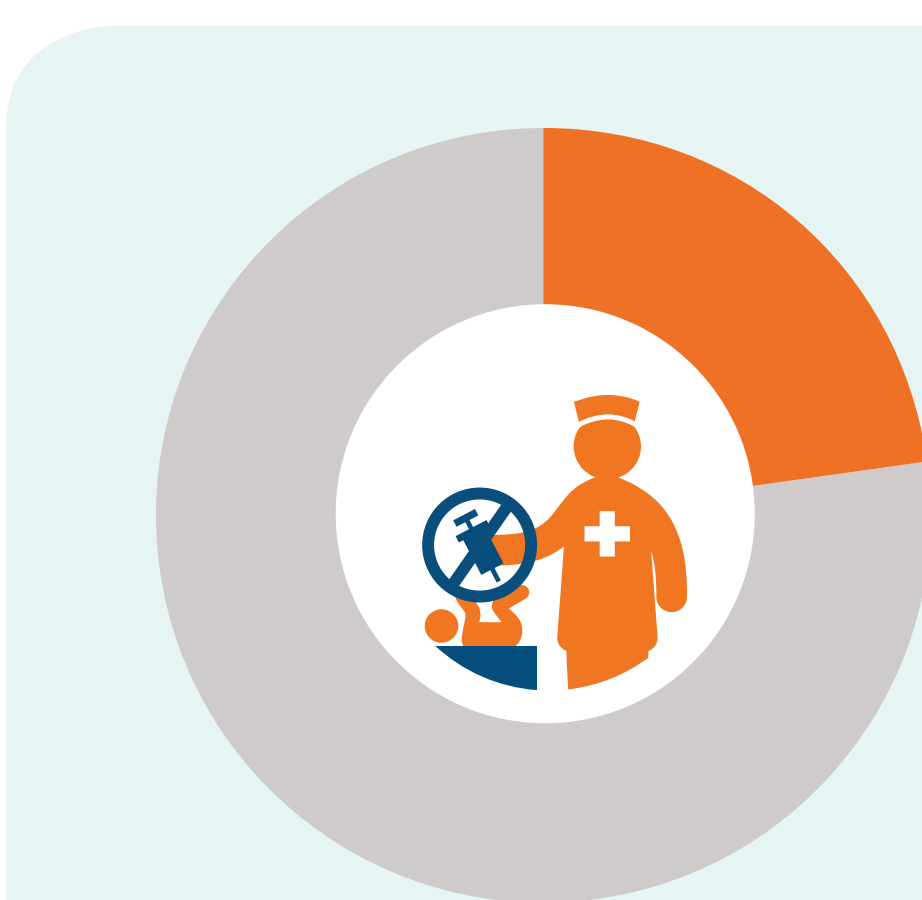
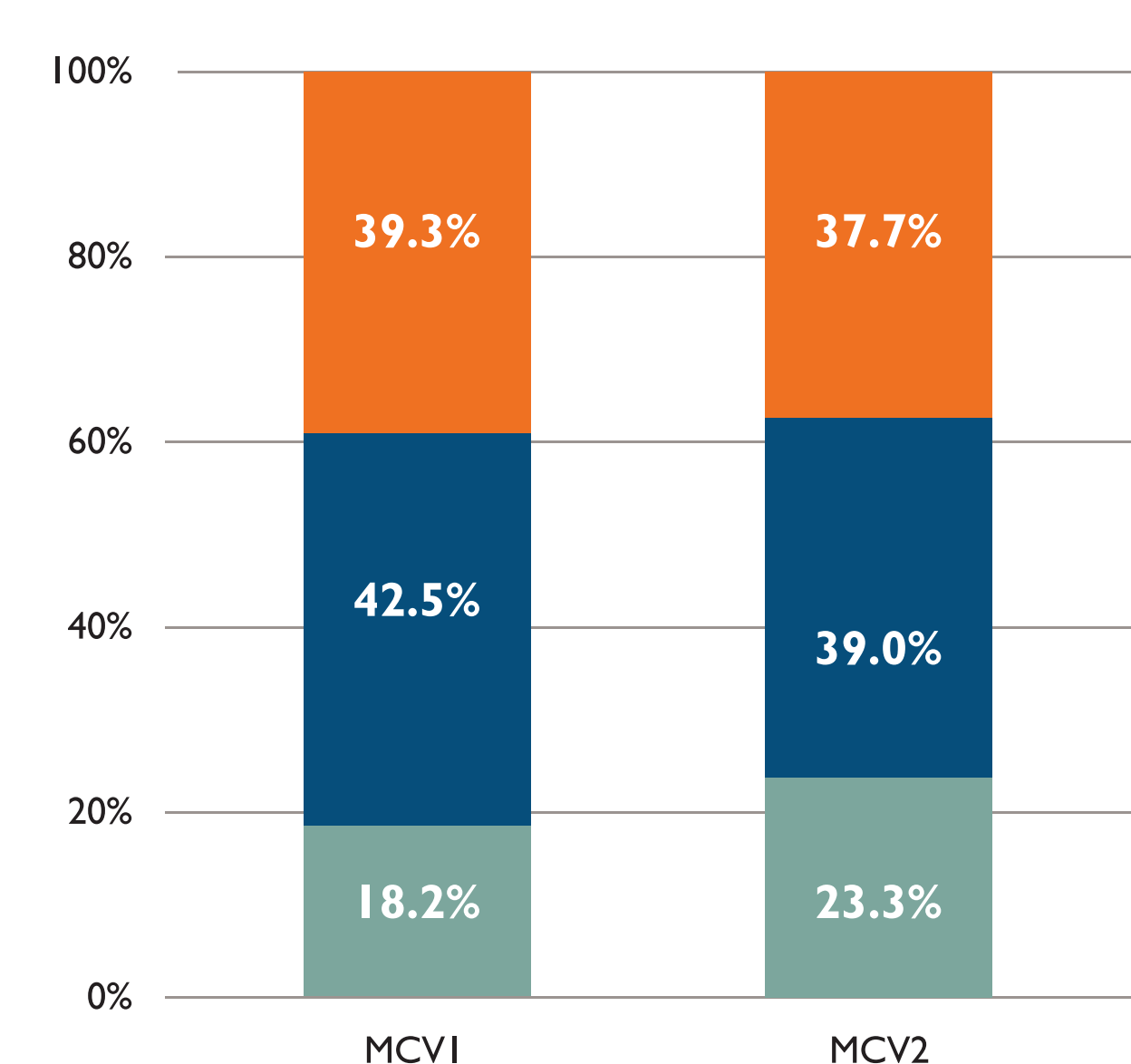
1. Examine the effects of switching from 10 vials to 5 dose vials of measles containing vaccine (MCV) on first and second dose coverage, open vial wastage, dropouts, session size and frequency, storage and distribution capacity, and logistics, service delivery, and total systems costs for RI.
2. Understand how vial presentation may have an influence on missed opportunities, timely coverage, equitable coverage, and safety.
3. Explore HCW preferences and examine HCW behavior with various vial presentations.
4. Identify the factors that enable and hinder the proper use of each of the two presentations.

BASELINE HOUSEHOLD SURVEY FINDINGS

Timeliness of MCV1 in children age 12–23 months according to cards, by study arm



Timeliness of MCV1 and MCV2 in children age 24–35 months according to card, by study arm



23% of household survey respondents stated that s/he had taken a child to a health facility for vaccination and the child was not vaccinated. The reasons for not being vaccinated stated by the respondents include the following:

RESEARCH DESIGN

A cluster randomized block design was used to allocate districts into control and intervention groups. The districts were matched according to average population size per health facility and number of health facilities within each district. Health facilities in the intervention group are receiving 5 dose vials of MCV to use while the control group is using standard 10 dose vials.


Data will be collected before and after this intervention to assess the effect of switching from 10 dose vials to 5 dose vials. A difference-in-differences approach will be used to assess a change in coverage rates.

YES, BECAUSE EVERYONE IS CONCERNED ON REDUCING THE VACCINE WASTAGE. IT IS A REASON WHY MOTHERS ARE SENT BACK AND ASKED TO COME A DIFFERENT DAY WHEN THERE ARE ENOUGH CHILDREN TO OPEN THE VIAL. THIS IS SO BECAUSE EVERYONE WANTS TO REDUCE THE WASTAGE.”

National Stakeholder in Ghana when asked about the decision to switch to a 10 dose vial of pentavalent from a single-dose vial

- No vaccine available at time of visit **69.6%**
- Not enough children present to open vial of vaccine **26.9%**
- No vaccinator available at facility **16.5%**
- Told that vaccination session was finished **5.4%**
- Vaccinator refused (e.g. too busy/not available) **3%**
- Visit not on vaccination day **2.3%**
- Child was too sick **2.1%**
- Other **3.4%**

KEY BASELINE FINDINGS



COVERAGE

- MCV1 coverage for children with cards 12–23 months is 61.8%
- MCV2 coverage for children with cards 24–35 months is 29.3%

HCW reasons given for non-receipt or delay of MCV1:


- Distance between HFs and communities
- Seasonal migration
- Transport
- Lack of community awareness
- Vaccine stock outs
- Too few children to warrant opening a vial.

Additional HCW reasons for non-receipt or delay of MCV2:

- Parents perceive child was protected due to previous MCV received
- Parents were unaware of the need for MCV2
- Pregnant women find it difficult to travel with toddlers


EQUITABLE COVERAGE

- Distance to closest HF or vaccination site is not statistically associated with coverage rates (p>.05)
- Caregiver's education level is significantly associated with MCV1 coverage (p<0.001)
- Conversely, according to frontline HCWs, distance between communities and HFs and lack of transport made it difficult for parents to access vaccination and for HCWs to reach communities.




WASTAGE

- Insufficient and inaccurate data on wastage (only 39% of HFs submitted any wastage data to district in 2016)
- Most HCWs reported waiting for a minimum of 5 children before opening the measles vial due to a concern for wastage
- Most HCWs stated HF performance was measured by coverage and not wastage
- All respondents at district and HF levels noted the importance of limiting wastage




SAFETY

- None of the districts had AEFI reports from HFs
- None of the frontline HCWs mentioned any AEFI or abscesses
- District-level respondents mentioned that, while no AEFIs were reported, they suspected HCWs did not know how to report



COLD CHAIN

The total net storage requirement per fully immunized child when 10 dose vials of MR are in use is 98.0 cm³ while the requirement when 5 dose vials of MR are in use is 103.2cm³. When considering a conservative 25% wastage rate for either presentation (the standard set by the MOH), the overall increase in cold chain requirements for 5 dose vials of MR (compared to 10 dose vials) is 6.34%, which has a minimal impact on available capacity.



HCW BEHAVIOR

- 3 of the 32 respondents mentioned that there was a national policy about vaccinating all children regardless of the number of children who show up. The rest of the respondents either stated that they did not know about a national policy or they were not aware of it. 50% of HCWs reported turning children away at outreach because they did not think they had enough children to warrant opening a vial.
- Most respondents said they waited for a minimum of 5 children before opening a vial.
- Majority of HCWs stated a preference for MCV vials with fewer doses which they believed would decrease wastage and increase coverage.