

Ongoing Studies:

- 1) NGO case histories of the early paediatric ART experience at Tygerberg Hospital - what have we learnt?
- 2) Serologic correlates of protection against vaccine-preventable disease in Perinatally HIV-infected (PHIV) Adolescents at Tygerberg Hospital
- 3) Risk of HIV infection in young peripartum women (aged 15-24 years) at Tygerberg Hospital
- 4) Assessing the relevance of cytomegalovirus (CMV) infection in HIV-exposed infants

1) NGO case histories of the early paediatric ART experience at Tygerberg Hospital - what have we learnt?

Dr A Houston, [Dr S Purchase, Dr M Esser, Prof M Cotton]

-in progress

In South Africa there are very few studies documenting long term outcomes in HIV+ children, partly because there are very few South African children who have been on treatment for longer than 10 years. The children funded by HOPE Cape Town were some of the initial children to start ARV's in the public sector in South Africa. They now represent a unique and pioneering group of South African young adults and adolescents, and can help clinicians identify some of the challenges and benefits of long-term ART for children. This study aims to document the success and struggles of this cohort of patients. Part 1 of the study was a folder review. Results from this were presented at the South African Academy of Family Physicians in August 2019 by Dr Houston. Part 2 involves interviews with patients and is still in progress.

2) Serologic correlates of protection against vaccine-preventable disease in Perinatally HIV-infected (PHIV) Adolescents at Tygerberg Hospital

Dr L Frigatti

-in progress

In the coming decades, the aging cohort of perinatally HIV-infected children entering adolescence will dominate the future of paediatric HIV in South Africa (SA). Adolescents aged 9 to 14 years will comprise the largest group of HIV-infected children in SA by 2020. Similar

trends are likely to occur across Africa, and thus understanding the long-term health issues in this population is of vital importance.

HIV-infected children and adults often have an increased risk of infection or experience more severe morbidity following exposure to vaccine-preventable diseases, and therefore a lower threshold for extending indications and offering vaccination may be appropriate relative to the general population. Protection from vaccination may be sub-optimal in HIV-positive children, and while protection derived from vaccination improves with antiretroviral therapy, it often not as effective and declines more rapidly than in HIV-negative children. However, many of these vaccines still afford protection and for some vaccines it is possible to improve protection by offering modified vaccine schedules, with higher or more frequent doses, without compromising safety.

Adolescence is a unique period for vaccination opportunities. There are new and important vaccines specifically designed for the adolescent period and vaccines that are currently being developed will target adolescents and young adults. In addition to this, pertussis, influenza and rubella vaccine can be given to adolescents to protect their children. Adolescents particularly those with HIV often lose contact with medical services and default treatment and medical care. HIV- Adolescent immunization may keep young people in care, the same way that childhood immunization at regular intervals allows an opportunity for general health care in young infants. It may also be a bridging strategy to adult care.

South African HIV-infected adolescents have received the country's standard Expanded Program for Immunization (EPI) childhood schedule. Human papilloma virus (HPV) vaccine is recommended at 9 years and tetanus and reduced dose diphtheria at 12 years. There are no specific recommendations for the growing population of South African HIV-infected adolescents. International recommendations provide more frequent and broader cover of vaccine preventable diseases.

The overall aim of this project therefore is to offer an improved vaccination schedule for HIV-infected adolescents. We will check immune response to EPI vaccines and vaccinate adolescents according to responses. Response to revaccination will be checked to ensure optimal protection is afforded.

Dr Lisa Frigati is a paediatric infectious disease specialist at Tygerberg Hospital. She is currently doing her PhD.

Relevant publications:

Initial results from this study were presented in a poster at the South African HIV Clinician's Society Conference in 2018

Multisystem impairment in South African adolescents with Perinatally acquired HIV on antiretroviral therapy (ART) Lisa Frigati et al

<https://onlinelibrary.wiley.com/doi/epdf/10.1002/jia2.25386>

3) Risk of HIV infection in young peripartum women (aged 15-24 years) at Tygerberg Hospital

Dr S Nyamathe
- in progress

Young women in the age group 15 – 24 years old contribute a quarter of all new HIV infections in South Africa. In 2017, this age group had the highest annual incidence of 1.51 % according to the Fifth South African National HIV Prevalence, Incidence, Behaviour and Communication Survey. This amounts to 113000 new HIV infections in young women every year. Although overall HIV incidence has decreased worldwide, incidence in this age group still remains the highest.

In this study, Dr Nyamathe aims to use a validated risk assessment tool to assess the extent of risk of HIV infection among young peripartum women at Tygerberg Hospital.

The study is currently in the data collection phase.

4) Assessing the relevance of cytomegalovirus (CMV) infection in HIV-exposed infants

Division of Medical Virology: Dr NP Nkosi, Prof Wolfgang Preiser et al.
- in progress

In sub-Saharan Africa, CMV infection is co-endemic with human immunodeficiency virus (HIV) infection. Mothers who are immunosuppressed due to HIV may also reactivate a latent CMV infection – which may increase risk of congenital CMV infection. South African data on congenital CMV are sparse. Published studies found 2.9% of babies infected in the Cape Town Central Health District of the Western Cape Province and 5.9% in Umtata in the

Eastern Cape Province. These studies document that even when pregnant women receive ART to prevent mother to child transmission of HIV, their offspring still experience a higher risk of congenital CMV infection.

Congenital CMV infection is an important medical and social issue. The majority (approximately

90%) of babies infected in utero are asymptomatic at birth while approximately 10% are born ill, often with features of severe disease such as growth retardation, small heads, jaundice, thrombocytopenia and others. In addition, another 10% of initially asymptomatic infants will develop delayed manifestations such as mental retardation and sensorineural hearing loss later during childhood.

Aims of this study are:

- To assess the current incidence of congenital CMV infection in the Eastern Health District of the Cape Town Metro, as ART has minimised the risk of mother-to-child transmission of HIV.
- To determine the suitability of dried blood spots to diagnose congenital CMV infection in RLS.
- The overall aim is to provide information in order to assess the need for and feasibility of introducing screening for congenital CMV infection in South Africa.