The operational impact of new World Health Organization (WHO) antiretroviral treatment (ART) guidelines on HIV patient volume and program costs in Kisumu sub-County, Kenya

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Introduction

- Early treatment of HIV leads to reduced morbidity and mortality.
- In July 2013 WHO revised ART guidelines to extend ART initiation criteria for:
  - adults (≥15 years) and children 5-14 years from CD4 ≤350 cells/µL and/or WHO stage 3 or 4 to CD4 ≤500 cells/µL and/or WHO stage3 or 4
  - children from <2 years of age to <5 years of age[1].
- Kenya will likely adopt these recommendations soon.
- This study aimed to determine the operational impact of the new guidelines on ART patient volume and program costs at Family AIDS Care and Education Services (FACES) supported sites in Kisumu sub-County, Kenya.

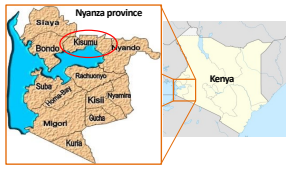


Figure 1: Map of Kenya's Nyanza province, highlighting Kisumu sub-County

About FACES
- Partnership between the University of California, San Francisco and the Kenya Medical Research Institute (KEMRI).
- Provides family focused HIV prevention, care and treatment, including timely ART treatment, at Ministry of Health facilities in the former Nyanza and Nairobi provinces since 2004.

Methods

- Retrospective study among patients enrolled in HIV care at four sites in Kisumu from 1 January 2010 to 30 June 2013
- Data abstracted from electronic medical records
- Proportion of existing and new patients who would be eligible for ART based on new WHO guidelines identified. Proportion applied to patients in care at FACES supported sites in Kisumu sub-County. Number of patients on ART in subsequent years adjusted based on expected patient retention.
- PEPFAR per patient costs per year, less ART commodity costs (donated)[2], were applied to projected increases in patient volume to approximate anticipated costs to program (table 1). Costs adjusted based on expected number of visits per year.

Table 1: PEPFAR per patient costs per year, less ART commodity costs (donated)[2]

Age group	Pre-ART	Year 1 on ART	Subsequent years on ART
Adults ≥15 years	$117	$148	$121
Pediatrics ≤14 years	$117	$136	$123

Results

- With the implementation of the new WHO guidelines, we anticipate the following increases in patient volume initiating ART in the first year of the new guidelines (figure 2):
  - 10% increase in adult patients age ≥15 years initiating ART,
  - 5% increase in pediatric patients age 5-14 years,
  - 77% increase in patients <5 years.
- According to current patient care patterns, patients who would qualify for ART under the new guidelines would have
  - higher retention rates once on ART compared to when not on ART.
  - average number of patient visits per year may decrease for some patient age groups (figure 4).

Figure 2: Anticipated increase in ART initiations in year 1 and year 2 of new guidelines implementation

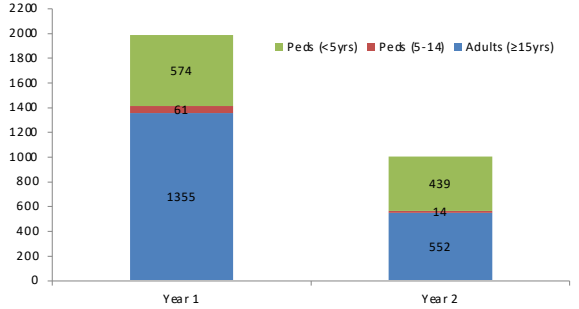
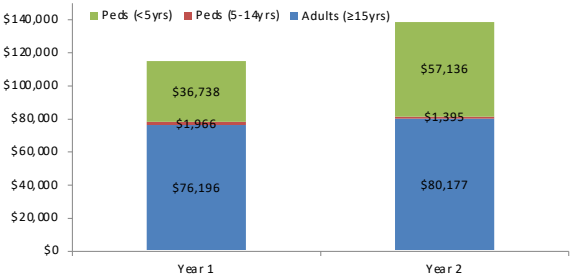


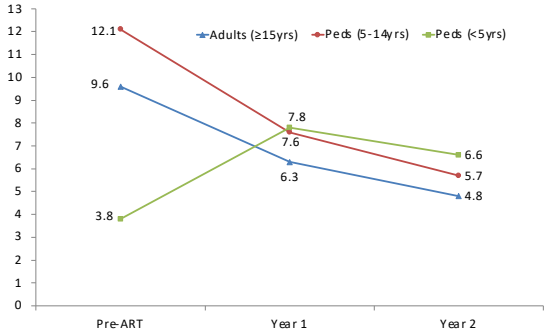
Figure 3: Anticipated increase in program costs in year 1 and year 2 of new ART guidelines implementation, adjusted for patient retention rates and number of patient visits per year



Results (continued)

Based on anticipated increase in:
- Patient volume, patient retention patterns, average number of patient visit patterns, and cost of ART, we anticipate additional program costs of:
  - >$75,000 for adults in both the first and second year of the new guidelines (figure 3).
  - >$35,000 in the first year and >$55,000 in the second year of the new guidelines for all pediatric patients (figure 3)

Figure 4: Anticipated change in mean number of visits for patients who will initiate ART under new guidelines



Conclusion

For effective program implementation, adequate resources are required to accommodate the anticipated increase of new patients on ART and the subsequent care needed as these new patients continue in care over time.

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Citations

1. World Health Organization (November 2013). *Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection: Recommendations for a Public Health Approach.* Retrieved from http://apps.who.int/iris/bitstream/10665/85321/1/9789241505727_eng.pdf?ua=1
2. Kimani, Maureen and Mirasi, Tom. *Preliminary findings of the costs of comprehensive HIV Treatment at outpatient clinics.* Meeting of CDC Kenya, 7 February 2013, Nairobi, Kenya.

The findings and conclusions in this presentation are those of the author(s) and do not necessarily represent the official position of U.S. Centers for Disease Control and Prevention/the and the Government of Kenya Instructions

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BACKGROUND

- Family AIDS Care and Education Services (FACES)
  - HIV prevention, care, and treatment program
  - Supporting Ministry of Health facilities in the former Nyanza and Nairobi provinces since 2004
- The Kenya National Guidelines on antiretroviral therapy (ART) initiation in adults has evolved rapidly
- Early treatment of HIV leads to reduced morbidity and mortality
- In July 2013,WHO revised ART guidelines:
  - For adults (15+yrs) and children 5 -14 years from CD4$\leq$350 cells/uL and/or WHO stage 3 and 4 to CD4 $\leq$500 cells/uL and/or WHO stage 3 or 4
  - For children from <2 years of age to <5 years of age
  - Kenya will likely adopt these recommendations soon
- Objective: Determine operational impact of new guidelines on ART patient volume and program costs at FACES supported sites in Kisumu sub-County, Kenya

METHODS

- A retrospective study among patients enrolled in HIV care
- Data abstracted from electronic medical records
  - 4 sites in Kisumu
  - 1 January 2010 to 30 June 2013
  - Lowest CD4 cell count, WHO stage and ART status
- Data analysis
  - Found proportion who would qualify for ART based on the new WHO guidelines
  - Proportion found applied to the sub-County population of active patients in care at FACES supported sites in Kisumu
  - PEPFAR per patient costs per year, less ART commodity costs(donated), were applied to the projected increase in patient volume to approximate the anticipated costs to the program

RESULTS

- Increase in ART initiations during first year of new guidelines
  - 1,355 (10%) more adults
  - 61 (5%) more children 5-14 years old
  - 574 (77%) more children <5 years
- Additional program costs
  - Adults
    - $30,495-$42,870 during the first year
  - Children
    - $18,741-$20,073 during the first year

CONCLUSION

- For effective program implementation, adequate resources are required to accommodate the anticipated increase in new patients on ART.

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REPUBLIC OF KENYA
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RESULTS

- Increase in ART initiations during each subsequent year of new guidelines
  - 552 (4%) more adults
  - 14 (1%) more children 5-14 years old
  - 439 (59%) more children <5 years
- Additional program costs
  - Adults
    - $16,330-$22,901 during each subsequent year
  - Children
    - $12,507-$13,298 during each subsequent year