



DPCP SNAPSHOT

GHANA: UNDERSTANDING CHANGES IN VACCINE PRESENTATION

GHANA'S DPC CHANGE

In 2012, the Government of Ghana changed the number of doses per container (DPC) for two vaccines—yellow fever and pentavalent. A 2016 study by the Dose Per Container Partnership (DPCP) examined how the Government decided on these changes and found that:

1. Decisions are based on what products are available on the global market, and on easily quantifiable factors, such as cold chain capacity and per-dose purchase price. Decision-makers prefer options that reduce cold chain storage requirements.
2. Stakeholders at the highest levels generally make decisions on DPC, with little input from those working at lower levels, such as frontline health care workers (HCWs).
3. National- and facility-level stakeholders have different perceptions of how well the health system might manage multiple DPC presentations of the same vaccine.

THE TAKEAWAY

Overall, decision-makers in Ghana relied on limited information to determine DPC changes. Using a broader range of resources, and considering the many trade-offs implied in any change of vaccine presentation (beyond price and cold chain requirements) could lead to more comprehensive deliberations on vaccine presentation and policy.

THE STUDY

In 2016, a DPCP study team reviewed policy and planning documents, records, and monitoring reports from the Expanded Program on Immunization (EPI). They also observed vaccine storage, supply chain management, and service delivery at several facilities; and conducted semi-structured, in-depth interviews with stakeholders—(government officials, HCWs, the Ghana Extended Program on Immunization (EPI) team, Gavi, the United Nations Children's Fund (UNICEF), and the World Health Organization (WHO)—to examine 1) how decisions about the DPC switch were made, 2) what information and tools were available, and 3) whether any tools were used to support the process.

DPCP: EXAMINING THE EFFECTS OF MULTIDOSE VACCINE PRESENTATIONS

The widespread use of multidose 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 FINDINGS

Sources of vaccines and information: National-level decisions on DPC in Ghana typically involve numerous decision-makers and several steps. Currently all vaccines used in Ghana are supplied by UNICEF, and thus are required to be WHO pre-qualified, limiting the number of options. For Gavi-financed vaccines, Gavi provides information to the EPI team. For antigens purchased by the national government, UNICEF provides the DPC information for available vaccines, and WHO provides technical guidance on whether it is in the country's best interest to retain or change the DPC. When Gavi or UNICEF alerts the team to a new vaccine presentation in their menu, the country EPI team and a technical group, which includes WHO and UNICEF, examine the implications of a switch for the country.

“ [THERE ARE] CHANCES THAT A HEALTH WORKER WILL PROTECT [THE] VIAL MORE THAN THE CHILD. ”

– NATIONAL-LEVEL STAKEHOLDER

Decision-making process: Vaccine availability, per dose purchase price, and cold chain requirements were the main factors in Ghana's decisions on vaccine presentation and changes in DPC. Overall, there was little understanding of DPC alternatives or knowledge of where to find information on programmatic impacts, trade-offs, and associated costs of different DPC presentations.

Rationale for DPC changes in Ghana: For yellow fever, the switch was due solely to the availability of vaccine presentations on the global market. In 2012, 10-dose vials (DV) were not available from UNICEF because of production shortages, so the EPI team switched to a 5-DV option, and then switched back when the 10-DV became available again in 2014. For pentavalent, the switch from single dose to 10-DV presentation was based on the new option of penta in liquid 10-DV, the per-dose purchase price of this presentation, and (more importantly) its potential to free up significant cold chain space. Few respondents mentioned other factors, such as coverage, safety, or training costs, as major considerations in examining proposed DPC changes.

Tools used in DPC decisions: Decision-makers in Ghana did not use quantitative analysis or any specific tools to settle on the DPC changes. One decision-maker said of the change to the 10-DV presentation for pentavalent, “It was quite obvious—we didn't use any tool to do any calculations.” Health care workers are not consulted during the decision-making process, and sometimes only a small group of national-level decision-makers determine what changes to make.

National decisions and facility-level impacts: National-level officials who make changes in vaccine presentations are not clear on how these changes affect HCWs' behavior; or how they ultimately influence coverage and wastage. Although the policy is to open a vial even if only one child is present at an immunization session, national stakeholders believe that HCWs are still hesitant to do so based on concerns about wasting costly vaccines and potential negative feedback from supervisors. One interviewee noted that this could be a holdover from previous policies; older health workers may still be concerned about wastage despite the newer policy to vaccinate every child even if it meant wasting vaccine in a multi-dose container.

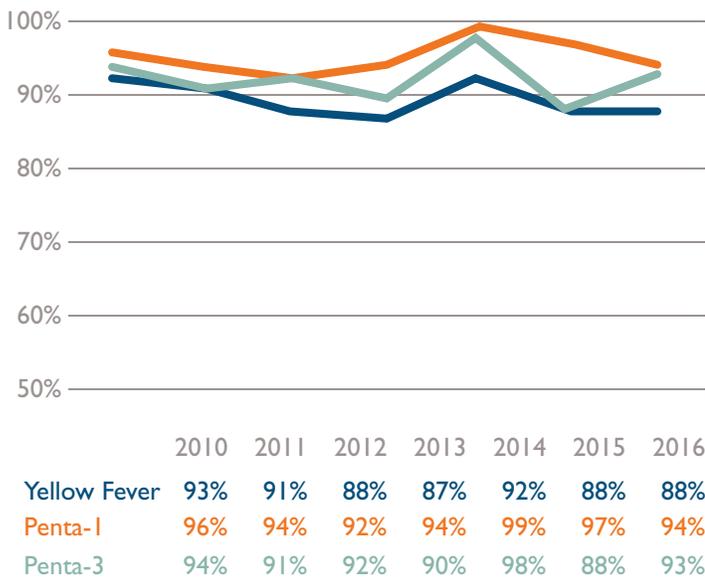
HCWs were indeed concerned about vaccine shortages (having experienced them), and described their efforts to minimize wast-

age of open vials, especially of lyophilized vaccines. However, they appear to be adept at coping with changes, and reported numerous strategies for minimizing wastage—scheduling immunization days to align with market days; giving vaccinations on alternate days (to maximize use of an open vial); even going into the community to use the doses still remaining in a vial, to avoid missing any child and wasting doses.

DPC and coverage: Available administrative data on coverage estimates did not indicate a causal relationship between DPC switches and coverage as coverage estimates fluctuated across all vaccines between 2011 and 2015. As seen in Figure 1, using WHO/UNICEF adjusted coverage estimates also cannot definitively infer any link between DPC change and coverage rates as 2013 (the full year with a different dose per vial for both vaccines) shows only minimal change in coverage from the previous year. Similarly, it is difficult to link the increase in estimated coverage rate of Yellow Fever in 2014, when the country reverted back to 10 DV, to a change in dose per container; as the estimated coverage rate for Pentavalent also increased the same year without a change in dose per container, and a similar increase in coverage was seen across all vaccines.

True wastage rates, and the extent of missed opportunities for vaccination, are unknown, due to limits of data quality and other, undetermined factors. More information is needed to understand how the DPC choice for different vaccines affects HCWs' behavior and coverage rates.

FIGURE 1: WHO-UNICEF ESTIMATES, GHANA COVERAGE RATES



“ WE ARE TORN BETWEEN TWO DEVILS – TO GIVE [THE VACCINE] NOW OR WAIT UNTIL THERE ARE ENOUGH BABIES TO MINIMIZE WASTAGE. ”

– FORMER HEALTH CARE WORKER

Multiple DPC presentations: Opinions differed widely on how the health system, and HCWs, would manage multiple DPC presentations of the same vaccine. National-level decision-makers mostly felt that multiple presentations would introduce too much complexity, both for supply chain administration and management by HCWs. By contrast, many HCWs felt that having multiple DPC presentations would help address current challenges in the field, and would not be too difficult to manage, especially if the different presentations were segmented by population density or delivery strategy (such as static versus outreach sites).

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.