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Reaching every district (RED) approach to strengthen routine immunization services: evaluation in the African region, 2005§

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ABSTRACT

Background This evaluation was undertaken in 2005, in the African region, to better understand the reaching every district (RED) implementation process that provides a framework for strengthening immunization services at the district level.

Methods In June 2005, a convenience sample of five countries was selected to evaluate the implementation of RED. Evaluation teams consisting of key partners conducted site visits to the national, district and health facility levels using standardized qualitative questionnaires.

Results RED was implemented in a similar manner in all five countries, i.e. starting with training and micro-planning. All RED components were implemented to some degree in the countries. Common implementation factors included development of plans, expanding outreach services (defined as services provided in sites outside fixed immunization sites), planning of supervisory visits and efforts to link with communities and utilize community volunteers. Monitoring tools such as wall charts and maps were observed and reportedly used.

Conclusions Evaluation of the RED implementation process provided evidence of improvement in delivery of routine immunization services. The RED framework should continue to be used to strengthen the immunization delivery system to meet continuing new demands, such as the introduction of new vaccines and integrated delivery of other child survival interventions.

Keywords health services, immunization

Introduction

In the African region (AFR) during 2002, approximately 1 million vaccine-preventable disease (VPD) deaths were estimated to have occurred among children less than 5 years of age, representing 43% of VPD deaths globally.[1] In 2002, World Health Organization (WHO)–UNICEF estimated, that diphtheria–pertussis–tetanus (DPT) vaccine third dose coverage was 57% in AFR, indicating that approximately 12 million children in each birth cohort were not fully immunized for DPT.[2] The large number of susceptible children led to renewed interest in routine immunization (RI) among key immunization partners, and in 2002, these partners discussed innovative strategies to strengthen RI services in Africa. Recognizing the importance of focussing on the district level for immunization service delivery, the partners developed the reaching every district (RED) approach.[3]

The RED approach has five components that are designed to strengthen capacity at the district and health facility levels by addressing common immunization obstacles.[3] 'Planning and management of resources' addresses the improvement of human and financial resources, micro-planning and resource management at the district level. 'Supportive supervision' provides on-site training and support for health workers.

§The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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'Re-establishing outreach' addresses the problem of poor access by extending regular services to all communities. 'Community links' improve long-term interactions between health staff and communities to increase service demand and utilization. 'Monitoring data for action' encourages the use of data (e.g. doses administered, wall monitoring charts, defaulter and newborns lists) to analyze the immunization program status and modify activity plans as necessary.

In AFR, implementation of the RED approach began in early 2003 through the provision of technical and financial support to several countries. During 2004, the RED implementation was extended to three of the countries with the largest unimmunized populations (Ethiopia, Democratic Republic of Congo [DRC] and Angola). By July 2005, the number of countries in the AFR implementing the RED approach (defined as receiving any additional resources and technical assistance) had increased to 26 (personal communication with AFR). Given the increasing number of countries implementing RED, an evaluation was planned to review the implementation process and document the lessons learned. Findings from the evaluation would be used to further improve implementation in countries where RED was already implemented and in countries with plans for RED implementation. This evaluation had four objectives: (i) to assess RED implementation; (ii) to review changes in administrative immunization coverage; (iii) to document lessons learned and best practices; and (iv) to disseminate findings to each country's Ministry of Health and the broader immunization community.

Methods

Countries were eligible for the evaluation on the basis of length of implementation (>1 year). Of nine eligible countries, four were unable to participate (Togo, Cameroon, Malawi and Angola), resulting in five countries participating in the evaluation: DRC, Ethiopia, Kenya, Madagascar and Zimbabwe.

Three standardized questionnaires were developed for national, district and health facility levels. Questionnaires were qualitative in nature and designed to facilitate comparison between countries at the national, district and health facility levels. The national-level questionnaire included questions such as 'What is RED?', 'When was it implemented?', 'How was it implemented?' and 'How much was spent on implementation?.' The questionnaire also asked for details on implementation practices for each of the five RED components. District and health facility questionnaires included questions on the implementation of the RED approach components, such as use of wall monitoring charts, micro-plans and session plans. Quantitative data were collected using an immunization data abstract form for the period from 2002 to 2004, including administrative immunization coverage and doses administered by district for dose 1 DPT (DPT1), dose 3 DPT (DPT3) and for measles vaccine. Although we collected coverage data, the design of this evaluation does not allow us to view changes in coverage as impact (i.e. this would require collecting baseline implementation to compare change in implementation with change in coverage). We therefore do not present changes in immunization coverage as part of our findings but rather in the discussion section.

In June 2005, evaluation teams with representation from WHO Headquarters (HQ), WHO African Regional Office, US Agency for International Development IMMUNIZATIONbasics and the US Centers for Disease Control and Prevention visited the five countries for data collection. Teams in four of the five countries conducted a minimum of seven qualitative interviews in each country, one at the national, two at the district and four at the health facility level. A convenience sample based on the availability of staff and the feasibility of travel was used to select districts and health facilities. Attempts were made to select either one high-performing and one low-performing district based on DPT3 coverage or one RED implementation district and one comparable non-RED implementation district. In DRC, only data from the national level were collected because an assessment of RED implementation had just been completed at the district and health facility levels. Structured interviews were conducted using the three questionnaires developed for the national, district and health facility levels and immunization data abstraction forms. Data were compiled and analyzed into a country report and were then aggregated from all five countries into a report posted on the WHO website.[4] In this paper, we summarize general descriptive findings from the country reports and the overall report.

Results

RED was implemented using a phased approach in four of the five evaluated countries; in Kenya implementation occurred simultaneously through the country (Table 1). Prioritization for district level implementation in countries using the phased approach was primarily based on access (i.e. DPT1 coverage), utilization (i.e. dropout, defined as children receiving DPT1 but not completing the full series [DPT3]) and the total number of unimmunized children. Other prioritization factors included geographic access, potential for change in coverage and presence of program implementation partners.

Table 1 Implementation and expansion of RED, 2003–2005

Country	*Number of districts implementing RED out of total districts*		
	2003	*2004*	*2005 expanding to . . .*
DRC	161		339 of 515
Ethiopia	13	45	58 of 85
Kenya	68 of 78 districts trained		Nationwide
Madagascar	14	Expanding to 59 of 111	
Zimbabwe	0	7	10 of 62

In all countries, implementation was reported to start with training on micro-planning and other RED components for district staff at the national level using standard RED implementation tools. Some countries reported that the impact of the initial training was reduced because of high staff turnover. National staff in all countries reported that the provision of funds was critical to accomplish the necessary training. After conducting the national training, limited funds were provided to assist districts in RED implementation, districts were expected to allocate their own resources to implement micro-plans and other RED-related activities.

Planning and management of resources

Micro-plans were available at the vast majority of district and health facility levels in all countries. The method for micro-plan development varied. In Kenya, Ethiopia and DRC, micro-plans were introduced through national-level training, and both district and health facility micro-plans were developed at the district level. In Ethiopia, micro-plans were developed at the district level, with input and support from local administrative authorities and community leaders. In Madagascar, health staff reported that community involvement in development of micro-plans would have strengthened the process.

Staff reported that micro-plans were not fully implemented because of inadequate RI funds. For example, in DRC, only 40% of the annual budget for RED was actually funded. In other countries, resources for micro-plan implementation were delivered late, delaying implementation.

Cold chain equipment availability varied considerably. In all countries, rural areas struggled with power shortages affecting refrigeration equipment, potentially jeopardizing vaccines. Vaccine wastage rates were not routinely calculated.

Supportive supervision

RI supervisory visits to health facilities were planned at the district level and incorporated into annual work plans. In Ethiopia, partners organizations were actively involved in conducting RI supervision visits. In other countries, RI supervision was integrated with acute flaccid paralysis and measles surveillance. Some supervisors reported conducting $<50\%$ of planned visits due to lack of resources such as staff, transportation and fuel. To reduce the number of supervisory visits canceled due to lack of transportation, RI and other health programs shared resources such as transport; however, this reportedly limited the amount of quality time for visits as time was spent on a variety of activities. In both Kenya and Ethiopia, health workers in hard-to-reach areas reported not always receiving adequate on-the-job training during supervisory visits.

In all five countries, district-level supervisors reported providing feedback during RI supervisory visits. In Madagascar, a particularly strong emphasis was placed on supportive supervision with feedback. Feedback methods included verbal, notes in supervisory logs and copies of checklists retained by the staff. Standard supervision checklists were used in all five of the countries, either specific to RI or integrated with other services. In Zimbabwe and Madagascar, the integrated supervisory checklists lacked important RI elements (e.g. vaccine stock levels, cold chain status).

Re-establishing outreach services

In an effort to vaccinate children in previously un-reached areas, all five countries had re-established or expanded outreach services. Outreach sessions were generally planned and implemented from the health facility level rather than from the district. In Ethiopia, health facility staff reported $>80\%$ of all RIs were given during outreach sessions (although no written documentation was available to confirm this report). In addition, in Ethiopia, outreach was often provided door to door to increase coverage. Ethiopian health facility staff believed that after many years of door-to-door polio immunization campaigns, families chose to wait for health workers to visit their homes rather than attend outreach sessions.

In all evaluated countries, data were not available to determine if resource allocation had been successfully used to obtain a balance between sustainable outreach services to immunize hard-to-reach children and reaching an optimal number of children. At the health facility level, coverage data were not disaggregated by service delivery approach (i.e. fixed, outreach and mobile), limiting analysis of outreach sessions, such that sessions were not always planned on the basis of need. For example, in Madagascar, the numbers of children expected at outreach sessions were not used to plan for the specific needs of the health facilities. In addition, resources were not always available for outreach sessions, and some sessions were canceled.

In Kenya, Ethiopia, Madagascar and Zimbabwe, outreach sessions for immunization were reportedly used to provide other interventions, including vitamin A supplementation, anti-helminthics, health education and bed nets treated with insecticide. However, these interventions were not provided in all outreach sites because of irregular supplies or uncertainty about policy on providing additional services.

Linking services with communities

The RED efforts to work with community leaders focussed on promoting immunizations, supporting outreach, assisting in newborn and defaulter tracking and developing district and health facility level micro-plans. Districts generally collaborated with communities supporting health facilities through regular meetings of health committees, which included community leaders, local politicians and non-government organizations. In Ethiopia, district managers included zonal councils in annual planning meetings and shared outreach schedules with village leaders. Additionally, health workers were assigned to specific villages for immunization outreach. In Zimbabwe, mobilization of resources (e.g. fuel) was coordinated with communities, local organizations and the private sector. In Kenya, district staff held meetings with stakeholders and established partnerships with religious and charitable organizations. In addition, communities participated in resource mobilization for immunizations through contributions to community development funds; however, community-based organizations were underused for RI advocacy and were primarily engaged only during immunization campaigns.

Community volunteers who were trained to track children that had dropped out, generate demand, and mobilize community resources were used extensively to link services to the community. Through RED, community volunteers were provided refresher training and registers to track dropouts. For their services, volunteers generally expected compensation, and the absence of incentives resulted in high turnover rates or limited participation.

Monitoring and use of data for action

Health facilities and district offices generally had maps of catchment areas with fixed and outreach sites marked. Health workers were able to describe the distinct populations and challenges for immunizing them. However, health workers did not always use this information to take corrective programmatic action.

A common issue across all five countries was the discrepancy between national population figures and local estimates, confounded by other denominator challenges, which resulted in difficulties for health workers when targeting interventions, as they did not know which targets were correct.

Defaulter tracking systems were used to reach children with known access to services. Defaulters are defined as those children who began the vaccination series (i.e. had access to services), but did not return for subsequent immunization doses. Most interviewed staff could describe their local defaulter tracking system and were actively identifying and following up with defaulters.

Wall monitoring charts were consistently displayed in district immunization offices and health facilities. Most charts were up to date and properly completed; however, health staff had difficulty in interpreting them, which was attributed to a lack of training during supervisory visits.

District level review meetings to discuss immunization program status among health facilities within the catchment are recommended quarterly. Although generally not occurring quarterly staff did report that the frequency of meetings has increased and where review meetings were held, the meetings played a critical role in identifying and addressing problems in a timely manner. In DRC, the national RI program analyzed monthly immunization coverage data and shared the results with division directors and the technical subcommittee of the Inter-Agency Coordinating Committee, where corrective measures were proposed for low-performing areas. Partners reported that this regular review of information at the national and sub-national levels was beneficial for improving RI coverage.

Discussion

Main findings of this study

A key objective of the evaluation was to better understand the RED implementation in order to strengthen RI services in AFR countries and ultimately to provide 'lessons learned' for other countries. The comprehensive RED approach, including all five components, was implemented in all evaluated countries. The prioritization of districts based on unvaccinated children helped to identify areas with the largest potential impact.

Ongoing funding was reported to be crucial for the introduction and expansion of the RED approach, particularly for training and micro-planning workshops. As RIs are considered an excellent investment,[5] we should make it a priority to ensure available funding for strengthening RI systems through approaches such as RED. All five countries are eligible for GAVI Alliance funds;[6] three countries (DRC, Ethiopia and Kenya) used the GAVI Alliance Immunization Services Support (ISS) funds along with other in-country partner support for implementation. GAVI Alliance ISS

funding allowed countries to spend the money as they deemed appropriate; however, continued funding was conditional upon improvements in performance. Although important, the relative impact of using GAVI funding for RED implementation was not measured with this evaluation.

The development and use of micro-plans, maps, review meetings and wall monitoring charts facilitated the use of data for action. Districts could further benefit from disaggregating fixed, outreach and mobile session data to better allocate resources, plan service delivery approach (e.g. balance between fixed and outreach sites), session location and frequency. Disaggregated coverage data could also be used to identify needed resources. Additionally, districts immunization managers and health facilities could improve stock management through estimation of vaccine needs, thus reducing the risk of having to cancel sessions due to inadequate stock or having surpluses exceeding cold chain capacity. However, repeatedly, staff reported a lack of confidence in denominator data (i.e. target populations), which they reported hindered their ability to make planning decisions.

The re-establishment of outreach component of RED provided a strong platform for integrating other health services with the immunization program, for which there is currently strong global interest. Countries used immunization service contacts to increase the reach of other health services. More evaluation efforts are needed to assess the advantages and disadvantages of integration and to identify the appropriate balance of outreach sites and sustainability. Outreach services provide RI opportunities for children in hard-to-reach areas, but services may be more costly through this approach. As mentioned above disaggregation of data can better aid in resource allocation, to ensure outreach sites are providing maximum benefit.

In areas where community representatives participated in the planning of RI activities, staff members reported that community support for activities increased. Keeping the community actively involved in planning and implementation activities, such as defaulter tracking, appears to foster ownership. Analysis of immunization indicators and the sharing of findings with local partners on a monthly basis were reported as important.

Although program strengthening as a result of the RED approach was reported, challenges remain, which need to be minimized to ensure that progress can continue. High staff turnover diminishes the impact of initial RED training; there is a constant need for training to upgrade skills and train newly deployed staff. Strong, consistent, and supportive supervisory visits that emphasize on-the-job training are needed to mitigate the lack of formal training for staff.

Overall national and district level vaccination coverage estimates from the evaluated countries show promising improvements. Although not possible in this evaluation to link increase in coverage with the RED approach, it appears that RED provides a framework focussing on immunization services delivery at the district level providing the potential for increased coverage. All five components of the RED approach were adapted to local conditions and the extent of implementation varied. Although it is not possible to say which RED components or external factors may have had the greatest impact on increasing coverage, a common factor in the evaluated countries was a focus on the district level, particularly on data collection and use of data for planning. Efforts to evaluate the impact of the RED approach against a backdrop of other factors, e.g. increased funding via GAVI Alliance should continue.

What is already known on this topic

As per the WHO–UNICEF coverage estimates, between 2002 (pre-RED) and 2005, coverage for all immunizations increased in the AFR, with DPT3 coverage increasing from 56 to 70%.[2] Coverage increased during the same time period in all but one of the evaluated countries (Fig. 1).[2] In these countries, the proportion of districts with DPT3 coverage $>80\%$ increased from 13% in 2002 to 52% in 2005, with the most notable change in Zimbabwe, where no districts reported $>80\%$ coverage in 2002, compared with 80% in 2005 (Fig. 2).[2] The number of children not receiving DPT3 in the five countries evaluated decreased by nearly 1 million from 2002 to 2005 (Fig. 3).[2] Yet, despite improvements in vaccine coverage, much work remains to be done. In 2006, there were still 7.5 million infants in AFR who had not completed the DPT series, representing one-third of the 26 million children globally not completing DPT3.[7] The RED approach focusses on improving immunization services in districts and health facilities.

What this study adds

The RI environment is a rapidly changing one, with increasing global focus on the RI activities. The 2005 WHO–UNICEF Global Immunization Vision and Strategy (GIVS) envisions a world in which all people have equal access to immunization, with a goal of all countries reaching at least 90% national vaccination coverage and at least 80% vaccination coverage in every district by 2010.[8] Beyond the vision outlined in the GIVS document, the RI program is being shaped by additional funds, exciting new vaccines, and increasing integration of service delivery. The planned addition of new vaccines (e.g.

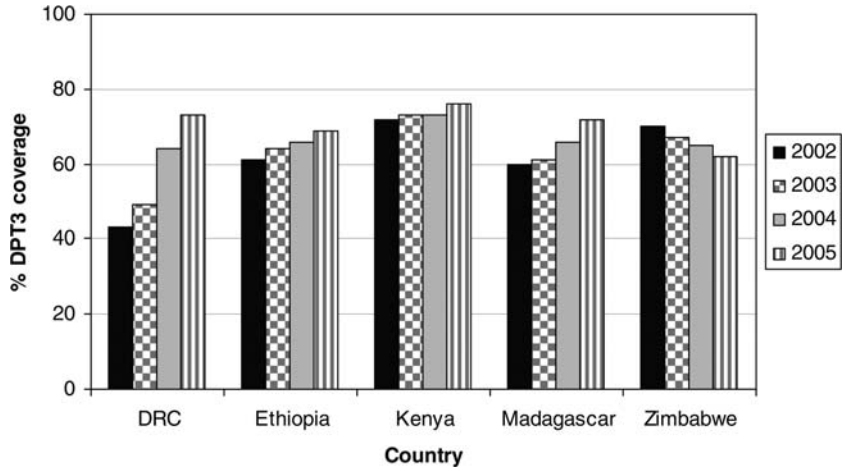

Fig. 1 Three-dose DPT coverage, five African countries, 2002–2005.[2]

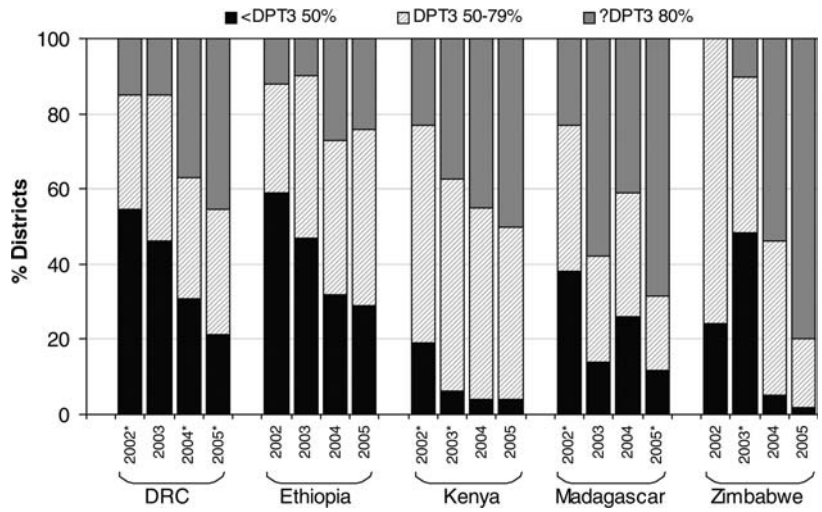

Fig. 2 Proportion of districts with three-dose DPT vaccine coverage <50, 50–79 and $\geq 80\%$, five African countries, 2002–2005.[2] *Incomplete district date.

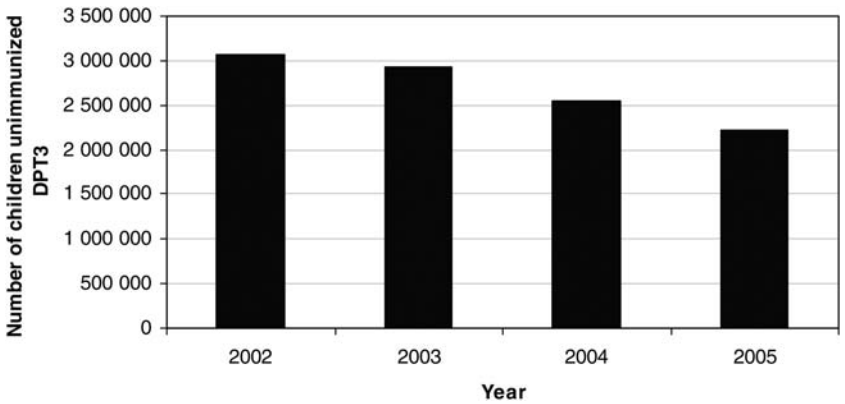

Fig. 3 Estimated number of children not receiving three doses of DTP vaccine in the five evaluated African countries, 2002–2005.[2]

Table 2 Key recommendations for countries and the immunization community

Countries
Continue to monitor immunization outcomes and use data for continuous program improvements
Increase the number of districts implementing RED
Use the success of RED to garner additional support for further implementation
Review outreach sessions to ensure that they are being effectively used and are sustainable
Involve health workers and communities in the micro-planning process
Disaggregate immunization data by type of delivery strategy (i.e. fixed, outreach and mobile) to assist in planning
Provide on-the-job training for the new staff to reduce the impact of high staff turnover
Ensure availability of resources at district levels for the implementation of the RED approach
Provide health workers with the skills to interpret and use data as a management tool
Broader immunization community
Encourage all countries to use the RED approach to bolster the RI program, to accelerate immunization coverage
Use the framework offered by the RED approach to channel resources and focus immunization activities at the district level

pneumococcal, rotavirus) will necessitate improved planning and systems delivery strategies to assure effective vaccine delivery. The successes in the implementation of the RED approach speak to the viability of the approach as a framework for channelling RI resources at the district level. Furthermore, the lessons learned from this evaluation can be used to further strengthen the immunization programs in the evaluated countries as well as other countries, providing a stronger platform for increased activities. To further strengthen the RED approach, we suggest several key recommendations for countries as well as the broader immunization community (Table 2).

Limitations of this study

Countries were evaluated on the basis of their willingness to participate, rather than through random selection and within each country a limited number of districts were visited. Although standard data collection forms were used to collect data, there were numerous data collectors and probably variations in data collection style. As such we presented qualitative rather than quantifiable results and we acknowledge that our findings may not be representative of all countries. Although all evaluated countries had at least 1 year from start of RED implementation to evaluation, this is very little time for a program to start showing significant changes. National level coverage data from early in the implementation of RED could be misleading for measuring RED impact, as a small percentage of children were living in RED implementation districts. Although it is possible that there was some 'spillover effect' of the RED approach to non-RED districts, as training was attended by staff from non-RED districts and health-care workers were transferred to other districts. Insufficient data on spillover and other external factors made it difficult to interpret coverage data and differences between RED and non-RED districts. Additional information would be needed regarding other concurrent interventions or earlier interventions to look at the potential for these spillover effects.

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