Weight Gain at 18-months for ART Experienced Patients that Switched to Dolutegravir in Nigeria

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Background

Dolutegravir (DTG) based regimen was recommended as an alternative in the Nigeria National Guideline for HIV Prevention, Treatment and Care (2016). In July 2017 a 12-month follow up study on early adopter acceptability commenced at 3 high volume Centers of Excellence. Subjects were surveyed on questions regarding DTG acceptability, including side effects at 2-months, 6-months, and 12-months post DTG initiation. At all survey time points study subjects frequently self-reported an 'increase in appetite' at a rate higher than any other listed side effect: 2 months – 20%, 6 months – 19%, 12 months – 15%.

We extracted weight and height information on the study patients to analyze weight and body mass index (BMI) changes that occurred after DTG initiation up to 18 months post DTG initiation.

The objectives were to:

1. Describe changes in study subject weight and BMI from baseline time of switch (T0) to 6 months (6m), 12 months (12m) and 18 months (18m)
2. Determine if weight change trends were changing over time

Methods

- Study population: There were 271 subjects in the acceptability study, only treatment experienced patients at switch were included in the analysis, 235 (87%)
- Age, sex, facility, weight, height, viral load and CD4 data were extracted in September 2019
- Generalized Estimating Equations was used to test weight changes and significance, adjusting for cluster sampling at 3 facilities and study subject demographic data:
  - Change in weight for all subjects and disaggregated for normal and overweight/obese
  - Percent of weight change for all subjects and disaggregated for normal and overweight/obese
  - Frequencies of subjects losing or gaining more than 10% weight from their baseline weight
  - Shifts in proportion of subjects by BMI category over time
- Subjects with missing data were excluded in a particular analysis, but not excluded entirely (ie. A subject with baseline and 12-month but not 18-month weight data were included in a T0 to 12m analysis, but not in the T0 to 18m. Subjects without height data were included in weight change analyses and excluded from BMI analyses)
- Analysis was conducted in SAS 9.4

Results: Weight changes at 6m, 12m, and 18m

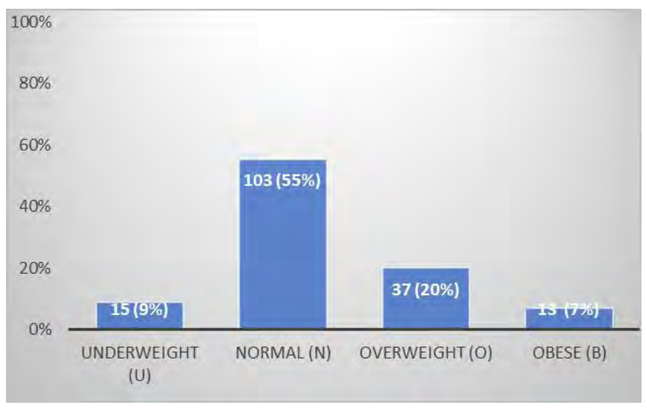
Descriptive Statistics:

271 subjects enrolled in the study across 3 sites
235 (87%) were treatment experienced at switch to DTG,
208 (77%) had a baseline weight; 168 (62%) had a baseline BMI,
206 (76%) had a baseline weight plus at least one additional weight
186 (69%) had a weight at T0 and 18m, 149 (55%) had a BMI at T0 and 18m
113 subjects had weight and BMI data at all four data points

	n	%	At baseline (median) weight	BMI
Total	206	76%	61.7	22.9
Male	75	36%	67.0	23.7
Female	131	64%	59.0	22.9
VL suppress at T0	168	95%	61.7	22.9
VL unsuppress at T0	8	5%	60.4	23.1
Facility 1	54	26%	64.3	23.9
Facility 2	88	43%	63.5	23.6
Facility 3	64	31%	56.0	22.4

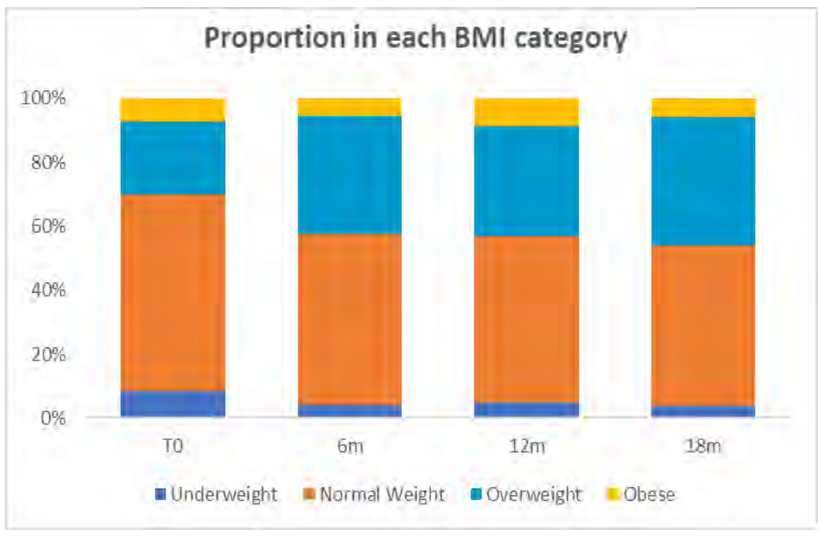
Median age = 47

Baseline BMI distribution (n=168)



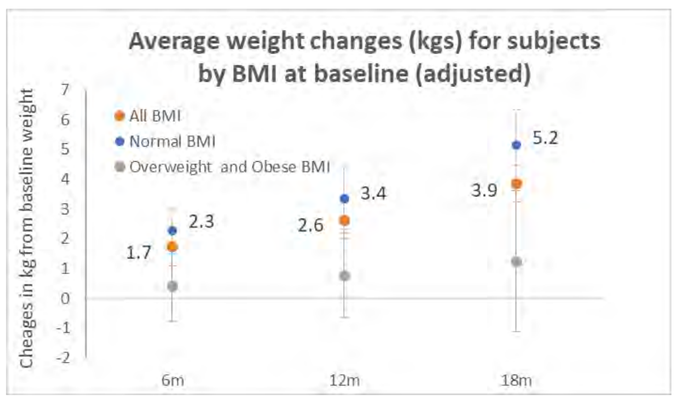
BMI changes at 18 months

Proportions of BMI category over time

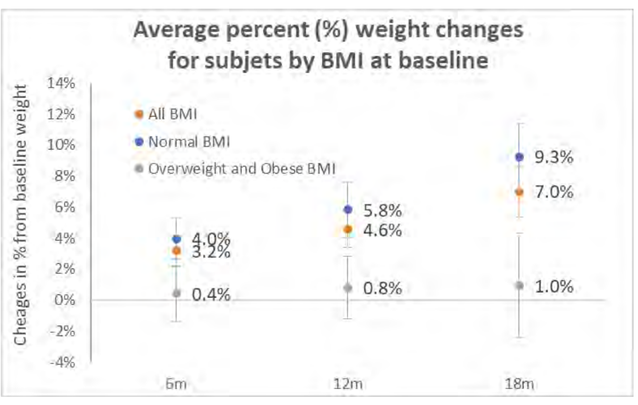


The proportion changes in BMI categories, show an overall decrease in the normal and underweight categories, while the proportion of overweight and obese increase, it increased from 30% to 46% at T0 to 18m.

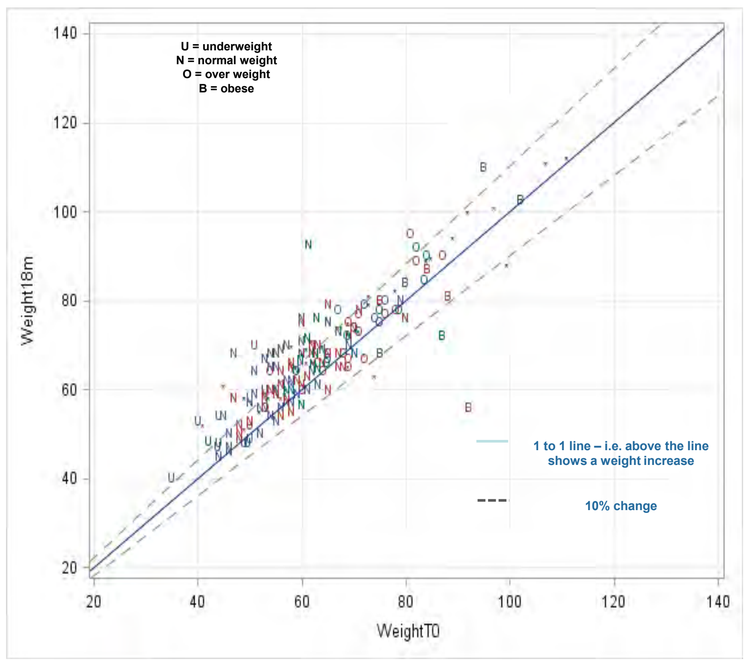
Subject weight changes and percent of weight change



- All BMI - estimates and error bars show there is a statistically significant weight gain and increase in percent of weight gain at 6, 12, and 18 months after DTG initiation (all p-values <0.01)
- Normal BMI - there is a statistically significant weight gain and percent of weight gain at 6, 12, and 18 months after DTG initiation (all p-values <0.01)
- Overweight and obese BMI – the data do not show significance for weight gain or percent of weight gain at any of the follow up periods for baseline BMIs above normal, although this is a small sample size



Weight changes of over 10% from baseline weight:



Many subjects are above the 10% weight gain line at 18 months, most were underweight or normal BMI at T0

Discussion and Limitations

- There was weight gain among patients that switch to DTG and the weight gain may continue for up to 18 months or longer. This was found particularly in subjects with lower weights and BMIs at time of switch
- We did not find weight gains amongst the overweight and obese population and further research on this population should be considered before considering them a risk for DTG given the small study sample size.
- No subjects in the cohort have discontinued DTG due to weight or appetite concerns
- There will be a follow up analysis of weight changes at 24 months once data becomes available

Limitations:

~ The study was not a controlled trial and was not initially designed to assess changes in weight. It was not powered to look at weight changes so conclusions could not be drawn in all circumstance.
~ Not all subjects had weights consistently recorded. Additionally, scales were not calibrated and there were no specifics on time of day or clothing during weight measurements.
~ Not all subjects in the study had recorded weights (82%) - there is a potential for bias with subjects that have recorded weights more likely to have experienced weight change and had this data purposefully collected.
~ There are natural weight gains that occur over time and the analysis does not include a control group to compare if the weight gains found would be unique to DTG patients and would not occur on other regimens.
~ Study participants were enrolled from a population of PLHIV experiencing side effects so some weight gain may be expected for patients switching to a more tolerable regimen with a 'return to health effect'.

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