

# Implementation of differentiated service delivery for paediatric HIV care and treatment: opportunities, challenges and experience from seven sub-Saharan African countries

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## ABSTRACT

Differentiated service delivery (DSD) models for HIV often exclude children and adolescents. Given that children and adolescents have lower rates of HIV diagnosis, treatment and viral load suppression, there is a need to use DSD to meet the needs of children and adolescents living with HIV. This commentary reviews the concept of DSD, examines the application of DSD to the care of children and adolescents living with HIV, and describes national guidance on use of DSD for children and adolescents and implementation of DSD for HIV care and treatment in children and adolescents in Elizabeth Glaser Pediatric AIDS Foundation (EGPAF)–supported programmes in seven sub-Saharan countries between 2017 and 2019. Programme descriptions include eligibility criteria, location and frequency of care delivery, healthcare cadre delivering the care, as well as the number of EGPAF-supported facilities supporting each type of DSD model. A range of DSD models were identified. While facility-based models predominate, several countries support community-based models. Despite significant uptake of various DSD models for children and adolescents, there was variable coverage within countries and variability in age criteria for each model. While the recent uptake of DSD models for children and adolescents suggests feasibility, more can be done to optimise and extend the use of DSD models for children and adolescents living with HIV. Barriers to further DSD uptake are described and solutions proposed. DSD models for children and adolescents are a critical tool that can be optimised to improve the quality of HIV care and outcomes for children and adolescents.

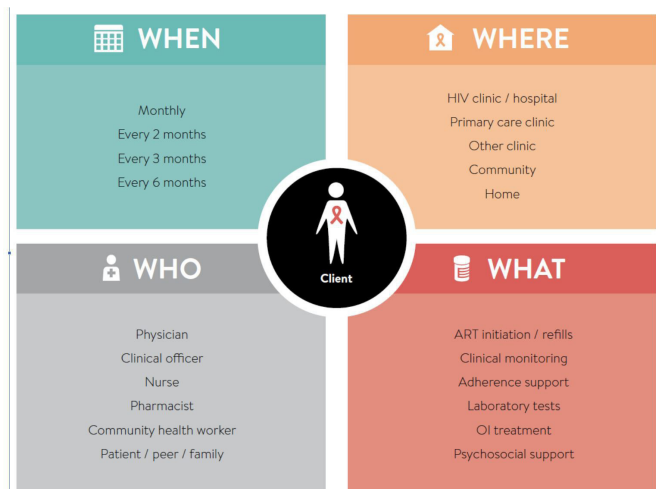
## INTRODUCTION

Differentiated service delivery (DSD) refers to a model of care that is designed to efficiently deliver patient-centred packages of healthcare and can be particularly effective in caring for patients with chronic disease. The DSD approach recognises that one size does not fit all, but instead supports the design

## Key points

- ▶ Differentiated service delivery (DSD) models, which have often overlooked children and adolescents living with HIV, have been implemented in seven sub-Saharan countries by Elizabeth Glaser Pediatric AIDS Foundation–supported programmes. This manuscript describes these models, including their eligibility criteria and uptake.
- ▶ There was significant uptake of various DSD models for children and adolescents across countries, suggesting acceptability, but variability in coverage and age criteria for each model was noted.
- ▶ While the recent uptake of DSD models for children and adolescents suggests feasibility, more can be done to optimise and extend the use of DSD models for children and adolescents living with HIV. Barriers to further DSD uptake are described and solutions proposed.

and implementation of care that allows for flexibility in the key characteristics of service delivery, promoting patient-centred care across the care cascade. Through the DSD framework ([figure 1](#)), a care plan can be built based on ‘who’ delivers the care, ‘where’ the care is delivered, ‘what’ the package of care includes and how often or ‘when’ a patient interacts with the health system. For people living with HIV, the building blocks of the service delivery package should be considered separately for clinical consultations, psychosocial support and refills of antiretroviral therapy (ART). The DSD approach was first comprehensively described with respect to the design of HIV programmes in low-income and middle-income countries (LMICs) and



**Figure 1** Decision framework for differentiated antiretroviral therapy delivery (used from IAS Differentiated Care for HIV: a decision framework (2017)).<sup>9</sup> ART, antiretroviral therapy; OI, osteogenesis imperfecta.

has since been widely adopted in global normative and national guidelines.<sup>1,2</sup>

Design of DSD models has not been uniform with respect to offering services tailored to meet the needs of all populations. In 2017, WHO with other key partners published key considerations for implementation of DSD in specific populations, recommending that DSD models be considered for and adapted to the needs of children and adolescents.<sup>3</sup> For example, these key considerations suggest that visit spacing may not be appropriate for children under 2 years of age as very young children require frequent dose adjustments but can be spaced out to every 3 to 6 months for clinically stable older children and adolescents, as per WHO definition for clinically stable patients.<sup>4</sup> Despite these considerations, eligibility for some DSD models was dependent on an age criterion of 15 years or older.

Globally, only 52% of HIV-positive clients 0–15 years of age are on ART.<sup>5</sup> Among those aged 10–19 years, ART coverage is even lower at 40% and viral load suppression remains consistently lower for adolescent populations than for adults.<sup>6</sup> Children and adolescents have unique needs that should be considered for how, where and by whom care is delivered. Children and younger adolescents (below 15 years) may be highly dependent on adult caregivers to bring them to appointments and help with medication administration. Thus, co-ordinating care with caregivers in a family-centred approach is critical. Children and adolescents may also be in school, including boarding school, which makes frequent visits to clinics during regular clinic hours difficult. Adolescents in particular are highly influenced by peer norms, suggesting that care delivered through peer groups may be beneficial.<sup>7,8</sup>

In this paper, current DSD models for children and adolescents and their implementation across programmes supported by the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) are described, as well as remaining gaps.

Uptake of service delivery models for children and adolescents is compared with what is supported by national guidelines and policies. Following this descriptive analysis, potential opportunities for expansion are outlined.

### EGPAF landscape: DSD models for children and adolescents

An assessment of DSD interventions implemented to support HIV care and treatment in children and adolescents across EGPAF-supported programmes in seven countries (Eswatini, Kenya, Lesotho, Malawi, Mozambique, Tanzania, Uganda) between 2017 and March 2019 was conducted. Programme descriptions included patient eligibility for enrolment into the DSD model, location where the care was delivered, interventions included in the DSD care model, healthcare cadre delivering the care, and frequency or timing of the care delivery. In each country, the number of EGPAF-supported facilities supporting each type of DSD model was collected, with these models mapped against national policies. A range of DSD models supporting HIV care and treatment for children and adolescents were identified across the seven countries. The majority of these models were facility based (table 1). Individual facility-based DSD models included multi-month refills (MMR) of antiretrovirals, weekend clinics and school holiday clinics. Facility-based group models were also common and included family models of care and children or teen clubs. Only four countries implemented community-based ART models that included children and/or adolescents (table 2).

Several DSD models allowed for more flexible child-centred visit frequency. All seven countries supported MMR, with clinical visits for stable patients every 6 months and clients given up to 3 months of ART, requiring the client to return to the facility for a refill between clinical visits.

Weekend clinics provided multidisciplinary care and offered a clinical check, ART refill, adherence counselling and sample collection for laboratory monitoring during non-school hours. In the five countries offering weekend clinics, children aged 10–19 were eligible for weekend clinics. In some cases, weekend clinics were combined with MMR. Alignment of clinic visits with school holiday times was offered in Kenya, Lesotho and Uganda for school-aged children, and these were combined with MMR.

Facility-based support group models such as teen or children's clubs and family support groups were also common. Through teen or children's clubs, child or adolescent-friendly peer support, clinical checks and ART refills at a single clinic visit could occur in a group setting. All seven countries offered teen or children's clubs, with eligibility of 10–19 years in five countries, with Uganda allowing all children and Lesotho above age 5. However, country staff reported that eligibility criteria are often not strictly adhered to and that both older and younger children were enrolled into these clubs. For many of these clubs, such as in Uganda and Kenya, youth ambassadors and counsellors would be present for adherence sessions

**Table 1** DSD models and their building blocks implemented across 7 EGPAF country programmes

Building block	Multi-month refills (MMR)	Weekend clinics	School holiday clinics	Child/teen clubs	Family model of care	Community-based models
<i>Who</i>	Clinicians*	Clinicians, lay workers, counsellors†	Clinicians, lay workers, counsellors	Clinicians, lay workers, counsellors	Clinicians, lay workers, counsellors	Clinicians, lay workers, counsellors
<i>What</i>	Provision of ART refills	Provision of comprehensive one-stop care, including clinical checks, ART refills. May be provided to groups or individuals	Provision of comprehensive one-stop care, including clinical checks, ART refills. May be provided to groups or individuals	Provision of comprehensive one-stop care, including clinical checks, ART refills. Provided to peer groups	Provision of comprehensive one-stop care, including clinical checks, ART refills. Provided to family groups	Provision of screening, refills, counselling, clinical checks
<i>Where</i>	Facility†*	Facility	Facility	Facility	Facility	Community, mobile clinic
<i>When</i>	Every 2–3 months	Weekends (frequency may follow refill or clinical check schedule and may be every 2–3 months when combined with MMR)	Scheduled for every 2–3 months during school holidays	Frequency may follow refill or clinical check schedule (may be every 2–3 months when combined with MMR)	Frequency may follow refill or clinical check schedule (may be every 2–3 months when combined with MMR)	Monthly

\*Clinician can include physician, clinical officer, nurse and/or pharmacist.

†Lay worker/counsellor can include peer counsellors, mentors, expert clients.

‡Facility can include HIV clinic/hospital, primary health clinic, other clinic.

ART, antiretroviral therapy; DSD, differentiated service delivery; EGPAF, Elizabeth Glaser Pediatric AIDS Foundation; MMR, multi-month refills.

and groups with pharmacy staff and clinicians present for ART refills and clinical checks.

Family models of care provide ART delivery at the facility for an entire family (male and female caregivers and/or siblings) during the same visit. In the seven countries offering family models of care, eligibility varied from 0 to 19 years in one country, 0–10 years in two countries, and no age specified for four countries. Within the family model, stable clients were able to schedule MMR in coordination with support group attendance.

Community-based ART refills and care were less commonly provided for children and adolescents,

with only Eswatini and Tanzania offering community screening, refills and counselling, while Mozambique includes adolescents over 15 in community ART groups. In Eswatini, this is performed with a team of healthcare workers including clinicians, pharmacy personnel, expert clients, and adherence and HIV testing services (HTS) counsellors. In Kenya, children and adolescents may be included in community ART groups only in communities that are difficult to access. In Tanzania, all clients, including adolescents and children, are eligible for community ART refills, which are conducted through facility-based outreach in remote areas.

**Table 2** DSD models for children and adolescents currently implemented in EGPAF-supported country programmes

	MMR	Weekend clinics	School holiday clinics	Child/teen clubs	Family model of care	Community-based models
Eswatini	Yes	Yes	Yes	Yes	Yes	Yes
Kenya	Yes	Yes	Yes	Yes	Yes	Yes
Lesotho	Yes	Yes	Yes	Yes	Yes	No
Malawi	Yes	No	No	Yes	Yes	No
Mozambique	Yes	No	No	Yes	Yes	Yes*
Tanzania	Yes	Yes	No	Yes	Yes	Yes
Uganda	Yes	Yes	Yes	Yes	Yes	No

Source: EGPAF country programs March 2019.

\*Adolescents 15 years and older only.

DSD, differentiated service delivery; EGPAF, Elizabeth Glaser Pediatric AIDS Foundation; MMR, multi-month refills.

**Table 3** Coverage of DSD models for children and adolescents across EGPAF-supported sites (percentage of sites implementing the model)

	MMR	Weekend clinics	School holiday clinics	Child/teen clubs	Family model of care	Community outreach models
Eswatini	100% 63/63	100% 63/63	100% 63/63	54% 34/63	6% 4/63	16% 10/63
Kenya	45% 98/218	61% 133/218	60% 130/218	80% 174	33% 72/218	1% 2/218
Lesotho	50% 102/203	55% 112/203	25% 51/203	50% 102/203	35% 70/203	NA
Malawi	100% 179/179	NA	NA	29% 52/179	3% 6/179	NA
Mozambique	18% 27/150	NA	NA	3% 4/150	15% 22/150	90%* 135/150
Tanzania	100% 343/343	63% 216/343	NA	36% 123/343	15% 50/343	18% 63/343
Uganda	58% 154/267	1% 3/267	30% 81/267	30% 81/267	58% 156/267	NA

Source: EGPAF country programs March 2019.

\*Adolescents 15 years and older only.

DSD, differentiated service delivery; EGPAF, Elizabeth Glaser Pediatric AIDS Foundation; MMR, multi-month refills; NA, not available.

For each DSD model for children and adolescents, the coverage of implementation in each country varied greatly. Few models were implemented at 100% of sites and some models were only implemented at a small percentage of sites. The overall coverage of DSD models for children and adolescents across EGPAF sites can be seen in [table 3](#).

### Policy landscape and gaps

A policy analysis in the seven countries was also conducted. National guidelines and other policy documents approved by the relevant national authority were gathered in order to describe which DSD models were officially supported in national policy. Through this analysis, it was found that all seven countries supported facility-based group models such as family and teen clubs, as well as MMR. However, eligibility to access MMR for stable clients varies: in one country, only children and adolescents above 10 years were eligible, in two countries all children and adolescents over 2 years were eligible, in two countries children and adolescents over 5 years were eligible, and in two countries all stable children and adolescents were eligible with no age specified. While weekend clinics (five countries) or scheduling clinics during school holidays (four countries) were widely practised, these models were included in the national guidelines for only three of the seven countries. A summary of what is explicitly included in national policies is included in [table 4](#), with eligibility criteria described where specified.

### Lessons learned: improving the delivery of DSD for children and adolescents

This programme and policy assessment of DSD models serving children and adolescents across seven countries

demonstrates that there is a range of models that are specifically designed for and serve this population. Both group and individual facility-based DSD models are in use that offer hours that are friendly for those enrolled in school and may be combined with MMR for eligible clients, thus further reducing the burden for patients, caregivers and healthcare workers.

Policy analysis suggests that many of the most commonly used DSD models for children are supported by national guidelines. However, most countries did not have policies or guidelines that fully reflected the guidance and eligibility criteria suggested by the WHO Key Considerations guidance. For example, many countries did not officially endorse school holiday clinics or community-based models, even when these models were being implemented for children and adolescents. Thus, despite broad adoption of DSD policies over the last 2 years, there are still several policy gaps limiting access to DSD models for children and adolescents and thereby limiting expansion in uptake. Potential contributors to these discrepancies include lack of specificity within the guidelines as well as lack of guidance on implementation, which can be seen in the disparities between policies supporting community-based models of care and the smaller number of programmes offering community-based services.

There was some discrepancy between policy and implementation with regards to eligibility criteria. For example, where policies defined age criteria for a model ([table 4](#)), the actual age of those accessing the model of care could vary. In Eswatini, the family model of care serves clients between the ages of 0 and 19 years and caregivers, but most enrolments are for those aged 0–14 years. Teen clubs meanwhile have a defined age group for attendance;



**Table 4** Policy landscape of DSD models for children

	Multi-month ARV refill	Weekend clinics	School holiday clinics	Child/teen clubs	Family model of care	Community-based models
Eswatini <sup>10</sup>	Yes 10–19 years if meet criteria for stability			Yes 10–19 years old	Yes 0–19 years and caregivers	Yes
Kenya <sup>11</sup>	Yes 10–19 years if meet criteria for stability		Yes	Yes 10–19 years if meet criteria for stability	Yes 0–10 years and their caregivers if meet criteria for stability	Yes All ages if meet criteria for stability
Lesotho <sup>12</sup>	Yes If meet criteria for stability (age eligibility not defined)					
Malawi <sup>13</sup>	Yes Virologically suppressed patients >2 years				Yes	
Mozambique <sup>14</sup>	Yes For patients >2 years of age if meet criteria for stability			Yes	Yes	Yes (adolescents >15 years meeting criteria for stability, with specific groups for 15–19 encouraged)
Tanzania <sup>15</sup>	Yes 3-month refills for patients >5 years of age if meeting criteria for stability	Yes Extended clinic hours beyond school times		Yes Adolescents 10–19 years	Yes 0–10 years and their caregivers	Yes C&T outreach ART refills for all clients
Uganda <sup>16 17</sup>	Yes For patients >2 years of age if meeting criteria for stability	Yes	Yes	Yes Target population adolescents 10–19 years	Yes	

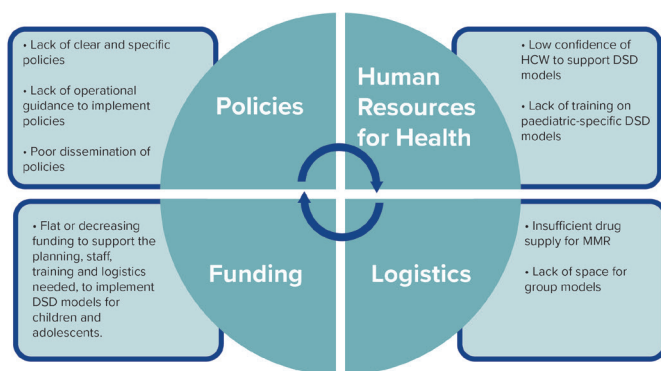
ART, antiretroviral therapy; ARV, antiretroviral; C&T, counselling and testing; DSD, differentiated service delivery.

however, older teens continued attending beyond the age limitation in all of the countries surveyed. This may be due to remaining gaps in programmes facilitating transition to adult care, underscoring the need to expand

DSD models for older adolescents to include a transition package to adult services that meets their specific needs.

More can be done to support the implementation of DSD for children and adolescents. With only two countries offering MMR to children from 2 years of age, more countries may consider extending policy on MMR to explicitly include younger age groups, provided they are of a weight range not requiring frequent adjustments in dosage. Facility-based groups may also be offered to younger children. More work is also needed to further develop and monitor community-based models of care to determine the feasibility of extending eligibility to community ART groups for adolescents. A more thorough analysis is needed, but a variety of factors likely contribute to the poor uptake of DSD models for children, as can be seen in [figure 2](#).

A prioritised roadmap for implementation research will also be helpful in targeting resources to fill critical data gaps and further the agenda for DSD in children and adolescents, such as acceptability of models and



**Figure 2** Factors potentially contributing to poor uptake of differentiated service delivery (DSD) models for children and adolescents. HCW, healthcare worker; MMR, multi-month refills.

the number of patients involved in each model. Such an agenda should not hinder roll-out, but rather be used to gather data and strengthen programmes in parallel with the scale-up of DSD models in children and adolescents.

## CONCLUSION

A multi-country programme and policy assessment of DSD models serving children and adolescents finds that a range of models specifically designed for this population are being implemented. The number of facilities supporting these DSD models of care suggest that these models may be feasible to scale-up in LMICs, although there is still significant variability in uptake across and within countries. While policies supporting DSD for children and adolescents exist, DSD policies must continue to adapt to take into account varying needs across population groups. Where policies exist, there are opportunities to implement and expand models that better meet the needs of children and adolescents.

More research, policy development and programmatic investments are urgently needed to further scale-up models already commonly implemented, and to define additional DSD models through engaging with young people in the development of models of service delivery which meet the needs of adolescents living with HIV and children. As we move to improve the quality of care for all patient groups, DSD models for children and adolescents are a critical tool to improve the quality of HIV care and outcomes for children and adolescents.

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