Integrated Campaigns:

Evidence on pro-equity interventions to improve immunization coverage for zero-dose children and missed communities

*Part of a series, this evidence brief presents results from a **rapid review** of the literature to understand the effectiveness and implementation of selected interventions, including integrated campaigns, that could help achieve more equitable immunization coverage, specifically helping to increase coverage and reach among zero-dose children and missed communities.*

EVIDENCE SUMMARY	
What are integrated campaigns?	Integrated campaigns involve activities to reach large numbers of individuals with vaccination delivered in combination with other health services, or in combination with other vaccines through multi-antigen campaigns.
How effective are integrated campaigns in reaching zero-dose children and missed communities?  PROMISING INTERVENTION	Based on findings from primary research studies identified, **integrated campaigns are a promising intervention for reaching zero-dose children and missed communities**. Results from four effectiveness studies found meaningful increases in vaccine coverage following the introduction of integrated campaigns and, specifically, within unvaccinated and children facing vulnerabilities. Integrated campaigns were most frequently implemented in **conflict/fragile** and **remote rural settings.** There was **significant variation in campaign type, duration/timing, and components.** Optimization is likely context dependent.
What are the main barriers and facilitators to implementation?	• **Major facilitators** during planning and implementation include **working closely with communities** and **key stakeholders**, **using existing tools and digital platforms**, and ensuring **a clear coordination plan.** • **Major barriers** include **operational and logistical considerations** relevant to ensuring the simultaneous delivery of multiple health services and **cost**.
What are the key gaps?	**Key gaps** include **lack of implementation** of integrated campaigns **in urban areas and those that explicitly address gender-related barriers**, a general **paucity of effectiveness and costing data**, and **lack of clarity** regarding ways to **maximize efficiencies** and **optimize integrated components**.

INTRODUCTION

What are integrated campaigns?

The World Health Organization (WHO) defines integrated services as "health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course" (1). WHO describes six possible uses for integration, including (1) packaging of preventative and curative services delivered to a particular group, (2) multipurpose delivery points (i.e., multipurpose clinics), (3) bundling interventions that support continuity of care over the life course, (4) vertical integration across different levels of services (i.e., shared referrals and supervision across district hospitals, health centers, and health posts), (5) integrated policymaking and management, and (6) integration across sectors (i.e., school health promotion campaigns) (2). For this activity, the focus was primarily on the first use — an integrated package of services delivered as part of a campaign — although other uses, like multisectoral collaborations, can also be relevant. Campaigns directed at increasing immunization and coupled with the promotion of health-related education, or other health services or products, including the provision of multiple vaccines, were included. As the review was focused on equity, emphasis was placed on identifying campaigns focused on reaching marginalized, missed, or communities facing other vulnerabilities. Campaigns include delivery strategies intended to reach a large group of people over a short period of time, such as:

- **Supplementary immunization campaigns/activities (SIAs),** defined as activities meant to complement routine immunization by rapidly boosting population-level immunity by vaccinating all targeted individuals, regardless of vaccination status.
- **Periodic intensification of routine immunization (PIRI),** defined as time-limited or intermittent activities in which un/under-vaccinated individuals are administered routine vaccinations and are also provided with health information on the benefits of vaccines. Examples of PIRIs include Child Health Weeks, Child Healthy Days, and National Immunization Weeks (3).

Why are integrated campaigns relevant to achieving equity?

The goal of promoting equity is at the center of efforts to reach zero-dose communities, and expanding childhood immunization services to include other essential health services can help close equity gaps. Although nearly one in eight children in Gavi-eligible countries are considered zero-dose, in many contexts, immunization coverage is higher than coverage of other essential preventive, diagnostic, and curative services (4). **Delivering services through an integrated approach protects the health of hard-to-reach communities through an efficient, high-value connection with the health system. Integrated campaigns might also help reach zero-dose children by enhancing convenience and building trust.** Additionally, integrated campaigns can work to simultaneously tackle multiple vulnerabilities faced by a community by providing nutritional support, disease prevention commodities (i.e., insecticide-treated bed nets), and immunization. Providing a highly valued companion service could build communities' confidence in immunization providers, helping combat negative myths and rumors about vaccination. Integrated campaigns that deliver multiple antigens also provide an opportunity to help zero-dose children get closer to full immunization status.

Why was this rapid evidence synthesis on integrated campaigns undertaken?

The overall goal of this activity was to rapidly synthesize existing evidence on the effectiveness and implementation of integrated campaigns to reduce inequities in vaccination coverage. Through a comprehensive review of peer-reviewed and grey literature, this work aimed to:

1. Identify promising approaches to integrate immunization campaigns with other health services to reach zero-dose children.
2. Assess the effectiveness and efficiency of integration efforts aimed at reaching zero-dose children.
3. Identify the main barriers, enablers, gaps, and implementation considerations for implementing integrated immunization services.
4. Identify and discuss the implications of various definitions of integrated immunization service delivery.

RESULTS: What is known about integrated campaigns?

Effectiveness: What is known about whether integrated campaigns "work"?

Overall, included studies found that integrated campaigns increased immunization coverage for un/under-vaccinated individuals and missed communities; however, relatively few were identified on effectiveness, which speaks to the need for further research. The review identified seven existing reviews and four studies on effectiveness, including one randomized controlled trial (RCT). Notably, no studies used the term "zero-dose" to describe populations reached through integrated campaigns.

Overall categorization of effectiveness

To help program planners assess whether an intervention, such as integrated campaigns, should be considered for reaching zero-dose children and missed communities, a categorization scheme is used below to rate interventions as: potentially ineffective, inconclusive, promising, or proven. A more detailed description of this categorization can be found in the general methodology for reviews in this series [linked on the evidence map website].

Categorization	Rationale
 PROMISING INTERVENTION	Across four studies that assessed effectiveness of integrated campaigns on vaccination coverage, including one rigorous community-based cluster RCT, all found that integrated campaigns increased vaccination coverage. Importantly, three of these studies disaggregated by un/under-vaccinated populations or those facing vulnerabilities (e.g., low economic status, poorly performing districts), and found significant increases were achieved in reaching these groups with vaccination (5-7). For these reasons, this intervention was categorized as "promising." Given that only four effectiveness studies were identified—and included a limited range of integrated components—more evidence is needed before this intervention can be classified as "proven." Integrated campaigns were most frequently implemented in **conflict/fragile** and **remote rural settings.** There was **significant variation in campaign type, duration/timing, and components.** Optimization is likely context dependent. Research demonstrates that integrated campaigns had success in terms of

	improving vaccine coverage among under-vaccinated populations and those facing vulnerabilities (e.g., low economic status, poorly performing districts).

Below are more details regarding effectiveness studies identified in this review.

What evidence has been synthesized previously on integrated campaigns?

Reviews published on the topic found a mixture of positive and inconclusive results across a variety of integrated campaigns to reach un-/under-immunized populations, with particularly promising results in emergency contexts. Other reviews noted that although clear evidence on the effectiveness of integrated campaigns on vaccination coverage was lacking, the model shows promise and could help expand access to essential health services.

Seven existing reviews relevant to integrated campaigns were identified (8-14). The reviews either focused on specific intervention combinations or types of integrated campaigns, or discussed more general approaches. Among those focused on specific combinations (9, 11, 12, 14), primary findings included:

- As part of their review on coverage of treatment within community-based public health distribution, Deardorff et al. included nine studies that assessed the impact of Child Health Days/Weeks on immunization coverage (specific intervention components were not reported). Overall, the review found provision of vaccination through these integrated campaigns increased coverage by 12.7% (specific antigens included in coverage, as well as full vs. partial immunization status were not reported), with an absolute average post-intervention coverage of 90% (9).
- Wallace et al. examined the integration of various immunization and maternal/child health activities and, among the four campaigns included, found a marked increase in pre- to post-vaccination coverage (12).
- A High Impact Practice (HIP) in family planning brief identified integration of family planning (FP) and immunization services as a "promising approach" for increasing postpartum FP use when provided during routine service delivery but cautioned against providing FP services within mass immunization campaigns given their episodic/intermittent nature, lack of privacy for conducting FP counseling, and potential for spreading rumors or misinformation (14).
- Vassallo et al. assessed the impact of polio SIAs on routine immunization and found mixed results regarding whether polio SIAs affected immunization coverage outside of polio. Of results included, SIAs positively contributed to vaccination uptake of non-polio vaccines in most relevant studies (n=7), but some studies demonstrated no effect (n=3), and one study found a negative effect (11).

Of the three reviews assessing more general approaches (8, 10, 13):

- A review by Ismail et al. evaluated vaccine delivery systems in protracted **humanitarian crises** and found that integrated campaigns were one of the most widely used delivery systems in these settings. While not examining campaign effectiveness, the authors identified three critical enabling factors for campaign success: (1) having multiple service delivery pathways, (2) investing in community mobilization, and (3) ensuring central coordination by the Ministry(s) of Health (10).

- A review by the Accelerator Project focused on understanding how immunization campaigns could be leveraged to improve routine immunization. The review found no clear evidence on the impact of integrated campaigns on vaccination coverage but noted the model shows promise. Specifically, the review highlighted that integrating other health services into vaccination campaigns provides continuing opportunities for health promotion, and also may provide opportunities for campaign staff to build rapport and trust with communities, especially in contexts where mistrust and rumors about vaccination are prevalent (13).
- A review by Collins et al. included lessons learned from meningitis A, yellow fever, and Ebola vaccination campaigns that could be applied to **COVID-19**. The review noted that integrating campaigns offers critical benefits, including expanding access to essential health services in areas where access is limited or nonexistent, and the potential for integrated campaigns to improve efficiencies and allow for greater community involvement by offering interventions prioritized by community members (6).

What evidence exists on the effectiveness of integrated campaigns within immunization?

Four included studies evaluated the effectiveness of integrated campaigns on vaccination coverage and found significant positive effects. Detailed descriptions of these studies are presented below:

- A community-based cluster RCT from Pakistan conducted a three-arm trial comparing one arm that received routine polio vaccination services only; one arm that received additional services, including enhanced community outreach and mobilization and provision of short-term maternal and child health services and oral polio vaccine (OPV) through “health camps” (campaign-like events); and one arm that received all these interventions, plus the inactive polio vaccination (IPV) delivered through the camps. The study found significant increases in OPV coverage among children less than 5 years of age within the two arms receiving integrated services (84% and 82%) compared with clusters receiving only routine services (75%) (7).
- A cross-sectional study conducted in Madagascar included a nationwide survey that compared rates of measles vaccination coverage within districts with integrated vaccination campaigns that included insecticide-treated bed nets (ITNs) to rates in districts without this integration. The study found that measles vaccination coverage was significantly higher in districts with integration versus without (relative risk=1.3, 95% confidence interval: 1.1-1.6) using propensity score matching to derive a comparable group (6).
- A pre/post evaluation conducted in Central African Republic in a post-conflict setting compared vaccination rates before and after rollout of a multi-antigen campaign that included administration of the following vaccines: oral polio; yellow fever; *Haemophilus influenza* type b (Hib) and hepatitis B (DTP–Hib–hepatitis B); combined diphtheria, tetanus, and pertussis (DTP); pneumococcal conjugate vaccine (PCV); and measles vaccine. The pre/post comparison found the campaign increased vaccination coverage across all vaccines, except yellow fever (15).
- A serial cross-sectional multi-country study on Child Health Days (CHDs) conducted in Ethiopia, Madagascar, Tanzania, Uganda, Zambia, and Zimbabwe used Demographic and Health Survey data for children aged 12–23 months in periods spanning pre- and post-CHD implementation. The study found that measles and DPT3 immunization coverage increased, potentially because of the supplemental immunization activities conducted jointly with CHDs in Ethiopia,

Madagascar, and Uganda, and that coverage remained high in Tanzania, but decreased in Zambia and Zimbabwe (5).

What evidence exists on reaching zero-dose children or missed communities through integrated campaigns?

Three studies mentioned above disaggregated data to specifically look at un/under-vaccinated and communities facing vulnerabilities—all found improvements in vaccination coverage among groups facing the most vulnerabilities. The Habib et al. study in Pakistan found the proportion of unvaccinated children (defined as unvaccinated according to the routine childhood immunization schedule) decreased in all three arms throughout the study period, although more so in the arms receiving integrated services (7). Two studies disaggregated results by other potential markers of inequity, including socioeconomic status and poorly performing districts, with performance defined in terms of routine immunization indicator assessments. The cross-sectional study in Madagascar found significant improvements in vaccination coverage among children in the lowest wealth quintile and found improved equity comparing districts with the integrated campaigns versus those without (6). The multi-country study noted the most improvements in vaccination coverage in previously poor-performing countries (5).

Effectiveness of integrated campaigns in specific settings and programmatic contexts

Integrated campaigns were most frequently implemented in **conflict/fragile** and **remote rural settings.** There was **significant variation in campaign type, duration/timing, and components.** Optimization is likely context dependent. Integrated campaigns saw success in terms of vaccine coverage among under-vaccinated populations and those facing vulnerabilities (e.g., low economic status, poorly performing districts).

IMPLEMENTATION: What is known about "how" integrated campaigns work?

Barriers and facilitators to implementation by ERG setting

Twenty-seven articles (16-42) discussed implementation of integrated campaigns and were included in this review. A summary of major facilitators and barriers to implementation along with specific Equity Reference Group (ERG) setting considerations are presented in Table 1.

Table 1. Barriers and facilitators to implementation

Major facilitators	Major barriers	Specific ERG considerations
● Involving communities in planning and implementation ● Investing in community mobilization activities ● Operating with clear central coordinating body in place	Operational barriers to implementation (specific to integration): ● Complication in providing multiple health products, resulting in longer wait times for campaign attendees ● Unable to integrate certain key vaccines in the campaign due to	● Campaigns occurring in **conflict settings** and **remote, rural areas** highlighted the importance of coordination and community mobilization. ● Campaigns in **urban areas** noted few context-

● Coordinating with other sectors during planning ● Utilizing existing tools (i.e., checklists and data collection forms) and digital platforms to facilitate planning and implementation ● Securing political will and creating or leveraging existing collaborations to engender support	funding, logistics, or lack of authorization from authorities Barriers related to campaigns in general: ● Extra workload/burden on health care workers, distraction from routine services ● Irregular schedules ● Security concerns ● Delays in funding, payment to health care workers	specific implementation considerations but in one case used central locations (markets) to enhance accessibility. ● Many campaigns did not name the specific context(s) in which they occurred.

What resources and planning are needed to achieve optimal integration?

Included studies and reports covered a variety of integrated campaigns and took place across disparate contexts. For this reason, it is challenging to synthesize findings relevant to resource and planning needs necessary to achieve optimal integration. In the planning phase**, building or leveraging collaborations, especially multisectoral collaboration, and securing political will was often critical to achieving success** (16-20)**.** Other studies highlighted the importance of **involving communities and building trust during planning and implementation** (7, 19, 21). Studies also noted using **existing tools for data collection and leveraging existing infrastructure to maximize efficiencies during implementation** (18, 22). Notably, **linkage to health care facilities for campaign attendees was mostly absent** from included studies. More evidence is needed regarding health facility referral in the context of integrated campaigns. More details on implementation outcomes relevant to integrated campaigns are presented below.

Implementation outcomes

Major implementation outcomes reported across studies are summarized below:

Feasibility

Articles demonstrated feasibility of implementing such integrated campaigns across a range of settings. The most common Equity Reference Group (ERG) priority settings where integrated campaigns occurred included conflict-affected areas (7, 15, 23, 25, 34, 38) and remote rural areas (18, 24, 39). Only one report specifically mentioned how an integrated campaign explicitly addressed gender-related barriers (35). Only two noted occurrences in urban contexts (22, 35). Many studies and reports reported on national or subnational-level campaigns without reference to a specific setting. One multi-country study noted the overall increase in co-delivered services through integrated campaigns over time, especially in West and Central Africa (31).

Important facilitators of implementation included having strong coordination plans and partnerships, robust political will, and dedicated funding (7, 16, 18, 42). **Barriers to feasibility included challenges with transportation and administering and procuring multiple interventions (17, 23, 42), weaknesses in program management (5), delays in payment of health care workers (33), or delays in funding more generally (32, 42).** Challenges also included security concerns in some areas (7, 34, 42).

Acceptability

Implementing integrated campaigns was viewed as acceptable to implementers and beneficiaries alike. Few studies directly reported on the acceptability of integrated campaigns for users, but those that did found high acceptability and increased perceived benefits due to integration of services (12, 35). Among health care workers, some studies mentioned challenges such as increased workload of vaccinators due to extra time to educate on new vaccines (28) or general concerns over workload/scheduling (17, 19, 23, 24, 29). Several reports highlighted the ability of integrated campaigns to address vaccine hesitancy or fears of medical intervention more generally due to past experiences with COVID-19 (32) and Ebola (16), respectively.

Adoption and penetration

Across settings, adoption of the intervention by communities was relatively high, although some issues surrounding vaccine hesitancy or lack of knowledge about the campaigns were identified. Accounts of these campaigns often noted the importance of dedicating significant time to raising community awareness, providing avenues for community engagement, and enacting community mobilization to enhance adoption (7, 16, 18, 32, 42).

Costs

Six studies reported on cost. **Three reported an increase in cost due to additional integrated intervention (17-19) and two reported integrated campaigns to be cost efficient (28, 30).** A cost-effectiveness analysis across three vaccination campaigns, including two integrated campaigns, found that integrating services in campaigns can produce financial efficiencies, but more research is needed. The study also found integration can lower costs due to economies of scale, although the addition of more health services may drive up labor costs (37). Below are more details about these studies:

- Boselli et al. evaluated the costs of integrated versus vertical campaigns involving deworming. The study found integration reduced the individual cost of deworming tenfold (from US$0.23 to US$0.03). The study did not assess changes to vaccination costs in integrated versus vertical campaigns (17).
- Kamadjeu et al. conducted a human and animal vaccination campaign in remote, rural areas of Somalia among nomadic populations; the package of services for children included oral polio and measles vaccination, oral rehydration solution (ORS), and vitamin A supplementation. The study encountered numerous operational challenges and found the cost to vaccinate a nomadic child in remote, rural Somalia was US$6.20. This was significantly higher than the cost to vaccinate children in other areas for polio alone (US$0.60), but the team noted costs would have been greater if not for the joint planning and implementation (18).
- Mwingira et al. assessed costs of integrating neglected tropical disease and measles supplementary campaigns in Tanzania. The study found total costs of implementing the two programs separately was US$6.04 million in 2013 and that costs increased to US$7.19 million when integrated in 2014. The authors hypothesized the additional costs were due to multiple factors, including the addition of rubella vaccination in 2014, service provision to a wider range of age groups in 2014, and additional costs of vitamin A supplementation. The authors also noted unique start-up costs associated with launching the new integrated campaign. Notably, this study did not conduct a formal costing exercise, so no further details were available (19).

- Torres-Ruada et al. interviewed key informants about the introduction of the HPV vaccine in Rwanda, which was often provided through co-delivery with other services, like health promotion sessions. While no costing data were presented, key stakeholders viewed the introduction of the vaccine as a potentially cost-saving activity, both due to cancer prevention and co-delivery with additional health interventions (28).
- Vince et al. presented a case study on integrated campaigns from Papua New Guinea (PNG). The study noted that in 2012, PNG integrated measles and trivalent oral polio vaccine SIAs into a multicomponent campaign, including tetanus immunization for women of childbearing age and child health interventions, such as vitamin A supplementation and deworming. The case study presented data showing costs rose from US$5 million in 2003 and 2008, to US$5.35 million in 2010, to US$6.4 million in 2012. However, despite rising costs, the study noted a sizable decrease in cost per intervention per beneficiary in 2012 (US$0.37, reduced from US$0.72 in 2003, $2.63 in 2009, and $1.89 in 2010) (30).
- A series of costing analyses conducted by Thinkwell assessed costs of two different integrated campaigns, one in Sierra Leone which was a seven-day effort involving measles-rubella vaccination, oral polio vaccination, vitamin A supplementation, and deworming in half of the nation's districts, and one in Nigeria involving a state-integrated yellow fever and meningococcal A vaccine provision. Analytic results found that drivers of financial costs were per diems and transportation and that service delivery encompassed the largest proportion of total costs. In Sierra Leone, the financial cost of delivery per vaccine dose (MR and OPV) was found to be similar across districts that delivered only the MR and OPV vaccinations and those with integrated campaigns (US$0.39 and $0.38, respectively), suggesting cost efficiencies can be reached through integration. However, the study also found higher labor and other opportunity costs in districts implementing the integrated campaign compared to those with vaccines only (US$0.50 and $0.41, respectively). The study in Nigeria presented a more complicated picture. In this analysis, the team found the state implementing vaccine co-delivery had higher costs per dose delivered than states not conducting vaccine co-delivery (US$0.35 vs. $0.34 and $0.29) and a lower median number of doses delivered per ward, suggesting the cost difference could be driven by volume rather than number of vaccines delivered. Across costing analyses, authors conclude that more research is needed to understand how integrated campaigns can result in cost efficiencies (37).

Examples of implementation by type of integrated campaign

Implementation studies presented a wide variety of integrated campaigns. Examples highlighting the diversity of integration methods are described in Table 2.

Table 2. Types of integration campaigns

Type of integration	Examples of implementation
Multi-antigen vaccination campaigns	● Yellow fever vaccination campaign was integrated with a measles follow-up campaign in Sierra Leone, with 13 of 14 implemented districts reaching targeted vaccination coverage for both vaccines (22). ● Measles and meningitis A campaign, and measles and yellow fever campaign implemented successfully in Nigeria during COVID-19 pandemic; focus was on the

	strength of the collaborative planning process, especially on its ability to reduce health worker fatigue and avoid overburdened health workers; introduced measurement of state readiness to improve planning (32). ● Measles and meningitis A in Guinea; discussed importance of decentralization, coordination, and timely payment of health care workers (33). ● Polio and measles vaccine campaigns integrated in the Middle East and Northern Africa during ongoing humanitarian crises due to conflict and political instability; population has a high percentage of refugees (**ERG priority**) (34). ● Measles rubella (MR) campaign, HPV vaccination campaign, and vitamin A supplementation were simultaneously implemented successfully in Rwanda (27).
Events: Child Health Days or Weeks, African Vaccination Week	● These events included integrated campaigns delivering some combination of the following services: immunization, deworming, vitamin A supplementation, distribution of mosquito nets, growth monitoring, and HIV and malaria testing. ● Generally successful, usually included high political and regional support, donor support and coordination. ● Over time (i.e., comparing recent African Vaccination Weeks to Weeks in the past), more services were integrated and coverage increased (20). ● The addition of immunization week in Assam (India), a rural state with various hard-to-reach populations (e.g., island communities, tribal groups, and migrant workers), contributed to approximately 10-25% increase in coverage compared to Universal Immunization Program alone. The immunization week included the bacille Calmette-Guerin (BGC); OPV; diphtheria, tetanus, pertussis (DPT); and measles vaccines (24).
Vaccine and vitamin A supplementation	● Polio vaccines and vitamin A supplementation successfully integrated in Ghana (24); included collaborative planning and reduced burden on health workers. ● Combined measles vaccination and vitamin A supplementation was implemented in rural Zimbabwe among children in a humanitarian emergency due to a drought (**ERG priority**) (39). ● Vitamin A supplementation and deworming prophylaxis were integrated within vaccination campaigns as part of emergency response in Niger, a setting with armed conflict and humanitarian emergency (**ERG priority**) (38). ● Measles rubella (MR) campaign, HPV vaccination campaign, and vitamin A supplementation were simultaneously implemented in Rwanda (27).
Vaccination and nutrition services	● Nutrition, vaccines, and birth registration services were delivered together in urban poor communities (**ERG priority**) in Liberia (35). This report also noted that the campaign explicitly addressed gender barriers by holding the campaigns in markets to be more easily accessible to women and increase hiring of female vaccinators. ● Active nutrition screening was integrated into vaccine campaigns in rural Zimbabwe among children in a humanitarian emergency due to a drought (**ERG priority)** (39).
Vaccination and other services	● Birth registration, nutrition, and vaccines were delivered together in a short-term campaign in urban poor communities (**ERG priority**) in Liberia; people were highly motivated to attend the campaign for birth registration, which was difficult to access in the country (35). ● Polio and measles vaccines and animal vaccine campaigns targeted nomadic pastoralists in Somalia **(ERG priority**). Despite operational challenges and increased

	cost, the campaign was successful in reaching zero-dose children and missed communities (18).

Existing evidence gaps and areas for further research

This review identified several important gaps regarding the evidence base for integrated campaigns and their ability to reach zero-dose children and missed communities:

- Only four studies identified evaluated the effectiveness of integrated campaigns, and only three of these disaggregated data to understand how the intervention affected equity. More evidence is needed to better understand the effectiveness of integrated campaigns, including more diversity in terms of integrated components, timing, targeting, and duration. Many integrated campaigns were implemented in conflict-affected and remote rural settings. Few studies and reports described or evaluated campaigns that took place solely in poor urban areas or that specifically addressed gender-related barriers. In many cases, the setting in which the integrated campaign took place was unclear.
- One goal of this review was to understand how integrated campaigns affect efficiencies and what specific set of integrated activities seems most promising. Due to insufficient data, it was not possible to answer these questions, suggesting additional research is needed. It may be difficult to produce evidence on the combination of services most effective in increasing vaccination coverage. Many factors influence which services are included in integrated models, including community priorities, availability/feasibility of adding specific health services, and staffing. The choice of components is not necessarily focused on maximizing the success of vaccination campaigns.
- While this review identified several studies that included the costs of integrated campaigns, cost estimations varied widely depending on setting and the additional health service delivery components. Additionally, few studies described the funding source(s) of integrated campaigns and challenges associated with securing funding across the often-diverse set of interventions included within integrated campaigns.

More research on these topics would provide more evidence regarding both the effectiveness and implementation of integrated campaigns to reach zero-dose children and missed communities.

Limitations

Despite undertaking a comprehensive search strategy, this synthesis involved a rapid literature review; it is possible that relevant citations were missed. Additionally, this review included only relevant peer-reviewed publications and publicly available grey literature sources. It is possible more evidence exists, especially programmatic data that might not be available through the sources searched. Publication bias, although not formally assessed, might be of relevance, especially if successful integrated campaigns are more likely to be written about and published than unsuccessful ones. Also, despite the use of standardized forms and trained staff members, data interpretation is somewhat subjective, especially given that formal, quantitative synthesis of outcomes was infeasible. Additionally, it was sometimes challenging to distinguish campaign activities from routine immunization activities that might occur outside of a facility setting, such as through community outreach, suggesting the line between

campaign-style events and routine immunization is not always clear. Finally, few studies presented outcomes specific to zero-dose children and missed communities, thus limiting our ability to understand implementation considerations among these groups.

Conclusions

How should pro-equity programming shift based on findings?

Evidence provided in this brief suggests integrated campaigns are a promising strategy and should be considered a potential intervention to improve reach to zero-dose children and missed communities. Because this is not yet considered a "proven" intervention, it will be important to document efforts to implement integrated campaigns to reach zero-dose children and missed communities so what is learned can be understood and applied. Integrated campaigns lend themselves well to improving equity through their focus on increasing access to health services, including immunization, in areas where services are limited or lacking. Three factors could help integrated campaigns reach more zero-dose children and missed communities:

1. **Ensure integrated campaigns take place in communities with high prevalence of zero-dose children**, which first requires identifying where zero-dose children reside and which communities are missed.
2. **Develop integrated campaigns that include components prioritized by communities facing vulnerabilities**, which requires working closely with these communities during planning and implementation and devoting sufficient resources toward effective community mobilization.
3. **Disaggregate monitoring data** so the impact on equity is clear. Results can be disaggregated using examples found within studies included in this review, such as presenting coverage changes for unvaccinated, partially vaccinated, and fully vaccinated individuals, or presenting coverage broken down by other clear markers of equity, such as wealth quintiles.

Based on the findings, should integrated campaigns with an equity perspective be brought to scale?

Several included studies demonstrated that **scaling up integrated campaigns is feasible**. For example, studies and reports included in this review described national level campaigns of integrated services (19, 21, 30). Programs should carefully consider the balance of conducting campaigns to increase vaccination coverage versus investing more in routine immunization approaches when scaling up (13). As noted previously, many integrated campaigns identified took place in post-conflict or conflict-affected settings where health care infrastructure was either poorly functioning or nonexistent, thus **integrated campaigns provide an excellent, short-term solution to rapidly improve vaccination coverage while simultaneously providing access to additional essential health services**. However, the **scale-up of and reliance on campaigns in settings with functional health care systems is less clear** and warrants careful consideration. Scaling up integrated campaigns might be an effective way to reach zero-dose children and missed communities, even in areas with strong routine immunization services. More evidence is needed to fully understand when, where, and how integrated campaigns can be used specifically to address inequities.

Appendix A. Review methods

How was this evidence synthesis conducted?

SEARCHING, DATA EXTRACTION, AND ANALYSIS: The review followed a general methodology for all topics in this series. In brief, the methodology involved comprehensively searching electronic databases for articles from January 2010 through November 2022, conducting a grey literature search, screening all citations, and developing topic-specific inclusion criteria. Data were extracted into standardized forms, and results were synthesized narratively.

INCLUSION CRITERIA: We included studies that took place in low- or middle-income countries, described an intervention that integrated immunization campaigns with other health services, or described a multi-antigen vaccination campaign. Studies needed to present data relevant to vaccination coverage (for effectiveness studies) or implementation of integrated campaigns. We included both effectiveness studies (defined as using a multi-arm design or using pre/post or time series data to evaluate an intervention involving integrated campaigns) and implementation studies (defined as any study containing descriptive or comparative data relevant to implementation outcomes).

SEARCH RESULTS

- 337 articles were identified in the published literature search.
    - 279 articles were excluded during title and abstract screening for irrelevance, leaving a total of 58 articles for full-text review.
    - 32 articles were excluded during full-text review for a total of 26 studies:
        - 6 existing relevant reviews
        - 4 effectiveness studies
        - 16 articles related to implementation
- 62 potential articles were identified in the grey literature:
    - 11 reports were included as relevant to implementation
    - 1 report was included as an existing review
- In total, 38 articles and reports were included:
    - 7 existing reviews
    - 4 effectiveness studies
    - 27 implementation studies/reports

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