

Using HOT4ART to Address Human Resource for Health Efficiency Challenges in Differentiated ART Service Delivery Settings

Delivering quality services across the HIV care continuum to achieve the 95-95-95 targets¹ depends on a workforce that is sufficient in numbers, has the right skills mix, and is optimally utilized to ensure the efficient and effective programming of resources. As countries increase their progress towards the first-95 goal, the patient volume of clients accessing ART is also rapidly increasing. Likewise, as countries move closer to the achievement of the 95 percent of PLHIV accessing ART and 95 percent of PLHIV virally suppressed, patient volumes will be higher than ever and must be sustained during the lifetime of the patients. This exacerbates the already existing healthcare worker (HCW) shortage, especially in sub-Saharan Africa.

It is critical that HCWs are optimally utilized and all available models for delivering HIV services are fully applied, especially those that address changing preferences of patients to ensure they are retained in treatment. Differentiated service delivery (DSD) is the process of adapting services to meet the preferences of PLHIV, while also reducing burdens on the health system.² In most cases this requires some task sharing amongst different HCWs both at the site-and-below site levels. DSD models can simplify and adapt ART distribution for stable patients accessing ART by facilitating touch points for drug distribution and referrals separate from the clinical site, while allowing HCWs to focus on more complex patients. Depending on the country-specific context, the implementation of task-sharing at the facility level may require a revision of service provider job descriptions to cover additional tasks and updated policies and/or guidelines. Service providers may need to be trained, supervised and mentored on how to perform additional tasks. Understanding what cadres are needed for any given model is essential to achieving programmatic efficiencies, and ultimately the 95-95-95 goals.

With funding from PEPFAR, USAID's HRH2030 team created the (HRH) optimization tool for differentiated ART delivery (HOT4ART)³ to identify staffing patterns to achieve efficiencies. The tool was developed and tested with above site and site level decision makers in Côte d'Ivoire, South Africa and Zambia. Decision makers can leverage the HOT4ART to improve the efficient allocation of human resources by identifying site level staffing mixes in support of DSD models. The tool is designed to be used both at the site and above site levels to determine improved staffing patterns. At the above site level, decision makers may also leverage this tool to inform the impact of updated policies and/or guidelines related to the scopes of work for specific cadre (e.g. community health workers (CHWs) ability to dispense ART). This paper presents how the HOT4ART tool can help

WHO Recommendations on HIV Task Sharing

Trained and supervised lay providers can distribute ART to adults, adolescents and children living with HIV (strong recommendation, low-quality evidence).

Trained non-physician clinicians, midwives and nurses can initiate first-line ART (strong recommendation, moderate-quality evidence).

Trained non-physician clinicians, midwives and nurses can maintain ART (strong recommendation, moderate-quality evidence).

Trained and supervised community health workers can dispense ART between regular clinical visits (strong recommendation, moderate-quality evidence).

These recommendations apply to all adults, adolescents and children living with HIV.

Source: <http://www.differentiatedcare.org/Guidance>

¹ By 2030, 95% of people living with HIV should know their status; 95% who know their status should be on ART; 95% of those on ART should be virologically suppressed.

² COP 2019 Guidance

³ HOT4ART is available on the HRH2030 website: https://www.hrh2030program.org/tool_hrh-planning-for-hiv/

decision makers in addressing common HCW changes to achieve efficiencies and facilitate the transition to various DSD models. The tool addresses:

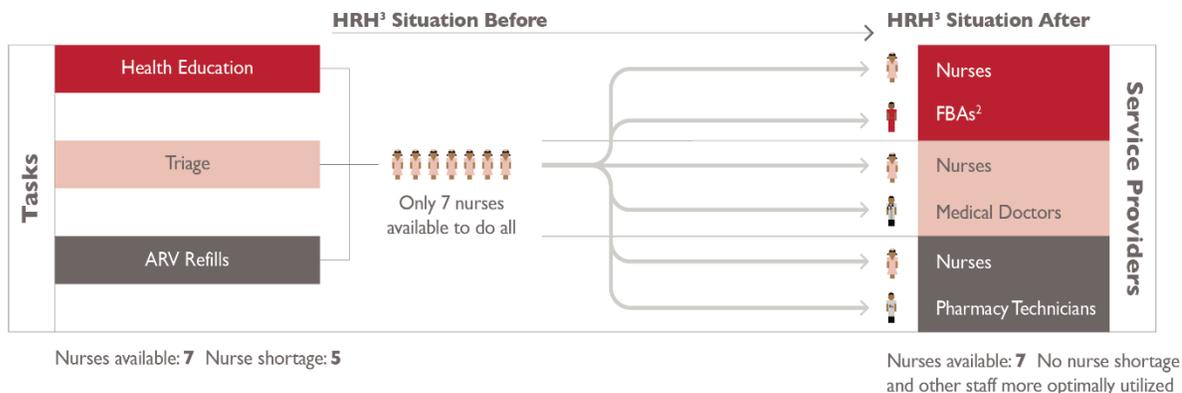
1. **Task sharing** (especially between facility-based cadre and community health workers): Optimizing the utilization of available staff through task-sharing where several qualified HCW cadres perform critical ART and related tasks;
2. **Optimizing staff utilization in DSD models** by offering ART clients alternative sources of care both at site-and-below site using individual and group settings based on client needs and preferences;
3. Estimating **savings in HCW numbers** from transitioning ART patients to community based DSD Models
4. **Improving service provision workflows** by combining or adding critical ART tasks.⁴

Each approach is described in detailed below using data from the Karwola Reference Clinic.⁵ This guide is not intended to be a step-by-step manual for how to use the tool, and is instead designed to provide examples and suggestions on how decision makers may leverage the tool to identify efficiencies. For specific steps and directions on how to interact with the tool there are guides available from the [website](#).⁶

I. Task Sharing

Optimization of existing staff through task-sharing may be one of the most practical responding the increasing volume of patients on ART. Task-sharing, previously referred to by PEPFAR as task shifting, is a 'team-based approach' where clinical care is provided to a patient by a set group (team) of different health professionals with different roles that maximize the skills and abilities of each team member.⁷ This type of model expands the availability of HCWs by leveraging less specialized cadre for patient care where appropriate.⁸ For example, both clinical officers and nurses may initiate ART and monitor stable patients while doctors manage patients with more complex opportunistic infections. National HIV service delivery guidelines describe the roles of different cadres to inform allowable task sharing in specific country contexts. By reorganizing and sharing tasks across cadres, task sharing can make more efficient use of existing human resources and ease bottlenecks in service delivery.

The following scenario discusses how to use the tool illustrate the impact of task sharing on the availability of nurses. In this scenario, the problem is ART services delivery constraint resulting in long client lines and excessive waiting times. After entering data into HOT4ART, results—as illustrated below—show that these constraints are due to a nurse shortage. Nurses perform too many ART tasks exclusively and other staff such as Facility-based Auxiliaries (FBA) are underutilized.



⁴ Although HOT4ART was not designed to simulate all possible workflow changes, with some ingenuity it can show the HRH impact of several efficiency improvements.

⁵ The name is fictitious but represents data from Uganda.

⁶ User guides and other materials for the HOT4ART Tool may be found at https://hrh2030program.org/tool_hrh-planning-for-hiv/.

⁷ Olson D. Task sharing, not task shifting: team approach is best bet for HIV care. IntraHealth international. 2012.

⁸ COP 19 Guidance

Scenario Goal: Maximize service provider mix to deliver ART and increase patient volume

- Begin with an inventory of the types of providers at the site, and assignments of each ART task to the type of provider performing the task most frequently on the Task Assignment sheet (one task—one provider). For instructions on where to enter site specific data please reference the tool user guides.
- Select the 7th Tab “Task Shifting”
- Notice the service delivery models used in this scenario include the Standard care (the first of five models of care) with 2,778 patients per data from the Client Distribution tab.
- Examine the Baseline scenario:
- Tasks performed by nurses are health education, triage and ART refills for all clients (Columns D, E, I, Line 14).
- This requires 8.9 nurse full time equivalents (FTEs) (Column AL/Line 14).
- A total of 11.9 nurse FTEs are needed when adding requirements for the other four models of care (Column AM/Line 14).
- Only 6.8 nurse FTEs are available (Column AN/Line 14) per data from the Service Provider tab.
- This indicates an overall gap of over 5 nurse FTEs (Column AO/Line 14).

Baseline Scenario - With Current Task Allocation															
1. Standard Care Total Number of Clients: 2,778 Note:															
Facility based Individual Management															
Service Provider Type	Enrollment/Registration	Health Education	Triage	Consultation/Clinical Assessment	Blood Draw	Adherence Counseling	ART Refill	Updating Records	Follow up	Combined ART Tasks	FTE Service Providers Required	Total FTEs required for all assigned models	Total FTEs available for all assigned models	Total FTEs excess or gap for all assigned models	
Medical Doctor (MD)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.9
Non Physician Clinician (NPC)	-	-	-	2,778	-	-	-	-	-	-	1.2	1.2	0.9	(0.3)	
Pharmacy Technician or Assistant (PTA)	-	-	-	-	-	-	-	-	-	-	-	0.0	0.9	0.9	
Nurse (N)	-	2,778	2,778	-	-	-	2,778	-	-	-	8.9	11.9	6.8	(5.1)	

Baseline Scenario - With Current Task Allocation														
1. Standard Care Total Number of Clients: 2,778 Note:														
Facility based Individual Management														
Service Provider Type	Enrollment/Registration	Health Education	Triage	Consultation/Clinical Assessment	Blood Draw	Adherence Counseling	ART Refill	Updating Records	Follow up	FTE Service Providers Required	Total FTEs required for all assigned models	Total FTEs available for all assigned models	Total FTEs excess or gap for all assigned models	
Medical Doctor (MD)	-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.9
Non Physician Clinician (NPC)	-	-	-	2,778	-	-	-	-	-	1.2	1.2	0.9	(0.3)	
Pharmacy Technician or Assistant (PTA)	-	-	-	-	-	-	-	-	-	-	0.0	0.9	0.9	
Nurse (N)	-	2,778	2,778	-	-	-	2,778	-	-	8.9	11.9	6.8	(5.1)	
Laboratory Technician (LT)	-	-	-	-	2,778	-	-	-	-	0.5	0.6	1.6	1.0	
Community Health Worker (CHW)	-	-	-	-	-	-	-	2,778	-	1.7	1.7	1.0	(0.7)	
Facility-based Auxiliary (FBA)	2,778	-	-	-	-	-	-	-	-	0.6	1.1	19.0	17.9	
Peer (P)	-	-	-	-	-	-	-	-	-	-	0.4	4.0	3.6	

- To address this FTE gap for nurses, in the same tab scroll to the right to the blue table
- Decide whether to allocate patients in numbers or as a percentage on the client distribution tab and then click Setup button (Column CA/Line 2). For more specific instruction please reference the user guides.
- Determine which service providers are qualified to share tasks with nurses in compliance with national norms and standards for ART service delivery.
- This scenario assumes Facility-based auxiliaries (FBA) for health education, Medical doctors for triage of complex cases, and Pharmacy assistants for ART Refills. Estimate how many clients can be reassigned from nurses to these three cadres. This scenario assumes the below calculations are entered by the user.
- Health education—1,778 to FBAs, 1,000 remain for nurses (Column BZ/Line 14 to Column BZ/Line 20)
- Triage—778 to medical doctors, 2,000 remain for nurses (Column CA/Line 14 to Column CA/Line 8)
- ART Refills—1,500 to pharmacy assistants, 1,278 remain for nurses (Column CE/Line 14 to Column CE/Line 12)
- Results of the changes under (b). FTE requirements and gaps/surpluses for nurses, FBAs, medical doctors, and pharmacy assistants in Columns DH, DI, DJ, DK:
- Medical doctors are more effectively assigned reducing an excess of 0.9 to 0.3 (Column DK/Line 8).
- Pharmacy assistants are effectively assigned reducing an excess of 0.9 to 0.3 (Column DK/Line 12)

- 20. Task-shifting eliminated the gap in nurse FTEs (an excess of 0.2 is immaterial) (Column DK/Line 14).
- 21. FBAs are more effectively assigned reducing an excess of 17.9 to 8.7 (Column DK/Line 20).

Scenario 1 - With Taskshifting/Tasksharing														Total Number of Clients: 2,778			Note: Shifting clients from NPCs to physicians for Consultations; Nurses to physicians for Triage; Nurses to FBAs for Health Education; Nurses to PTAs for ART Refill; SSWs to FBAs and counsellors for ad counselling; and CHWs to FBAs and Peers for Follow-up.		
1. Standard Care																			
Facility based Individual Management																			
Service Provider Type		Enrollment/Registration	Health Education	Triage	Consultation/Clinical Assessment	Blood Draw	Adherence Counseling	ART Refill	Updating Records	Follow up		FTE Service Providers Required	Total FTEs required for all assigned models	Total FTE available for all assigned models	Total FTEs excess or gap for all assigned models				
Medical Doctor (MD)	No.	-	-	778	778	-	-	-	-	-	-	0.5	0.5	0.5	0.3				
	%	-	-	28%	28%	-	-	-	-	-	-	-	-	-	-				
Non Physician Clinician (NPC)	No.	-	-	-	2,000	-	-	-	-	-	-	0.8	0.8	0.9	0.0				
	%	-	-	-	72%	-	-	-	-	-	-	-	-	-	-				
Pharmacy Technician or Assistant (PTA)	No.	-	-	-	-	-	-	1,500	-	-	-	0.5	0.6	0.9	0.3				
	%	-	-	-	-	-	-	54%	-	-	-	-	-	-	-				
Nurse (N)	No.	-	1,000	2,000	-	-	-	1,278	-	-	-	3.5	6.6	6.8	0.2				
	%	-	36%	72%	-	-	-	46%	-	-	-	-	-	-	-				
Laboratory Technician (LT)	No.	-	-	-	-	2,778	-	-	-	-	-	0.5	0.6	1.6	1.0				
	%	-	-	-	-	100%	-	-	-	-	-	-	-	-	-				
Community Health Worker (CHW)	No.	-	-	-	-	-	-	-	-	1,278	-	0.8	1.0	1.0	0.0				
	%	-	-	-	-	-	-	-	-	46%	-	-	-	-	-				
Facility-based Auxiliary (FBA)	No.	2,778	1,778	-	-	-	1,000	-	-	1,000	-	9.7	10.3	19.0	8.7				
	%	100%	64%	-	-	-	36%	-	-	36%	-	-	-	-	-				
Peer (P)	No.	-	-	-	-	-	-	-	-	500	-	0.3	0.7	4.0	3.3				
	%	-	-	-	-	-	-	-	-	18%	-	-	-	-	-				
Social Service Worker (SSW)	No.	-	-	-	-	-	1,000	-	-	-	-	1.1	1.1	0.8	(0.3)				
	%	-	-	-	-	-	36%	-	-	-	-	-	-	-	-				
Counsellor (C)	No.	-	-	-	-	-	778	-	-	-	-	0.8	0.9	1.0	0.1				
	%	-	-	-	-	-	28%	-	-	-	-	-	-	-	-				
Data Officer	No.	-	-	-	-	-	-	2,778	-	-	-	0.4	0.9	3.0	2.1				
	%	-	-	-	-	-	-	100%	-	-	-	-	-	-	-				
Community Outreach Worker	No.	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0				
	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

- 22. Repeat task-shifting/sharing for other cadres where there is a gap (social service workers) or excess (FBAs and data officers) for the Standard Care model.
- 23. If needed, repeat task-shifting/sharing for the other models of care implemented in a specific clinic (three in the Karwola case study).
- 24. If substantial staff imbalances remain, users can develop a second task-shifting/sharing scenario in the orange tables (Scenario 2) to the far right of the sheet and compare the differences in the Taskshifting tab or in the Results tab; the latter offers a more aggregate view and graphic representations.

2. Optimizing Staff Utilization in DSD Models

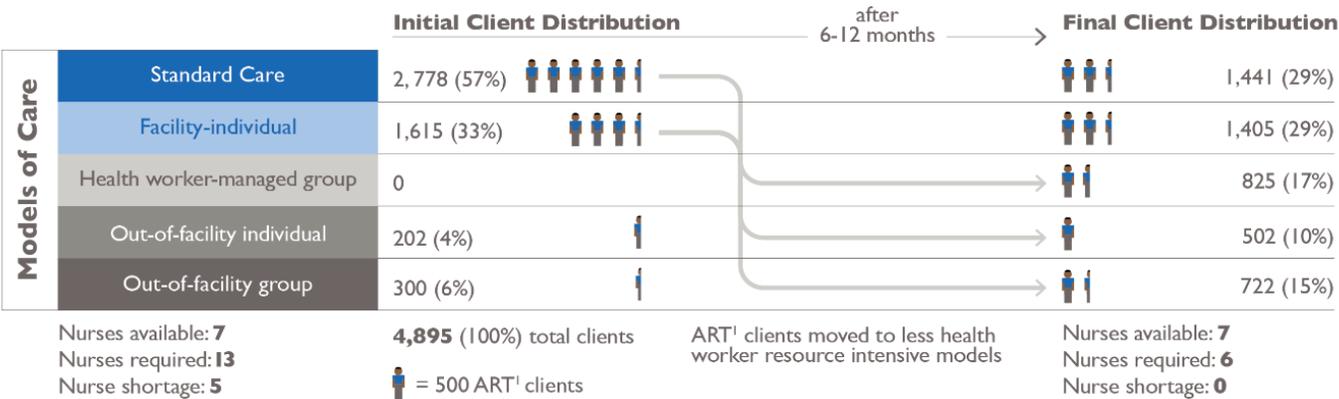
Patients move between different sites and types of service delivery based on their preferences for care and recommendations from providers. At the time of the creation of the HOT4ART tool, stakeholders identified four DSD models detailed in the text box on the preceding page. Different countries adopt various combinations of these models based on patient preferences and health system capabilities. The HOT4ART tool allows users to name these models based on the country context. Accordingly, the tool in the scenario reflects the terminology from Uganda.

HOT4ART can help site-level managers assess the human resource impact of patients adopting different DSD models through the tool's the model-shifting functionality. This functionality allows the user to predict the impact of patients switching from site-based care to a DSD model based on their preferences and eligibility. In most contexts, after a period of 6-12 months stable and adherent patients are eligible for transfer to DSD models. As more patients choose to transition to a DSD model, new patients can be linked to the site based on new provider availability. Just as with task sharing, HOT4ART allows users to create various scenarios to calculate this availability.

Global Models of DSD for ART Delivery	Example Karwola Reference Clinic
<p>Facility-based individual models ART refill visits are separated from clinical consultations. Also referred to as ARV refill <i>fast-track</i> models.</p>	<p>Fast Track Drug Refills ART refill visits are separated from clinical consultations and can be picked up by the patient.</p>
<p>Out-of-facility individual models ART refills and, in some cases, clinical consultations are provided to individuals outside of health care facilities.</p>	<p>Community Drug Distribution Points ART refills and, in some cases, clinical consultations are provided to individuals outside of health care facilities.</p>
<p>Health care worker-managed group models Clients receive their ART refills in a group and either a professional or a lay health care staff manages this group.</p>	<p>Facility Based Groups Clients receive their ART refills in a group and either a professional or a lay health care staff manages this group.</p>
<p>Client-managed group models Clients receive their ART refills in a group, but this group is managed and run by clients themselves.</p>	<p>Community Client-Lead Groups Clients receive their ART refills in a group, but this group is managed and run by clients themselves.</p>

Source: <http://www.differentiatedcare.org/Guidance>

In this example scenario, the site is overwhelmed by a high volume of patients, which means lines and waiting times are long and quality of care may suffer. After the user entered the necessary information into HOT4AR, it illustrates, as shown below, many clients (90%) are being managed under a facility based care model—Standard Care and Facility-individual (fast track drug supply)—and too few clients are enrolled in out-of-facility and group DSD models. Healthcare workers are therefore overburdened and have limited time to attend to new, unstable and complex clients. However, this site plans to begin to offer DSD care models to stable and adherent patients.



Scenario Goal: Improve ART service delivery by maximizing service provider mix through DSD transitioning at Site-Level

1. Begin by entering the information required in the Treatment Models, Service Providers, Client Distribution, and Task Assignment sheets. For instructions on where to enter site specific data please reference the tool user guides.
 - a. It is optional to include task sharing information tab.
2. Tool sheet (tab) to use: “Modelshifting” (tab 8 on the Dashboard).

Baseline Scenario Before Modelshifting						
Note:	Facility based Individual Management	Fast track drug refills	Facility based groups	Community drug distribution points	Community-client led ART delivery	Total Clients
New Clients	1,405					1,405
Existing Clients						
Adults	922	1,615	-	202	300	3,039
Adolescents	120	-	-	-	-	120
Children	131	-	-	-	-	131
PBFW	200	-	-	-	-	200

3. Notice the service delivery models used: Standard Care plus all four DSD models; client caseload data are drawn from the Client Distribution tab.
4. Examine the Baseline scenario, which presents the same information as in the task-shifting baseline but by DSD model instead by ART task:
 - a. DSD models used: Facility-based individual management (Standard Care), Fast track drug refills, Community drug distribution points, Community-client led ART delivery; the Facility-based groups model was initially not used at this facility.
 - b. This requires a total of 11.9 nurse FTEs across all five DSD models (Column I/Line 23).
 - c. Only 6.8 nurse FTEs are available (Column J/Line 23) per data from the “Service Providers” tab.
 - d. The indicates an overall gap of over 5 nurse FTEs (Column K/Line 23), which is identical to the numbers in the baseline table under the “Taskshifting” tab.

Baseline Scenario Before Modelshifting									
Note:	Facility based Individual Management	Fast track drug refills	Facility based groups	Community drug distribution points	Community-client led ART delivery	Total Clients			
New Clients	1,405					1,405			
Existing Clients									
Adults	922	1,615	-	202	300	3,039			
Adolescents	120	-	-	-	-	120			
Children	131	-	-	-	-	131			
PBFW	200	-	-	-	-	200			
Total	2,778	1,615	-	202	300	4,895			
							Total FTEs Required	Total Existing FTEs	Staff Excess or (Gap)
Medical Doctor (MD)	-	-	-	-	-	-	-	0.9	0.9
Non Physician Clinician (NPC)	1.17	-	-	-	-	-	1.2	0.9	(0.3)
Pharmacy Technician or Assistant	-	-	-	-	0.01	-	0.0	0.9	0.9
Nurse (N)	8.85	2.81	-	0.13	0.09	-	11.9	6.8	(5.1)
Laboratory Technician (LT)	0.51	0.06	-	0.00	0.02	-	0.6	1.6	1.0

5. To address this FTE gap for nurses, perform model-shifting without prior task-sharing in the green table to the right of the baseline scenario:
 - a. Decide whether to allocate patients in numbers or as a percentage, click Setup button (Column CA/Line 2). For more specific instruction please reference the user guides.
 - b. Decide which DSD models can be offered to clients that comply with national norms and standards for ART service delivery. The tool will estimate the HCW requirements to support facility and community-based models based on the allowable task for each HCW (please note the user can adjust these on the Service Provider and Task Assignment tabs).
 - i. Facility-based individual management (Standard Care)

- ii. Fast track drug refills
 - iii. Facility-based groups model (newly introduced at this facility per this example)
 - iv. Community drug distribution points
 - v. Community-client led ART delivery
- c. Estimate how many clients can be reassigned based on the number of ART clients who may be eligible and desire to shift between models (for more information on the classification of clients please refer to the user guide)
- i. 705 *new clients* who adhered to treatment for 6 months from Facility-based individual management to Fast track drug refills (Column N/Line7 to Column O/Line 7).
 - ii. 722 *stable adult clients* from Facility-based individual management to Community-client led ART delivery (Column N/Line 10 to Column S/Line 10).
 - iii. 615 *stable adults* from Fast track drug refills to Facility based groups model (Column O/Line 10 to Column P/Line 10).
 - iv. 300 *stable adults* from Fast track drug refills to Community drug distribution points.
 - v. 60 *stable adolescents* from Facility-based individual management to Facility-based groups model (Column N/Line 12 to Column P/Line12).
 - vi. 150 *stable pregnant or breastfeeding women* from Facility-based Individual Management to Facility-based groups model (Column N/Line16 to Column P/Line16).

Baseline Scenario Before Modelshifting						Baseline Scenario After Modelshifting							
Note:	Facility based Individual Management	Fast track drug refills	Facility based groups	Community drug distribution points	Community-client led ART delivery	Note: Shifted new clients if stable after 6 months to fast track model. Shifted stable adults to all DSD models. Shifted stable adolescents and PBFW to HW group model.	Facility based Individual Management	Fast track drug refills	Facility based groups	Community drug distribution points	Community-client led ART delivery	No. of Clients Baseline Scenario	No. of Clients After Modelshifting
New Clients	1,405						700	705	-	-	-	1,405	1,405
Existing Clients							500	700	615	502	722	3,039	3,039
Adults	922	1,615	-	202	300		16%	23%	20%	17%	24%		
Adolescents	120	-	-	-	-		60	60	-	-	-	120	120
Children	131	-	-	-	-		131	-	-	-	-	131	131
PBFW	200	-	-	-	-		50	150	-	-	-	200	200
Total	2,778	1,615	-	202	300		1,441	1,405	825	502	722	4,895	4,895
							29%	29%	17%	10%	15%		100%

- d. Examine the changes in FTE requirements and gaps/surpluses for nurses and FBAs in Columns T-W:
- i. Model-shifting alone reduced the gap in nurse FTEs to less than 1, but this is not yet correct because of missing data as noted below in *italics*.
 - ii. Unlike task-shifting, model-shifting did not affect FBAs significantly with a remaining excess of 17.9 (Column W/Line 27).
- e. Note the lack of FTEs in Column P and the highlighted warning message; this means that FTEs required are underestimated. Because the Facility-based groups model was not used initially, neither frequencies nor ART tasks had been assigned to this model. Once the user adds this information in the Treatment Models and Task Assignment tabs, FTEs will be calculated, which correctly increases the gap for nurses to 1.5, and the warning message disappears. For specific directions on entering this information please refer to the user guide.

L	M	N	O	P	R	S	T	U	V	W	
4	Baseline Scenario After Modelshifting									Attention: The highlighted ART model was not assigned frequencies or workers. No FTEs are calculated. Assign frequencies on 'Treatment Models' tab and service providers on 'Task Assignment' tab.	
5											
6	Note: Shifted new clients if stable after 6 months to 1st track model. Shifted stable adults to all DSD models. Shifted stable adolescents and PBFW to HW group model.	Facility based Individual Management	Fast track drug refills	Facility based groups	Community drug distribution points	Community-client led ART delivery	No. of Clients Baseline Scenario	No. of Clients After Modelshifting			
7		700	705	-	-	-	1,405	1,405			
8		50%	50%	-	-	-		100%			
20							Total FTEs Required Baseline Scenario	Total FTEs Required after Modelshifting	Total Existing FTEs		Staff Excess or (Gap)
21	Medical Doctor (MD)	-	-	-	-	-	-	-	0.9		0.9
22	Non Physician Clinician (NPC)	0.61	-	-	-	-	1.2	0.6	0.9		0.3
23	Pharmacy Technician or Assistant (PTA)	-	-	-	-	0.02	0.0	0.0	0.9	0.8	
24	Nurse (N)	4.59	2.45	-	0.31	0.22	11.9	7.6	6.8	(0.8)	
25	Laboratory Technician (LT)	0.27	0.05	-	0.01	0.04	0.6	0.4	1.6	1.2	
26	Community Health Worker (CHW)	0.86	-	-	-	-	1.7	0.9	1.0	0.1	
27	Facility-based Auxiliary (FBA)	0.31	0.21	-	0.27	0.27	1.1	1.1	19.0	17.9	
28	Peer (P)	-	0.28	-	0.10	0.15	0.4	0.5	4.0	3.5	
29	Social Service Worker (SSW)	1.55	-	-	-	-	3.0	1.5	0.8	(0.7)	
30	Counsellor (C)	-	0.21	-	0.13	0.06	0.3	0.4	1.0	0.6	
31	Data Officer	0.19	0.34	-	0.12	0.16	0.9	0.8	3.0	2.2	
32	Community Outreach Worker	-	-	-	-	-	-	-	1.0	1.0	
33											

- Repeat model-shifting after task sharing in the blue table (Scenario 1) below the green tables. Clients can be reassigned in the table to the right. The table to the left shows the scenario before model-shifting but after task sharing using data from the "Taskshifting" tab. If the same model-shifts are performed in the blue table as in the green table, the nurse shortage is eliminated; the tool would even suggest an excess of 1.2 nurses.
- If substantial staff imbalances remain, users can develop a third model-shifting scenario in the orange tables (Scenario2) below the blue tables and compare the differences in the Modelshifting tab or in the Results tab; the latter offers a more aggregate view and additional graphic presentations.

3. Savings in HCW Numbers from Transitioning Patients to Community-based DSD Models

Out-of-facility DSD models usually require community outreach to support services provided in communities close to where clients live. Several tasks can be performed during community outreach, usually including ARV refills, health education and adherence counseling, group networking, and even clinical consultations by a qualified service provider. In particular, group networking or forming ART treatment groups among certain client sub-populations (e.g., pregnant and breastfeeding women and adolescents) provides a social network, encourages psychosocial support among peers, promotes voluntary disclosure of HIV status, and helps manage stigmas through peer support. Group settings may also result in better adherence to treatment as members support each other to keep appointments.

Certain tasks along the ART service delivery continuum (such as health education and adherence counseling) can be performed for a group rather than on an individual basis under any model—group or individual. Community-based ART services are provided to a group of people, whether in individual or group setting, and HOT4ART treats community outreach like a group activity and calculates the time per patient contact by dividing the overall time spent on community outreach in a day by the number of patients served in a group or community setting. For community outreach this also includes the travel time for a return trip to the community.

Using HOT4ART, service managers can maximize the utilization of available staff by ensuring that as many patients as feasible participate in group activities. This leaves service providers with more time for individual care and allows them to devote more time to unstable and complex clients. Appropriate group size can be determined by a number of factors that includes the ART caseload, the type of group DSD model—HCW or client-managed, the number of service providers available at the facility, and the number of days in a week that ART services are offered.

All community based DSD models require a minimum number of contacts with HCWs at the clinic for standard ART tasks as well as contacts in the community. Contact frequencies are specified in the “Treatment Models” tab; and community outreach can be added as a user-defined task. Standard tasks such as health education and adherence counseling use the same group size as specified in the top part of each DSD model table on the Task Assignment tab. For user-defined group or community outreach tasks, each task can have its own group size.

This example scenario builds from Scenario II, in which a clinic is newly transition many patients to various DSD models. Different from Scenario II, this scenario focusses on estimating the necessary below-site cadre to support the new DSD models. The tool also provides an opportunity to include client contact frequencies per the contextual national guidelines for community based DSD models.

Scenario Goal: Estimate FTE requirements for community outreach activities

- I. Begin by entering the following preliminary data points:
 - a. Add a user-defined community outreach task under the “Treatment Models” tab. For additional instructions please reference the first row of this tab.
 - b. Assign a standard services provider or add a user-defined service provider responsible for community outreach under the Service Providers tab. The Service Providers tab will pop-up with a reminder when the information is entered.
 - c. Assign this service provider to the community outreach task for the appropriate DSD model under the Task Assignment tab.
2. Select “Task Assignment” tab 6 and scroll down through the green tables to Line 102, Table 5 “Out-of-Facility Group, Client Managed.”
3. Enter the group size for tasks that take place in the health facility in cell Column N/Line 105 (standard tasks).
4. Indicate whether health education and adherence counseling are done in a group setting at the facility by entering “Y” or “Y” in Column G/Line 113.
5. Indicate whether the user-defined Community Outreach task is performed as a group task by entering “Y” or “Y” in Column G/Line 118.

102	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
103	ART Model Type:		Out-of-Facility/Community							Number of					
104	ART Model:		5. Out-of-Facility Group, Client-Managed							Clients					
105	Country-Specific Description:		Community-client led ART delivery							300		Clients per Group		4	
106															
107					Group (Y/-)	Contact Time per Client (Mins)	Range (+/-1 SD)	No. of Times per Year	Hours of Staff Time Needed	Range (+/-1 SD)					
108	Enrollment/Registration		Facility-based Auxiliary (FBA)			3.2	0.8 - 5.6	3	48	11 - 84					
109	Health Education		Facility-based Auxiliary (FBA)		Y	4.2	2.6 - 5.8	3	63	40 - 87					
110	Triage		Peer (P)			1.2	0.5 - 2.0	3	18	7 - 29					
111	Consultation/Clinical Assessment		Nurse (N)			9.3	3.4 - 15.3	3	140	51 - 229					
112	Blood Draw		Laboratory Technician (LT)			4.8	0.2 - 9.3	1	24	1 - 47					
113	Adherence Counseling		Counsellor (C)		Y	2.5	2.5 - 2.5	3	38	38 - 38					
114	ART Refill		Pharmacy Technician or Assistant (PTA)			1.0	1.0 - 1.0	3	15	15 - 15					
115	Updating Records		Data Officer			6.5	3.4 - 9.7	3	98	51 - 146					
116	Additional Tasks														
117	Follow up		Peer (P)			3.0	1.0 - 5.0	3	45	15 - 75					
118	Community outreach		Community Outreach Worker			18.8	3.8 - 37.5	4	375	75 - 750					
119										0 - 0					
120															
121	Calculate contact time for group & community tasks for user-added tasks only														

6. A user-added group or community outreach task must be declared before clicking the button for the popup calculator as explained below. The contact time per client must be calculated by dividing the total number of hours in a day when outreach is done by the number of clients reached in all communities visited that day. Three numbers are required: the average time per client and the minimum and maximum times. The user can either do these side-calculations and enter the data directly into the cells shaded light green (below Step 8) or click the grey button (as shown at the bottom of the figure in Step 5). Each DSD model table to display a calculator that will facilitate these calculations.

7. Using the popup calculator is recommended. It requires the following inputs:
- Total time spent on community outreach on average on a day when outreach is done including travel time and client-facing time in the community [5 hours].
 - Average number of people reached in one community (or group) [4 clients]
 - Minimum number of people reached in one community (or group) [2 clients]
 - Maximum number of people reached in one community (or group) [20 clients]
 - Average number of groups visited on a day when outreach is done [4 clients]
 - Total number of ART clients served in a community setting [300]. This number can be as large as the total number of clients assigned to a DSD model (appropriate for all community-based models) or smaller (facility-based models with a community outreach component).

Calculate contact time for user-added group & community tasks

5. Out-of-Facility Group, Client-Managed

Total number of clients in this model: 300

Row #	Additional ART Tasks	Service Provider	Group	Average no. of hours spent on group work or community outreach on a day when such work is done	Maximum group size	Minimum group size	Maximum group size	Average no. of groups or communities visited on a day when such work is done	Total no. of ART clients served through groups or community outreach	Total number of groups or communities supported	Annual contact frequency (from Treatment Models tab)	Total no. of days per year/ week spent on group visits or community outreach	Average-Minimum-Maximum contact times per client in minutes (will be entered automatically in columns H, I & K)
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13] [14]	[15] [16] [17]
117	Follow up	Peer (P)											3 1 5
118	Community outreach	Community Outreach Worker	Y	5	4	2	20	4	300	75	4	75 1.5	18.75 3.75 37.5
119													

Notes for specific [columns]

[1] This number refers to the row in the Task Assignment tab for which client contact times are estimated.

[10] For group models, this should be the total number of clients in this model. Community outreach can be part of individual care models, and the no. of clients reached through outreach would be less than the total.

[11] The number of groups or communities supported is an estimate only by dividing column [10] by column [6]. Actual numbers will differ slightly.

[13/14] The total no. of days per year spent on group visits or community outreach is an estimate only by dividing column [1] by column [9] and multiplying by column [12]; divided by 50 for community visits per week.

[15-17] Average-Minimum-Maximum contact times per client are estimates in minutes by multiplying column [5] by 60 and then dividing this by columns [6-8] respectively multiplied by column [9].

These calculations are for user-added group or community tasks only as indicated by "Y" in the group column. To calculate client contact times, cells in green must have a value greater than zero for these tasks only. Press the CALCULATE button after changes are made to update average, minimum and maximum client contact times highlighted in yellow. Clicking the CANCEL button before clicking the CALCULATE button will ignore any changes in the green cells. Clicking the CANCEL button after the CALCULATE button is clicked may not undo any changes made in the green cells.

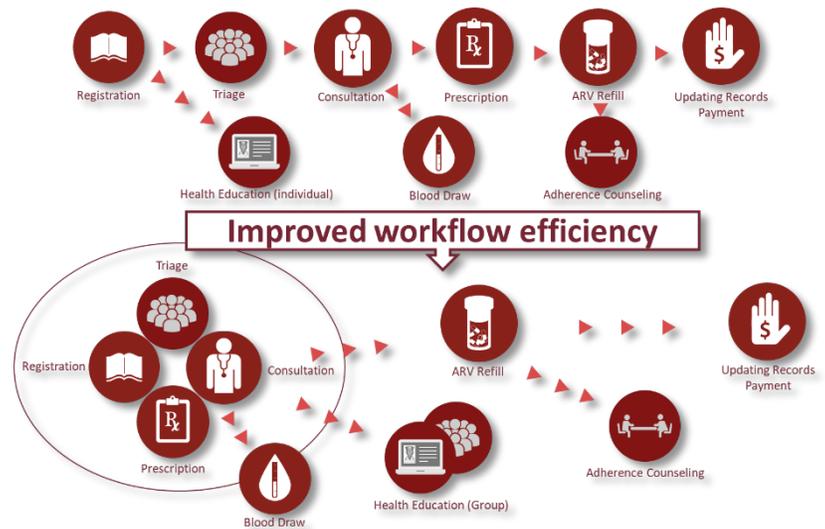
Close Cancel Calculate

8. When all data have been entered, press the Calculate button; this will estimate the:
- Total number of communities (or groups) supported by the clinic [75 groups].
 - Frequency with which each community should be visited (drawn from the Treatment Models tab) [4 times per year].
 - Total number of days per year that service providers should spend on community outreach (or group activities) is based on this frequency [75 days].
 - Total number of days per week that services providers should spend on community outreach (or group activities) based on previous number/52 [1.5 days per week].
 - These are rough estimates based on the data provided by the user; actual numbers will vary somewhat.
9. Lastly, the calculator will provide the average [18.75], minimum [3.75] and maximum [37.5] contact times per client in minutes, which will be entered into the spreadsheet automatically once the Close button on the calculator is clicked. User input is stored in the tool. Task designations as group or community can be turned on and off without losing these data.
10. The variation in the number of clients supported in a community (or group) setting is driving the variation in client contact times in this tool even though many parts of community outreach vary—hours spent per day, number of communities visited per day and clients participating.
11. The impact of changing the number of clients supported in a community (or group) setting on FTE requirements for staff involved in these activities can be seen on the Results tab.

4. Improving Service Workflows by Combining or Adding ART Tasks

Delivering HIV services sequentially as suggested by the eight standard ART tasks in HOT4ART and shown in the top part of the figure at right may not be the most efficient way of providing services—especially in an integrated setting. Where services require too many steps involving different HCWs clients are likely to spend more time than needed in the facility, and may also experience longer waiting times.

Clinic managers have several options for improving workflows and shortening clinic visits. It is common practice at lower volume sites that one HCW performs several tasks at once. For example, a qualified social service worker may register a client, do the triage, conduct the consultation, and write the ARV prescription as shown in the lower part of the figure above. Depending on the type of HCW and national guidelines, blood may also be drawn by the same person. In some countries a non-physician worker may do the clinical consultation and prescribe ARVs, but a medical doctor may have to review the medical record and sign off on the prescription.



Other efficiency improvements can result from a more flexible management of client appointments, which can be staggered to some extent across the day to reduce early morning overcrowding and over burdening available staff. Extending services into the evening hours or into the weekend will help clients to come outside their working hours and alleviate clinic congestion. Flexible clinic hours may benefit specific sub-populations such as adolescents, pregnant and breastfeeding women, couples, and others. Such client-tailored arrangements provide an opportunity for increasing adherence and offering targeted counseling sessions and health talks.

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HOT4ART can help in estimating the HRH impact of improving some of the efficiency measures mentioned above, especially combining critical ART tasks, expanding work hours, and conducting certain tasks in a group setting. This scenario explores how to combine tasks performed by HCWs to increase efficiencies by decreasing the length of each patient visit. Because HOT4ART was primarily designed to simulate task-shifting/sharing and model-shifting, a small workaround is necessary assess the effect of workflow changes. In the scenario below, a mock service provider is created to compare FTE requirements for nurses before and after workflow improvements.⁹

Scenario Goal: Reduce FTE requirements for ART service providers

1. Tool sheets (tabs) to use: Treatment Models, Service Providers, Task Assignment, and Taskshifting (tabs 1, 2, 4, and 5 on the Dashboard).
2. Service delivery models used: Standard care (the first of five models of care) with 2,778 patients per data from the Client Distribution tab.
3. On the “Treatment Models” tab (tab 3), add a user-defined task ‘Combined ART Task’ that combines several standard ART tasks (client registration, triage and consultation) and the require client contact frequency [12] for the Standard Care Model under the Treatment Models tab.
4. Add a user-defined service provider ‘Mock Nurse Discrete ART’ under the Service Providers tab and match it to a nurse. The user-defined ‘Combined ART Task’ will be assigned to this ‘Mock Nurse Discrete ART’ initially.

⁹ The mock nurse is created for illustrative purposes only; it is not part of clinic staffing.

5. Assign service providers to the standard tasks and assign the ‘Combined ART Task’ to the ‘Mock nurse Discrete ART’ under the Task Assignment tab. Enter the average [3.5], minimum [3.0] and maximum [6.0] times in minutes to conduct the ‘Combined ART Task’ for one client.
6. Shift all clients for registration from FBAs to the ‘Mock nurse Discrete ART’ Column EU/Line 20 to Column EU/Line32) in the first orange table (Scenario 2) to the right under the “Taskshifting” tab.
7. Shift all clients for health education from nurses to FBAs (Column EV/Line 14 to Column EV/Line20) in the same orange table under the “Taskshifting” tab.
8. Shift all clients for triage from nurses to the ‘Mock Discrete ART’ (Column EW/Line 14 to Column EW/Line 32) in the same orange table under the “Taskshifting” tab.
9. Shift all clients for consultation from non-physician clinician to the ‘Mock Nurse Discrete ART’ (Column EX/Line 10 to Column EX/Line 32) in the same orange table under the “Taskshifting” tab.
10. Shift all clients for ART Refills from nurses to the pharmacy assistant (Column FA/Line 14 to Column FA/Line12) in the same orange table under the “Taskshifting” tab.
11. Lastly, shift all clients for the ‘Combined ART Task’ from the ‘Mock Nurse Discrete ART’ to nurses (Column FE/Line 32 to Column FE/Line 14) in the same orange table under the “Taskshifting” tab.
12. The discrete ART tasks of client registration, triage and consultations are now shifted to the ‘Mock Nurse Discrete ART’. All other discrete ART tasks for nurses under Standard Care are now assigned to other staff. The ‘Combined ART Task’ is the only task assigned to nurses.
13. Compare the FTE estimates for nurses to the ‘Mock Nurse Discrete ART’:
 - a. At baseline (green table to the left) 11.9 nurse FTEs were required for Standard Care leaving a deficit of 5.1.
 - b. After improving workflow efficiency by combining standard ART tasks (first orange Scenario 2 table) 4.3 nurse FTEs are required with an excess of 2.5 nurse FTEs.
 - c. For Standard Care alone, the ‘Combined ART Task’ requires 1.3 nurse FTEs compared to 2.3 nurse FTEs required for conducting registration, triage and consultations discretely as shown for the ‘Mock Nurse Discrete ART’.
 - d. Another result is the better utilization of available pharmacy assistants and FBAs.
 - e. This scenario assumes that the positions for medical doctor and non-physician clinician are vacant (shown as an excess in the tool).

Scenario 2 - With Taskshifting/Tasksharing														Total Number of Clients: 2,778				Note: Combining ART tasks of nurses under 'ART provider' and shifting ART Refills to PTAs. Shifting Registration for FBAs to ART Provider.			
1. Standard Care																					
Facility based Individual Management																					
Service Provider Type	Enrollment/Registration	Health Education	Triage	Consultation/Clinical Assessment	Blood Draw	Adherence Counseling	ART Refill	Updating Records	Follow up	Combined ART Task	FTE Service Providers Required	Total FTEs required for all assigned models	Total FTEs available for all assigned models	Total FTEs excess or gap for all assigned models							
Medical Doctor (MD)	No.	-	-	-	-	-	-	-	-	-	-	-	0.9	0.9							
Non Physician Clinician (NPC)	No.	-	-	-	-	-	-	-	-	-	-	-	0.9	0.9							
Pharmacy Technician or Assistant (PTA)	No.	-	-	-	-	-	2,778	-	-	-	1.0	1.0	0.9	(0.1)							
Nurse (N)	No.	2,778	2,778	2,778	-	-	-	-	-	2,778	1.3	4.3	6.8	2.5							
Laboratory Technician (LT)	No.	-	-	-	2,778	-	-	-	-	-	0.5	0.6	1.6	1.0							
Community Health Worker (CHW)	No.	-	-	-	-	-	-	2,778	-	-	1.7	1.7	1.0	(0.7)							
Facility-based Auxiliary (FBA)	No.	2,778	-	-	-	-	-	-	-	-	10.7	11.2	19.0	7.8							
Peer (P)	No.	-	-	-	-	-	-	-	-	-	-	-	0.4	4.0	3.6						
Social Service Worker (SSW)	No.	-	-	-	-	2,778	-	-	-	-	3.0	3.0	0.8	(2.2)							
Counselor (C)	No.	-	-	-	-	-	-	-	-	-	-	-	0.3	1.0	0.7						
Data Officer	No.	-	-	-	-	-	-	2,778	-	-	0.4	0.9	3.0	2.1							
Community Outreach Worker	No.	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0							
Mock Nurse Discrete ART	No.	2,778	-	2,778	2,778	-	-	-	-	-	2.3	2.3	2.0	(0.3)							
Check Client Total	No.	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778	-	-	-	-							
Check Percent Total	%	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%										

How to use HOT4ART to assess the HRH impact of other workflow improvements

- Workflow improvements that reduce client contact times for standard ART tasks can be simulated by adding a user-defined task under the Treatment Models tab and assigning client contact times (average, minimum, maximum) under the Task Assignment tab.
- For example, If the contact time for ARV Refills can be shortened through prepackaging pill supplies, the user would add ARV Refills as a user-defined task and not assign any frequencies or healthcare workers to the standard ARV Refill task.
- The same process can be used for shortening client contact times for other standard tasks such as registration and updating recodes by preparing client records ahead of the visit or by an effective electronic medical records system.

Further resources for improving service provider performance and productivity in order to better implement differentiated service delivery are available in a Toolkit developed by the HRH2030 program that can be found at: <https://hrh2030program.org/wp-content/uploads/2018/09/ProdPerfToolkit-rev-for-web.pdf>



An HIV counselor tests a client in Lagos, Nigeria. Photo Credit: URC, 2016.

About HRH2030

HRH2030 strives to build the accessible, available, acceptable, and high-quality health workforce needed to improve health outcomes.

Global Program Objectives

1. Improve performance and productivity of the health workforce.
2. Increase the number, skill mix, and competency of the health workforce.
3. Strengthen HRH/HSS leadership and governance capacity.
4. Increase sustainability of investment in HRH.

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This material is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of cooperative agreement no. AID-OAA-A-15-00046 (2015-2020) in partnership with The U.S. President's Emergency Plan for AIDS Relief. The contents are the responsibility of Chemonics International and do not necessarily reflect the views of USAID or the United States Government.

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