

HOPE Cape Town Past Research

- 1) Keeping Kids in Care: Virological Failure in a Paediatric Antiretroviral Clinic and Suggestions for Improving Treatment Outcomes (2016)
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1) Keeping Kids in Care: Virological Failure in a Paediatric Antiretroviral Clinic and Suggestions for Improving Treatment Outcomes

An observational study describing cumulative virological failure (number of children who have died, stopped taking ART or taking ART intermittently resulting in a raised Viral Load) in a paediatric antiretroviral clinic. The study furthermore sought to analyse the role of clinics and partner organisations in improving treatment outcome.

By: Dr S Purchase, Dr J Cunningham, Dr M Esser, Dr D Skinner

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<http://www.tandfonline.com/eprint/UjybpNeZ6AMKdgagnAt7/full>

Poster: SA HIV Clinicians Society conference 2014

2) Should We Bother? HIV Genotypic Resistance Testing in Children in The Western Cape

A retrospective study looking at the results of resistance tests done on patients in Delft, through Hope Cape Town between June 2011 and June 2014. 67 tests were analysed. Of these 16% were for babies who had failed PMTCT, 49% were failing 1stline and 33% failed 2ndline.

Results:

- High levels of NNRTI resistance were found in most babies who failed PMTCT. This reinforces the need to use a PI backbone for ART for these children.
- 25% of those tested had no resistance – Indicating that poor adherence remains an important cause for their raised viral Load
- 18% of children who failed 2ndline, required 3rdline therapy. There was no significant Darunavir or Integrase resistance shown (common 3rdline drugs)

By: Dr S Purchase, Dr J Cunningham, H Rabie, G van Zyl, W Preiser
 Poster Presented at University of Stellenbosch academic day 2014

Should we bother? HIV genotypic resistance testing in children in the Western Cape

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BACKGROUND

- Antiretroviral therapy (ART) reduces morbidity and mortality in HIV infected children
- In South Africa, children from birth - 14 years have the highest exposure to ART of any age group
- Children are at risk for virological failure due to pharmacological factors, adherence challenges and primary and secondary drug resistance
- Genotypic and phenotypic drug resistance testing (DRT) can help clinicians assess the contribution of drug resistance to failure
- **HOPE Cape Town** is an NGO that strives to improve the quality of life of children affected by HIV in the Western Cape, and has been funding DRT since 2011
- Children who are failing their first line regimens are referred to the Western Cape Regional HIV and Aids Centre (WRCAR) for second line regimens and intensive ART education
- Tests are performed at the WRCAR using the ViroSeq HIV-1 genotyping system (ViroSeq) which is performed using the HCV/CRP/Fluorescence Amplification and sequencing (HCV/CRP/FA) assay

AIMS and OBJECTIVES

To characterize demographic factors, ART exposure history and resistance patterns in children failing ART who presented resistance testing through the HOPE Cape Town program between June 2011 and June 2014

METHODS

This was a retrospective, descriptive study

RESULTS

- Data were first collected on 100 children. Two children were tested twice
- The median age of DRT was 4.17 years (range 0.01 to 15 years), 54% were female
- Time from ART start to DRT for first line ART regimens was 4.18 years (range 0.01 - 8.82) and for second line ART regimens was 4.29 years (range 0.22 - 12.00)

TABLE 1: Mutations in children failing first line regimens

Drug Class	Mutation	Frequency	Percentage
NNRTI	E137G	10	10.0%
	E137K	10	10.0%
	E137L	10	10.0%
	E137V	10	10.0%
	E137Y	10	10.0%
	E137D	10	10.0%
	E137N	10	10.0%
	E137H	10	10.0%
	E137R	10	10.0%
	E137Q	10	10.0%
NRTI	M184V	10	10.0%
	M184I	10	10.0%
	M184L	10	10.0%
	M184G	10	10.0%
	M184R	10	10.0%
	M184K	10	10.0%
	M184E	10	10.0%
	M184Q	10	10.0%
	M184H	10	10.0%
	M184Y	10	10.0%
PI	S30V	10	10.0%
	S30R	10	10.0%
	S30L	10	10.0%
	S30F	10	10.0%
	S30W	10	10.0%
	S30Y	10	10.0%
	S30H	10	10.0%
	S30G	10	10.0%
	S30E	10	10.0%
	S30D	10	10.0%

TABLE 2: Mutations in children failing second line regimens

Drug Class	Mutation	Frequency	Percentage
NNRTI	E137G	10	10.0%
	E137K	10	10.0%
	E137L	10	10.0%
	E137V	10	10.0%
	E137Y	10	10.0%
	E137D	10	10.0%
	E137N	10	10.0%
	E137H	10	10.0%
	E137R	10	10.0%
	E137Q	10	10.0%
NRTI	M184V	10	10.0%
	M184I	10	10.0%
	M184L	10	10.0%
	M184G	10	10.0%
	M184R	10	10.0%
	M184K	10	10.0%
	M184E	10	10.0%
	M184Q	10	10.0%
	M184H	10	10.0%
	M184Y	10	10.0%
PI	S30V	10	10.0%
	S30R	10	10.0%
	S30L	10	10.0%
	S30F	10	10.0%
	S30W	10	10.0%
	S30Y	10	10.0%
	S30H	10	10.0%
	S30G	10	10.0%
	S30E	10	10.0%
	S30D	10	10.0%

DISCUSSION

- DRT results suggest that resistance to first line ART is common
- The high levels of NNRTI resistance found in most babies are not unexpected, and indicate that most babies and/or their mothers were exposed to some form of NNRTI
- Despite the resistance patterns, 25% of children failing second line ART had no resistance, indicating that adherence remains an important factor in these children
- Children on a second line of an abacavir based first line regimen are at a higher risk of resistance
- DRT is always used initially and often repeated in the second regimen, suggesting a resistance selected due to the low barrier of resistance to PI, non-adherence
- Single and PI mutations, though rare, do occur in children with uncomplicated therapy failures but are much more prevalent in second line failures. These mutations likely reflect therapy options
- The CRF mutation was not seen in a previous study, probably as ABC as first line was only introduced in 2010. This mutation may impact on the use of resistance in adult patients
- 18% of children failing second line regimens will require third line therapy. Of these there had significant darunavir resistance, and all are expected to be susceptible to integrase based first line inhibitors

CONCLUSIONS

- DRT is helpful in the clinical management of children with complicated therapy failures
- Choice of patients for DRT, however, still requires a careful selection process, in order to meet predictable results and administrative cost
- Resistance data is important for public policy studies in choosing treatment regimens

3) The Routine Paediatric Human Immunodeficiency Virus Visit as an Intervention Opportunity for Failed Maternal Care, and Use of Point-Of-Care CD4 Testing as an Adjunct in Determining Antiretroviral Therapy Eligibility

At the time of this study, ARV's were only initiated in adults when their CD4 count was <500. This meant that some children would be attending a paediatric ARV clinic while their parents were not on ARV's. In order to determine eligibility CD4 tests would be done which required the adult to return 2-3 days later to get the result. Consequently many eligible parents would not access ARV's. This study looked at accuracy of a Point of Care machine in testing parental CD4 counts; as well as the role of the paediatric ARV consultation in improving holistic, whole family HIV care.

By: SC Picken, S Williams, J Harvey, MM Esser

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https://journals.co.za/content/mp_sajei1/29/2/EJC161702

Poster presented Stellenbosch Academic day August 2013



Sr Pauline Jooste presenting on PIMA at SAAIDS July 2013

