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BACKGROUND

- Chad HIV burden in 2015 (UNAIDS 2016):
 - People living with HIV (PLWH): 170,000 (130,000-210,000)
 - New infections: 8,300 (5,400-12,000)
 - AIDS related deaths: 8,500 (6,400-11,000)
- Chad HIV care and treatment information system:
 - Harmonized and implemented by MoH and partners since 2012.
 - 90 HIV facilities were functional in 2016.
 - 92% use paper-based system to track a patient's care over time.
 - Main tools: medical record/treatment cards, antiretroviral treatment (ART) registers.
 - Main HIV core indicators: currently on ART, died, transferred, lost to follow-up, retention on ART care
- HIV data specificities:
 - Long term cohort follow-up is complex in the context of scale-up of ART.
 - Cohort survival analysis is needed for HIV core indicators calculation.
- Barriers faced in reporting data system of HIV facilities in Chad:
 - Inadequate data-collection tools
 - Incomplete reporting
 - Cohort survival analysis is performed manually and therefore subject to arithmetic errors.
 - Consequences: HIV core indicators, particularly the number of HIV patients currently on ART, are not reliable for monitoring, evaluating and planning of HIV care activities and to ensure rational drug forecasting and laboratory inputs.

OBJECTIVE

The main objective of this study was to estimate with accuracy the number of HIV patients currently on ART at a given time point. The specific objectives were to evaluate other indicators of HIV care activities and to assess HIV facility data system functionality in order to identify evidence-based recommendations.

METHODS

- Survey method: prospective cohort study
- Study population: all PLWH receiving ART during the study period in all HIV facilities in Chad.
- Study period: March to July 2016. This study duration is the minimum time required to evaluate HIV core indicators with sufficient accuracy.
- Data collected at repeated visits: age, gender, biological and treatment information, information to examine attributes that affect data system functioning at the facility level.
- A PLWH was defined as loss to follow-up if he/she did not attend the last scheduled visit at least 90 days after a given time point. The given time point was 31 July 2016. PLWH who died or was transferred-out was not considered as loss to follow-up. A PLWH was considered as currently or retained on ART if he/she was not loss to follow-up, died or transferred-out.
- Data system assessment measure: i) the verification ratio which is the ratio of the value of indicator recalculated during the study to the value that was initially recorded by the system; and ii) the extent to which the critical elements of the reporting system adhere to a set of minimum acceptable standards.
- Stata 11.0 was used for analysis.

RESULTS

PLWH profile at ART initiation and delay of ART renewal from March to July 2016 in Chad

| | Overall (34142) | Adult women (23570) | Adult men (9592) | Children (980) |
|---|-----------------|---------------------|------------------|----------------|
| Median age at ART initiation in years (IQR) | 35 (29-43) | 34 (28-41) | 40 (33-46) | 6 (3-10) |
| Median CD4 cell counts at ART initiation (IQR) | 266 (169-383) | 276 (177-397) | 240 (147-339) | 401 (225-718) |
| % of PLWH with at least one CD4 count during the last 12 months (n) | 34% (11,750) | 35% (7,930) | 35% (3,261) | 25% (234) |
| % of PLWH with at least one viral load test during the last 12 months (n) | 0.2% (67) | 0.2% (51) | 0.1% (12) | 0.3% (3) |
| % of PLWH delaying ART renewal at least once per number of delayed days (n) | | | | |
| 1-3 days | 31% (4,010) | 31% (2,781) | 32% (1,084) | 26% (84) |
| 4-14 days | 34% (4,409) | 33% (2,991) | 33% (1,136) | 33% (107) |
| >14 days | 35% (4,666) | 34% (3,301) | 35% (1,183) | 42% (137) |
| % anticipated ART renewal at least once per number of anticipated days (n) | | | | |
| ≤10 days | 33% (3,113) | 33% (2,153) | 32% (788) | 36% (58) |
| >10 days | 67% (6,416) | 67% (4,396) | 68% (1,672) | 64% (101) |

IQR: interquartile range; n: the number of patients of the category.

- 84 out of 90 HIV facilities were covered; 79 out of 90 HIV facilities transferred data in time.
- 61,643 site visits of 34,142 PLWH was collected.

Indicators of retention on ART estimated at end of July 2016 in Chad

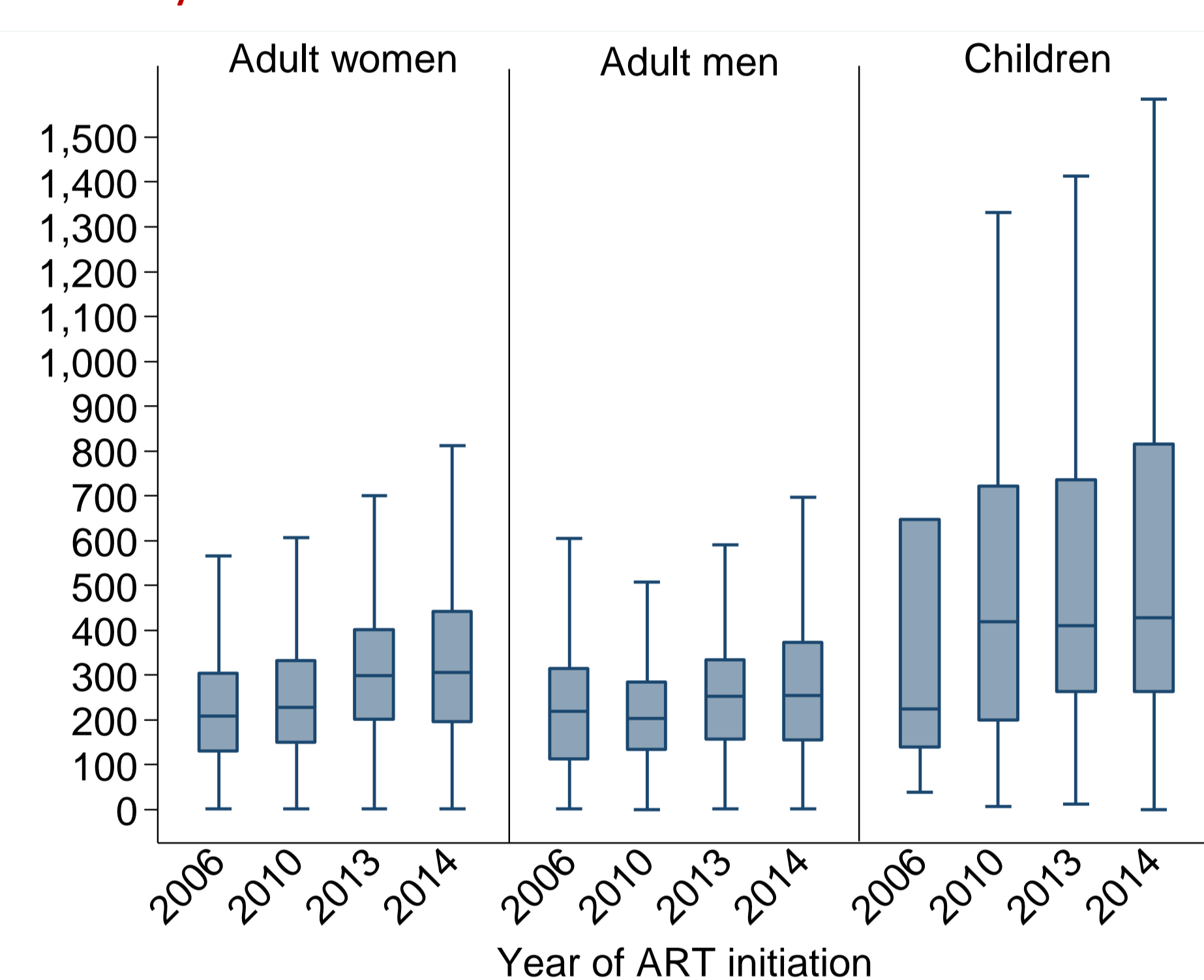
| | Overall | Adult women | Adult men | Children |
|---|------------------------|------------------------|------------------------|---------------|
| Number of PLWH currently on ART at national level (CI) [¶] | 38,872 (38,486-39,159) | 27,104 (26,870-27,338) | 10,865 (10,771-10,960) | 903 (895-910) |
| Verification ratio (CI)* | 167% (139%-195%) | - | - | - |
| Number of PLWH currently on ART in N'Djamena region (CI) | 26,655 (26,354-26,878) | 18,556 (18,367-18,746) | 7,370 (7,293-7,447) | 731 (723-735) |
| % of PLWH currently receiving: | | | | |
| Zidovudine+Lamivudine+Nevirapine | 56% | 56% | 55% | 60% |
| Tenofovir + Emtricitabine + Efavirenz | 36% | 36% | 36% | 24% |
| Others | 8% | 8% | 9% | 16% |
| % of PLWH currently receiving: | | | | |
| First line of ART | 97% | 98% | 96% | 97% |
| Second line of ART | 3% | 2% | 4% | 3% |
| Retention at 12 months on ART (CI) | 68% (61%-77%) | 79% (70%-90%) | 56% (50%-64%) | 35% (31%-40%) |
| % of PLWH loss to follow-up during the study period | 3% | 3% | 3% | 3% |

[¶]: the number of PLWH currently on ART in HIV facilities which did not transfer data in time was estimated by combining verification ratio with values initially recorded by the system.

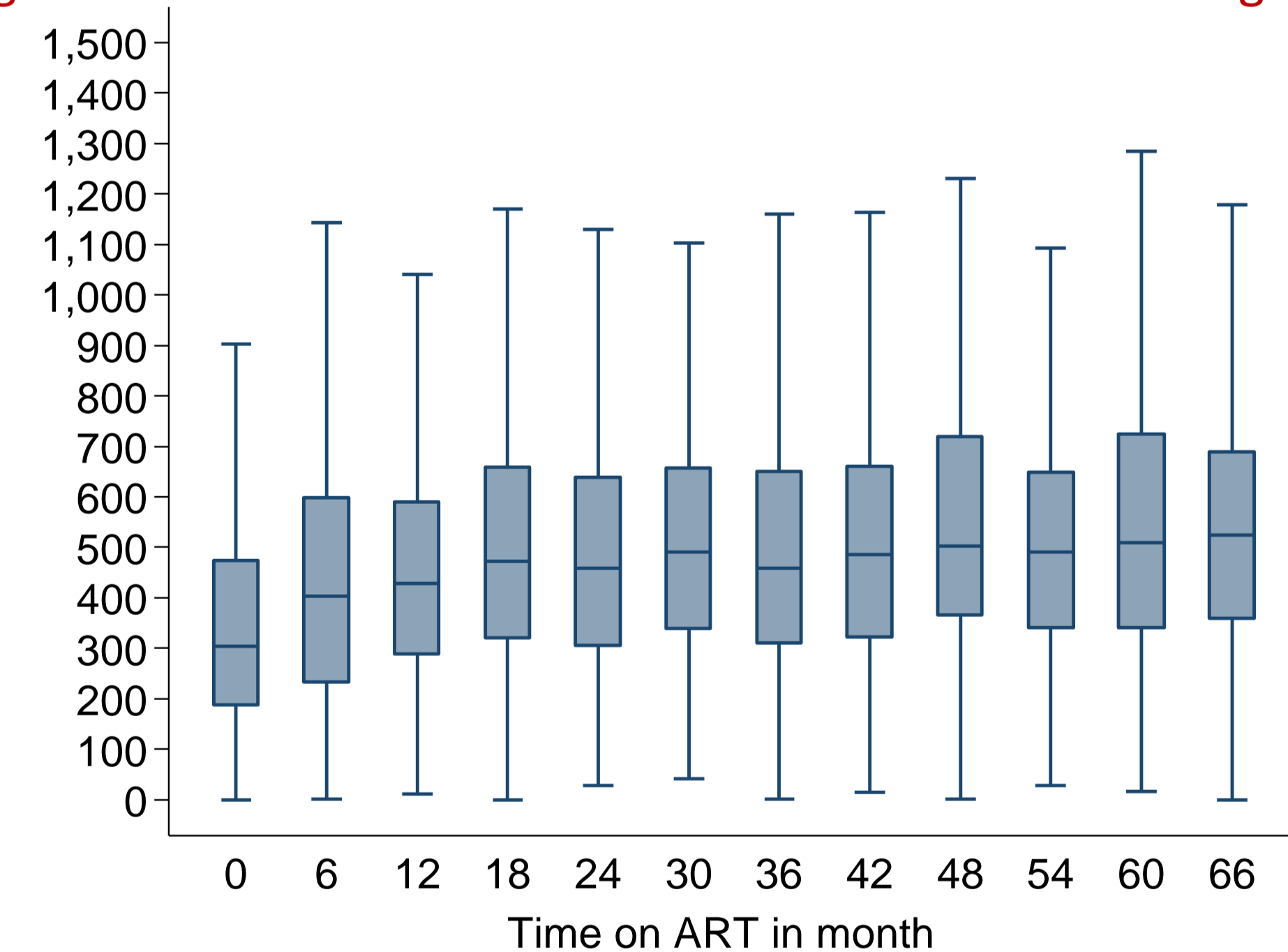
*: verification ratio was calculated for the number of PLWH currently on ART.

CI: confidence interval was calculated using bootstrap method.

CD4 cell counts at ART initiation among PLWH in Chad according to age, gender and year of ART initiation



Progression of CD4 cell counts since a PLWH starts receiving ART care in Chad



Visual representation of system assessment results for 69 HIV facilities. The color represents the proportion of HIV facilities having the metric of the system assessment

| Variables | Availability of tools | No out of stock | Training for data management | Data validation meeting | Data verification | Completeness |
|----------------------------------|-----------------------|-----------------|------------------------------|-------------------------|-------------------|--------------|
| ART register | Higher | Higher | Higher | Higher | Higher | Higher |
| Dispensation register | Higher | Higher | Higher | Higher | Higher | Higher |
| Quarterly report template | Higher | Higher | Higher | Higher | Higher | Higher |
| Medical record | Higher | Higher | Higher | Higher | Higher | Higher |
| SOPs for data management | Higher | Higher | Higher | Higher | Higher | Higher |
| SOPs for data collection | Higher | Higher | Higher | Higher | Higher | Higher |
| Doctor | Higher | Higher | Higher | Higher | Higher | Higher |
| Other health care workers | Higher | Higher | Higher | Higher | Higher | Higher |
| Non-existence | Higher | Higher | Higher | Higher | Higher | Higher |
| Monthly or quarterly | Higher | Higher | Higher | Higher | Higher | Higher |
| External assessment | Higher | Higher | Higher | Higher | Higher | Higher |
| All reports transferred | Higher | Higher | Higher | Higher | Higher | Higher |
| All HIV core indicators included | Higher | Higher | Higher | Higher | Higher | Higher |

Lower (<50%) Moderate (50%-90%) Higher (>90%)

CONCLUSION

- This study provides accurate core indicators that will help National HIV Programme: i) to assess progress accomplished to track the HIV epidemic; ii) to identify new strategies to overcome barriers to retention and adherence on HIV care, iii) to ensure rational drug forecasting and laboratory inputs.
- Particularly, this study shows that efforts are made by National HIV Programme to initiate PLWH earlier and earlier on ART. Nevertheless, viral load monitoring is urgently needed.
- The verification ratio was estimated at 1.7, which suggests overestimation of main core indicators at HIV facility level. This overestimation is mainly due to: lack of data analysis guidelines and low skills of healthcare workers for data analysis; no data validation process in all HIV facilities; incompleteness of data; no availability of data collection tools in all HIV facilities.
- To overcome these weaknesses, National HIV programme designed an action plan to strengthen health information system of HIV care at different levels of health pyramid.