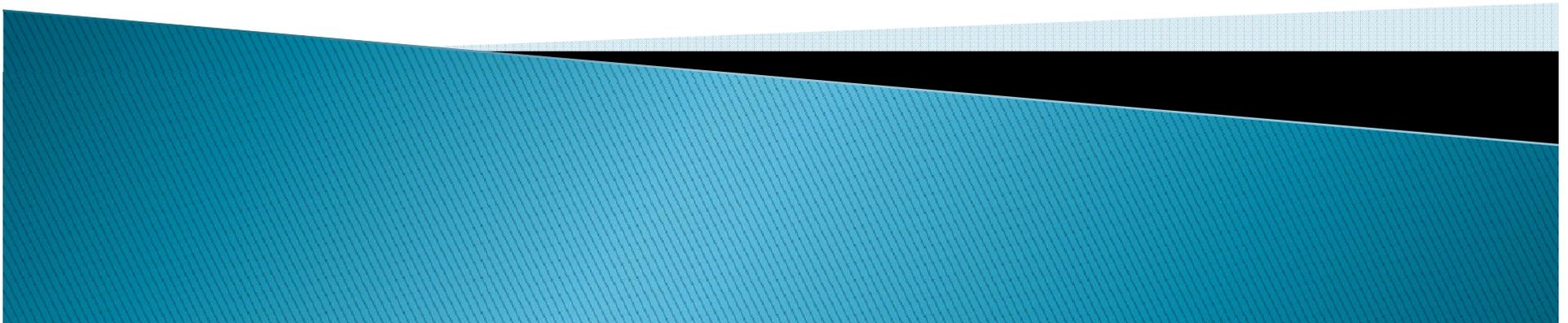


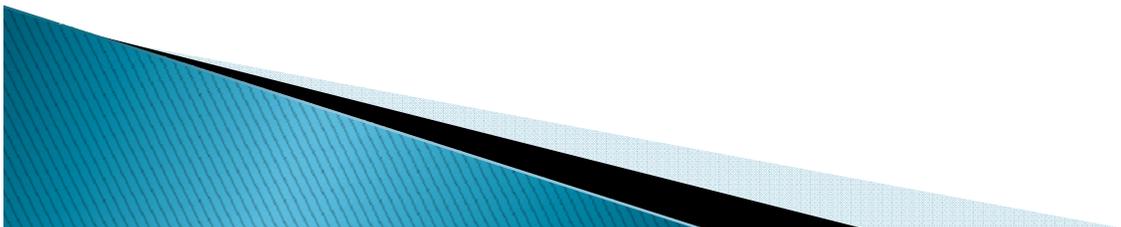
HIV Drug Resistance Surveillance: **Early Warning Indicators**

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Background

- ▶ HIV prevalence among general population in Cambodia has been declining from 1.2% in 2003 to 0.9% in 2006
- ▶ Despite HIV/AIDS epidemic started in 1990, antiretroviral treatment (ART) provision was initiated in 2003
- ▶ At the end of quarter 4, 2008, there were already about 28,932 patients (3,067 children) on ART at 51 OI/ART facilities

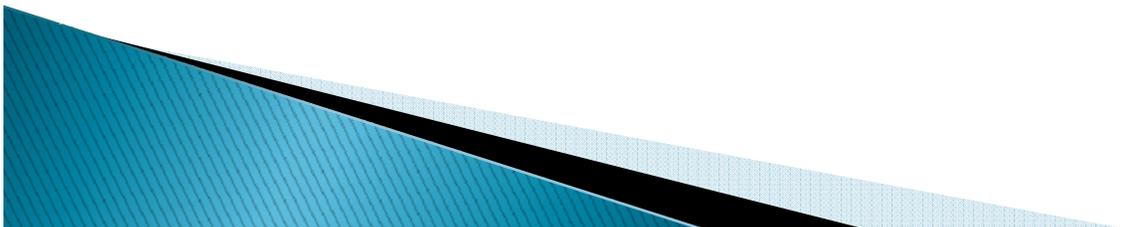


Background (Con't.)

- ▶ In 2006, Cambodia started implementing strategies to minimize the emergence of HIV drug resistance including;
 - The continuous supply of WHO pre-qualified ARV drug
 - ART provision using evidence-based standard highly active ART
 - Adherence support
 - Removal barriers to continuous access to ART
 - Prevention program to reduce HIV transmission from person on ART

Rationale

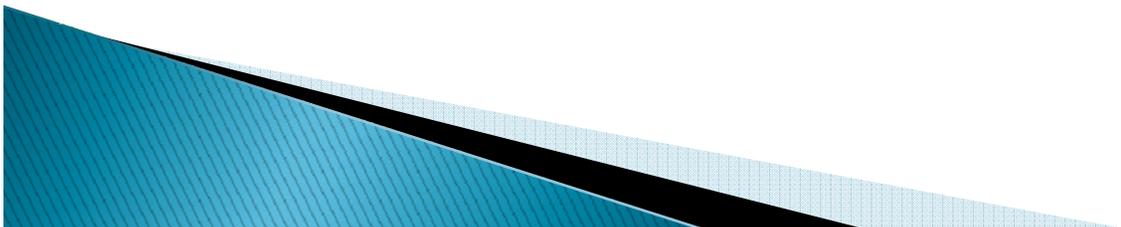
- ▶ Because of high mutation rate of HIV, it is expected that some degree of HIV Drug Resistance (HIV DR) will occur among person on ART
- ▶ The degree of transmission of resistant strains depends on many factors;
 - Degree of treatment success on a population
 - Degree of Success of prevention program
 - Degree of Success of ART program effort
- ▶ In 2003, one study from Pasteur Institute of Cambodia: of 144 newly infected ARV naïve people, 4.9% had drug resistance mutations to ARV drugs.



HIV DR surveillance system

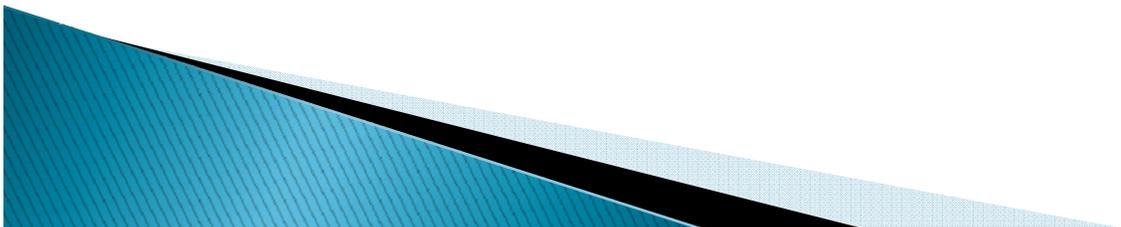
HIV DR surveillance typically includes 3 components;

1. Monitoring of early warning indicators (EWIs)
2. Surveillance of primary HIV DR transmission through threshold survey of recently infected people
3. Monitoring of secondary HIV DR occurring among patients on ART at sentinel sites



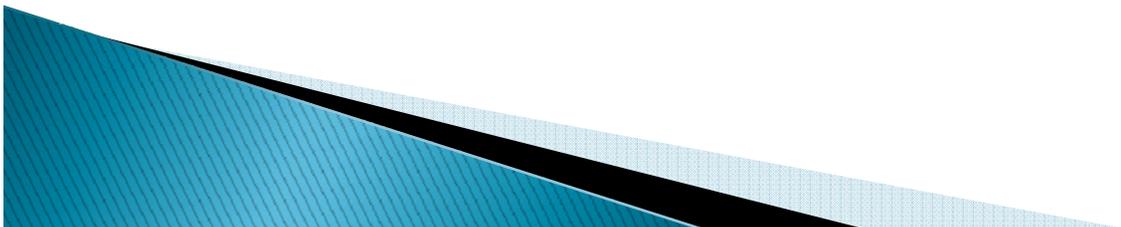
List of EWIs

- ▶ EWI#1: Percentage of months in which there were no ARV drug stock outages
- ▶ EWI#2: Percentage of months no expired ARV drug was found at ART site
 - EWI#2b: : Percentage of months no emergency request for ARV drug was found at ART site
- ▶ EWI#3: ARV drugs are in storage conditions



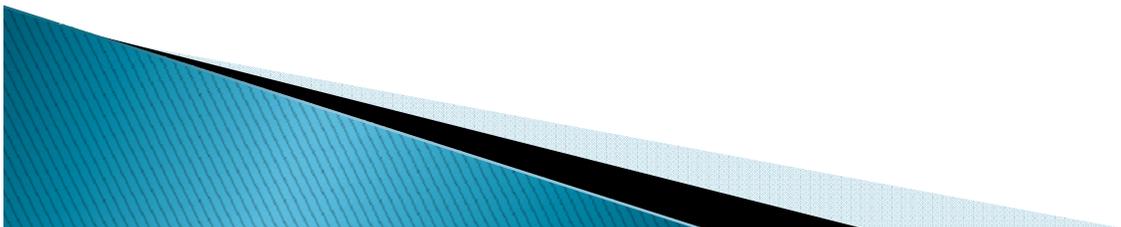
List of EWIs (Con't.)

- ▶ EWI#4: Percentage of patients started on standard recommended first line ART regimen
 - EWI#4b: Percentage of patients who started ART on a standard recommended first line regimen (among a cohort of patients who started ART in the past 12 months)
- ▶ EWI#5: Percentage of patients lost to follow up at 12 months after ART initiation
- ▶ EWI#6: Percentage of patients still on first line ART regimen 12 months after ART initiation
- ▶ EWI#7: Proportion of patients who kept all appointments



Methods

- ▶ EWI will be collected from all ART sites in Cambodia. However, only 16 was selected in 2008
- ▶ Matrix for ART sites were created based on the location, year started of ART sites, as well as number of AIDS patients served at the site
- ▶ ART sites were selected from each groups (if more than 2 ART sites were in the same group, random selection was used)

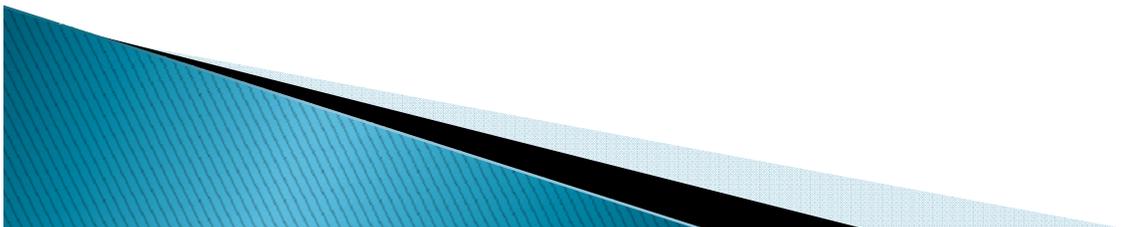


Methods – Selected sites

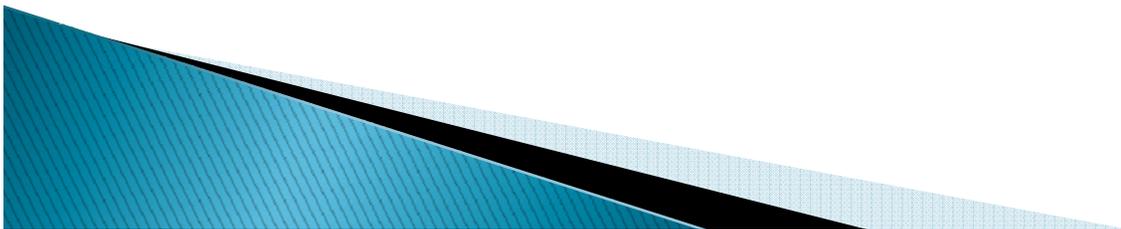
Provincial capital				Remaining districts			
Large (>300)		Small (<300)		Large (>300)		Small (<300)	
2005 or earlier	After 2005	2005 or earlier	After 2005	2005 or earlier	After 2005	2005 or earlier	After 2005
Serey sophon	R5 Military (BTB)	Kampong Chhnang	Kampot RH	Kampot (K-trach)	Poi pet	Chheung Prey	Tmor Kol (BTB)
Kompong speu					Nak Loeng RH	Sotnikum	Koh Thom
Kompong Thom							
Social Health clinics							
SHV-RH							
Svay Rieng RH							

Data collection

- ▶ Data are collected from
 - ARV patient register
 - ARV patient records
 - Computer database (if available)
 - Pharmacy records
 - Inspection of the storage condition in the pharmacy
 - Interview with clinicians
 - Interview with patients who are on ARV



Results

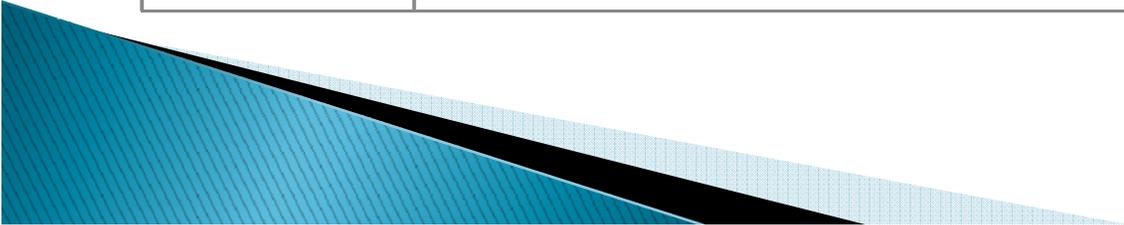
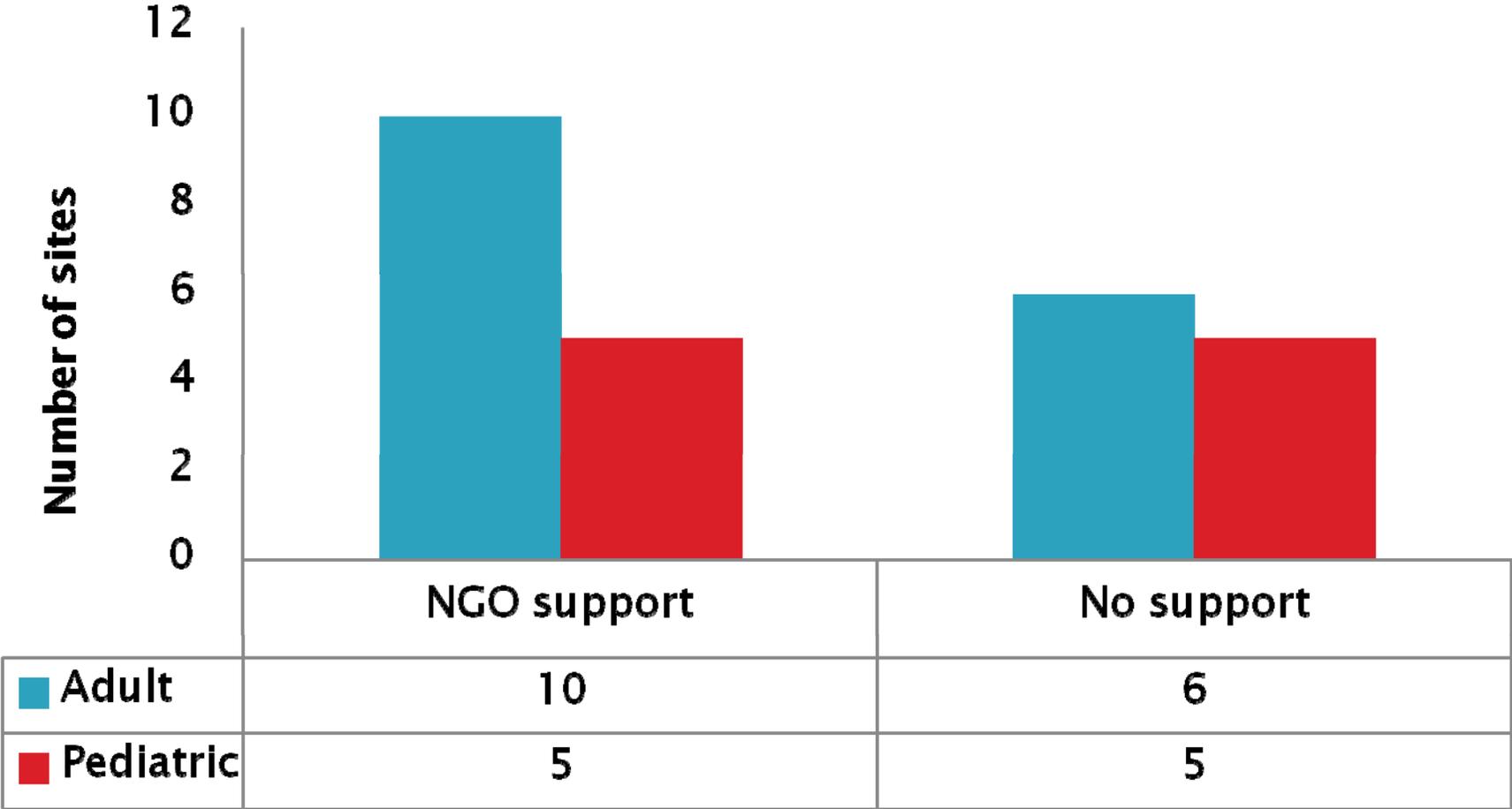


Characteristics of selected sites

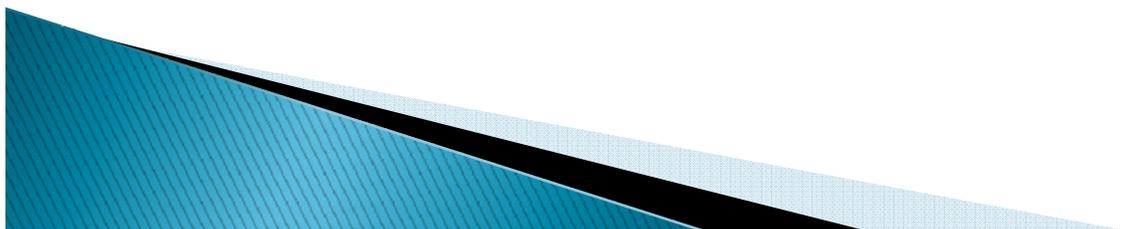
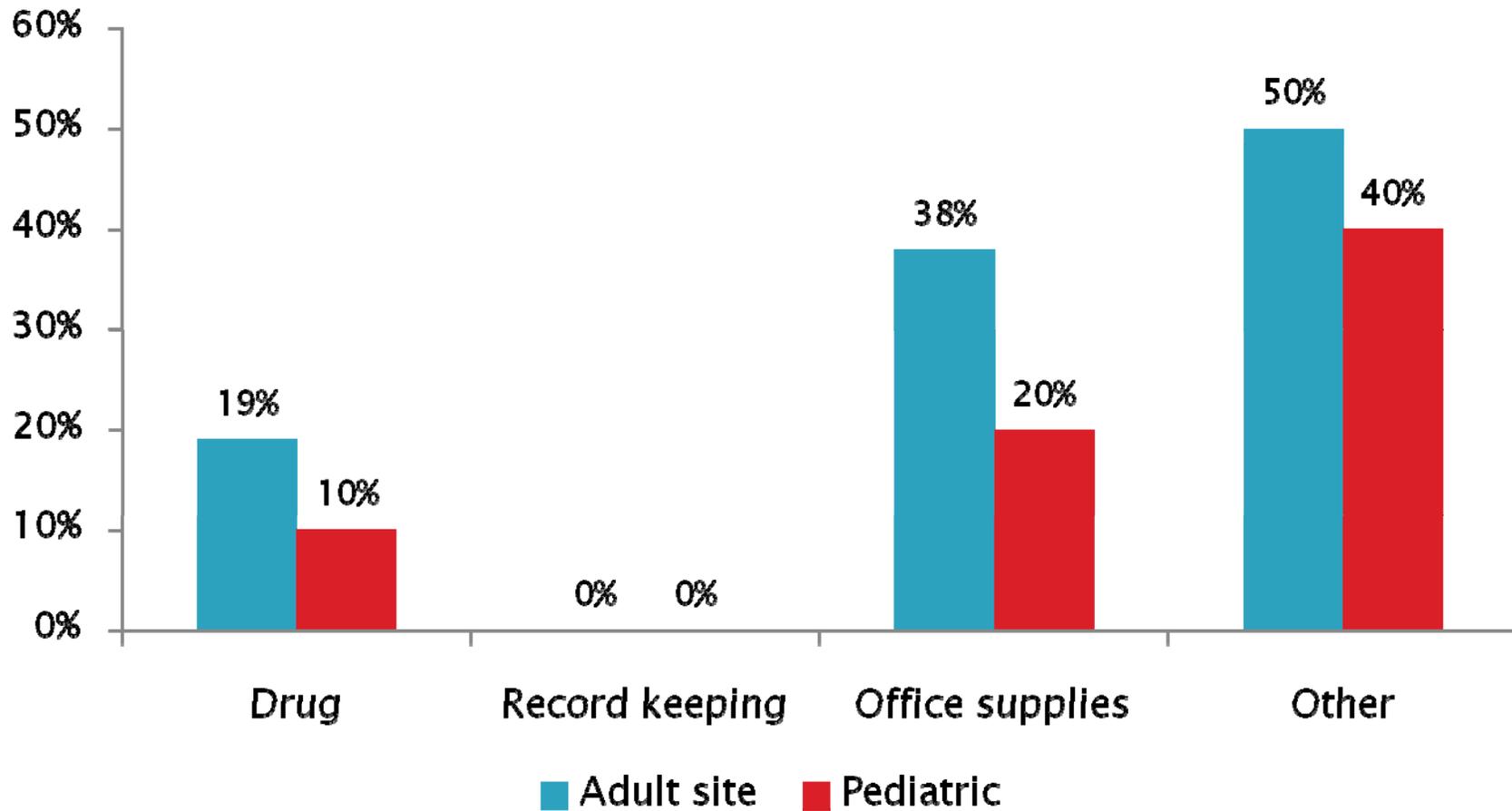
	Adult sites (n=16)		Pediatric sites (n=10)	
	<i>Urban (9)</i>	<i>Rural (7)</i>	<i>Urban (8)</i>	<i>Rural (2)</i>
Median number of ARV patients used the site (range)	407 (192-1350)	378 (160-600)	88 (6-167)	79 (8-150)
Median number of OI/ARV patients served per day (range)	11 (10-40)	25 (10-45)	7 (1-20)	4 (3-4)
Median number of staff at the ART site	9 (5-32)	9 (4-18)	5 (4-9)	4
Median number of clinicians at the site	3 (2-7)	3 (1-5)	2 (2-3)	2
Median ratio of total patients to 1 staff	45 (6-103)	33 (17-111)	19 (1-23)	19(2-37)
Median days in a week ART site opens	5 (3-5)	5(3-5)	4.5 (1-5)	4.5(4-5)
Median % of staff receiving any kind of incentive (range)	100% (70%-100%)	100% (50%-100%)	100% (28%-100%)	50% (0%-50%)
Median No. volunteers working at the site	3 (0-6)	2 (2-5)	2(0-6)	1
Median No. staff working in the pharmacy	2 (1-3)	2 (1-3)	1 (1-3)	1
Median No.HBC team working with the site	4 (0-16)*	3 (2-5)	6(0-16)	4(3-4)
Percentage of site with separate pharmacy	89%	71%	75%	100%

* Peer support groups work as HBC

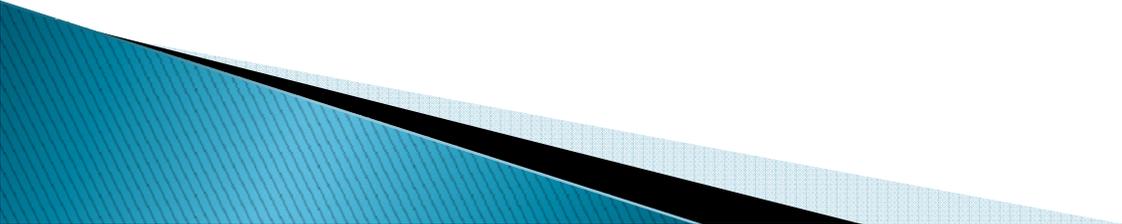
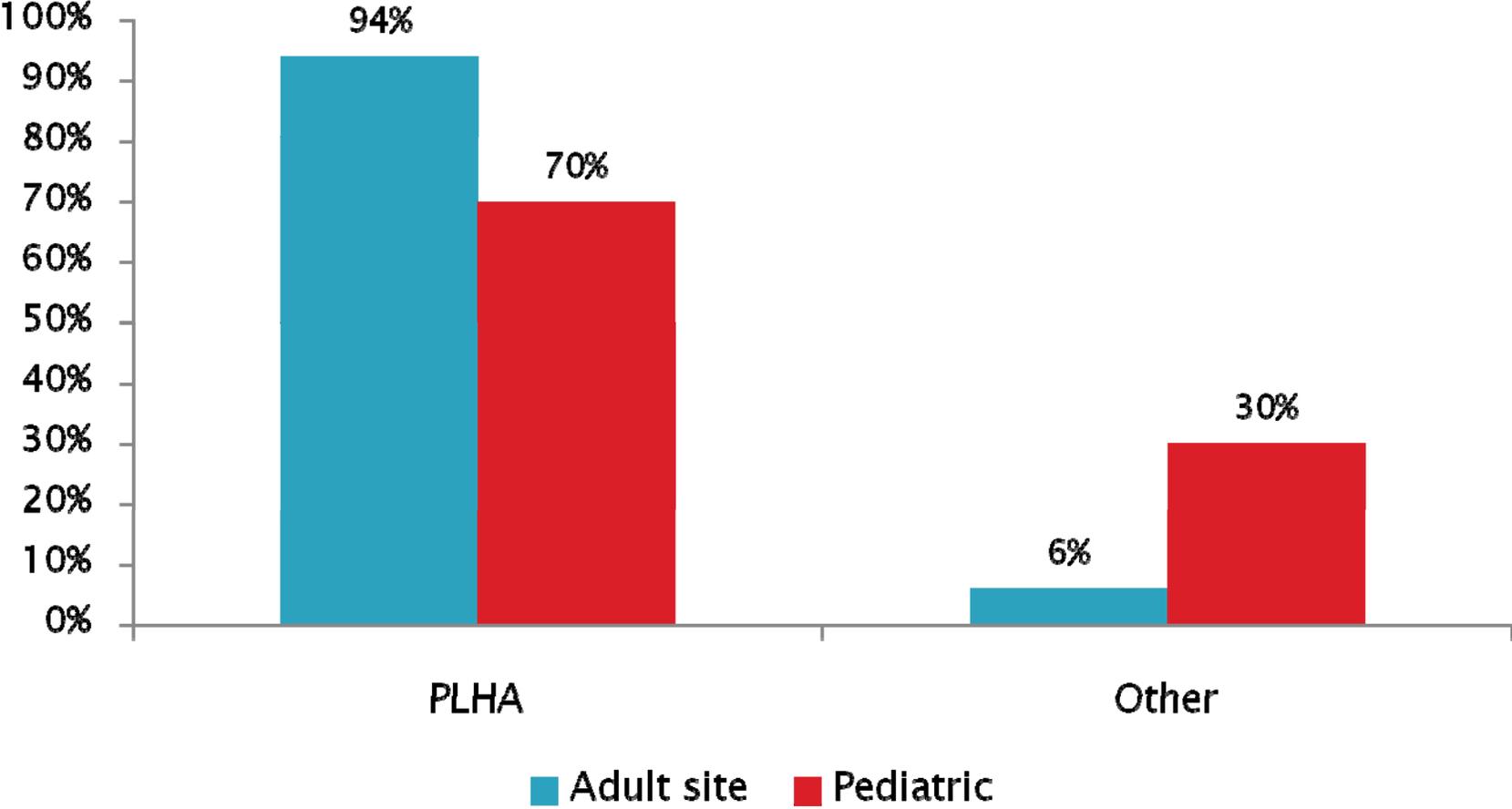
Any Kind of NGO support



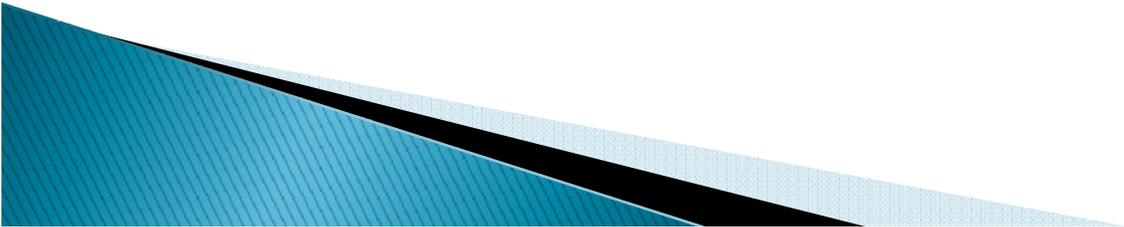
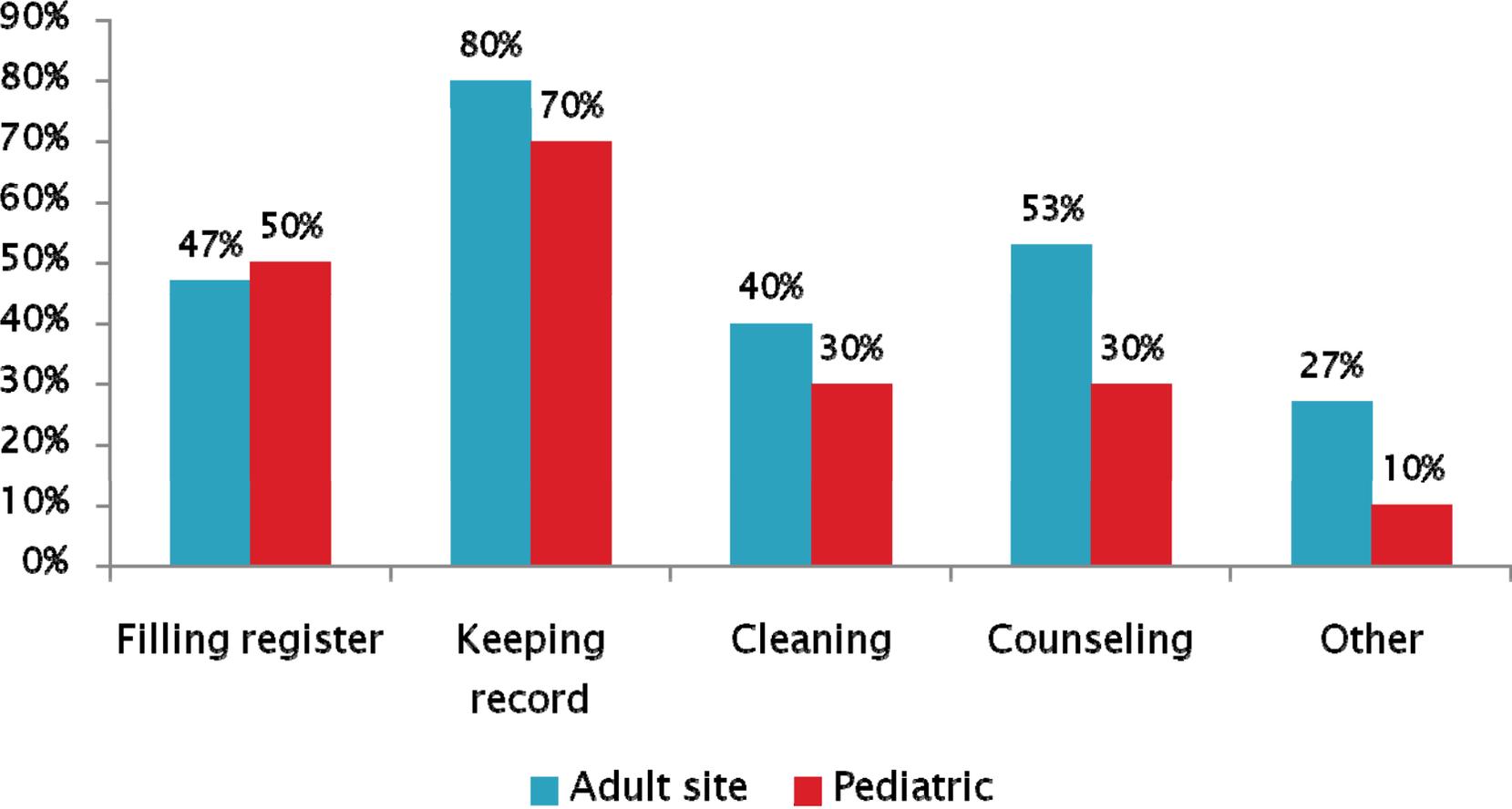
Services supported by NGOs



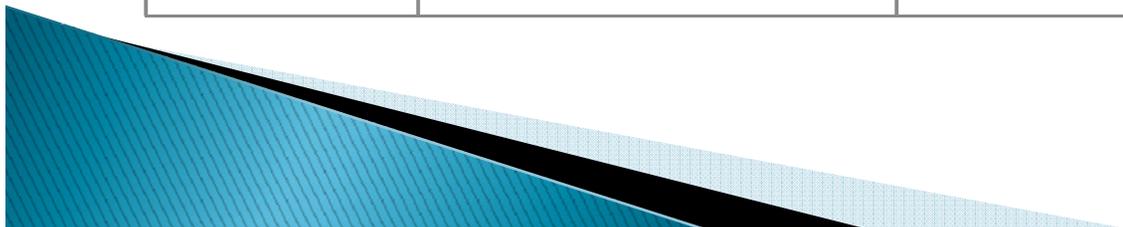
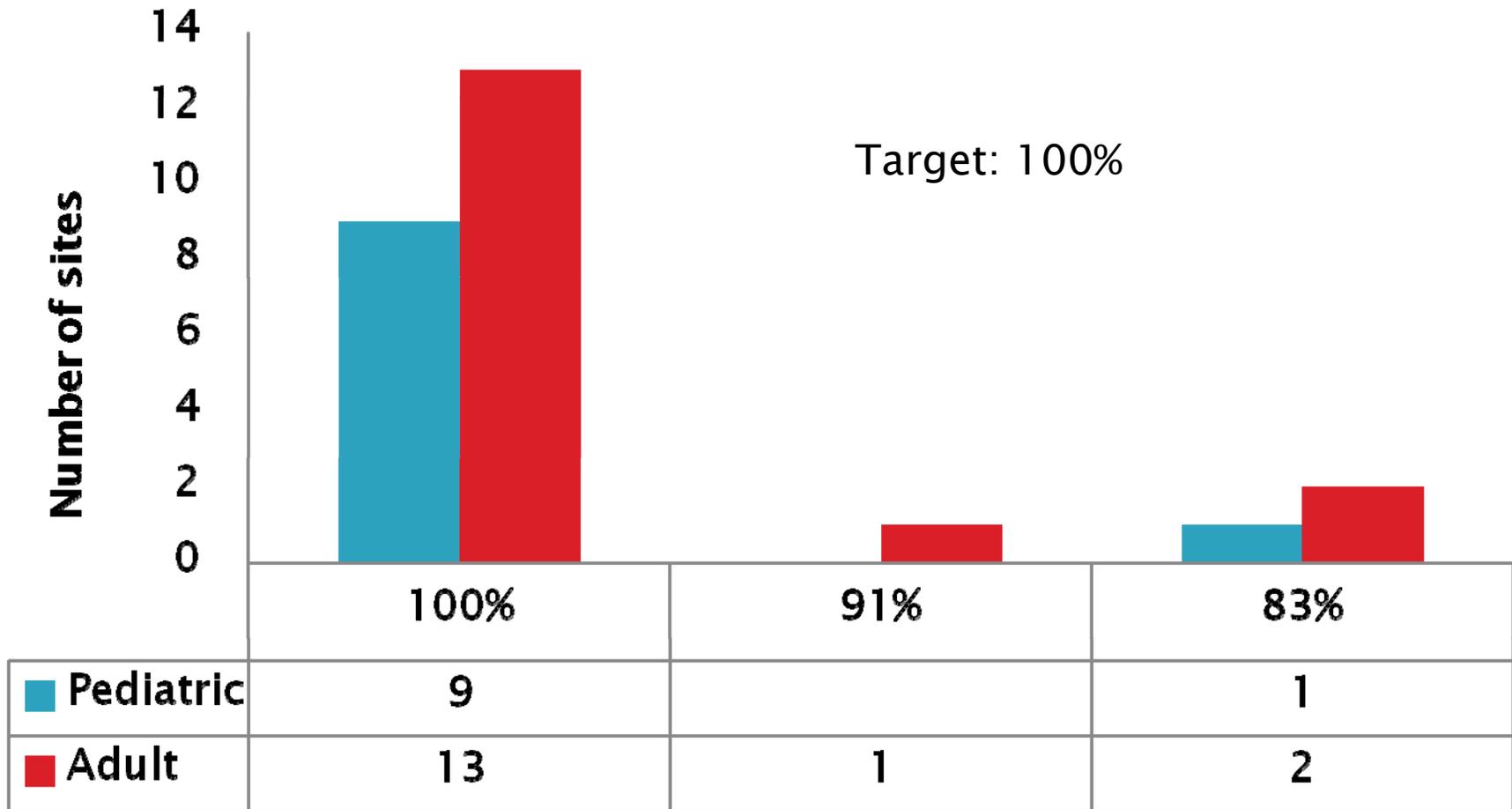
Volunteers working at the site



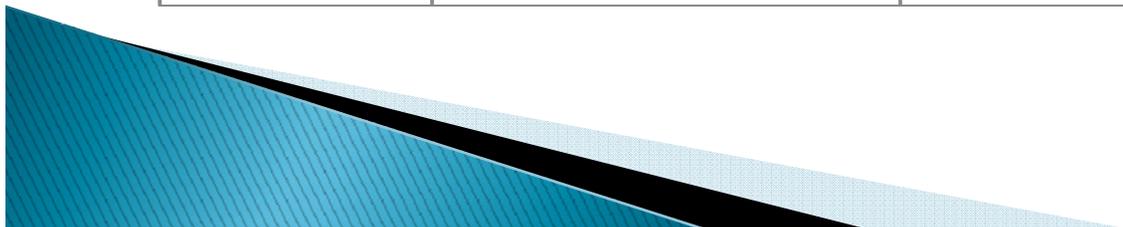
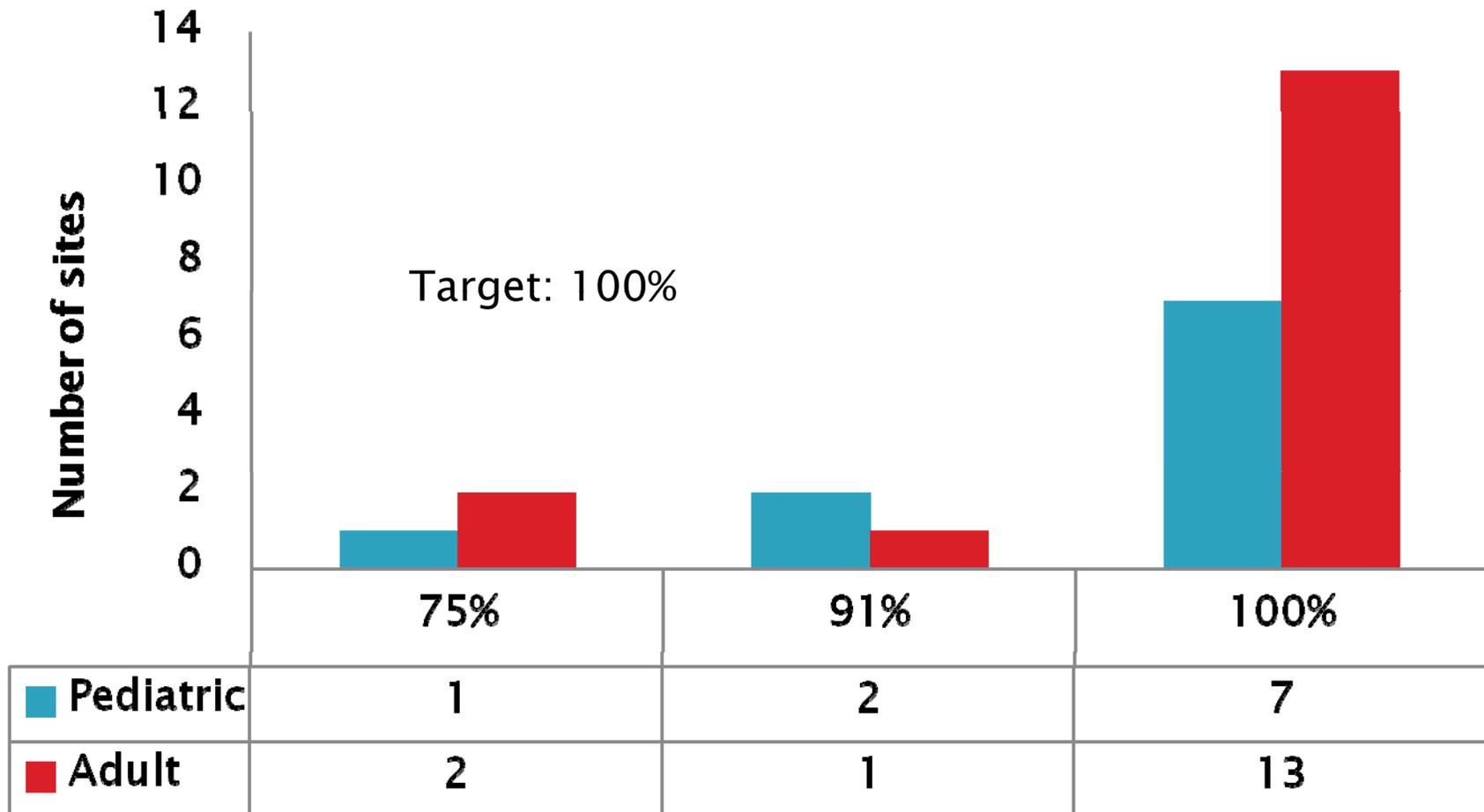
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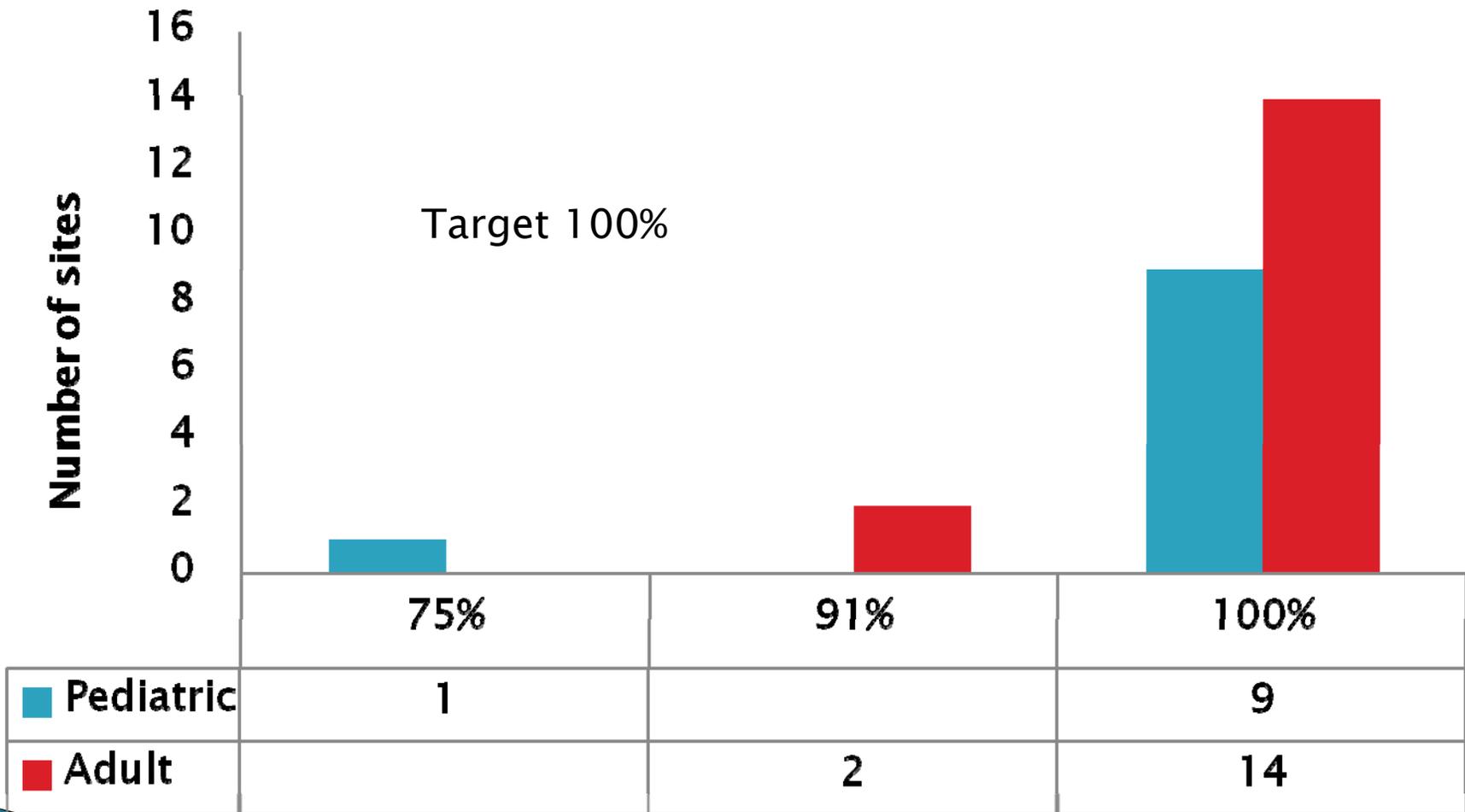
EWI #1: Percentage of months in which there were no ARV drug stock out



EWI #2: Percentage of months no expired ARV drug was found at ART site



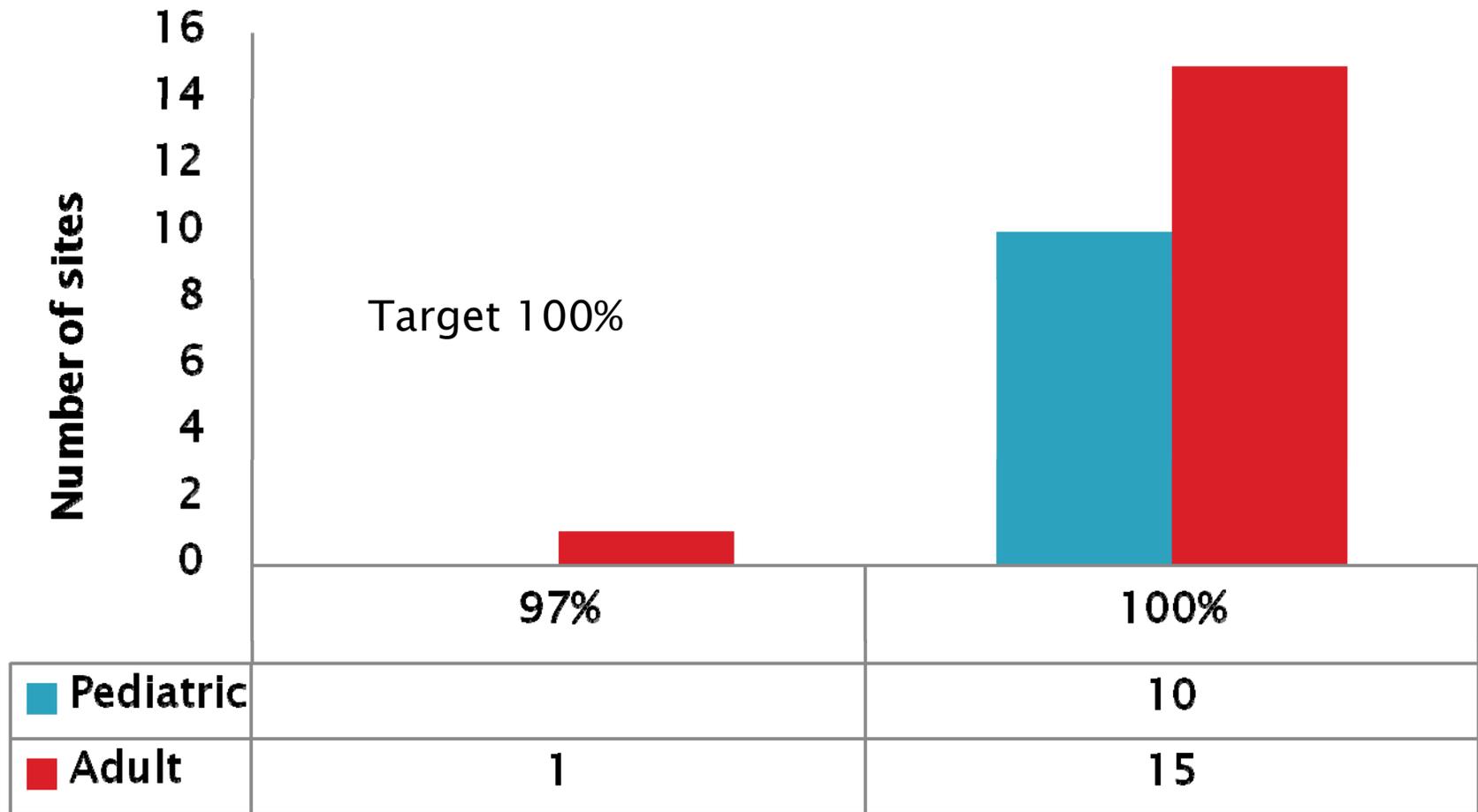
EWI #2b: Percentage of months no emergency request for ARV drug was found at ART site



EWI #3: ARV drug are in storage conditions

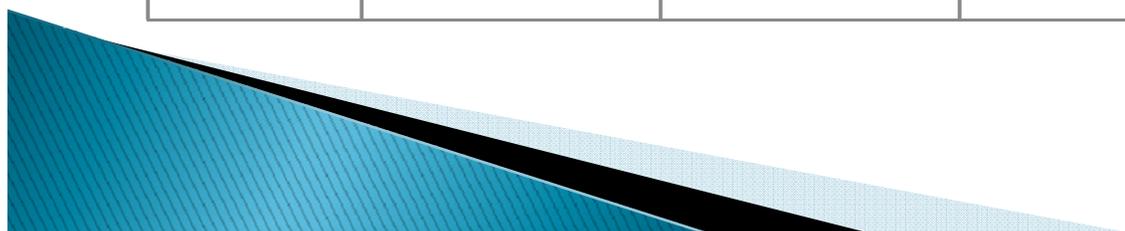
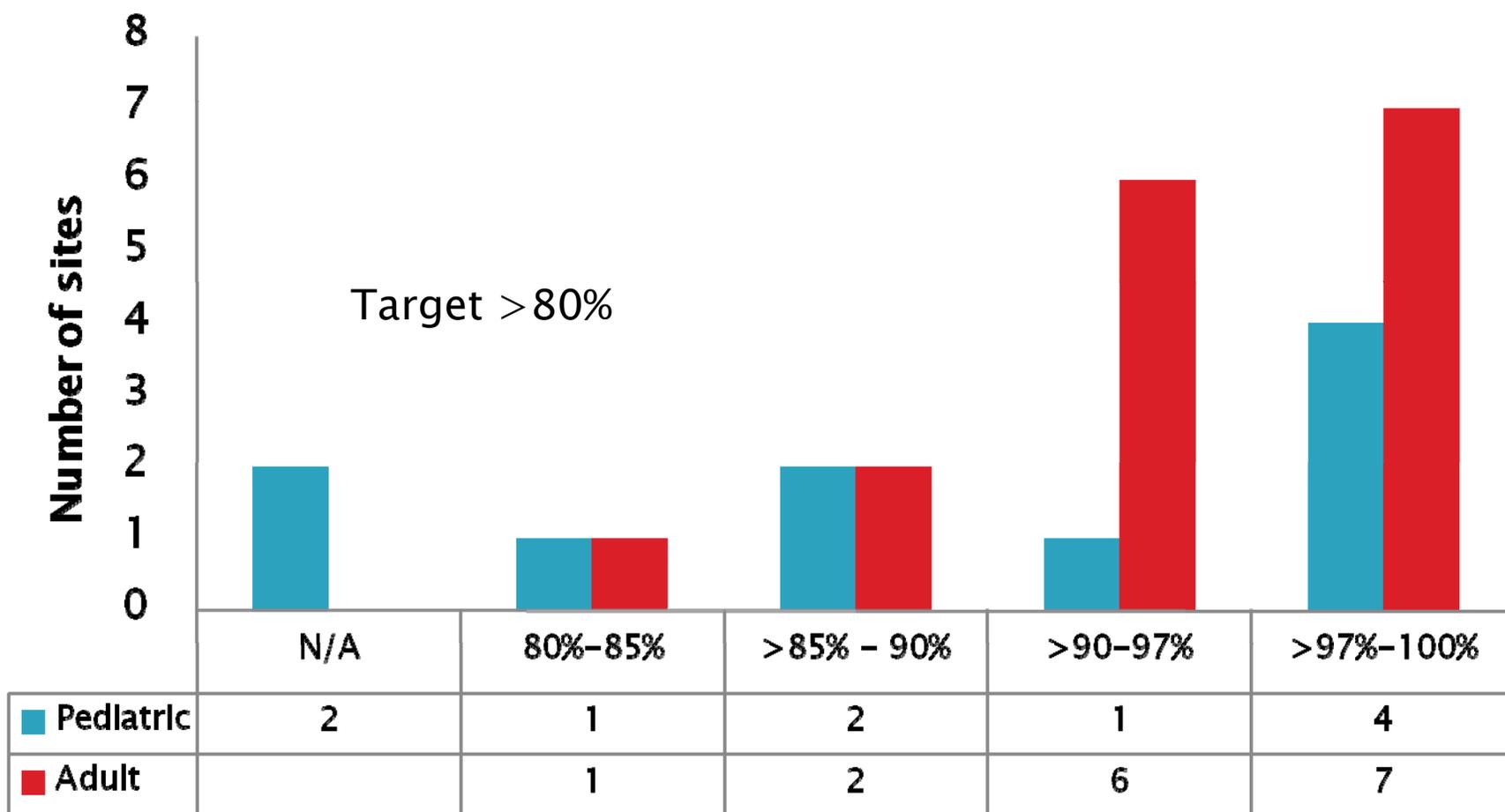


EWI #4: Percentage of patients started on standard recommended first line ART regimen

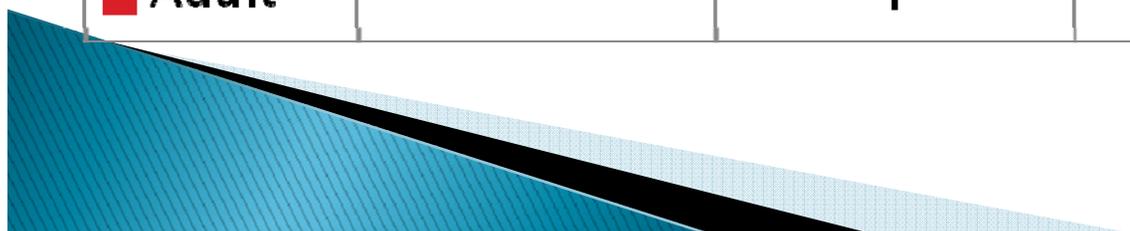
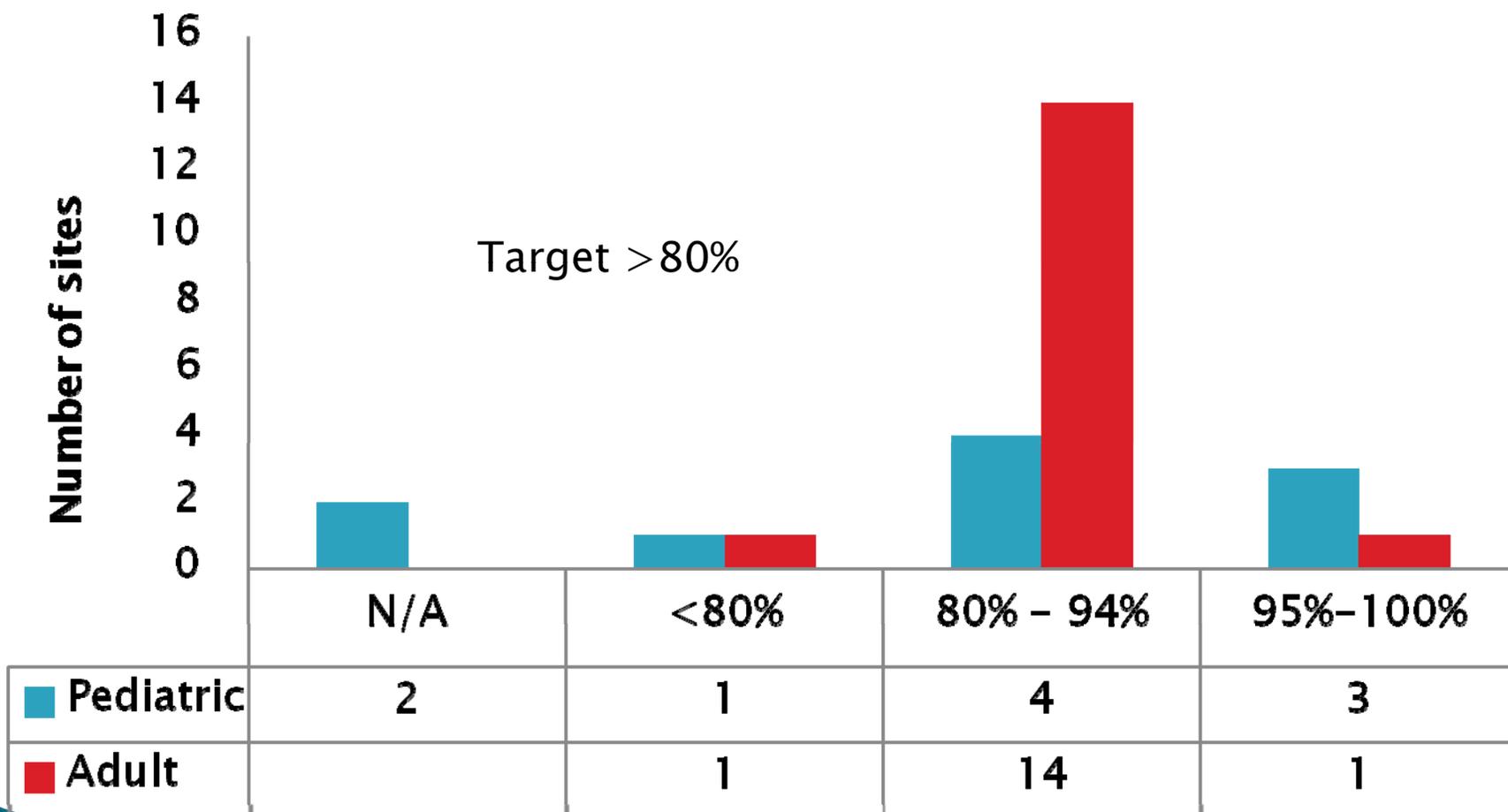


Note: One patient started treatment with 2nd line regimen (he used to have 2nd line drug from black market)

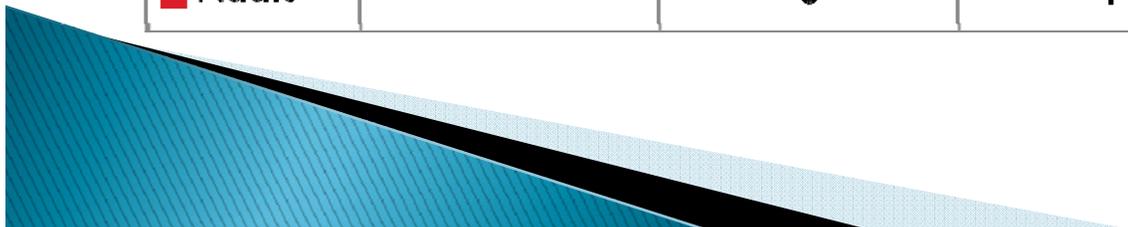
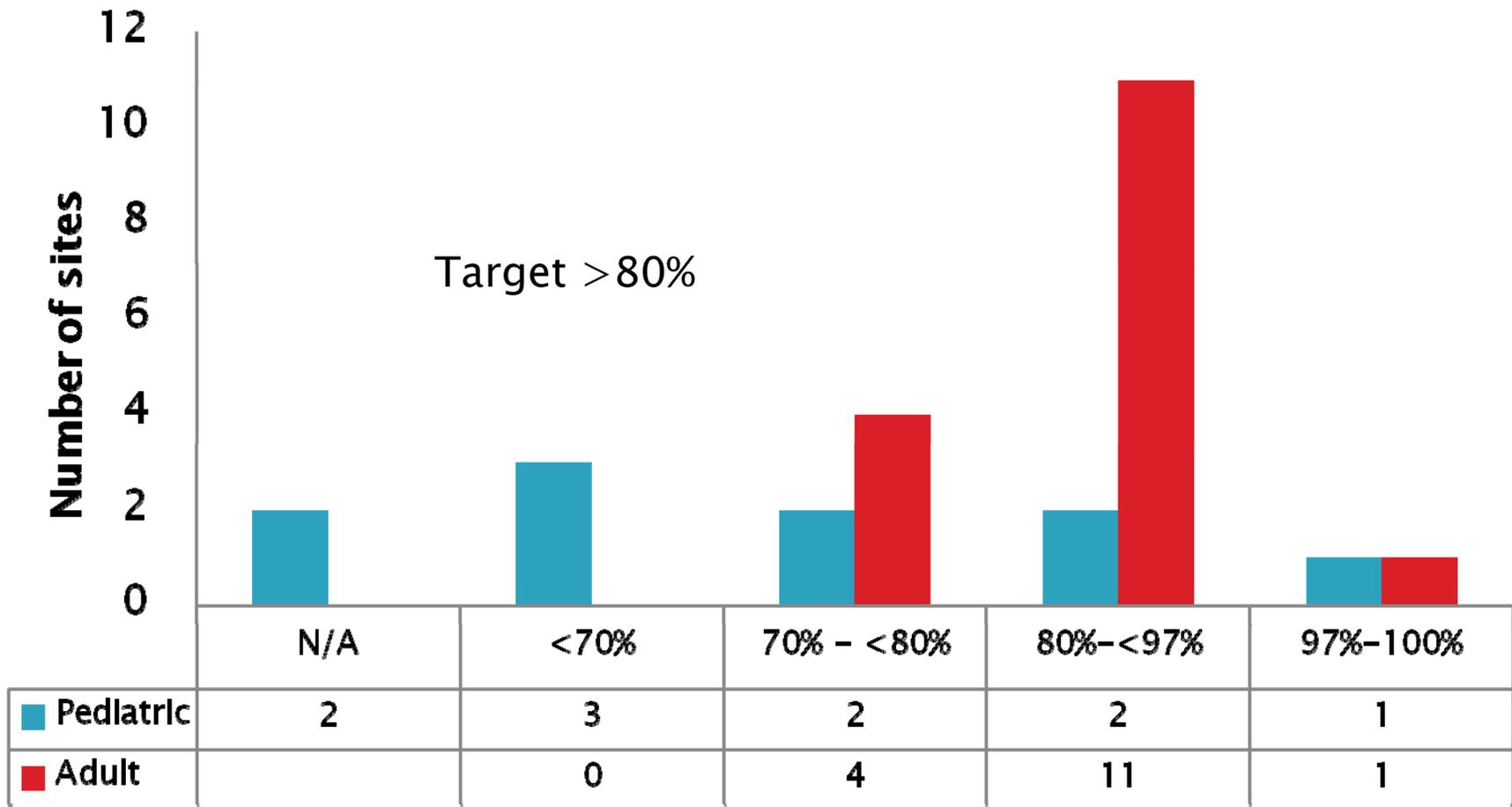
EWI #5: Percentage of patients no lost to follow up at 12 months after ART initiation



EWI #6: Percentage of patients still on first line regimen at 12 months after ART initiation

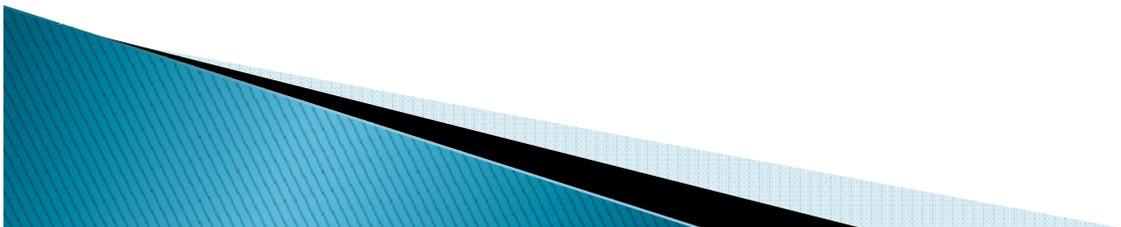


EWI #7: Proportion of patients who kept all appointments



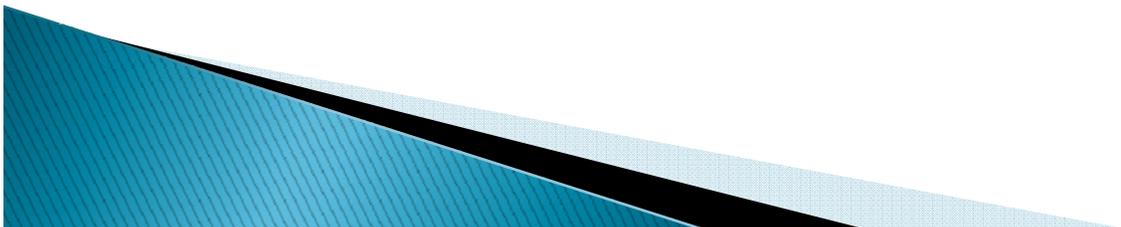
Conclusions – adult sites

- There still rooms need to be improved in terms of drug stock out, expired drug and storage condition
- Treatment is responsive since 100% of patients still be on 1st line regimen at 12 moths after initiation
- The rates of lost to follow up at all sites are within an acceptable range
- Appointment keeping at some sites are below the target
- All patients started ART with recommended 1st line regimen.



Conclusion – Pediatric sites

- There is also problems at the Pediatric sites regarding drug stock out, expired drug and storage condition
- Good performance in terms of choices of ARV regimen used at the start of the treatment
- The percentage of children still on 1st line regimen at 12 months after ARV initiation is good
- The proportion of patients who lost to follow up within 12 months was less than 20%
- Appointment keeping at many sites were out of an acceptable range (less than 80%)



Implications

- ▶ There have had no significant warning signs related to the occurrence of HIV drug resistance yet in all visited ART sites
- ▶ **However;**
 - ARV Drug management (drug supply, expired drug, storage) need to be improved
 - There is a need to improve the appointment keeping rate, especially for children receiving ARV
 - Issues such as, using different patient registers, different codes and incompleteness of the data should be solved immediately in order to make HIV DR surveillance more feasible.



Thank You

