

Bacteraemia in HIV-1 infected children on antiretroviral therapy in Uganda and Zimbabwe in the ARROW clinical trial



Joint Clinical Research Centre
Plot 893 ring road,
P.O.Box 10005 Kampala, Uganda
Email: vmusiime@jrcr.co.ug

MRC Clinical Trials Unit
222 Euston Road, London, NW1 2DA
Tel: +44 20 7670 4894
Fax: +44 20 7670 4818
Email: sarah.walker@ctu.mrc.ac.uk

*Victor Musiime¹, Adrian Cook², Sabrina Bakeera-Kitaka³, Tichaona Vhembo⁴, Joseph Lutaakome⁵, Rosette Keishanyu¹, Andy Prendergast², Sam Lubwama¹, Val Robertson⁴, Peter Hughes⁵, Kusum Nathoo⁴, Paula Munderi⁵, Philippa Musoke³, Diana M. Gibb²

¹Joint Clinical Research Centre, Kampala, Uganda; ²Medical Research Council, Clinical Trials Unit, London, UK; ³Paediatric Infectious Diseases Clinic, Mulago hospital, Kampala, Uganda; ⁴University of Zimbabwe, Harare, Zimbabwe; ⁵Medical Research Council/Uganda Virus Research Institute, Entebbe, Uganda

BACKGROUND

- Bacteraemia is a common cause of morbidity and mortality in HIV infected children [1, 2]; the commonly isolated pathogens including: *S. pneumoniae*, *S. aureus* and *Enterobacteriaceae* [2, 3, 4]
- Most isolates are susceptible to cephalosporins but high rates of resistance to cotrimoxazole and penicillin have been observed [2, 4]
- Data on patterns of the bacteraemia pathogens and their antimicrobial sensitivity patterns still limited

1. Berkley JA, et al. N Eng J Med. 2005 Jan 6; 352 (1):39-47
2. le Roux DM, et al. Pediatr Infect Dis J. 2011 May 12 [Epub]
3. Feikin DR, et al. BMC Infect Dis. 2010 Jun 23; 10:186
4. Byam PR, et al. West Indian Med J. 2010 Jul; 59(4): 386-92

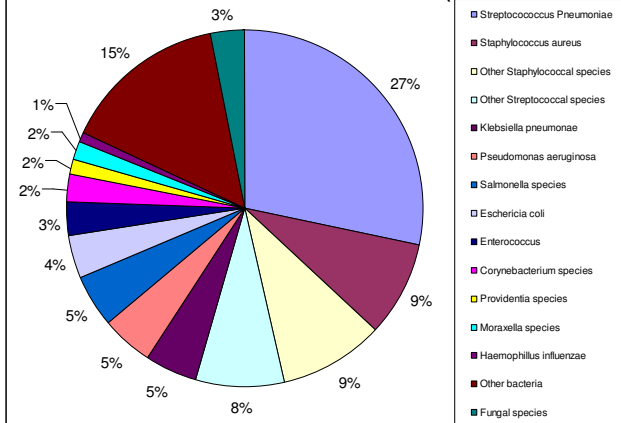
METHODS

- ARROW is a randomized trial investigating first-line treatment and monitoring strategies in 1207 previously untreated HIV-1-infected children initiating ART
- Most children had received *haemophilus influenzae type B* vaccination as part of the EPI schedule. None had received pneumococcal vaccination
- Children developing febrile illnesses in follow-up were investigated for infections including blood culture and sensitivity done according to standard microbiological techniques

RESULTS

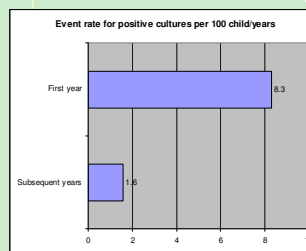
- 848 blood cultures obtained from 461 children
 - 123 (14.5%) from 105 children were positive
- Among children with positive isolates:
 - 54/105 (51%) were girls
 - median age was 4 (range: 0.5 - 15) years

Rates of isolation of Bacteraemia pathogens in HIV-1 infected children in the ARROW trial (N=105)



Susceptibility of other bacterial isolates other than *S. pneumoniae*

Drug	Percentage of susceptible isolates				
	<i>S. Aureus</i> (N=11)	<i>Salmonella spp</i> (N=6)	<i>E. Coli</i> (N=5)	<i>P. Aeruginosa</i> (N=6)	<i>K. Pneumoniae</i> (N=6)
Ceftriaxone	55.6	100	100	100	0
Cefotaxime	100	100	100	-	0
Carbapenems	-	100	100	100	66.7
Ciprofloxacin	100	100	-	100	100
Gentamicin	0	75	66.7	100	0
Chloramphenicol	100	-	-	0	0
Erythromycin	42.9	-	-	-	-
Penicillin	50	25	0	0	0
Cotrimoxazole	16.7	33	0	50	-



Susceptibility of *Streptococcus pneumoniae*

Name of Antibiotic	Number of susceptible isolates (percentage)
Vancomycin	16/16 (100)
Chloramphenicol	6/6 (100)
Clindamycin	6/6 (100)
Cefuroxime	4/4 (100)
Erythromycin	15/16 (93.8)
Amoxicillin	8/9 (88.9)
Ceftriaxone	30/36 (83.3)
Ampicillin	5/6 (83.3)
Amoxicillin/ clavulanic acid	4/5 (80)
Penicillin G	8/11 (72.7)
Oxacillin	8/12 (66.7)
Cefotaxime	24/36 (66.7)
Cotrimoxazole	10/22 (45.4)
Gentamicin	1/5 (20)

CONCLUSIONS

- High rates of proven bacteraemia were observed during the first year on ART in African HIV-infected children
- *Streptococcus pneumoniae* was most commonly isolated, suggesting a need for effective prophylactic antibiotics and/or pneumococcal vaccination
- High rates of resistance to commonly used antibiotics suggest that newer agents like ceftriaxone should be the drugs of choice when treating HIV-infected children with possible bacteraemia

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Data Monitoring Committee: A Breckenridge (Chair), C Giacchino, C Hill, J Matenga, J Tumwine
Endpoint Review Committee: G Tudor-Williams (Chair), H Barigye, HA Mujuru, G Ndezi, MF Bwakura-Dangarambizi, V Musiime, P Musoke, P Nahirya-Ntege, JM Crawley, DM Gibb
Joint Clinical Research Centre, Kampala, Uganda: P Mugenyi, V Musiime, V D Ayo, E Bagurukira, J Bwomezi, J Byaruhanga, P Erimu, C Karungi, H Kizito, S Muboki, WS Namala, J Namusanje, R Nandugwa, D Nanyumba, TK Najjuko, E Natukunda, M Ndigendawani, F Nghanu, SO Nsiyona, F Odongo, K Robinah, M Ssenyonga, D Sseremba, J Tezkyabiriri, CS Tumusiime, R Keishanyu
University of Zimbabwe, Harare, Zimbabwe: KJ Nathoo, MF Bwakura-Dangarambizi, MM Chipiti, R Dzapasi, J Gumbo, C Katanda, R Mandidzwa, F Mappingo, C Marozva, T Mute, D Muchabaiwa, S Mudzingwa, D Nyoni, M Phiri, J Steamer, T Vhembo
MRC Clinical Trials Unit in Uganda Research Unit on AIDS, Uganda Virus Research Institute, Entebbe, Uganda: P Munderi, P Nahirya-Ntege, M Aber, FN Kagawa, P Kaleebu, R Katuramu, JH Kyaruzza, J Lutaakome, I Matama, M Musunguzi, G Nalulime, A Ruberantwari, R Sebuku, IM Ssekamutte, G Tushabe, D Wangi
Paediatric Infectious Disease Centre, Mulago Hospital, Uganda: A Kekitiinwa, P Musoke, S Bakeera-Kitaka, J Aseilo, JK Balungi, G Kaps, JN Kairu, P Kasirye, B Mugisa, C Mukasa, S Musoba, SJ Mutebi, J Nakafeero, S Nakyanzi, R Namuddu, C Semambo, Victoria Ssebude, S Ssenyonjo, A Wanyoto
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