

COMPARATIVE COSTING OF FEEDING OPTIONS

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QUESTION ADDRESSED IN THIS COSTING



How does the cost of a infant
feeding strategy compare
when health system provides free

- ❑ ARV intervention (maternal ART or ARV prophylaxis) to Breast-Feeding mothers
- ❑ Maternal ART & Formula Feeds

Approach

- ❑ Provider costs : excluding household costs
- ❑ Only costs specific to the respective feeding interventions.



- ❑ Omit costs which are common to different feeding strategies
- ❑ Only include the differences.

OPTIONS COVERED

	OPTIONS
BF + ART	Breastfeeding and ART to mothers who fulfil eligibility criteria (lifelong ART)
BF + NVP	Breastfeeding and NVP prophylaxis to BF exposed infants
FF + ART	Formula Feeds & ART to mothers who fulfil eligibility criteria (for lifelong ART)
FF	Formula Feeds only

Whilst ART to mothers does not directly affect the infant with Formula, the cost of ART is included for purpose of comparison with BF + ART.

Outputs

- ❑ Cost implications per HIV+ve mother/child living in a Sub-Saharan country
 - Per option/month
 - Per scenario applying different combinations of these options over 6 and 12 months reflecting duration of health system support

- ❑ Quantifying these scenarios to 10 000 HIV+ve mothers with 2 ART eligibility criteria.

Health Services Encounters

- Details of steps in notes attached

	ANC	Delivery	PNC
Staff		X	X
Drugs			X
Formula			X
Distribution / Storage			X
Labs			
Overheads			

X = Activities, Commodities change according to feeding strategies

Staff

- ❑ 1 monthly visit for all options
- ❑ Clinicians: Patients on ART, identical visit
- ❑ Counselling re. 'exclusive' feeding (irrespective of whether BF or FF): identical
- ❑ Counselling re hygiene ... for FF longer than for NVP prophylaxis
- ❑ Pharmacy time: similar for BF and FF

Assumption re Staff

Minimum change situation

= >

Staff revising their work to incorporate new recommendations

No additional staff, most likely in short term

Any time savings reinvested in staff to improve quality of care including counselling and support to these interventions
e.g. to improve adherence counselling and support to mothers.

DRUGS

- Assumption: no switch to second line ARV

Median Drug Cost Sub-Sahara Countries - 2009*

ART Mother	Drugs	PPYear	PPMonth
	ZDV + 3TC + NVP	\$147	\$12.25

TDF + 3TC	\$173	\$14.42
NVP	\$41	\$3.42
TDF + 3TC + NVP	\$214	\$17.83

Baby	Drugs	PPYear	PPWeek	No Week	Per Patient 6 Months	PPMonth
	NVP 10 mg	\$35	\$0.67	6	\$4.04	
	NVP 20 mg	\$59	\$1.13	20	\$22.69	
	NVP				\$26.73	\$4.46

* GPRM Summary Report June 2009: Median Drug Cost 2009 Sub-Sahara

Formula

- ❑ \$ 25 monthly cost – 2009

- ❑ From model

Resource Needs for HIV/AIDS

Futures Institute, Glastonbury, CT, USA

University of Cape Town, SA

Updated June 2009

Distribution & Storage

□ 15% of commodity cost

From

Nakakeeto & Kumaranayake:

The Global Strategy to eliminate HIV infection in infant & young children: seven country assessment of costs, AIDS 2009, Vol 23

Set-Up Costs

□ Training :

- will be common for both options

□ Storage :

- included in 15% distribution/storage cost

RESULTS

Monthly Cost by Option (US \$)

ART Regimen: ZDV + 3TC + NVP

Type	Number Visits per Month	Drug Cost	Formula	Distribution / Storage	Total Cost US \$
BF-ART	1	12.25		1.84	14
BF-Prophylaxis	1	4.46		0.67	5
FF+ART	1	12.25	25.00	5.59	43
Formula Feeding	1		25.00	3.75	29

Comparing Options			
ART	FF + ART =	3.0	times the cost of BF + ART
Non-ART	FF =	5.6	times the cost of BF + NVP

Monthly Cost by Option (US \$)

ART Regimen: TDF + 3TC + NVP

Type	Number Visits per Month	Drug Cost	Formula	Distribution / Storage	Total Cost \$
BF-ART	1	17.83		2.68	21
BF-Prophylaxis	1	4.46		0.67	5
FF+ART	1	17.83	25.00	6.43	49
Formula Feeding	1		25.00	3.75	29

Comparing Options			
ART	FF + ART =	2.4	times the cost of BF + ART
Non-ART	FF =	5.6	times the cost of BF + NVP

SCENARIOS

ART Regimen: ZDV+3TC+NVP

Cost per Woman / Child (US \$)

Scenarios: A & B

Scenario A	Mothers eligible for ART: FF. Non-ART mothers: EBF & CF from 6 months + NVP to infant
Scenario B	Mothers eligible for ART: FF. Non-ART mothers: EBF til 6 months + NVP to infant. At 6 months: FF.

	Postnatal ARV intervention	Recommended Feeding Practice		Cost per Woman/ Child in \$	
		0-5m	6-11m	Paid for 6 Months	Paid for 12 Months
Scenario A	Lifelong ART	FF	FF	257	514
	Daily NVP to infant if BF	EBF	CBF	31	61
Scenario B	Lifelong ART	FF	FF	257	514
	Daily NVP to infant if BF	EBF	FF	31	203

Cost per Woman / Child (US \$)

Scenarios: C1 & C2

Scenario C All mothers, on ART or not:
 C1: FF
 C2: EBF for 6 months then BF (+CF) + NVP to infant.

	Postnatal ARV intervention	Recommended Feeding Practice		Cost per Woman/ Child in \$	
		0-5m	6-11m	Paid for 6 Months	Paid for 12 Months
Scenario C1	Lifelong ART	FF	FF	257	514
	Nil	FF	FF	173	345
Scenario C2	Lifelong ART	EBF	CBF	85	169
	Daily NVP to infant if BF	EBF	CBF	31	61

x 3

x 5.6

Cost per Woman / Child (US \$)

Scenarios: D & E & F

Scenario D	All mothers, on ART or not: EBF for 6 months + NVP to infant. At 6 months: FF.
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CD4 Count Unknown => No ART

Scenario E	All mothers BF + NVP to infant
Scenario F	All mothers FF

	Postnatal ARV intervention	Recommended Feeding Practice		Cost per Woman/ Child in \$	
		0-5m	6-11m	Paid for 6 Months	Paid for 12 Months
Scenario D	Lifelong ART	EBF	FF	85	342
	Daily NVP to infant if BF	EBF	FF	31	203
Scenario E	Daily NVP to infant if BF	EBF	CBF	31	61
Scenario F	Nil	FF	FF	173	345

Population Assumptions

Number HIV+ve Mothers	ART Eligibility	% HIV+ve	ART	No ART
10 000	CDA < 200	15%	1 500	8 500
	CDA < 350	40%	4 000	6 000

Cost per 10 000 HIV+ve Mothers (US \$)

Eligibility for ART: CD4<200 & CD4<350

Scenario A	Mothers eligible for ART: FF. Non-ART mothers: EBF & CF from 6 months + NVP to infant
Scenario B	Mothers eligible for ART: FF. Non-ART mothers: EBF til 6 months + NVP to infant. At 6 months: FF.

	CDA < 200		CDA < 350		% increase in cost when moving to CD4<350
	Paid for 6 Months \$	Paid for 12 Months \$	Paid for 6 Months \$	Paid for 12 Months \$	
Scenario A	646 831	1 293 662	1 212 542	2 425 085	87%
Scenario B	646 831	2 498 618	1 212 542	3 275 642	87%

Cost per 10 000 HIV+ve Mothers (US \$)

Eligibility for ART: CD4<200 & CD4<350

Scenario C All mothers, on ART or not:

C1: FF

C2: EBF for 6 months then BF (+CF) + NVP to infant.

	CDA < 200		CDA < 350		% increase in cost when moving to CD4<350
	Paid for 6 Months \$	Paid for 12 Months \$	Paid for 6 Months \$	Paid for 12 Months \$	
Scenario C1	1 851 788	3 703 575	2 063 100	4 126 200	11%
Scenario C2	388 081	776 162	522 542	1 045 085	35%

Cost per 10 000 HIV+ve Mothers (US \$)

Eligibility for ART: CD4<200 & CD4<350

Scenario D All mothers, on ART or not: EBF for 6 months + NVP to infant.
At 6 months: FF.

CD4 Count Unknown => No ART

Scenario E	All mothers BF + NVP to infant
Scenario F	All mothers FF

	CDA < 200		CDA < 350		% increase in cost when moving to CD4<350
	Paid for 6 Months \$	Paid for 12 Months \$	Paid for 6 Months \$	Paid for 12 Months \$	
Scenario D	388 081	2 239 868	522 542	2 585 642	35%
Scenario E	307 404	614 808	307 404	614 808	0%
Scenario F	1 725 000	3 450 000	1 725 000	3 450 000	0%

Cost of scenarios - 10,000 HIV mothers (US\$)

Assume eligibility criteria for ART <350

Health system provides commodities for			6 months	12 months
<u>Scenario A</u>	<350	ART + FF	1,212,542	2,425,085
	>350	BF+NVP for 12m		
<u>Scenario B</u>	<350	ART + FF	1,212,542	3,275,642
	>350	BF+NVP 6m, then FF		
<u>Scenario C</u>	<350	ART+FF	2,063,100	4,126,200
	>350	FF		
<u>Scenario D</u>	<350	ART+BF for 12m	522,542	1,045,985
	>350	BF+NVP for 12m		
<u>Scenario E</u>	<350	ART+BF 6m then FF	522,542	2,585,642
	>350	BF+NVP 6m then FF		
<u>Scenario F</u>	No CD4 and no ART	All BF+NVP for 12m	307,404	614,808
<u>Scenario G</u>	No CD4 and no ART	All FF	1,725,000	3,450,000

Discussion

- ❑ This costing has taken a conservative approach to FF option costing with likely underestimates of
 - staff time required for FF
 - storage costs of the formula, a bulky commodity.
- ❑ Even a decrease in formula unit cost is unlikely to change the conclusion that the cost of FF is significantly higher than that of the BF options + ART/NVP interventions.

Information on comparative costs only 1 element of decision making

- ❑ While financial costs need to be considered, must be read against the health impact of each scenario in terms of infant HIV free survival.
- ❑ If BF based scenarios show equivalent health impact than FF based scenarios, then savings.
- ❑ Question: How to reinvest savings to maximise quality of care?

THANK YOU