DPCP
DOSE PER CONTAINER PARTNERSHIP

DPCP SNAPSHOT

VACCINATION IN ZAMBIA: HEALTH WORKER EXPERIENCES USING 5-DOSE MR VACCINE

Many countries procure vaccines in multi-dose presentations. This can present difficulties for health care workers (HCWs) who wish to ensure high, timely coverage while minimizing vaccine wastage—especially for vaccines without preservatives that must be discarded 6 hours after the vial is opened. In Zambia, the Dose Per Container Partnership (DPCP) examined the effect of providing measles-containing vaccine (MCV) in 5-dose vials rather than the customary 10-dose vials. This qualitative research (part of a larger research project, which is described in another document) focused on managers' and providers' experiences with this lower-dose presentation, including perceived advantages and challenges. The main findings included:

1. When comparing a 10-dose vial to a 5-dose vial, district staff and HCWs felt that the 5-dose vial could help to reduce missed opportunities as they would be more likely to open the vial when only a few eligible children were present.
2. Many HCWs said that the 5-dose vial increased efficiency by reducing time spent waiting for the minimum number of children to arrive, giving them time to attend to other duties; but some said that reconstituting and transporting the lower-dose vials presented challenges.
3. Some HCWs reported that they are now vaccinating daily with the lower-dose presentation, while others retained scheduled vaccination sessions.

THE RESEARCH

The Government of Zambia currently provides lyophilized measles-containing vaccine (MCV) in two doses, recommended at 9 months for the first vaccination (MCV1) and 18 months for MCV2. MCV is provided in 10-dose vials, generally during scheduled fixed (at the health facility) and outreach sessions. In May 2017, the DPCP worked with the Ministry of Health to introduce 5-dose vials of MCV in 7 districts, while monitoring 7 other districts that would continue using 10-dose vials.[1] Baseline findings (see DPCP Snapshot Measles Vaccination in Zambia: Balancing Coverage & Wastage) showed that reluctance to waste vaccine played a significant role in HCWs' decision to open a 10-dose vial. To understand the HCW's experiences switching presentations and their initial perspectives on the new presentation, a midline qualitative data collection was conducted in December 2017.

1 The endline findings, showing the effects of the switch to a 5-DPC presentation, will be available late 2018.

DPCP: EXAMINING THE EFFECTS OF MULTIDOSE VACCINE PRESENTATIONS

The widespread use of multi-dose vaccine containers in low- and middle-income countries' immunization programs is assumed to offer benefits and efficiencies for health systems, such as reducing the purchase price per vaccine dose and easing cold chain requirements.

Yet the broader impacts on immunization coverage, costs, and safety are not well understood. It is also unclear what processes governments typically go through to determine their choices about DPC, and what information decision-makers have or use when determining DPC.

To add to the limited evidence base on this topic, the Dose Per Container Partnership, or DPCP, is undertaking a series of activities to explore current decision-making on DPC options and better understand the relationship between DPC and immunization systems, including operational costs, timely coverage, safety, product costs/wastage, and policy/correct use.

Trade-offs in Multiple-Dose Presentation

The DPCP seeks to better understand how changes in DPC could affect other components of immunization programs:

COVERAGE RATES
including timeliness

WASTAGE RATES

SAFETY

COSTS PER DOSE
and child vaccinated

SUPPLY CHAIN

HCW BEHAVIOR
including willingness to open a multidose vial no matter how many children present

The researchers interviewed 24 participants in the intervention districts: HCWs at 16 facilities (including large, medium-sized, and small facilities in both urban and rural areas), 4 district-level MCH coordinators (supervisors), and 4 district pharmacists.

> **"WE OPEN THE VIAL EVEN IF THERE IS ONE CHILD."**
>
> **– FACILITY-BASED HCW, LUANO**

THE FINDINGS

Missed opportunities for vaccination: HCWs said that the 5-dose presentation reduced missed opportunities because they no longer turned children away due to fear of opening a vial and potential for higher wastage. The majority of HCW interview respondents felt that the switch to 5-dose MCV presentation increased the number of children vaccinated with MCV, because providers no longer had constraints on opening a vial, even if only one child presented. A facility-based HCW said, "The 5-dose vial is making us integrate our services. If a child comes for malaria illness, I will make sure I check the under-five card to see if the child is fully immunized and if not I will vaccinate that child there and then without asking the mother to bring that child for immunization on a different day. Experience has been good so far. The use of MR 5 dose vial is helping us reach out to more children." Half of providers reported educating mothers on the availability of the 5-DPC presentation, and said that mothers were also responding to the change, since they no longer need to wait for a minimum number of children to present for vaccination. "With the 5-dose vial [the] number of doses wasted per vial has reduced which has made it easier to vaccinate a lot of children in the past 6 months. We no longer send back mothers or ask them to wait for a little bit longer before we open the vial. We open the vial even if there is one child," one provider said.

Wastage: Interview respondents reported that they felt that the 5-dose MCV presentation reduced wastage, compared to the 10-dose vial. On average, respondents said that they were using 3 or 4 doses per vial with the 5-dose presentation—and thus wasted only 1 or 2 doses per vial. With the reduced number of doses, HCWs reported less fear of wastage than with the 10-dose presentation. A participating pharmacist said that facilities are ordering lower quantities of vaccines. "Facilities have been ordering less vials, which is strange but I take it that [there are fewer doses wasted]," the respondent said.

Minimum number of children needed to vaccinate: All 16 facility-based respondents said that with the 10-dose vials, they had waited for at least 5 children to present before opening a vial; when fewer than 5 children presented, they asked mothers to return another day, so as to avoid wastage. With the 5-dose presentation, most HCWs said that they no longer waited for a minimum number of children before opening a vial. There were three exceptions of the 16 respondents: two providers said they waited for three children, and one reported waiting for two. One MCH coordinator said that they had provided guidance to HCWs in his district to wait for three children before opening a vial to reduce wastage. However, even those HCWs who did specify a minimum number of children before opening a vial said that they had not turned any children away in the six months since the 5-dose presentation was introduced.

Time constraints: Many HCWs said that the 5-dose vial was easy to use, reduced the time spent waiting for enough children to arrive, and therefore gave them more time to attend to other

duties. However opinions varied. One District Medical Officer and three facility-based respondents said that the lower-dose presentation required more time for dilution during a large session.

Session planning: HCWs from 7 of the 16 facilities still reported encouraging women to bring children for MR vaccinations at the health facilities on specific days to avoid wastage, and to enable HCWs to attend to other services. However, HCWs from 9 facilities (many of them larger, urban facilities) said that they felt free to offer the vaccine during other services, such as family planning, antenatal care, and other maternal care. Even so, they still offered vaccinations on specific days, because community members were familiar with these days, and facilities could thus expect many children. "Vaccination [for measles] is throughout the day and month," one provider said. "But there is still that day which mothers know as fixed day for immunization. We have been sensitizing them during the health talks to bring the children for vaccinations any day. This is really helping a lot to cover more children."

Challenges: One of four district supervisors said that the lower-dose vials increased cold chain requirements during distribution and there was insufficient space at the district store (5- and 10-dose vials are the same size, so the same quantity of 5-dose vials would require double the space if the same quantity of doses is required without factoring in the potential reduced wastage). Six facility-based HCWs said that sufficient cold storage during distribution was challenging, and indicated a need for larger vaccine carriers based on their current frequency of resupply.

> **"EXPERIENCE HAS BEEN GOOD SO FAR. THE USE OF MR 5 DOSE VIAL IS HELPING US REACH OUT TO MORE CHILDREN."**
>
> **– FACILITY-BASED HCW**

THE TAKEAWAY

Respondents said that the 5-dose presentation enabled HCWs to open MCV vials with less concern for wastage. They believed that the lower-dose presentation increased coverage, since HCWs were more willing to open a vial even when only one child was present. However, a few expressed concerns that the lower-dose presentation would pose challenges for dilution, storage, and transportation. Overall HCWs felt that the perceived benefits of the 5-dose vial outweighed the challenges.

This document was developed by JSI through the Dose Per Container Partnership (DPCP). The partnership is coordinated by JSI Research & Training Institute, Inc. in collaboration with colleagues from the Clinton Health Access Initiative, the HERMES modeling team and the International Vaccine Access Center (IVAC) through Johns Hopkins School of Public Health, and PATH. This material is intended to provide stakeholders evidence to guide informed, sustainable decisions on DPC when considering vaccine products and program design and may be used freely by all partners.