Supportive Supervision:

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 of and implementation considerations for selected interventions, including supportive supervision, that could help achieve more equitable immunization coverage, specifically helping to increase coverage and reach zero-dose children and missed communities.*

EVIDENCE SUMMARY	
What is supportive supervision?	Supportive supervision refers to supervisory approaches that seek to continuously build the skill, knowledge, and overall performance of health care workers through non-authoritarian means that promote positive feedback, open communication, and problem solving. It focuses on using data to inform decision-making and monitor performance over time.
How effective is supportive supervision in monitoring zero-dose children and missed communities? ? INCONCLUSIVE EVIDENCE	Most studies evaluating supportive supervision found some evidence of positive effects on outcomes relevant to quality and performance, such as knowledge, skills, and reporting practices. Given these findings, supportive supervision could be considered a "promising" intervention from a "reach" perspective. However, results on whether supportive supervision led to improved data utilization, data collection, and decision-making were lacking. Several studies demonstrated that deploying supportive supervision interventions in priority areas may increase vaccination coverage, although it was unclear whether changes to coverage were due to supportive supervision improving reach of unvaccinated children directly or through improved monitoring. Notably, supportive supervision interventions varied in terms of content, approach, and delivery. **Despite the promising results in using supportive supervision to impact quality, the lack of data on use of supportive supervision to inform monitoring and use of data to inform decision-making led to a categorization of "inconclusive" from a monitoring perspective.** Research indicates that supportive supervision is most useful when issues are related to **quality** and less useful when issues are **structural** (i.e., lack of human capital). Supportive supervision has been implemented in remote rural settings, fragile/conflict-affected settings, and in urban settings.
What are the main barriers and facilitators to implementation?	• **Facilitators** include **engaging stakeholders** and securing **government ownership** including as part of a **bundle** or **collaboration;** using **standardized checklists,** including **digital** ones, to provide assessments/feedback; creating an **enabling environment;** and **fostering** supervisor/supervisee **relationships** built on **trust, respect, and open communication**.

	• **Barriers** include **lack of financial and human capital**, competing with **systemic constraints**, not considering **existing structures,** inability to measure **quality** of supervision, and challenges with **sustainability.**
What are the key gaps?	Key gaps include a **lack of evidence** specific to using supportive supervision to **measure and monitor** immunization services among zero-dose children and missed communities, and a lack of evidence on how supportive supervision can address **gender barriers**. More evidence is needed on how to leverage use of supportive supervision when included as part of an **intervention bundle** and on the **mechanisms** through which supportive supervision works to affect change.

INTRODUCTION

What is supportive supervision?

Improving the supervision of health workers is perceived as an important aspect of strengthening the health care system by improving the quality of services delivered and health worker performance, which may ultimately affect health outcomes (1). Supportive supervision can also be used to improve data quality, such as by improving reporting practices, monitoring existing interventions, and data collection through supervisory visits; and to increase the use of data to make informed decisions regarding programming. The term "supportive supervision" has come to represent supervisory approaches that facilitate and support health workers in meeting performance objectives, and that specifically shift away from more "traditional" approaches, which are often viewed as authoritarian and focused on checking for errors and inspection, not on skills building or positive reinforcement of good practices (2).

The World Health Organization (WHO) defines supportive supervision as "a process of helping staff to improve their own work performance continuously…carried out in a respectful and non-authoritarian way with a focus on using supervisory visits as an opportunity to improve knowledge and skills of health staff" (3). Accordingly, it may be an important way to improve the performance of health workers (3). Supportive supervision emphasizes open communication that includes both parties and focuses on team-based problem solving. Performance and implementation monitoring, goal setting, data-based decision-making, and frequent follow-ups are all important aspects of supportive supervision (3).

While supportive supervision has been used in a variety of areas, it is important to understand how it may be beneficial to improving performance monitoring and data-based decision-making. The goal of this evidence brief is to understand how supportive supervision can help improve equity within immunization, specifically through improving measuring and monitoring of immunization activities.

> "Supportive supervision encourages **open**, **two-way communication**, and building **team approaches** that facilitate problem solving. It focuses on **monitoring** performance towards goals, and **using data** for decision-making, and depends upon regular follow-up with staff to ensure that new tasks are being implemented correctly."
>
> *-World Health Organization*

Why is supportive supervision relevant for reaching zero-dose children and missed communities?

Supportive supervision could be especially important within settings that have higher proportions of zero-dose children and missed communities, including priority settings identified by the Equity Reference Group (ERG): remote rural, conflict affected, urban poor, and where gender-related barriers exist (4). In some of these settings, such

supervision could serve as a critical link between health care workers (HCWs) and the health system in which they serve as a means for providing supplemental training, capacity building, and support (1). For this review, the focus is on considering the role of supportive supervision in the context of monitoring as articulated in the IRMMA (Identify – Reach – Monitor – Measure – Advocate) framework, specifically within the "measure and monitor" component that focuses on improving program performance monitoring and the use of data for decision-making (5). Notably, Gavi-supported countries often include supportive supervision as a measure-and-monitor strategy they undertake to improve pro-equity programming. Several mechanisms through which supportive supervision could work to improve pro-equity programming are:

- Improve the reach of immunization services directly by improving health service delivery (e.g., improved quality) and by increasing human resource capacity (e.g., increased skill and retention of existing HCWs).
- Improve monitoring of demand- and/or supply-side strategies to improve reach, thus enabling facilities and health systems to understand what is working and what is not.
- Strengthen existing data systems, leading to better data quality to inform programming.
- Improve monitoring and data quality for better use of data to inform decision-making, planning, and action.

Several global organizations and consortiums have published guidelines and training materials on how to conduct supportive supervision, including manuals developed by WHO (3), United Nations Children's Fund (UNICEF), and other global partners (6), and global international nonprofit organizations (2). Definitions of supportive supervision have differed, and programs have drawn upon a diverse set of tools, content, and approaches to implement supportive supervision interventions (1).

Why was this evidence synthesis on supportive supervision undertaken?

The overall goal of this activity was to synthesize existing evidence on the effectiveness and implementation of supportive supervision to monitor and improve implementation of immunization activities within vulnerable communities. Through a rapid review of peer-reviewed and grey literature, this work aimed to evaluate the following questions:

1. Is supportive supervision effective in improving monitoring of immunization activities and the use of data for decision-making related to immunizations? What factors contribute to making supportive supervision effective in these ways?
2. What are the main considerations of carrying out supportive supervision to improve monitoring and data use, specific to reaching zero-dose or missed communities?

This review also sought to understand lessons learned from the application of supportive supervision outside of immunization by conducting a review of relevant reviews that synthesized learnings from interventions within primary health care services from 2010 through 2022. An additional search was conducted to identify more recent, relevant primary studies and reports that discussed immunization-specific applications of supportive supervision published from 2015 through 2022. To be included, studies/reports had to be conducted in a low- or middle-income country, published during the dates mentioned above, and report on effectiveness or implementation outcomes related to supportive

supervision interventions relevant to immunization services. More information on review methods is presented in Appendix A.

RESULTS: What is known about supportive supervision?

Twenty-three eligible studies were identified, including two reviews. Studies generally sought to understand how supportive supervision interventions can affect quality of immunization services, management, and health worker performance, either integrated across health areas or focused solely on one health area. **Studies generally did not provide specifics on how supportive supervision improved monitoring of immunization activities and/or improved use of data to inform decision-making. Most effectiveness studies demonstrated some positive impacts on outcomes relevant to quality and performance, such as health worker knowledge and reporting practices, or vaccination coverage.** No studies were specific to zero-dose children or missed communities, but several took place within prioritized administrative districts (due to low vaccination coverage rates), assessed changes in full immunization status, and/or were targeted toward settings prioritized by the ERG (4), including studies in remote rural areas, conflict-affected areas, and among the urban poor. No studies focused on how supportive supervision addresses gender-related barriers. Supportive supervision was carried out through training of supervisors, development of supervision tools and guidelines, and supervisory visits. Data were collected through interviews, surveys, cost analysis, activity reports, and checklists.

Overall categorization of effectiveness

To help program planners assess whether an intervention, such as supportive supervision, should be considered for monitoring to help improve implementation of immunization activities for 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
? INCONCLUSIVE EVIDENCE	Across studies that assessed the effectiveness of supportive supervision for immunization services, the vast majority demonstrated improvements in outcomes relevant to improved quality of service delivery, including improvements to cold chain and vaccine management, knowledge of vaccine handling and storage, and documenting/reporting. Given these findings, supportive supervision could be considered a "promising" intervention from a "reach" perspective. However, results focused on whether supportive supervision impacted data utilization and decision-making were lacking. Some studies assessed the impact of supportive supervision on vaccination coverage among priority areas, and most found improvements, although it was infeasible to ascertain whether changes to coverage were due to supportive supervision improving quality or through improved monitoring/use of data. Notably, supportive supervision interventions varied in terms of content, approach, and delivery. Some studies provided little detail on how supportive supervision was implemented. Despite the promising results in using supportive supervision to impact quality, the lack of data on use of supportive supervision to inform monitoring and use of data to inform decision-making led to a categorization of "inconclusive" from a monitoring perspective.

	Supportive supervision has been implemented in remote rural settings, fragile/conflict-affected areas, and urban settings. Research indicates that supportive supervision is most useful when issues are related to quality and less useful when issues are structural (i.e., lack of human or financial capital).

Specific evidence for deriving this categorization is presented below.

What evidence exists on the effectiveness of supportive supervision within immunization?

Fourteen primary research effectiveness studies related to the provision of immunization services were included (7-20)**. Overall studies found improvements both in outcomes potentially relevant to service quality, such as improved knowledge of cold chain point management, vaccine storage, and reporting practices, and outcomes related to vaccination coverage.** Of five studies measuring changes to vaccination coverage, all but one reported positive impact. From these studies, the mechanisms through which supportive supervision contributed to changes in coverage were unclear. Notably, two studies found mixed results (16, 17). Details of included study results are presented in Appendix B.

Studies found varying understanding of supportive supervision among supervisors and noted this intervention might not be able to directly affect quality and other outcomes unless more systematic issues (i.e., financial resources, supply chain management) were also addressed (17). One cross-sectional study in Ethiopia found generally low levels of knowledge among vaccine handlers and poor status of cold chain and vaccine management in primary health centers; receiving supportive supervision was associated with better cold chain and vaccine management in this context (10).

Studies utilized a variety of study designs, including serial cross-sectional, pre-/post-test, and quasi-experimental. A few articles used a control/comparison design, but no studies employed randomization. Seven interventions took place in India (9, 11-15, 17, 18), two in Nigeria (15, 16), two in Ethiopia (8, 10), one in Zambia (19), one in Uganda (20), and one involved multiple countries including Cameroon, Cote d'Ivoire, and Mauritania (7). Studies were categorized by the following types:

- Supportive supervision delivered as part of a collaboration with other institutions.
- Supportive supervision delivered as part of a comprehensive package.
- Supportive supervision delivered as a stand-alone intervention, with a focus on using digital tools.

One study did not provide enough information to be categorized (10). Categories are not mutually exclusive, yet they provide a sense of the types of supportive supervision interventions implemented.

What evidence exists on the effectiveness of supportive supervision specific to identifying and reaching zero-dose children or missed communities?

No interventions mentioned zero-dose children. One intervention in Nigeria specifically targeted "unreached" children in their approach that involved use of supportive supervision within conflict-

affected settings (15). Results from this study were positive. The number of children immunized increased from 1,862,958 to 1,922,940 pre/post intervention, and lot quality assurance sampling (LQAS) results showed increased polio vaccination coverage (67% to 84% pre/post intervention). However, it is unclear whether these results are directly attributable to supportive supervision as this intervention encompassed a wide range of additional activities, including microplanning, youth engagement, and establishing transit vaccination for mobile populations. No details were included on the supportive supervision component.

Additionally, although many studies did not specify the ERG setting in which interventions occurred, there were examples that showed promise in both rural areas (8) and areas encompassing the urban poor (12). Both interventions involved collaborations with local academic institutions to provide external supervision and mentoring.

Across included studies, many supportive supervision interventions were targeted within districts or other administrative areas with low vaccination coverage and were therefore prioritized (7, 8, 11), although few details were provided as to why supportive supervision was enacted in certain districts and not others and how this extra support was meant to affect change.

What evidence has been synthesized previously on the effectiveness of supportive supervision outside of immunization services?

Two existing systematic reviews were identified that assessed the impact and implementation of supportive supervision interventions for HCWs in low- and middle-income settings (21, 22). **Neither review focused on supportive supervision as a means to improve monitoring, data quality, and use of data to inform decision-making; the reviews mostly focused on the role of supportive supervision in improving quality of care and HCW motivation.** Neither review was able to provide firm conclusions about the effectiveness of supportive supervision, although they included descriptive factors.

- Bailey et al. systematically reviewed the literature from 2004 through 2014 to identify the impact of supportive supervision on quality of care and HCW motivation and performance among supportive supervision interventions implemented in sub-Saharan Africa (21). Findings across 18 eligible reports indicated supportive supervision was often linked with increased job satisfaction and motivation, but evidence was lacking on its impact on clinical outcomes. The review noted a wide variety of approaches to supervisory programs, including embedding supportive supervision within quality improvement programs or programs focused on mentorship. The review was unable to draw clear conclusions on the effectiveness of supportive supervision on quality of care or clinical outcomes but noted the overall conclusions:
    - Supportive supervision is less likely to work when critical system inputs are insufficient. Careful consideration should be given to human and financial resources necessary to successfully implement and sustain these interventions.
    - Supervisory approaches built on problem-solving approaches tended to have stronger associations with HCW satisfaction and job performance.
    - The supervisor-supervisee relationship is important and should not be overlooked.
- Deussom et al. documented supervision enhancements conducted within low- and middle-income countries that successfully improved HCW performance (22). The review included studies published from 2010 through 2020. Among 57 studies conducted across 29 countries, the review found:

- Most studies were externally funded pilots; few interventions were adapted, scaled, or sustained, which limited cost effectiveness and impact.
- Over half of included studies were focused on community health workers.
- Supportive supervision approaches identified included: utilization of health systems data (n=38 studies) and use of continuous quality improvement as the basis for providing supportive supervision (n=22 studies). Many interventions successfully integrated technology-based components.

IMPLEMENTATION: What is known about "how" supportive supervision works?

Barriers and facilitators to implementation

Seventeen studies and reports presented information relevant to supportive supervision interventions across ERG settings. Major implementation barriers and facilitators are summarized in Table 1.

Table 1. Barriers and facilitators to implementation by ERG setting

	Facilitators	**Barriers**
ERG setting not specified	• Using a health systems approach and developing interventions informed by theory (11) • Establishing feedback audit systems or having real-time visibility on indicators to track improvement (23, 24) • Having support from high levels of government for implementation (13) • Use of standardized tools and checklists during supervisory visits (13), including digital checklists for real-time assessments/feedback (9, 19, 24, 25) • Adequate financial and human capital; having enabling health systems (7) • "Country-led, whole-system changes that can be sustained and scaled" (8) • Providing adequate training for supervisors and providing targets with measurable indicators (24) • Fostering trust and respect within supervisor/supervisee relationships so HCWs feel free to share concerns and have their voices heard (21)	• Resource issues, competing priorities, and issues with management accountability (20) • Not addressing systemic constraints (i.e., supply chain management, financial resources) in addition to supportive supervision approach (17) • Staff overburden (17) • Lack of monetary and non-monetary incentives for supervisors (26) • Political issues (related to lack of commitment, poor performance (26) • Lack of clarity regarding roles and scope (26) • Disruption in supportive supervision visits due to COVID-19 pandemic (27) • "One-off, program-driven approaches that are funded by external donors" (22) • Inability to monitor supervision quality or ensure sufficient supervisory capacity and training (19, 26)
Remote rural	• Engagement of diverse stakeholders and government ownership critical for integration and sustainability (8)	• Low capacity and lack of staff to serve as supervisors (8) • Transportation difficulties that hamper completion of supervisory visits (26)

Urban poor	• Early engagement of partners, clearly stated purpose with common goals, effective communication, and no financial conflict (12) • Fostering collaborations with local medical colleges led to residents receiving first-hand experience and training in health care management created a "win-win" situation (12)	• Sustainability of collaborations between institutions and health departments (12) • Non-cooperation of staff in program (12) • Clash in priorities between institution and health department (12)
Conflict-afflicted	• Targeting "human and financial resources to the areas with known gaps rather than generalizing the utilization of the resources with little effect" (15) • Implementing interventions known to work concurrently (15) • Leveraging digital technologies developed for one vaccine-preventable disease (polio) to use with another (COVID-19) (28) • Capitalizing on remote means to support staff in areas with hard-to-reach HCWs (28)	• Lack of material capital (28) • Issues with using digital means of communication and data collection/feedback, such as poor network coverage or platform instability (28)
Gender-related barriers	Not reported	Not reported

Below are notable factors associated with effective implementation of interventions:

1. **Forming partnerships to address shortages in supervisory capacity:** Several studies addressed the lack of existing trained supervisors by forming collaborations with other institutions, mostly academic, in which knowledgeable faculty were trained as external supervisors (8, 12). Another study in Uganda utilized external consultants to both provide direct supervision and train district-level staff to become supervisors (20).
2. **Using theories and conceptual frameworks to design interventions:** Several studies employed theoretical frameworks, such as taking a "health systems approach" as Gera et al. did in India, which implemented supportive supervision along with other interventions to nurture stewardship, improve empowerment and coordination, prevent stock-outs, and build skills and confidence (11). Other studies, like Gupta et al., utilized a logic model to specify what inputs and processes were needed to affect change (12). Another approach in Uganda provided clear and detailed rationales for components, such as using on-the-job training and working within the existing health system using a collaborative approach (20).
3. **Taking a comprehensive approach**: In three studies supportive supervision served as part of an intervention bundle (7, 12, 15). For example, the technical assistance provided by Agence de Médecine Préventive in Cameroon, Cote d'Ivoire, and Mauritania included technical and management capacities in vaccinology strengthening for district medical officers, and supportive supervision and technical assistance in health logistics, data management, and quality. Results demonstrated improvements in vaccination coverage across priority districts (7).

4. **Using standardized checklists and leveraging digital technologies:** Two studies reported on using digital technologies, including checklists, for supportive supervision (9, 19). While studies found positive impacts, noting that the digital tools worked in providing real-time assessments and feedback, the quality of supervision mattered and should be accounted for in future studies (19).

Implementation outcomes

Below is a summary of specific implementation considerations related to acceptability, feasibility, appropriateness, cost, and sustainability that expands on barriers and facilitators already listed. **Overall, studies found supportive supervision was acceptable and feasible for both supervisors and supervisees. Determining appropriateness of implementing supportive supervision was based on having willing participants, an enabling system, and ensuring systemic constraints would not impede improvements. Few cost data were available; reliance on donors to support supportive supervision interventions was a concern for sustainability.** Of note, several included studies used implementation science to evaluate the supportive supervision intervention, thus these studies provide in-depth elaborations on implementation (8, 20). Case studies included in the review also described implementation of existing supportive supervision programs (13, 24).

Acceptability

Studies found supportive supervision was generally viewed as acceptable. Studies with qualitative data reported those who received supportive supervision, especially supervisees, found the supervision helpful. One study about a collaboration between an academic institution and a health department mentioned that the mentoring provided was appreciated, was viewed as being supportive, and led to change (8).

Feasibility

All included studies report on supportive supervision interventions that were successfully implemented to some degree, thus speaking to their feasibility. One review noted that for supportive supervision interventions to be feasible, two critical elements are required: motivated and willing participants (supervisees and supervisors) and systems that support and enable the supportive supervision process (21). Notably, one article by Bello et al. described the impact of COVID-19 on countries' ability to implement supportive supervision as restrictions during the pandemic prevented site visits from occurring (27). Another study referred to the fact that existing integrated supportive supervision data, collected through an online platform and designed to help improve performance related to polio vaccination, was used during COVID-19 to actively search for COVID-19 cases, thus showing how supportive supervision systems can be leveraged for additional purposes (28).

Appropriateness

Appropriateness, or perceived fit of the intervention, was discussed in several studies and reports. As previously noted, one study mentioned the potential inappropriateness of implementing a supportive supervision intervention if systemic constraints affecting service delivery are not also addressed (17). Another study from Pakistan mentioned findings relevant to appropriateness for specific issues, such as training materials and understanding of the purpose of supervision versus monitoring (26). Tanzil et al. noted that existing training materials from WHO and others are only available in English and contain little information about vaccination administration and counseling, which limits their utility. Tanzil et al.

also reported on differences in understanding as to what supervision includes. Vaccinators and supervisors viewed supervision and monitoring as the same whereas district officials viewed them as separate and distinct processes (26).

Costs

Only one study described specific costs of implementing supportive supervision (29), although several studies mentioned the lack of adequate financial resources as a barrier to implementing supportive supervision interventions. The costing study examined costs of providing supportive supervision in Côte d'Ivoire as part of a package of technical assistance provided by the Agence de Médecine Préventive. The cost of providing supportive supervision to 10 health districts, across 40 visits in total, was US$44,675. Costs included: personnel (salary, per diem), transportation, communication, office supplies, vehicle maintenance and depreciation. Of these costs, 90% were recurring and 10% were non-recurring. Personnel costs were the largest, and the authors estimated costs could be reduced by 59% if local facility staff provided supervision (29). Notably, these data came from one study and are program specific; it is unlikely these cost estimates are generalizable.

Sustainability

Many studies mentioned external donors, such as UNICEF, Gavi, and USAID, providing funding for supportive supervision efforts (7, 9, 11, 17, 18, 20, 24), thus raising questions about sustainability after such support ends. One study in Uganda, which used external consultants, mentioned that existing systems for supportive supervision needed to be strengthened to sustain improvements made after the study period ends (20). Another study in Pakistan noted that existing national Expanded Programme on Immunization (EPI) guidelines contain "brief and ambitious" guidelines about supervision but lack clear ones on implementation and on specific roles and responsibilities (26). This finding suggests that including supportive supervision goals within guidelines is not enough to create and sustain improvements to supervisory structures and practices (26).

Existing evidence gaps and areas for future research

This review identified several important gaps regarding the evidence base for supportive supervision and its ability to reach zero-dose children and missed communities:

- Lack of evidence on supportive supervision interventions specifically designed to improve monitoring, data quality, data collection, and use of data to inform decision-making.
- Limited evidence on use of supportive supervision to directly improve the reach of immunization services for zero-dose children and missed communities through improving the quality of health care or motivation of HCWs.
- Lack of evidence on how supportive supervision can be used to address gender barriers, either through gender responsive or gender transformative interventions.
- More research to understand how supportive supervision with an equity-focus can be used as part of an intervention bundle to boost impact, and how to tease out effects of supportive supervision when implemented as part of a comprehensive approach.
- More understanding of how to balance the need to improve quality and performance while also recognizing existing systemic constraints (i.e., lack of financial and human capital) might be both negatively affecting service delivery and preventing efforts to address it, such as through interventions such as supportive supervision. Across studies identified in this review, supportive

supervision was often targeted to low-performing districts that likely experience some health system constraints, such as lack of trained staff and limited resources. In these cases, it is unclear whether supportive supervision could still be used to address quality issues or for certain activities (such as those designed to improve reach to zero-dose children).

- More rigorous studies are needed to understand the effectiveness of supportive supervision, including more detailed descriptions of how supportive supervision activities were carried out, assessing the effectiveness of supportive supervision training, and monitoring supervision quality and capacity.
- More data on costs, especially considering costs if programs were scaled and whether targeting the intervention to critical areas/health facilities could help increase sustainability. Only one included study described specific cost estimates for carrying out supportive supervision visits. More cost data on supportive supervision interventions outside of immunization is most likely available, such as one study that found the cost per trained supervisor was US$2113 (30). However, this literature was not included as this reviewed focused on immunization-specific studies.
- More studies that compare supervisee and supervisor perspectives, as well as perspectives from key stakeholders. One included study that provided these different perspectives showed vastly dissimilar points of view (26). For example, perspectives might differ in terms of perceived burden of providing or receiving supervision; training/quality of supervision; and compensation, or lack thereof, of participating as a supervisor or supervisee.

Limitations

Despite undertaking a comprehensive search strategy, this synthesis involved a rapid literature review; relevant citations could have been missed. Additionally, this review included only relevant peer-reviewed publications and available grey literature sources. It is possible that more evidence exists, especially programmatic data unavailable through the sources searched. Publication bias, although not formally assessed, might be of relevance, especially if successful supportive supervision interventions are more likely to be 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, many supportive supervision interventions were implemented as part of a bundle of activities, thus suggesting that supportive supervision often occurs in tandem with other interventions and results cannot always be traced back to the impact of supportive supervision itself. Definitions and detailed descriptions of supportive supervision activities were often lacking.

Conclusions

How should pro-equity programming shift based on findings?

Based on findings from this review, programs can take several steps to tailor supportive supervision interventions to help achieve equity:

1. **Conduct needs assessments within health care facilities serving populations with a high prevalence of zero-dose children and within missed communities**: Understand reasons why children are not being reached with vaccination, i.e., issues with quality and/or HCW performance or lack of financial and human capital, vaccine stock-outs, and supply chain

problems. If the latter, supportive supervision might be unlikely to improve service delivery, unless existing constraints are also addressed.

2. **Examine existing supervisory structures within the health care system**: Assess whether human capital is available to provide additional supervision and financial resources for the appropriate supervisory training. If not, consider whether collaborations could be formed to leverage potential external supervisors. Consider whether off-site trainings are needed, or whether on-the-job training and working within existing structures/schedules would be more appropriate. Devising a system to monitor the quality of supervision would be important.
3. **Consider how supportive supervision could be added to existing pro-equity interventions, including to support interventions designed to "reach" zero-dose children and missed communities, as part of a comprehensive approach.** Adding supportive supervision to a bundle of targeted interventions designed to work synergistically could help boost impact, especially if the bundle is developed using a theoretical framework or logic model to ensure clarity in the mechanisms through which supportive supervision is designed to work. For example, supportive supervision might be used as a complementary intervention to help improve data quality and/or utilization as a means to improve identification of zero-dose children and missed communities. Once identified, supportive supervision could be used as a complementary strategy to improve the effectiveness of interventions designed to reach zero-dose children and missed communities, including through improvements to monitoring these interventions to assess whether impact on equity is being achieved.

Based on the findings, should supportive supervision interventions with an equity perspective be brought to scale?

This review found that supportive supervision interventions varied widely in terms of approach, content, and delivery. Given this variability, it is challenging to determine whether such interventions should be brought to scale. Developing a learning agenda is needed if countries are to consider scaling supportive supervision interventions. The agenda could suggest phased, targeted approaches, and include relevant programmatic components to reach zero-dose children in the supervisory list. Considerations for bringing such interventions to scale include:

- **Feasibility:** It is imperative that supportive supervision interventions are implemented in contexts where both supervisors and supervisees are motivated and willing to be involved, and existing systems support their involvement (7). If these foundational elements are lacking, implementation is unlikely to succeed. Additionally, supportive supervision interventions are rarely implemented in isolation, thus consideration should be given to how they can be leveraged as part of a comprehensive approach for scale-up.
- **Cost:** Little information was identified on costs of implementing supportive supervision interventions; more is needed to inform scale-up. Of note, articles in this review often mentioned that lack of financial and human capital were barriers, suggesting cost and resource allocation are important for bringing interventions to scale.
- **Appropriateness:** Related to the cost and feasibility aspects mentioned above, if factors beyond quality and performance are hindering the provision of immunization services to zero-dose children and missed communities, it is unlikely that supportive supervision would be an appropriate intervention to implement without simultaneously addressing these constraints.

Appendix A. 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 from January 2010 through November 2022, conducting a grey literature search, screening through 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 and described an intervention that used supportive supervision in a health campaign or routine immunization efforts. For effectiveness studies, articles needed to present data relevant to monitoring through supportive supervision relevant to immunization services. 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 supportive supervision) and implementation studies (defined as any study containing descriptive or comparative data relevant to implementation outcomes). Review articles that synthesized results of supportive supervision interventions relevant to essential health services more generally were also included.

SEARCH RESULTS:

- 89 articles were identified in the published literature search.
    - 68 articles were excluded during the title and abstract screening
    - An additional 8 articles were excluded during full-text reviewing, leaving 21 eligible studies, including:
        - 2 existing relevant reviews
        - 14 effectiveness studies (some effectiveness studies also contained information on implementation)
        - 5 articles related solely to implementation
- 4 potential reports were identified in the grey literature:
    - 2 reports were eligible and included as implementation studies
- In total, 23 articles and reports were included:
    - 2 existing reviews
    - 14 effectiveness studies
    - 17 implementation studies (7 implementation only; 10 implementation and effectiveness)

Appendix B. Categorization of supportive supervision interventions measuring effectiveness

STUDY	INTERVENTION	RESULTS
COLLABORATIONS		
Amare et al. (8) Wogera and Dabat districts in Northwest Ethiopia	Partnership between local medical university and health facilities to implement mentorship and supervision intervention to improve coverage/ quality of immunization services, implementation of Reach Every District (RED) strategy, and health worker capacity. University faculty served as mentors and supervisors. Tools and training were developed using WHO-endorsed materials.	• Higher Penta3 vaccination coverage (14.5%) and complete vaccination coverage (16.6%) in intervention versus control districts. • Improvements in RED implementation, knowledge, and skills
Gupta et al. (12) Urban poor in Chandigarh, India	Collaboration between the state health department and the Department of Community Medicine of an independent institution. Interventions included: supportive supervision, enhanced community engagement, male partner involvement, tracking of high-risk pregnant women, and identification of problem families.	• Significant improvement in maternal and child health (MCH) indicators comparing intervention to control areas. Analysis depicted a net increase in fully immunized children by 8.6%. *Note: Results not directly attributable to only supportive supervision as multiple interventions were implemented.*
Mendhe et al. (14) Rajnandgaon District of Chhattisgarh, India	Faculty from a medical college served as external monitors. Supervisors, team leads, and others were trained by UNICEF (specific training on supportive supervision was unclear). During visits, supervisors observed the facility environment, listened to the vaccine cold chain handler, and reviewed records using a checklist.	• Scores on cold chain point management improved in 35/50 health centers • Scores improved in vaccine management, equipment maintenance, temperature monitoring; scores decreased for human resources • Frequency of visits did not seem to affect outcomes
Ward et al. (20) 50 districts in Uganda	A collaboration between the Uganda National Expanded Program on Immunization (UNEPI), U.S Centers for Disease Control and Prevention, the African Field Epidemiology Network, and the Bill & Melinda Gates Foundation used external consultants and practical training methods to provide and train in supportive supervision. The Strengthening Technical Assistance for Routine Immunization Training (START) approach provided training on routine immunization (RI) planning and monitoring, visited districts/health centers to help enforce and support the knowledge and skills provided, and incorporated a friendly "non-fault finding" attitude. START consultants worked closely with UNEPI staff during implementation.	• Anecdotal reports by consultants: positive staff motivation toward RI, completion of planning and monitoring tools, and new systems for archiving and checking of accuracy of vaccine administration data. • START consultants felt their support had increased district and health centers' awareness of the underlying reasons for challenges experienced, and how to trouble-shoot problems independently.
INTERVENTION BUNDLES		
Musa et al. (15) Areas along the Kamacha River, Nigeria	Six interventions introduced in local government areas along the Kamacha River at risk for polio outbreaks: household-based microplanning, scale-up of transit vaccination, scale-up of youth engagement, and strengthened supportive supervision ("youth accompanied vaccination	• Number of children immunized increased from 1,862,958 to 1,922,940 pre/post intervention. • LQAS results showed increased polio vaccination coverage (67% to 84% pre/post intervention).

	teams working in volatile or security compromised settlements"). No additional information was provided on the supportive supervision component.	*Note: Results not directly attributable to only supportive supervision as multiple interventions were implemented*
Ahanhanzo et al. (7) Priority districts in Cameroon, Côte d'Ivoire, and Mauritania	The Agence de Médecine Préventive provided technical assistance to priority districts, including technical and management capacities in vaccinology strengthening for district medical officers, supportive supervisions, and technical assistance in health logistics, data management and quality. No other details on technical assistance were provided	• Penta3 vaccine coverage (VC) increased in 70%, 100%, and 86% of priority districts in Cameroon, Côte d'Ivoire, and Mauritania, respectively. • Number of districts with Penta3 VC over 80% was higher in priority vs. non-priority districts (20% vs. 8% for Cameroon, 58% vs. 29% for Côte d'Ivoire, and 17% vs. 8% for Mauritania)
Gera et al. (11) Six states within India	"Health Systems Approach" to improve vaccination at birth in institutional deliveries. The intervention included efforts to sustain advocacy to nurture stewardship, supportive supervision to improve skills and documentation, efforts to strengthen data analysis and feedback to minimize stock-outs, and staff sensitization to improve empowerment and coordination. For supportive supervision, project staff completed health center visits to allow HCWs to hone skills and confidence in documentation and record-keeping.	• Intervention resulted in incremental increases in hepatitis B and OPV coverage across the six states to 94% and 96%, respectively, and BCG coverage to 89% • Improvements were sustained throughout the intervention period
STAND-ALONE		
Nass et al. (16) Katsina State, India	Katsina State Government in Northern Nigeria introduced integrated supportive supervision (ISS) in primary health centers. The study was guided by the Primary Health Care Performance Initiative Conceptual Framework. No additional details on the intervention were reported.	• The study showed positive effects of intervention on infrastructure, human resources for health, essential drugs, and number of pregnant women screened for HIV. • Human resources for health and the number of children receiving immunization were not affected by the intervention.
Panda et al. (17) **Som et al. (18)** Odisha, India	The Government of Odisha, together with UNICEF, piloted a strategy in four districts to improve RI program outcomes. The intervention involved trainings; topics included: development of supportive supervision guidelines for district immunization managers, district-level training in continuous supportive supervision monitoring and evaluation of performance, and allocation of resources for district managers to cover travel and communication costs. Supportive supervision, which was the focus of the intervention, was based on (1) introducing updated job descriptions with documented lines of supervision, (2) improving communication lines and skills, (3) introducing guidelines and tools for supervision, performance review, and monitoring, and (4) evidence-based action planning.	• Findings were mixed. Mean knowledge score of supervisors was higher in control versus intervention district. • Health workers in intervention districts gave lower ratings to their respective supervisors' knowledge, skill, and frequency of supervision. • Logistics and vaccine availability were better in control districts. • Conclusion: "Supportive supervision may not have independent effects on improving the quality of immunization services. Addressing systemic issues, such as the availability of essential logistics, supply chain management, and financial resources, could complement the supportive supervision strategy."

Immunization Basics (13) Jharkhand, India	Intervention involved teams of trained individuals external to the existing supervisory system who carried out periodic site visits with some of the identified supervisors to make corrections on site and provide feedback, emphasizing a supportive approach. Each team visited at least two selected session sites around each PHC and observed specific areas using a checklist, including: cold chain maintenance, status of vaccines and icepacks in vaccine carriers, injection technique, waste-disposal practices, communication with clients/parents, social mobilization, and use of tracking mechanisms.	• Of five sites with at least two rounds of visits, 3/5 districts improved maintenance of required temperature for ice-lined refrigerators. • Proportion of storage facilities practicing correct storage of vaccine vials showed similar trends with improvement. • Storage improved over consecutive rounds; most facilities moved from "poor to average or average to good."
DIGITAL TOOLS		
Das et al. (9) Golaghat District of Assam, India	Evaluated a UNICEF-supported, mobile-based supportive supervision checklist on cold chain point (CCP) management and RI service delivery. Monthly field visits occurred, and each CCP and RI session site was visited twice, with four months between visits.	• Significant improvement in vaccine management and CCP infrastructure handling from initial to second visit • Improved knowledge and skills of cold chain handlers regarding cold chain management
Umar et al. (19) Zambia	Evaluated the use of online integrated supportive supervision (ISS) to improve the quality of services provided by front-line health workers using online tools in the Open Data Kit (ODK) platform. The system provides real-time analysis and automated alerts to program managers to improve the decision-making process and the implementation of appropriate action.	• ISS positively affected three or four indicators (availability of updated monitoring chart, health workers knowledge of acute flaccid paralysis (AFP) case definition, and AFP case files). • Frequency of site visits varied widely. Investigators conclude that quality of supervision provided seemed more important than frequency of visits.

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