

Best Paediatric ID Papers 2010 - 2011

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Parasitic infections in finger-sucking school-age children

Idowu OA, Babatunde O, Aderian A. *Pediatr Infect Dis J* 2011, 30: 791-792

- Abeokuta, State capital, South West Nigeria
- Electricity & piped water
- Randomly selected primary school children from schools
- Questionnaire
- Stool sample –
 - Direct
 - formal ether concentration technique
- N = 100
 - Finger-sucking (FS) – 50
 - Non-finger sucking - 50

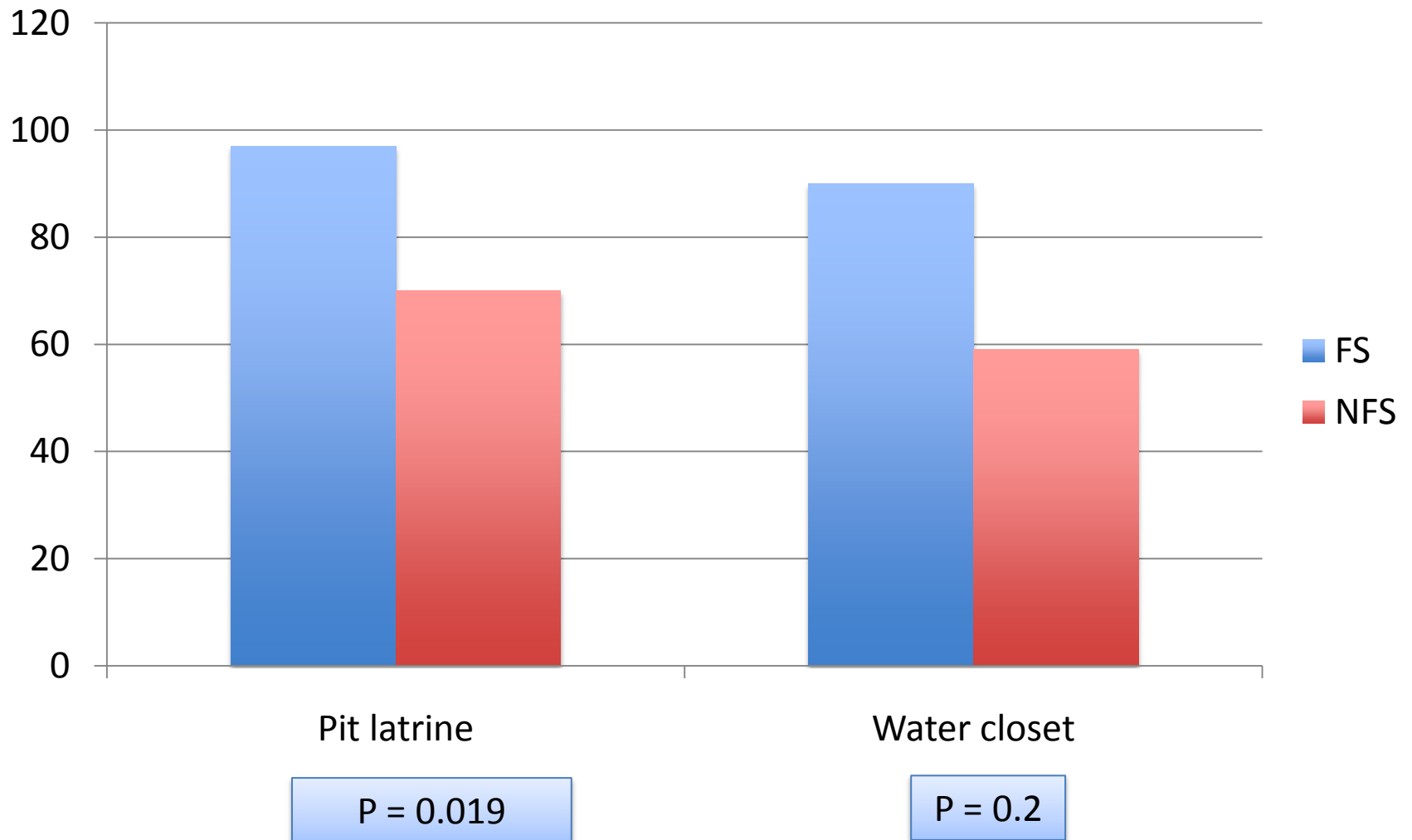
TABLE 1. Parasite Distribution by Species and Pupil Gender Among Finger-sucking and Nonfinger-sucking Children

Parasite	Population Occurrence N (%)	Finger-sucking			Nonfinger-sucking		
		Male	Female	Total	Male	Female	Total
<i>Entamoeba histolytica</i>	44 (33)	14 (35)	16 (38)	30 (37)	6 (26)	8 (29)	14 (28)
<i>Ascaris lumbricoides</i>	30 (23)	10 (25)	9 (21)	19 (23)	4 (17)	7 (25)	11 (22)
<i>Enterobius vermicularis</i>	23 (17)	6 (15)	7 (17)	13 (16)	4 (17)	6 (21)	10 (20)
<i>Trichuris Trichiura</i>	19 (14)	4 (10)	6 (14)	10 (12)	4 (17)	5 (18)	9 (18)
<i>Giardia duodenalis</i>	17 (13)	6 (15)	4 (10)	10 (12)	5 (22)	2 (7)	7 (14)
Total	133	40	42	82 (62)	23	28	51 (38)

Results – prevalence of parasites

FS: 47/50 NFS: 33/50

Prevalence of parasites



Conclusions

- High level parasites
- Finger sucking exacerbates

JOURNAL CLUB

Comparative Efficacy and Safety of 4 Randomized Regimens to Treat Early *Pseudomonas aeruginosa* Infection in Children With Cystic Fibrosis

Miriam M. Treggiari, MD, PhD, MPH; George Retsch-Bogart, MD; Nicole Mayer-Hamblett, PhD; Umer Khan, MS; Michal Kulich, PhD; Richard Kronmal, PhD; Judy Williams, MPH; Peter Hiatt, MD; Ronald L. Gibson, MD, PhD; Terry Spencer, MD; David Orenstein, MD; Barbara A. Chatfield, MD; Deborah K. Froh, MD; Jane L. Burns, MD; Margaret Rosenfeld, MD, MPH; Bonnie W. Ramsey, MD; for the Early *Pseudomonas* Infection Control (EPIC) Investigators

Arch Pediatr Adolesc Med 2011; 165 (9) 847-856

Background

- *Pseudomonas aeruginosa* dominant pathogen in Cystic Fibrosis (CF)
- Infection starts in 1st decade of life
- Effects
 - Decline in lung function
 - Increased hospitalization
 - Decreased survival

Aggressive abx at initial *P aeruginosa* airway detection recommended – varied strategies & treatment durations

“Inhaled Colistin or Tobramycin, with quinolones results in prolonged eradication”

- Several randomized studies
- 1 cohort study
- Occasional spontaneous clearance

Unclear whether clearance impacts other health indicators

- Concerns re long term abx use
 - Toxicity
 - Resistance

Aim: To compare Clinical & Microbiological Effectiveness & safety of 4 regimens:

- **Hypothesis:** More frequent administration & double abx would reduce rates of Pulmonary Exacerbations (PE) & frequency of *P aeruginosa*+ve respiratory cultures over 18-months

Design

- Multicenter, randomized trial
- Newly diagnosed CF patients
- 1 – 12y of age
- 1st +ve culture
- *P aeruginosa* within the 6 months prior to randomization permitted if:
 - 1st time
 - No +ve culture in previous 2 years
 - ≤ 1 course inhaled or IV specific abx allowed prior to baseline
- Core investigators blinded to allocations

Abx Regimens

1. Scheduled – every 3m

- a. Inhaled Tobramycin & oral Ciprofloxacin
- b. Inhaled Tobramycin & oral Placebo

2. Culture determined

- a. Inhaled Tobramycin & oral Ciprofloxacin when 3-monthly culture +ve
- b. Inhaled Tobramycin & oral Placebo

3. Baseline Rx as per assigned Rx

- Inhaled Tobramycin - 300 mg twice a day for 28 days
- Ciprofloxacin - 15 - 20 mg/kg/dose u(max 750 mg / dose) 2X daily for 14 days

Monitoring

- Clinical
- Musculoskeletal
- Audiometry
- *P aeruginosa* type

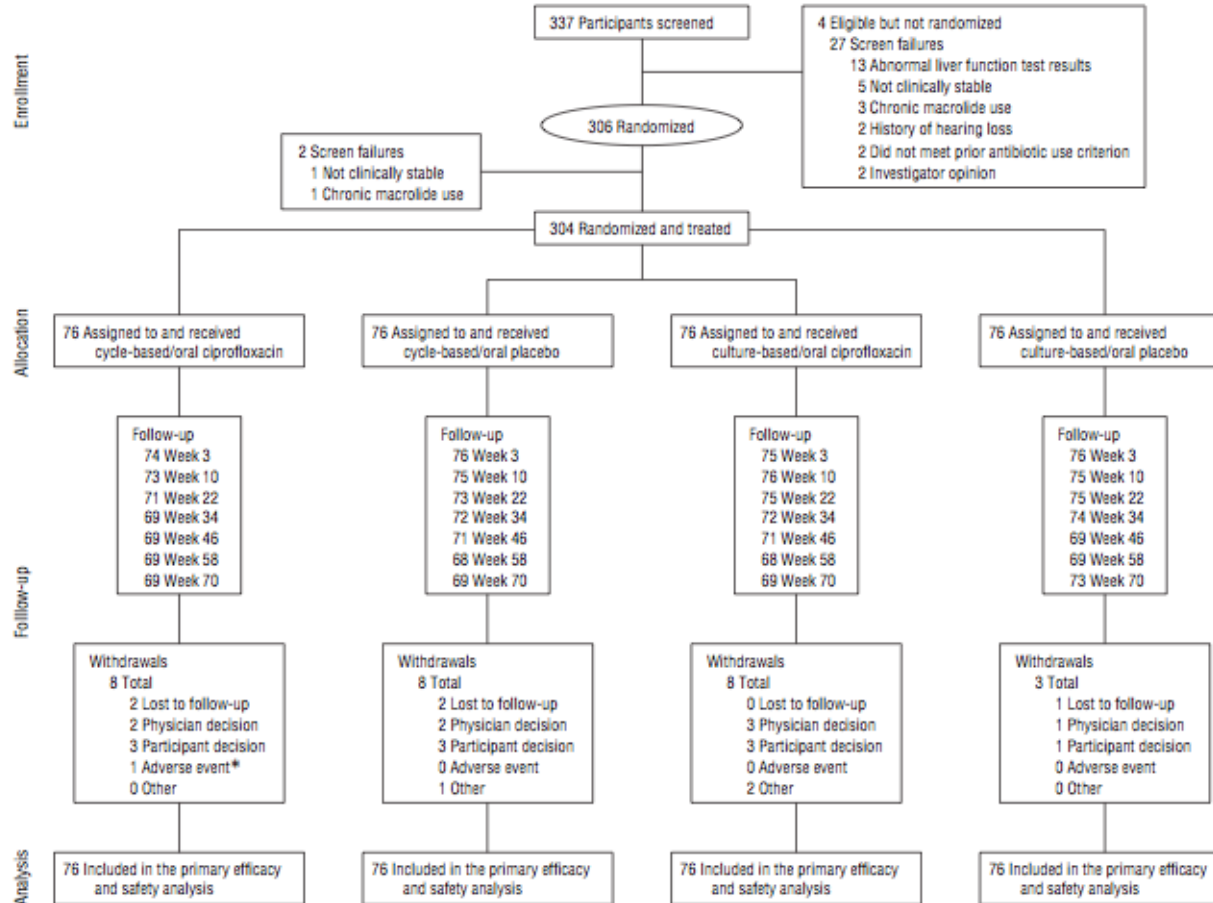
Primary Objective

- Clinical
 - Time to 1st pulmonary exacerbation requiring IV abx or hospital admission
- Microbiological
 - Proportion of *P aeruginosa*+ve respiratory cultures from all quarterly cultures after initial treatment cycle

Sample size

- Annual event rate in children from 1985-2000 CF Foundation National Registry
 - 50% difference between new onset (0.36 per person-year) and never infected with *P aeruginosa* (0.18 per person-year)
- 300 patients: 80% power to detect at least a 40% reduction in the risk of exacerbation in the cycled group

Results

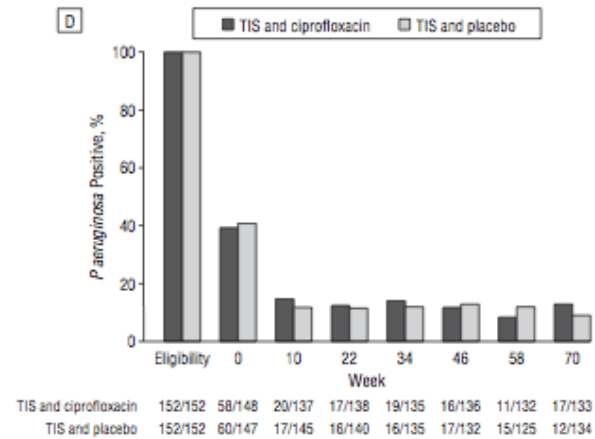
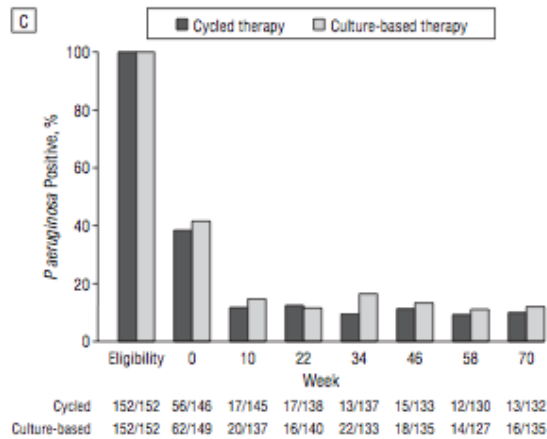
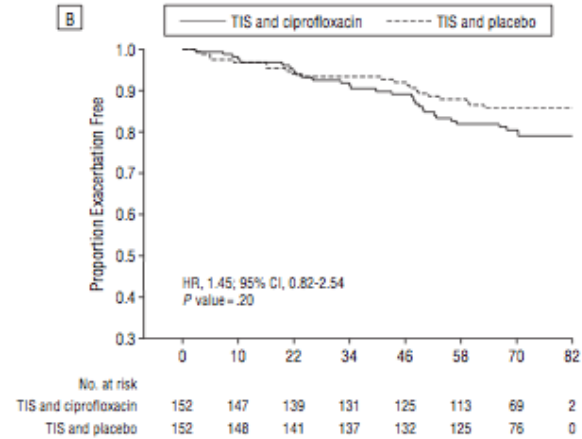
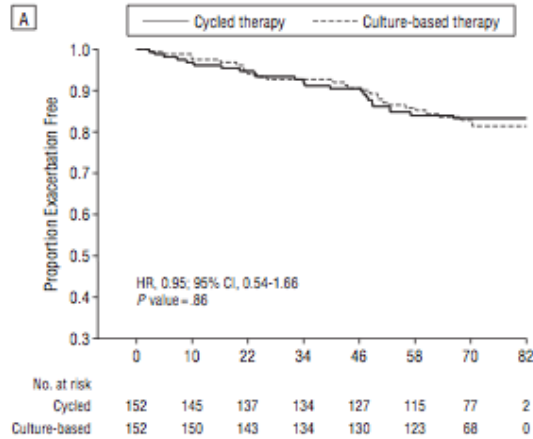


Baseline Characteristics

Table 1. Participant Baseline Characteristics by Treatment Group

Characteristic	No. (%)			
	Cycled vs Culture-Based ^a		Ciprofloxacin vs Placebo ^a	
	Cycled Therapy (n=152)	Culture-Based Therapy (n=152)	Oral Ciprofloxacin (n=152)	Oral Placebo (n=152)
Age, y, mean (SD)	5.8 (3.4)	5.5 (3.7)	5.5 (3.5)	5.9 (3.6)
Age, y				
1-3	38 (25)	52 (34)	51 (34)	39 (26)
>3-6	45 (30)	39 (26)	41 (27)	43 (28)
>6	69 (45)	61 (40)	60 (39)	70 (46)
Female	77 (51)	77 (51)	69 (45)	85 (56)
Race				
White	139 (91)	146 (96)	147 (97)	138 (91)
Other ^b	13 (9)	6 (4)	5 (3)	14 (9)
Height, cm, mean (SD)	110.0 (21.7)	107.1 (24.1)	107.6 (23.0)	109.5 (22.8)
Weight, kg, mean (SD)	21.2 (9.9)	20.1 (10.3)	20.3 (10.3)	20.9 (9.8)
Genotype				
Delta F508 homozygous	66 (43)	83 (55)	68 (45)	81 (53)
Delta F508 heterozygous	67 (44)	49 (32)	62 (41)	54 (36)
Other ^c	19 (13)	20 (13)	22 (14)	17 (11)
<i>P aeruginosa</i> culture eligibility				
First lifetime <i>P aeruginosa</i> -positive culture	106 (70)	102 (67)	114 (75)	94 (62)
2-y History <i>P aeruginosa</i> -negative culture	46 (30)	50 (33)	38 (25)	58 (38)
Positive microbiology status at baseline ^d				
<i>P aeruginosa</i>	56 (38)	62 (42)	58 (39)	60 (41)
<i>S aureus</i>	90 (62)	80 (54)	84 (57)	86 (59)
<i>S maltophilia</i>	5 (3)	6 (4)	6 (4)	5 (3)
<i>A xylosoxidans</i>	2 (1)	1 (1)	3 (2)	0
<i>B cepacia</i> complex	1 (1)	1 (1)	0	2 (1)

Efficacy Outcomes



Primary & Secondary Outcomes

Majority culture negative // Few recurrences

End Points	Cycled vs Culture-Based ^a			Ciprofloxacin vs Placebo ^a		
	No. (%)		Difference (95% CI)	No. (%)		Difference (95% CI)
	Cycled Therapy (n=152)	Culture-Based Therapy (n=152)		Oral Ciprofloxacin (n=152)	Oral Placebo (n=152)	
Primary end point						
Severe PE ^b	24 (16)	26 (17)	-1 (-10 to 7)	29 (19)	21 (14)	5 (-3 to 14)
Secondary end points						
All PE ^c	70 (46)	81 (53)	-7 (-18 to 4)	83 (55)	68 (45)	10 (-1 to 21)
PE major criteria	38 (25)	42 (28)	-3 (-12 to 7)	41 (27)	39 (26)	1 (-9 to 11)
Hospitalizations						
Any cause	39 (25.7)	43 (28.3)	-2.6 (-13 to 7)	46 (30.3)	36 (23.7)	6.6 (-3 to 16)
Antibiotic use ^d						
IV	34 (22)	31 (20)	2 (-7 to 11)	38 (25)	27 (18)	7 (-2 to 16)
Inhaled	15 (10)	22 (14)	-4 (-12 to 3)	18 (12)	19 (13)	-1 (-8 to 7)
Oral	130 (86)	134 (88)	-2 (-10 to 5)	133 (88)	131 (86)	2 (-6 to 9)
<i>P aeruginosa</i> -positive cultures						
0	109 (74)	85 (57)	17 (6 to 27)	97 (66)	97 (64)	2 (-8 to 13)
1	17 (11)	38 (25)	-14 (-22 to -5)	22 (15)	33 (22)	-7 (-15 to 2)
2	9 (6)	18 (12)	-6 (-13 to 1)	13 (9)	14 (9)	0 (-7 to 6)
>2	13 (9)	9 (6)	3 (-3 to 9)	14 (10)	8 (5)	5 (-2 to 11)
Height, cm, mean (SD) ^e	9.2 (2.8)	9.4 (3.1)	-0.2 (-0.8 to 0.5)	9.2 (2.8)	9.4 (3.1)	-0.2 (-0.9 to 0.5)
Weight, kg, mean (SD) ^e	4.0 (2.7)	3.9 (2.4)	0.1 (-0.5 to 0.7)	3.8 (2.5)	4.1 (2.7)	-0.3 (-0.9 to 0.3)
FEV ₁ , L, mean (SD) ^{e,f}	0.25 (0.22)	0.23 (0.28)	0.02 (-0.06 to 0.10)	0.26 (0.27)	0.23 (0.23)	0.03 (-0.04 to 0.11)
FEV ₁ , % of predicted, mean (SD) ^{e,f}	0.77 (12.65)	-1.61 (14.01)	2.37 (-1.60 to 6.35)	1.17 (13.56)	-1.85 (12.89)	3.02 (-0.92 to 6.96)
FEF ₂₅₋₇₅ , L, mean (SD) ^{e,f}	0.22 (0.56)	0.24 (0.49)	-0.02 (-0.18 to 0.13)	0.21 (0.55)	0.24 (0.51)	-0.03 (-0.18 to 0.13)

Comments

- 1 of largest trials in CF patients
- Hospitalizations for respiratory symptoms lower (0.17 person-year) than in the Cystic Fibrosis Patient Registry (0.36 person-year)
- Good chance prolonged clearance
- Recommendation:
 - Close monitoring of cultures
 - Judicious use of inhaled Tobramycin

Fluid Expansion as Supportive Therapy (FEAST)

May 29 2011

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Mortality after Fluid Bolus in African Children with Severe Infection

Kathryn Maitland, M.B., B.S., Ph.D., Sarah Kiguli, M.B., Ch.B., M.Med.,
Robert O. Opoka, M.B., Ch.B., M.Med., Charles Engoru, M.B., Ch.B., M.Med.,
Peter Olupot-Olupot, M.B., Ch.B., Samuel O. Akech, M.B., Ch.B.,
Richard Nyeko, M.B., Ch.B., M.Med., George Mtove, M.D., Hugh Reyburn, M.B., B.S.,
Trudie Lang, Ph.D., Bernadette Brent, M.B., B.S., Jennifer A. Evans, M.B., B.S.,
James K. Tibenderana, M.B., Ch.B., Ph.D., Jane Crawley, M.B., B.S., M.D.,
Elizabeth C. Russell, M.Sc., Michael Levin, F.Med.Sci., Ph.D., Abdel G. Babiker, Ph.D.,
and Diana M. Gibb, M.B., Ch.B., M.D., for the FEAST Trial Group*

Background

- Rapid early fluid resuscitation for shock
- Paediatric Life support programs recommend “up to” 60ml/kg within 15 mins of diagnosis of shock
- 5% albumin reduced mortality from 18 to 4% in RCT of children with severe malaria Maitland et al Clin

Infect Dis J 2005; 40: 538-545

- Boluses of 20 mL/kg titrated for blood pressure, Heart Rate, peripheral pulses, capillary refill, level of consciousness, peripheral skin temp, and urine output.
 - Initial volume resuscitation commonly requires 40-60 mL/kg
- Brierly et al. Crit Care Med 2009; 37: 666-686

Design

- 2 strata
- Randomized
- Controlled
- Multi-centered
 - Kenya – 6
 - Tanzania – 1
 - Uganda - 4

Strata

A.

Hypotension not
severe

B.

Severe
hypotension

Systolic <50 -
<12m

Syst <60 1- 5y

Sys <70 >5y

A: Fluid for Mild to Moderate shock

1:1:1

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graph TD; A[1:1:1] --- B[N saline 20ml/kg 1hr]; A --- C[5% albumin 20ml/kg 1hr]; A --- D[No bolus]; E[Maintenance: 2 - 4ml/kg/hr];
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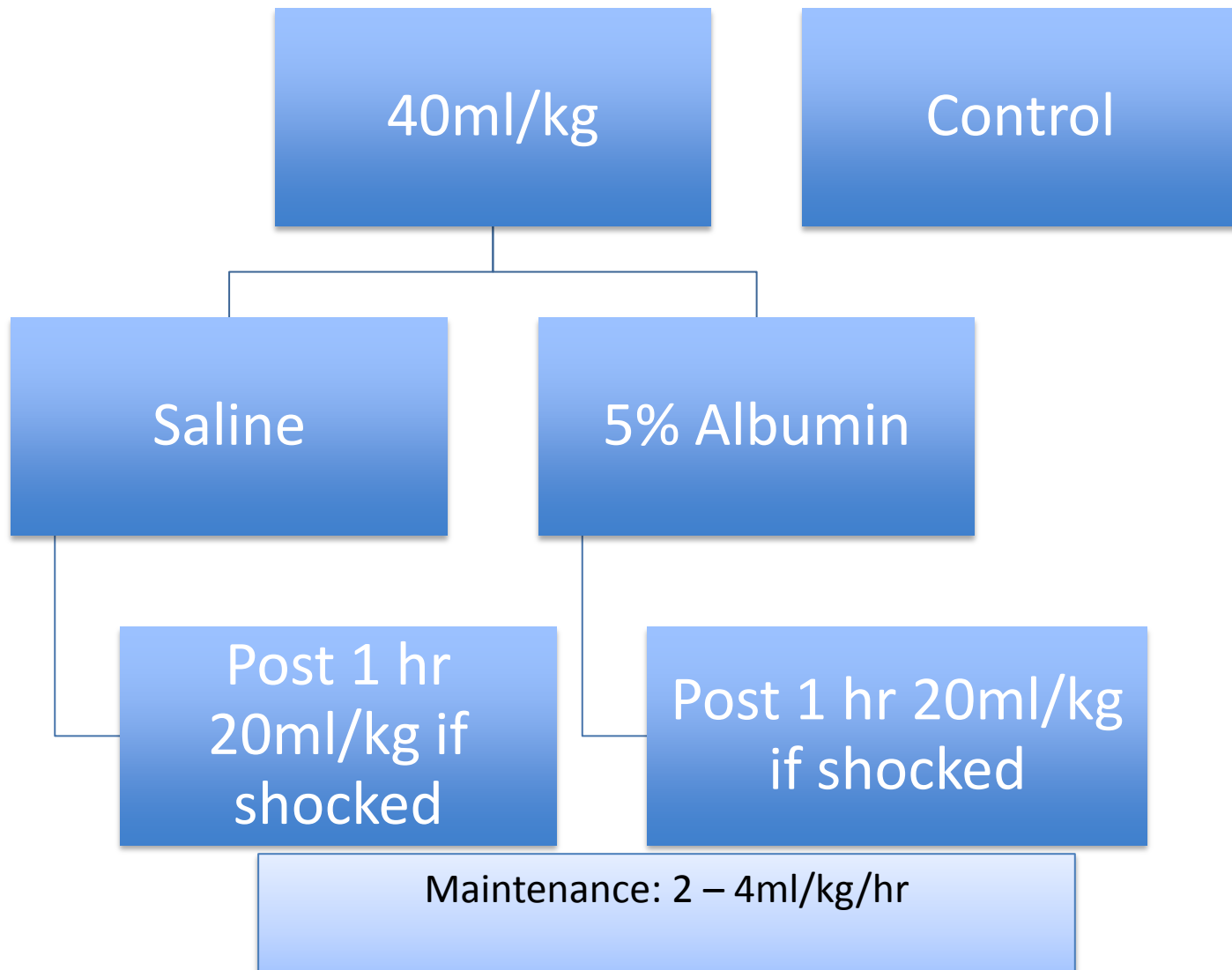
N saline 20ml/kg
1hr

5% albumin
20ml/kg
1hr

No bolus

Maintenance: 2 – 4ml/kg/hr

B: IV fluid for severe shock



Study population

- Inclusion
 - 60 days to 12y of age
 - Febrile illness complicated by:
 - Impaired consciousness
 - Respiratory distress
 - Impaired perfusion
- Exclusion
 - Gastroenteritis
 - Severe malnutrition
 - Non-infectious causes of shock
 - Volume expansion contra-indicated

Endpoints

- Primary
 - Death at 48 hrs
- Secondary
 - Death at 4w
 - Neurological deficits at 4 & 24w
 - Hypotensive shock in 1st 48 hrs
 - Adverse events related to IV resuscitation
 - Pulm edema
 - Raised ICP
 - Allergy

Study Procedures

- General Wards
- Abx, antimalarials, anticonvulsants
- O2 saturation & BP
- Standard approach for hypoglycemia
- Transfuse if Hb <5g/dL
 - 20ml/kg whole blood over 24 hrs
- Data Safety Monitoring Board

Baseline Characteristics

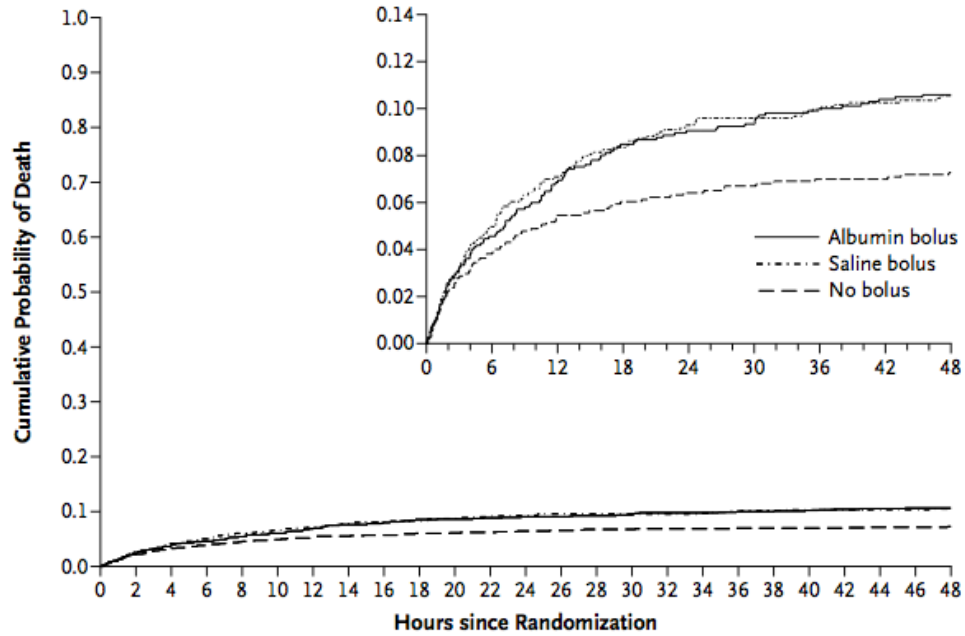
Table 1. Baseline Characteristics of the Children.*

Variable	Albumin Bolus (N=1050)	Saline Bolus (N=1047)	No Bolus (N=1044)	Total (N=3141)
Demographic and anthropometric characteristics				
Age — mo				
Median	23	23	25	24
Interquartile range	14–37	13–37	14–40	13–38
Female sex — no. (%)	474 (45)	480 (46)	498 (48)	1452 (46)

- Median systolic bp – 92
 - T >39°C – 24%
- O2 saturation <90% - 25%
 - Seizures - 37%
 - **Malaria – 57%**
 - Hb <5 – 32%
- **+ve blood culture 12%**

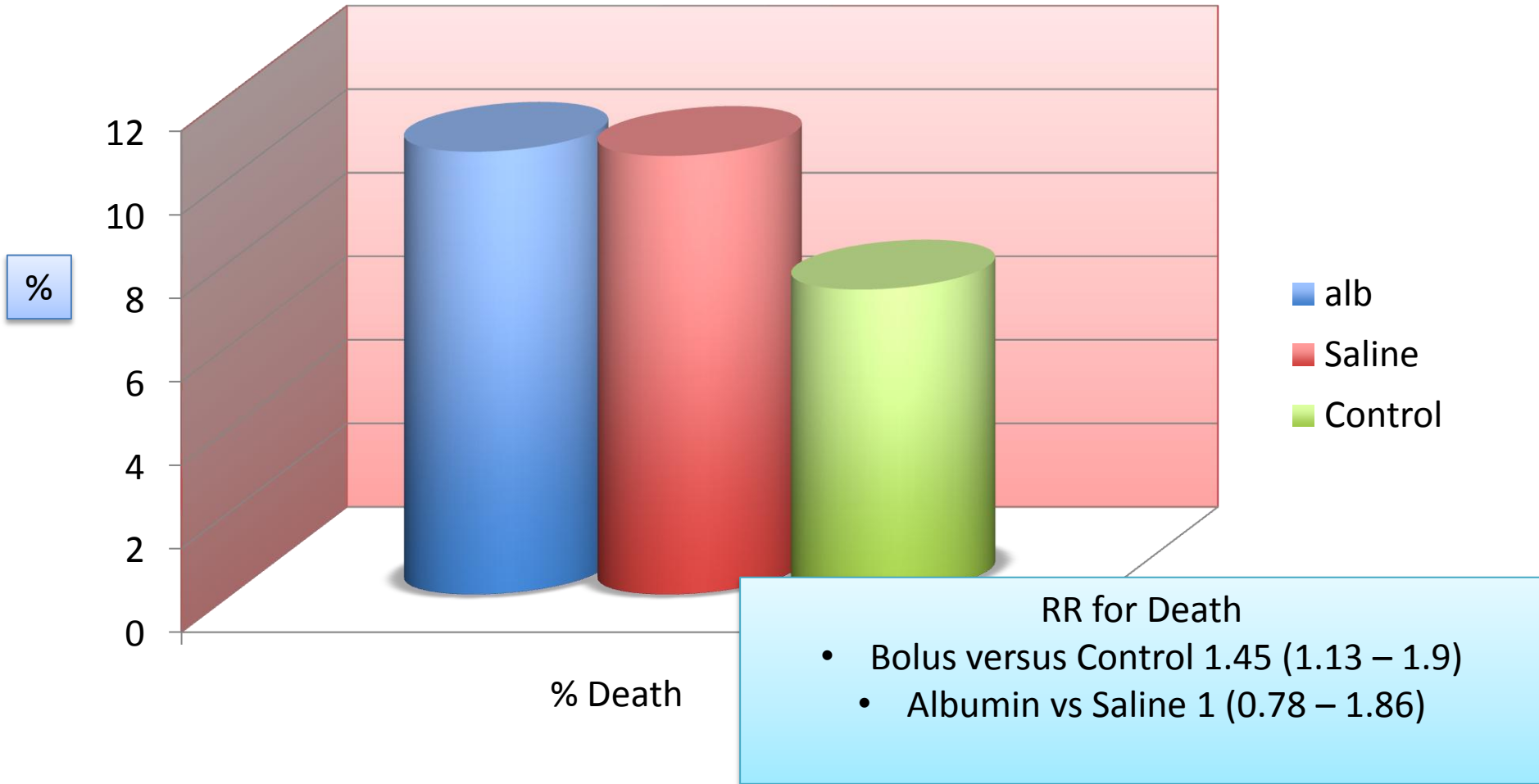
Mortality at 48 hours

A Mortality at 48 Hours

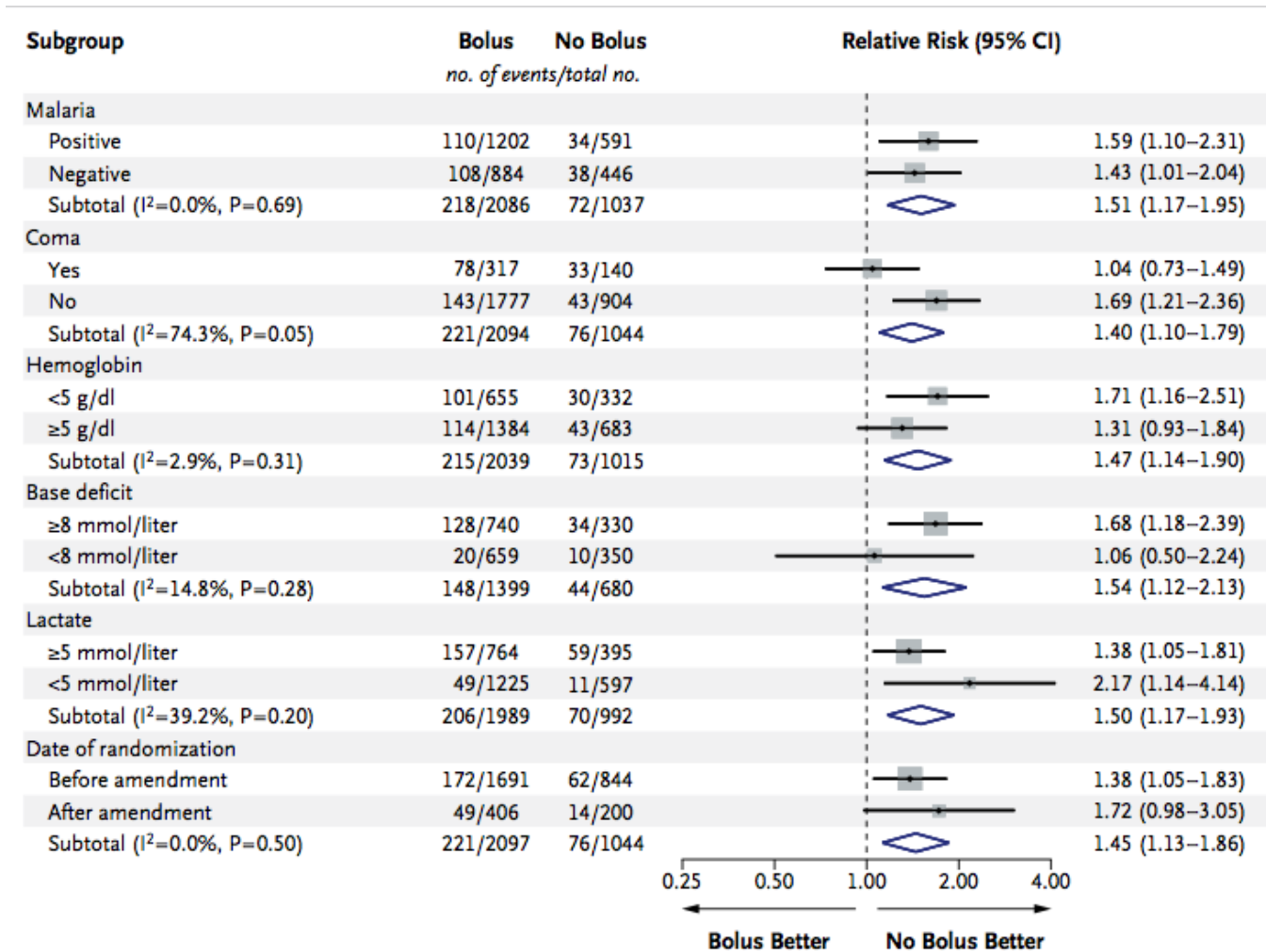


	Hr 1			Hr 2			Hr 3			Hr 4			Hr 5-8			Hr 9-24			Hr 24-48		
	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus	Albumin bolus	Saline bolus	No bolus
No. at Risk	1050	1047	1044	1037	1033	1030	1024	1018	1021	1016	1010	1015	1010	1001	1011	992	980	996	954	945	975
Died	13	12	14	13	15	9	8	7	6	6	9	4	17	20	14	38	34	20	16	13	9
%	1.2	1.1	1.3	1.3	1.5	0.9	0.8	0.7	0.6	0.6	0.9	0.4	1.7	2.0	1.4	3.8	3.5	2.0	1.7	1.4	0.9

Mortality at 48 hours



Mortality at 48 hours



Short vs Long Antimicrobial Treatment for Acute Hematogenous Osteomyelitis of Childhood: Prospective, Randomized Trial on 131 Culture-positive Cases

- Heikki Peltola, MD; Markus Pääkkönen, MD; Pentti Kallio, MD, PhD; Markku J. T. Kallio, MD
- *Pediatr Infect Dis J.* 2010;29(12):1123-1128.

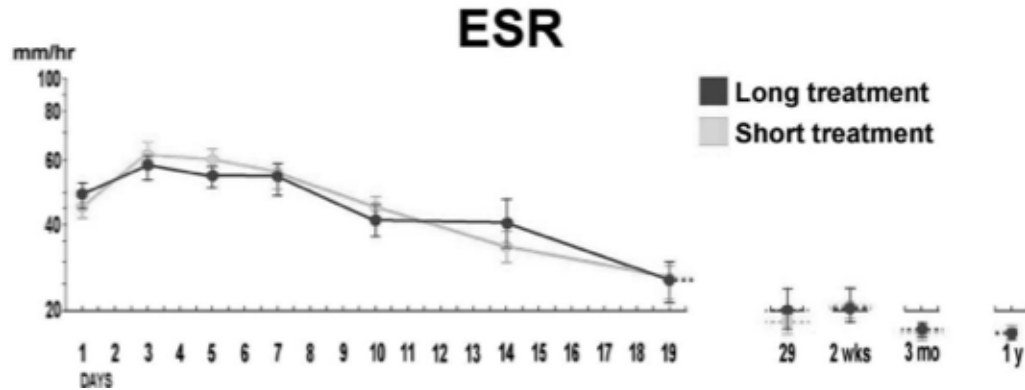
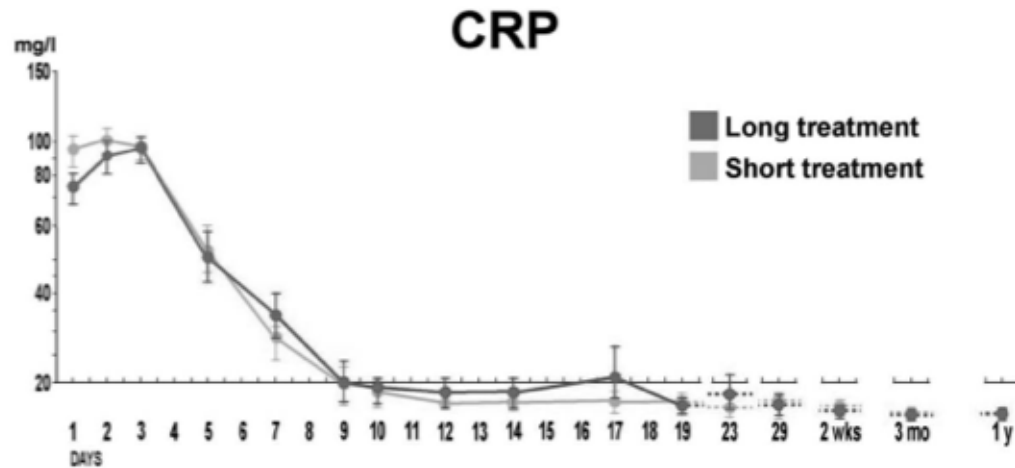
Duration abx: 20 versus 30 days

- Children aged 3 months to 15 years with culture-positive AHOM
- Randomly assigned to receive clindamycin or 1st-generation cephalosporin for 20 or 30 days; IV 1st 2 - 4 days
- Minimal surgery
- Primary end point:
 - full recovery without need for further antimicrobial therapy because of an osteoarticular indication during next 12 months.

Results

- N = 131
- 89% *S aureus*

Inflammatory parameters



Conclusion

- 20 days = 30 days for Abx duration
- **Duration of Study**
 - 1983 – 2005**
 - 22 years!!**

Premasticating Food for Weaning African Infants: A Possible Vehicle for Transmission of HIV

Maritz E, Kidd M, Cotton MF
Pediatrics 2011; e579-e590

- 3 cases of HIV transmission described in USA
Guar, Pediatrics 2009; 24: 658 – 666
- HBV transmission
- Survey around Tygerberg districts
- Mainly caregivers of children attending clinics
- N = 164

106 (69%) caregivers practice pre-mastication

TABLE 1 Key Differences Between the Premasticator and the Nonpremasticator Groups

	Premastication Group (<i>N</i> = 106 [69%])	Nonpremastication Group (<i>N</i> = 48 [31%])	<i>P</i>
Age child, median (IQR), mo	14 (7.25–24)	12 (6–24)	>.05
Mean (IQR) age starting solids, mo	5 (4–6)	4 (3–6)	>.05
Level of caregiver education, %			.01
Lower primary only	7.5	0.0	
Upper primary only	5.7	10.4	
Lower secondary	22.6	14.6	
Upper secondary only	66.0	68.7	
Median (IQR) time spent at school, y	10 (9–11)	11 (9.5–12)	
Role of caregiver, %			
Mother	90.5	93.5	>.05
Father	2.0	0.0	
Other family member	7.5	6.5	
Total frequency (SD) of feeding children, times per day	6 (2.8)	5 (2.4)	<.01
Food given from caregiver's own plate, % (<i>n</i>)			<.01
Yes	75 (80)	6 (3)	
No	25 (26)	94 (45)	

Premastication

- 46% infants teething & 42% have oral lesions
- 52% premasticators report oral lesions
 - 39% reported seeing blood in food
- Could contribute to horizontal transmission of HIV & HBV
- Should be included in counseling sessions
- **Hypothesis:** - Biological basis for explaining increased HIV transmission during mixed feeding