

CURRICULUM VITAE

NAME	NULDA BEYERS
HOME ADDRESS	10 Saxon Road, RONDEBOSCH, 7700, South Africa
WORK ADDRESS	Desmond Tutu TB Centre Department of Paediatrics and Child Health PO Box 19063 Tygerberg 7505 South Africa
E-mail	nb@sun.ac.za
NATIONALITY	South African
DATE OF BIRTH	20 May 1951
PLACE OF BIRTH	Senekal, South Africa
MARITAL STATUS	Married (GIE)
CHILDREN	André, Marguerite, Lowna-Marié (triplets born 28.01.81)
HOME LANGUAGES	English/Afrikaans
ACADEMIC QUALIFICATIONS	
A. School Education	
1968	Senior Certificate, Bellville High School (6 distinctions)
B. University Education	
1969-1974	MChB, University of Stellenbosch
C. Post Graduate Education	
1979	Fellow of the College of Physicians of South Africa (FCP SA)
1981	MSc (Med), University of Cape Town. Thesis: <i>The Teratogenic effects of Diphenylhydantoin and Phenobarbitone in the experimental mouse.</i>
1989	PhD, University of Stellenbosch : Thesis: <i>Bone and Mineral Metabolism in the Neonate.</i>

AWARDS

- 1974 Noristan prize for best medical student in clinical medicine.
- 1980 Guy Elliot Research Scholarship
- 1994 SEMDSA (Society for Endocrine and Metabolic Diseases in Southern Africa) Award for best publication 1994
- 1995 Award for best presentation at the Congress of SA Biochemical Society
- 1996 Francie van Zijl medal for best scientific oral presentation at Academic Year Day, Faculty of Medicine, University of Stellenbosch
- 1997 Danone Bledina Award at European South African Paediatric Congress for best scientific oral presentation:
- 1998 Award from South African Pulmonology Society for best scientific oral presentation at conference.
Francie van Zijl medal for best scientific oral presentation at Academic Year Day, Faculty of Medicine, University of Stellenbosch (awarded to my PhD student Dr Annelies van Rie)
- 1999 Award from South African Pulmonology Society for best poster presentation at conference
- 2000 Vice Chancellor's Award for Excellence in Research (University of Stellenbosch)
Award from South African Pulmonology Society for best scientific publication
Travelling lectureship SA Thoracic Society

APPOINTMENTS AND RESEARCH EXPERIENCE

- 1.1.75-31.12.75** **Houseman** Tygerberg Hospital (Internal Medicine Prof MA de Kock, Obstetrics and Gynaecology, Prof W van Niekerk)
- 1.1.76-31.12.76** **Medical officer** Tygerberg Hospital (Paediatrics Prof MP Keet, Internal Medicine Prof MA de Kock)
- 1.2.77-31.12.79** **Registrar** Red Cross War Memorial Children's Hospital (Prof MD Bowie)
- 1.1.80-31.12.80** **Guy Elliot Research Scholar**, Department of Pharmacology, University of Cape Town (Prof PL Folb)
Completed research work for **MSc thesis** on the teratogenic effects of anticonvulsants. In this study I examined the effects of diphenylhydantoin and phenobarbitone on the mouse embryo in vivo as well as in whole embryo cultures. In the in vivo model the anticonvulsants were added to the maternal diet in different concentrations during pregnancy and the effects on litter size, neonatal weight, congenital abnormalities and the fetal skeleton were assessed. In the whole embryo culture

system, embryos were removed under sterile conditions at specified times during early pregnancy, placed in culture medium and cultured for specified times known to coincide with the development of specific organ structures. The effects of diphenylhydantoin and phenobarbitone on the development of the embryo were assessed by examination with a dissecting microscope as well as by the incorporation of 3H-thymidine into the specific organ system developing at a specific time.

1982-1987 Medical Officer and Specialist Department of Paediatrics and Child Health, University of Stellenbosch

Completed research work for **PhD thesis** on bone and mineral metabolism in babies. I evaluated the growth, bone mass, development of radiological bone abnormalities and certain serum and urine biochemical parameters in 220 babies the day after birth and at certain specified times during the first year of life. Post natal bone mineralization in preterm babies was compared to expected intra-uterine bone mineralization, the effect of mineral and vitamin D supplementation on bone development was studied and the pathogenesis of osteopenia and bone abnormalities was examined in these babies. In addition post-mortem bone biopsies of babies were histomorphometrically assessed. In this study the biochemical, radiological and morphometric findings all imply that neonatal osteopenia is caused by increased bone resorption and not merely by decreased bone formation.

1.7.87-31.12.88 Postgraduate Research Fellow Pulmonary Research Laboratory, Vancouver, Canada (Prof JC Hogg)

During the 18 months spent in this laboratory I gained experience in morphometric evaluation of the lung. Two of the studies, namely **The morphometric analysis of neutrophils in the rabbit lung after the infusion of zymosan- activated plasma** and **Neutrophil accumulation and capillary transit times in emphysematous and non-emphysematous human lung**, involved mainly point counting at macroscopic, light microscopic and electron microscopic levels. The third study **The neutrophil volume and capillary segment diameter in the rabbit, the dog and the human** involved basic morphometric measuring techniques as well as the adaptation of previously described methods for measuring neutrophil volume.

1989-1992 Specialist and Chairperson of Research Department of Paediatrics and Child Health Tygerberg Hospital and University of Stellenbosch (Prof PB Hesselning)

My main responsibilities were student teaching, co-ordinating the research in the department, clinical work in Childhood pulmonology and doing research which focused mainly on tuberculosis in childhood. I was also involved in a variety of community and outreach projects ranging from the use of drama, songs and puppet theatre in health education to the development of sport fields, nutrition kitchens and other projects focused on transfer of skills.

1993-1998 Specialist Department of Paediatrics and Child Health Tygerberg Hospital and University of Stellenbosch (Prof PB Hesselning)

Chairperson of Research in Department
Principal Investigator Glaxo Wellcome Action TB International Research Programme

1999-2002 Associate Professor Department of Paediatrics and Child Health Tygerberg Hospital and University of Stellenbosch (Prof PB Hesselning)

Chairperson of Research in Department

Principal Investigator Glaxo Wellcome Action TB International Research Programme

Strengths are the co-ordination of clinical and epidemiological research on a community level and the integration of this research with laboratory techniques. Have been working in Community Tuberculosis Clinics for the past 10 years doing research and treating tuberculosis patients. The Local Health Committees representing the people of these communities, have been actively involved in all the research projects and formed part of a multidisciplinary research team consisting of a variety of researchers with different skills including clinicians, anthropologists, sociologists, immunologists, molecular biologists, pharmacologists. A unique team of researchers has been established over the last couple of years. The success of such research depends on recruiting patients into clinical studies and motivating patients to participate and to donate their time, privacy and specimens without any direct advantage to themselves. This can only be achieved by building up credibility in a community and by never exploiting the people.

Present position **Professor** Department of Paediatrics and Child Health, Tygerberg Hospital and University of Stellenbosch (Prof PB Hesselning)
Chairperson of Research in Department
Principal Investigator of numerous studies
Director (Clinical studies) Desmond Tutu TB Centre (which is also a Collaborating Centre of the IUATLD)
Editor-in-Chief International Journal of Tuberculosis and Lung Disease

POST GRADUATE RESEARCH GUIDANCE:

- 1990-2000 MMed (Paed) students: (± 20 in department) All rotate through the community clinics where I teach them about community involvement, primary health care and tuberculosis. A number of these students (1-2 per year) do their research project on tuberculosis.
- 1995-1997 Supervisor and examiner M Anthropology thesis Ms C Classen. (Department Sociology and Anthropology, University of the Western Cape). Title of thesis: *Too close for comfort: Redefining the notion of close contact as the source of tuberculosis transmission in the high incidence communities of Uitsig and Ravensmead.*
- 1996-1998 Supervisor M Anthropology thesis Mr W Ellis (Department Sociology and Anthropology, University of the Western Cape). Title of thesis: *The social-medical history of tuberculosis in Ravensmead and Uitsig.*
- 1997-2000 Supervisor (Promoter) PhD thesis Dr Annelies van Rie (Department Paediatrics and Child Health). Title of thesis: *Disease dynamics of drug resistant tuberculosis in an area with a high TB-incidence*
- 1997-2000 Supervisor (Promoter) PhD thesis Dr Liesbeth Scholvinck (Department Paediatrics and Child Health). Title of thesis: *The influence of age on the cellular immune response in patients with tuberculosis.*
- 1997-2003 Supervisor (Promoter) D Phil thesis Ms Collette Booyesen (Department Sociology and Anthropology, University of the Western Cape) Title of thesis: *Living with tuberculosis –anthropological aspects*
- 1998-1999 Supervisor and examiner MFam Med thesis (University of Stellenbosch). Dr D Barnard. Title of thesis: *Sifting en diagnose van volwasse pasiënte met pulmonale tuberkulose in die Oudtshoorn distrik – ‘n epidemiologiese profiel.*

- 1999-2003 Supervisor (Promoter) PhD thesis Ms Joanita Adams (Department of Medical Biochemistry, University of Stellenbosch) Title of thesis: *Immune responses in a community with a high incidence of tuberculosis*
- 2000-2005 Supervisor PhD thesis Ms M Richardson. Title of thesis: *The characterization of M. tuberculosis strain families in a molecular epidemiological study of a community with a high incidence of tuberculosis.*
- 2001-2005 Supervisor (Co-promoter) DPhil thesis Dr D Knapp van Bogaert. Title of thesis: *Earth, air, fire and water: Moral responsibility and the problem of global drug resistance.*
- 2003-2005 Co-Promoter PhD thesis Ms Suzanne Verver. Title of thesis: *The epidemiology of tuberculosis.*
- 2002-2006 Supervisor PhD thesis Dr CC Obihara. Title of thesis: *The hygiene hypothesis revisited: TB infection, atopy and intestinal parasites in children in a third world setting*
- 2002-2006 Promoter PhD thesis Dr BJ Marais. Title of thesis: *Childhood Pulmonary Tuberculosis: Addressing the Diagnostic Dilemma*
- 2003-2007 Co-Promoter PhD thesis Ms Saskia den Boon. Title of thesis: *The prevalence of tuberculosis and risk factors for developing tuberculosis.*
- 2007–onward Promotor MSc Thesis Mr Rory Dunbar. Title of thesis: *Assessing the validity of routinely collected data.*
- 2007-onward Co-Promotor MPH thesis Mr Jabulani Ncayiyana. Title of thesis: *Risk factors associated with TB in a South Africa urban resource-poor community with high TB prevalence: a retrospective cohort study*

RESEARCH GRANTS:

1980:			
	Guy Elliot Research Scholarship	R	15 000
Before 1990:			
	Harry Crossley	R	19 745
1990 :			
	MRC	R	2 865
	Harry Crossley	R	4 000
1991 :			
	MRC	R	2 865
1992 :			
	MRC	R	2 865
1993 :			
	MRC	R	1 900
	Harry Crossley	R	6 000

	Glaxo Wellcome Action TB	R 100 000
1994 :		
	MRC	R 2 000
	Glaxo Wellcome Action TB	R 221 550
1995 :		
	Glaxo Wellcome Action TB	R 261 550
1996 :		
	Glaxo Wellcome Action TB	R 321 000
1997 :		
	Glaxo Wellcome Action TB	R 383 187
1998 :		
	MRC	R 150 000
	Glaxo Wellcome Action TB	R 395 899
1999 :		
	Glaxo Wellcome Action TB	R 1 278 500
	THRIP	R 639 250
2000 :		
	MRC	R 66 500
	Glaxo Wellcome Action TB	R 1 111 500
	Glaxo Wellcome Action TB drug trial	R 999 999
	THRIP	R 450 000
	Stellenbosch University	R 160 000
2001		
	MRC	R 66 500
	GlaxoSmithKline Action TB	R 1 210 200
	THRIP	R 750 000
	Sequella Global TB Foundation	R 96 500
	Stellenbosch University	R 160 000
2002		
	MRC	R 66 500
	GlaxoSmithKline Action TB	R 1 500 000
	THRIP	R 850 000
	Sequella Global TB Foundation	R 96 500
	Fogarty ICOHRTA AIDS/TB	R 750 000
	Stellenbosch University	R 160 000
2003		
	GlaxoSmithKline Action TB	R 1 571 000
	THRIP	R 900 000
	Sequella Global TB Foundation	R 96 500
	IUATLD	R 111 044

USAID (Health Seeking behaviour)	R 1 216 362
USAID (Sputum register)	R 104 000
Applied for Phase 2 ICOHRTA AIDS/TB	R 444 968 (USD 1 768 519)

1998-2001:

Wellcome Trust: (Joint application with Prof PD van Helden, AD Beyers and Dr E Hoal-van-Helden) "Tuberculosis: a host genetics study in a high risk endemic South African population group." R 1 89 314 (£189 314) in total for three years.

1998-2001

Research post from the University	R 80 000
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2004

THRIP	R 714 000
GlaxoSmithKline (Sample bank)	R 681 000
USAID USAID Award No. GPH-A-00-02-00008-00. (Education)	R 998 904
NIH LHS Blood study	R 213 356
USAID Award No. HRN-A-00-00-00018-00 (Sputum register)	R 338 404
URC DOTS Pilot	R 124 981
GlaxoSmithKline	R 80 000
IUATLD	R 62 365
GlaxoSmithKline (Data base)	R 65 000

2004-2006

GlaxoSmithKline Surrogate Marker	R 728 233
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2004-2010

Gates Foundation (CREATE - ZAMSTAR)	R30 000 000
LSHTM Contract Ref: ITCRVS75/1	

Subcontract under the Bill and Melinda Gates Foundation (Agency)

Grant Number 19790.01

Title: "CREATE: Consortium to Respond Effectively to the AIDS-TB Epidemic"

2005

Research Council of Norway (nr. 164053/S30) Part of the <i>TB in the 21st Century Consortium</i>	R 480 000
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2006

USAID Award No. S000661 (Initial defaulters)	R 299 177
UBS Optimus Foundation (eNose)	CHF 220 000

2007

	PEPFAR grant	USD 1 000 000
	UBS Optimus Foundation (eNose)	CHF 220 000
2008	Community Interaction Award from Stellenbosch University for Flagship Project of University	
2007	Award from KNCV for PhD student	

ADVISORY COMMITTEES:

- Provincial Committee for Tuberculosis Education
- Strategic Management Committee for the Restructuring of Hospital Services in the Western Cape
- Advisory Committee for the Provincial Minister of Health on the Management of Tuberculosis
- Chairperson of the Childhood Tuberculosis Working Group of the International Union Against Tuberculosis and Lung Disease IUATLD
- Editor-in-Chief International Journal of Tuberculosis and Lung Disease (2003-2007)
- Stakeholders Committee for SA National TB Program
- Writing Committee for SA National TB Program Guidelines

CONFLICT OF INTEREST STATEMENT:

Received £500 in 2003 for speaking at a conference where one session was sponsored by GlaxoSmithKline.

Was reimbursed in 2004 for travel to give a talk at a “Diseases of the Developing World” day held at GlaxoSmithKline, UK.

Received £111,150 in 2000 and £150,000 per year for 2001-2003 from GlaxoSmithKline Action TB Program as research grants for developing and maintaining an epidemiological field site and for doing a study aimed at identifying surrogate markers for response to treatment in TB patients. From 2004-2006 funding (£72,000 per year) is received from GlaxoSmithKline for maintaining the epidemiology field site

Received R2 000 from Beckton Dickinson for presenting talk “The role of TB cultures in the era of HIV/AIDS” at a TB Symposium held at the Table Bay Hotel, Cape Town, 03 September 2005.

PUBLICATIONS

Articles published in Peer Review Journals

1. Beyers N, Moosa A. The fetal alcohol syndrome. *S Afr Med J* 1978;54:575-78
2. Beyers N, Moosa A, Bryce RL, Kent A. Depressed skull fracture in the newborn. *S Afr Med J* 1978;54:830-32
3. Beyers N, Wiggelinkhuizen J, Van Buuren AJ. Nephrotic syndrome in families. *S Afr Med J*, 1979;55:867-70
4. Van der Westhuizen JH, Berger GMB, Beyers N, Moosa A. Iatrogenic hyperosmolality in a neonate. *S Afr Med J*, 1981;60:996-98
5. De Beer FC, Kirsten GF, Gie RP, Beyers N, Strachan AF. Value of C reactive protein measurement in tuberculous, bacterial, and viral meningitis. *Arch Dis Child*, 1984;59(7):653-56
6. Beyers N, Hough FS. Metabolic bone disease in preterm infants. *S Afr Med J*, 1986; 70:407-13
7. Beyers N, Odendaal HJ, Hough FS. Vitamin D and mineral metabolism in normal pregnancy and in the normal fetus. *S Afr Med J*, 1986;70:549-54
8. Beyers N, Doerschuk CM, Brumwell ML, Coxson H, Hogg JC. Morphometric analysis of neutrophils in the rabbit lung after infusion of zymosan-activated plasma (ZAP). *Am Rev Resp Disease*, 1988;137(4):391
9. Beyers N, Brumwell ML, Doerschuk CM, Coxson HO, Hogg JC. Neutrophil accumulation and capillary transit times in emphysematous and non- emphysematous human lung. *Am Rev Resp Dis*, 1989;139(4):A121
10. Beyers N, Doerschuk CM, Coxson HO, Hogg JC. Neutrophil volume and capillary segment diameter in the rabbit, the dog and the human. *Am Rev Res Dis*, 1989; 139(4):A297
11. Hesselning PB, Van der Merwe PL, Grassmann R, Wessels G, Henning PA, Kirsten GF, Gie RP, Cotton MF, Nel ED, Kling S, Donald PR, Thom JC, Van Buuren AJ, Schoeman JF, Piek CJ, Schraader EB, Beyers N, Smith J, Schaaf HS, Kalis NN. Financial crisis in hospitals. *S Afr Med J*, 1991;79:405 (Letter)
12. Gie RP, Beyers N, Schaaf HS, Donald PR. Missed opportunities in the diagnosis of pulmonary tuberculosis in children. *S Afr Med J*, 1993;83(4):263
13. Schaaf HS, Gie RP, Beyers N, Smuts N, Donald PR. Tuberculosis in infants less than 3 months of age. *Arch of Dis in Child*, 1993;69:371-74
14. Doerschuk CM, Beyers N, Coxson HO, Wiggs B, Hogg JC. Comparison of neutrophil and capillary diameters and their relation to neutrophil sequestration in the lung. *J Appl. Physiol*, 1993;74(6):3040-45
15. Beyers N, Alheit B, Taljaard JF, Hall J, Hough FS. High turnover osteopenia in preterm babies. *Bone*, 1994;15(1):5-13
16. Beyers N, Gie RP, Schaaf HS, Van Zyl S, Nel ED, Talent JM, Donald PR. Delay in the diagnosis, notification and initiation of treatment and compliance in children with tuberculosis. *Tuberc and Lung Disease*, 1994;75:260-65
17. Beyers N, Esser M, Alheit B, Roodt M, Wiggs B, Hough FS. Static bone histomorphometry in preterm and term babies. *Bone*, 1994;15(1):1-4
18. Wiid IJF, Werely C, Beyers N, Donald PR, Van Helden PD. Oligonucleotide (GTG)₅ as a marker for mycobacterium tuberculosis strain identification. *J Clin Microbiol*, 1994; 32(5):1318-21
19. Smuts NA, Beyers N, Gie RP, Schaaf HS, Talent JM, Nel ED, Van Zyl S, Donald PR. The value of the lateral chest radiograph in detecting hilar lymphadenopathy in childhood primary tuberculosis. *Paediatr Radiol*, 1994; 24:478-80

20. Gie RP, Beyers N, Schaaf HS, Smuts NA, Donald PR. TB or not TB. Diagnosis confused with childhood pulmonary tuberculosis. *S Afr Med J* 1995; 85(7):658-662
21. Schaaf HS, Beyers N, Gie RP, Nel E, Smuts N, Scott H, Donald PR, Fourie B. Respiratory tuberculosis in children: The diagnostic value of clinical features and special investigations. *Pediatr Inf Dis J*,1995;14:189-194
22. Hogg JC, O.Coxson H, Brumwell M, Beyers N, Doerschuk CM, MacNee W, Wiggs BR. Erythrocyte and polymorphonuclear cell transit time and concentration in human pulmonary capillaries. *J Appl Physiol*, 1994;77(4):1795-1800
23. Donald PR, Schoeman JF, Beyers N, Nel ED, Carlini SM, Olsen KD, McCracken GH. Concentrations of Interferon γ , Tumor Necrosis Factor α , and Interleukin-1 β in the cerebrospinal fluid of children treated for tuberculous meningitis. *Clin Inf Dis*, 1995;21:924-29
24. Schmidt S, Beyers N, Gie RP, Bardin P. Tuberculosis : A historical perspective. *SA Resp J* 1996;2(3):38-41
25. Warren R, Hauman J, Beyers N, Richardson M, Schaaf HS, Donald P, van Helden P. Unexpectedly high strain diversity of Mycobacterium tuberculosis in a high-incidence community. *S Afr Med J*, 1996;86(1):45-49
26. Beyers N, Gie RP, Zietsman HL, Kunneke M, Hauman J, Tatley M, Donald PR. The use of a geographical information system (GIS) to evaluate the distribution of tuberculosis in a high-incidence community. *S Afr Med J*, 1996;86(1):40-44
27. Schaaf HS, Nel ED, Beyers N, Gie RP, Scott F, Donald PR. A decade of experience with Mycobacterium tuberculosis culture from children: a seasonal influence on incidence of childhood tuberculosis. *Tubercle and Lung Disease*, 1996;77:43-46
28. Donald PR, Beyers N, Rook GAW. Adolescent Tuberculosis. *S Afr Med J*, 1996; 86:231-32
29. Donald PR, Schaaf HS, Gie RP, Beyers N. An assessment of stool microscopy and culture for the confirmation of the diagnosis of pulmonary tuberculosis. *J Trop Paediatr*, 1996; 42:311-12 (Letter)
30. Schaaf HS, Botha P, Beyers N, Gie RP, Vermeulen HAS, Groenewald P, Coetzee GJ, Donald PR. The 5-year outcome of multidrug resistant tuberculosis patients in the Cape Province of South Africa. *Trop Med Internat Health*, 1996;1(5):718-22
31. Warren R, Richardson M, Sampson S, Hauman JH, Beyers N, Donald PR, van Helden PD. Genotyping of Mycobacterium tuberculosis with additional markers enhances accuracy in epidemiological studies. *J Clin Micro*, 1996; 34(9):2219-24
32. Lewis L, Victor TC, Hoal-van Helden EG, Blackwell JM, Da Silva-Tatley F, Tullett S, Ehlers M, Beyers N, Donald PR, Van Helden PD. Identification of C to T mutation at position - 236 bp in the human NRAMP1 gene promoter. *Immunogenetics*, 1996;44:309-11
33. Beyers N, Gie RP, Schaaf HS, Van Zyl S, Talent JM, Nel ED, Donald PR. A prospective evaluation of children under the age of 5 years living in the same household as adults with recently diagnosed pulmonary tuberculosis. *Int J Tuberc Lung Dis*, 1997;1(1):38-43
34. Du Plessis FA, Gie RP, Kling S, Beyers N, Rickman R, Fenhalls G, Beyers AD. Pneumatocoele formation in an infant with Hyperimmunoglobulin E Syndrome: *S A Respiratory Journal*, 1997;3(2):67
35. Ellis JHP, Beyers N, Bester D, Gie RP, Donald PR. Sociological and anthropological factors related to the community management of tuberculosis in the Western Cape communities of Ravensmead and Uitsig. *S Afr Med J*, 1997;87(8):1047-51

36. Carlini SM, Beyers N, Schoeman JF, Nel ED, Truter EJ, Donald PR. Adenylate kinase activity in the cerebrospinal fluid of children with tuberculous meningitis and its relationship to neurological outcome. *Scand J Infect Dis*, 1997;29:275-80
37. Victor TC, Warren R, Beyers N, Van Helden PD. Transmission of Multidrug-Resistant Strains of *Mycobacterium tuberculosis* in a High Incidence community. *Eur J Clin Microbiol Infect Dis*, 1997;16:548-49
38. Viktor HL, Cloete I, Beyers N. Extraction of rules for Tuberculosis diagnosis using an Artificial Neural Network. *Meth Inform Med*, 1997;36:160-62
39. Fourie PB, Becker PJ, Festenstein F, Migliori GB, Alcaide J, Antunes M, Auregan G, Beyers N, Carvalho JM, Cruz JR, Fanning EA, Gie R, Huong ND, Leitch AG. Procedures for developing a simple scoring method based on unsophisticated criteria for screening children for tuberculosis. *Int J Tuberc Lung Dis*, 1998;2(2):116-123
40. Gie RP, Kling S, and Schaaf HS, Beyers N, Moore S, and Schneider J. Tuberculous Broncho-Esophageal Fistula in Children: A description of two cases. *Pediatric Pulmonology* 1998;25:258-88
41. Heyns L, Gie RP, Kling S, Samaai P, Schaaf S, Beyers N. Management of children with tuberculosis admitted to a pediatric intensive care unit. *Pediatr Infect Dis J*, 1998;17:403-7
42. Wessels G, Hesselning PB, Beyers N. Skeletal tuberculosis: dactylitis and involvement of the skull. *Pediatr Radiol* 1998;28:234-36
43. Pio A Rasmussen Z, Yaohua D, Beyers N, Maboshe M et al. Priorities for research in lung health. *Int J Tuberc Lung Dis* 1998; 2(12):1046-48
44. Classen CN, Warren R, Richardson M, Haumann JH, Gie RP, Ellis JHP, van Helden PD, Beyers N. The impact of social interactions in the community on the transmission of tuberculosis in a high incidence area. *Thorax* 1999;54:136-140
45. Van Rie A, Beyers N, Gie RP, Kunneke M, Zietsman L, Donald PR. Childhood tuberculosis in an urban population of South Africa: burden and risk factor. *Arch Dis Child* 1999;80:433-37
46. Schaaf HS, Vermeulen HAS, Gie RP, Beyers N, Donald PR The evaluation of young children in household contact with adult multidrug resistant pulmonary tuberculosis cases. *Pediatr Inf Dis J* 1999;18(6):494-500
47. Hoal-van-Helden EG, Epstein J, Victor TC, Hon D, Lewis L-A, Pearson D, Beyers N, Ezekowitz RAB, van Helden PD. Mannose binding protein and tuberculosis in a South African population.. *Paediatr Res* 1999;45:459-64
48. Beyers N, Cotton MF, Donald PR, Gie RP, Henning PA, Hesselning PB, Kirsten GF, Kling S, Nel ED, Pieper CH, Ravenscroft A, Schaaf HS, Schoeman JF, Smith J, van Buuren AJ, van der Merwe PL, van Schalkwyk HJ, Wessels G. The mother-to-child HIV transmission debate. *S Afr Med J*. 1999;89(2):104-6
49. Adams JFA, Schölvinc EH, Gie RP, Potter PC, Beyers N, Beyers AD. Decline in total serum IgE after treatment for tuberculosis *Lancet* 1999; 353(9169):2030-33
50. Warren R, Richardson M, van der Spuy G, Victor T, Sampson S, Beyers N, van Helden PD. DNA fingerprinting and molecular epidemiology of tuberculosis: Use and interpretation in an epidemic setting. *Electrophoresis* 1999;20(8):1807-12
51. Goussard P, Gie R, Kling S, Beyers N. Thoracic actinomycosis mimicking primary tuberculosis. *Pediatr Inf Dis J* 1999;18(5):473-75
52. Weber H, Schaaf HS, Beyers N, Gie RP, Fish T, Donald PR. The clinical and radiological features of tuberculosis in adolescents. *Ann Trop Paed* 2000;20:5-10

53. Bentwich Z, Kalinkovich A, Weisman Z, Borkow G, Beyers N, Beyers AD. Can eradication of helminthic infections change the face of AIDS and tuberculosis *Immunology Today* 1999; 20(11):485-87
54. Van Rie A, Warren R, Beyers N, Gie RP, Classen CN, Richardson M, Sampson S, Victor T; van Helden PD. Transmission of a multi-drug resistant *Mycobacterium tuberculosis* strain resembling "Strain W" among non-institutionalised, HIV seronegative patients. *J Inf Dis* 1999; 180(5):1608-15
55. Wessels G, Beyers N, Gie RP, Schaaf HS, Donald PR Haematological abnormalities in childhood tuberculosis. *J Trop Paed* 1999;45:307-10
56. Van Rie A, Warren R, Richardson M, Van Der Spuy G, Victor T, Gie RP, Enarson D, Beyers N, Van Helden P. Exogenous reinfection as a cause of recurrent tuberculosis after curative treatment. *N Engl J Med* 1999;341(16):1174-79
57. Bellamy R, McAdam KPWJ, Beyers N, Ruwende C, Gie RP, Samaai P, Bester D, Meyers M, Corrah T, Collin M, Camidge DR, Wilkinson D, Hoal-Van Helden E, Whittle HC, van Helden PD, Hill AVS. Genetic susceptibility in Africans: a genome-wide scan. *Proc Natl Acad Sci* 2000;97(14):8005-9
58. Van Rie A, Warren R, Richardson M, Gie RP, Enarson DA, Beyers N, van Helden PD. Classification of drug resistant tuberculosis. *Lancet* 2000;356:22-5
59. Schaaf HS, van Rie A, Gie RP, Beyers N, Victor T, van Helden PD, Donald PR. Transmission of Multidrug Resistant Tuberculosis. *Paed Inf Dis J* 2000;19:695-9
60. Enarson D, Beyers N, Zhang L. The TB Pandemic Today. Routes of Transmission; New Target Groups. *Scan J Infect Dis* 2001;33:9-12
61. Van Rie A, Warren R, Mshanga I, Jordaan AM, van der Spuy G, Richardson M, Simpson J, Gie RP, Enarson DA, Beyers N, van Helden PD, Victor TC. Analysis of a limited number of gene codons can predict drug resistance of *Mycobacterium tuberculosis* in a high incidence community. *J Clin Micro* 2001;39:636-41
62. Schaaf HS, Gie RP, Beyers N, Sirgel FA, De Klerk PJ, Donald PR. Primary drug-resistant tuberculosis in children. *Int J Tuberc Lung Dis* 2000;4(12):1149-55
63. Victor TC, van Rie A, Jordaan AM, Richardson M, van Der Spuy GD, Beyers N et al. Sequence polymorphism in the *rrs* gene of *Mycobacterium tuberculosis* is deeply rooted within an evolutionary clade and is not associated with streptomycin resistance. *J Clin Microbiol* 2001;39:4184-6
64. Warren R, Richardson M, Sampson SL, van der Spuy GD, Bourn W, Hauman JH, Heersma H, Hide W, Beyers N, van Helden PD. Molecular evolution of *Mycobacterium tuberculosis*: Phylogenetic reconstruction of clonal expansion. *Tuberc* 2001;81(4):291-302
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29. Schaaf HS, Gie RP, Kennedy M, Beyers N, Donald PR. Evaluation of young children in household contact with adult multidrug-resistant pulmonary tuberculosis: a 30-month follow-up. *Int J Tuberc Lung Dis* 2001; 5(11) Suppl 1: S183
30. Schaaf HS, Gie RP, Beyers N, Donald PR. Drug management of children in household contact with adult multidrug-resistant pulmonary tuberculosis cases. *Int J Tuberc Lung Dis* 2001; 5(11) Suppl 1: S184.
31. Beyers N, Michaelis I, Gie RP, Schaaf HS, Richardson M, Warren R, Fourie B, van Helden P. Transmission of tuberculosis (TB) to children in a high incidence area. *Int J Tuberc Lung Dis* 2001; 5(11) Suppl 1: S185.
32. Hesselting A, Gie RP, Schaaf HS, Beyers N. A critical review of scoring systems used in the diagnosis of childhood tuberculosis. *Int J Tuberc Lung Dis* 2001; 5(11) Suppl 1: S212.
33. Kara S, Van Zyl S, Bester D, Gie RP, Faure M, Van Helden P, Engelke E, Beyers N. Bacterial detection of *Mycobacterium tuberculosis* (MTB) in nasopharyngeal aspirates and gastric aspirates in children under 5 years old. A comparative study. *Int J Tuberc Lung Dis* 2001; 5(11) Suppl 1: S213.
34. Hesselting AC, Werschkul H, Westra A, Donald PR, Hussey G, Beyers N, Heymans HAS, Schaaf HS. The clinical features and outcome of confirmed tuberculosis (TB) in human immunodeficiency virus (HIV) infected children. *The international journal of tuberculosis and lung disease* 2002; 6(10): S181.
35. Beyers N. Improving diagnosis and value of contact tracing. *The international journal of tuberculosis and lung disease* 2002; 6(10): S9.
36. Verver S, Warren RM, Munch Z, Richardson M, van der Spuy GD, Borgdorff MW, Beyers N, Van Helden PD. Tuberculosis transmission in the household in a high incidence area. *The international journal of tuberculosis and lung disease* 2002; 6(10): S148.
37. Verver S, Warren RM, Borgdorff MW, Beyers N, Richardson M, Van Helden PD. Reinfection and relapse in a high incidence suburb. *Int J Tuberc Lung Dis* 2003; 7(11): S210.

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39. Obihara C, Van Lill S, Gie R, Kimpen J, Beyers N. The relationship between atopy, asthma and tuberculin skin test in children living in an area with high prevalence of tuberculosis. *Int J Tuberc Lung Dis* 2003; 7(11): S238.

PAPERS AND POSTERS PRESENTED AT CONGRESSES

International

1. Beyers N, Folb PI, Thompson PAC. The effects of potential teratogens on mouse embryonic development in vitro. International Workshop on the application of Tissue Culture in Toxicology, Soesterberg, Netherlands, July 1980.
2. Thompson PAC, Folb PI, Beyers N. In vitro culture of intact mouse embryos during the period of central nervous system development. International Workshop on the application of Tissue Culture in Toxicology, Soesterberg, Netherlands, July 1980.
3. Thompson PAC, Folb PI, Beyers N. The effects of teratogenic agents on embryonic central nervous system development. World Conference on Clinical Pharmacology and Therapeutics, London, July 1980.
4. Beyers N, Alheit B, Taljaard JJF, Hough FS. Osteopenia in preterm babies. American Society for Bone and Mineral Research Congress, Indianapolis, USA, July 1987.
5. Beyers N, Doerschuk CM, Brumwell ML, Coxson H, Hogg JC. Morphometric analysis of neutrophils in the rabbit lung after infusion of zymosan- activated plasma (ZAP). The American Thoracic Society Meeting, Las Vegas, USA, May 1988.
6. Beyers N, Brumwell ML, Doerschuk CM, Coxson HO, Hogg JC. Neutrophil accumulation and capillary transit times in emphysematous and non- emphysematous human lung. The American Thoracic Society Meeting, Cincinnati, USA, May 1989.
7. Beyers N, Doerschuk CM, Coxson HO, Hogg JC. Neutrophil volume and capillary segment diameter in the rabbit, the dog and the human. The American Thoracic Society Meeting, Cincinnati, USA, May 1989.
8. Gie RP, Beyers N, Schaaf HS, Donald PR. Missed opportunities in the diagnosis of pulmonary tuberculosis in children living in a developing country. 1992 World Congress on Tuberculosis, Bethesda, Maryland, USA, November 1992.
9. Gie RP, Beyers N, Schaaf HS, Smuts N, Fourie PB, Donald PR. Evaluation of criteria for the diagnosis of pulmonary tuberculosis in children living in a developing country. 1992 World Congress on Tuberculosis, Bethesda, Maryland, USA, November 1992.
10. Donald PR, Schaaf HS, Gie RP, Beyers N, Sirgel F. Stool microscopy and culture to aid the diagnosis of pulmonary tuberculosis in childhood. 1992 World Congress on Tuberculosis, Bethesda, Maryland, USA, November 1992.
11. Donald PR, Beyers N, Carlini SM, Van Zyl L, Schoeman J. The prognostic value of cerebrospinal fluid adenylate kinase in children with tuberculous meningitis : A preliminary report. 1992 World Congress on Tuberculosis, Bethesda, Maryland, USA, November 1992.
12. Schaaf HS, Gie PR, Beyers N, Smuts N, Donald PR. Tuberculosis in children less than 3 months of age: a comparative study. 1992 World Congress on Tuberculosis, Bethesda, Maryland, USA, November 1992.
13. Smuts NA, Beyers N, Gie RP, Schaaf HS, Donald PR. The value of the lateral chest radiograph in diagnosing pulmonary tuberculosis (PTB) in children. 18th International Congress of Radiology, Singapore, January 1994.
14. Gie RP, Beyers N, Schaaf HS, Donald PR. An evaluation of children suspected of having pulmonary tuberculosis. Paediatric Week Holland (PWH), Rotterdam, 3-6 July 1994.
15. Beyers N, Smuts NA, Gie RP, Schaaf HS, Donald PR. The value of the lateral chest radiograph in the diagnosis of pulmonary tuberculosis in children. Paediatric Week Holland (PWH), Rotterdam, 3-6 July 1994.
16. Schaaf HS, Beyers N, Gie RP, Nel ED, Donald PR, Smuts NA, Scott F. Tuberculosis (TB) in children: An evaluation of clinical features and special investigations as diagnostic criteria. Paediatric Week Holland (PWH), Rotterdam, 3-6 July 1994.

17. Gie RP, Beyers N, Schaaf HS, Donald PR. An evaluation of children suspected of having pulmonary tuberculosis. Paediatric Week Holland (PWH), Rotterdam, July 1994.
18. Schaaf HS, Beyers N, Nel ED, Gie RP, Donald PR. Seasonal variation in the culture rate of *M.tuberculosis* in children. 28th World Conference of IUATLD/UICTMR, Mainz, Federal Republic of Germany, 14-17 June 1994.
19. Gie RP, Beyers N, Schaaf HS, Van Zyl S, Nel E, Talent JM, Donald PR. Evaluation of children under 5 years in contact with tuberculosis in an area with a high TB incidence. 28th World Conference of IUATLD/UICTMR, Federal Republic of Germany, 14-17 June 1994.
20. Schaaf HS, Beyers N, Nel ED, Gie RP, Scott F, Donald PR. A decade of experience with *M.tuberculosis* culture from children. 28th World Conference of IUATLD/UICTMR, Mainz, Federal Republic of Germany, 14-17 June 1994.
21. Donald PR, Schoeman JF, Beyers N, Carlini SM, Olsen KD, McCracken GH. Cerebrospinal fluid (CSF) &interferon (INF) tumour necrosis factor- \hat{A} (TNF) and interleukin-1 β (IL-1 β) concentrations in children with tuberculous meningitis (TBM). Paediatric Week Holland (PWH), Rotterdam, July 1994.
22. Wiid IJF, Werely C, Beyers N, Donald PR, van Helden PD. Oligonucleotide (GTG)₅ as a marker for strain identification in *Mycobacterium tuberculosis*. Concerted Action on TB, Paris, France, 1994.
23. Van Helden PD, Warren R, Richardson M, Wiid I, Werely C, Beyers N, Donald PR. Molecular epidemiology of tuberculosis: Strain subtypes in a very high incidence community. Keystone Symposia on Molecular and Cellular Biology. Tamarron, Colorado, 1995.
24. PR Donald, Beyers N, Gie RP, Liebenberg C, Hough S, Cooper R, Bouic P, Rook GAW. An evaluation of hormonal and immunological factors associated with tuberculosis in adolescents. Annual meeting of the International Union against Tuberculosis and Lung Disease. Paris, France April 1995.
25. Gie RP, Beyers N, Schaaf HS, Donald PR, Te Water Naudé J, Perkins DR. The outcome of children treated for endobronchial tuberculosis. Annual meeting of the International Union against Tuberculosis and Lung Disease. Paris, France April 1995.
26. Gie RP, Beyers N, Donald PR, Schaaf HS, Van Zyl, S, Zietsman L. The uneven distribution of TB cases in a suburb with a high TB incidence. Conference on Global Lung Health and the 1995 Annual Meeting of the International Union Against Tuberculosis and Lung Disease (IUATLD), Paris, France. September 1995.
27. Gie RP, Beyers N, Schaaf HS, Donald PR, Te Water Naude J. The outcome of children treated for endobronchial tuberculosis. Conference on Global Lung Health and the 1995 Annual Meeting of the International Union Against Tuberculosis and Lung Disease (IUATLD), Paris, France. September 1995.
28. Schaaf HS, Beyers N, Gie RP, Vermeulen H, van Schalkwyk E, Donald PR. An evaluation in a developing community of the childhood contacts of adults excreting multidrug resistant *M.tuberculosis* organisms. 7th International Congress for Infectious Diseases, Hong Kong, 10-13 June 1996.
29. Beyers N, Gie RP, Bester D, Cooper RC, Bouic PJD, Rook GAW, Donald PR. Hormonal changes and the regulation of the Th1/Th2 balance in adolescents with tuberculosis. Third International Conference on the Pathogenesis of Mycobacterial Infections. Stockholm, Sweden, 27-30 June 1996
30. Warren R, Richardson M, Hauman J, Sampson S, Beyers N, Donald P, Van Helden PD. The molecular epidemiology of *mycobacterium tuberculosis* - a study of disease dynamics in a high-incidence community. Third International Conference on the Pathogenesis of Mycobacterial Infections. Stockholm, Sweden, 27-30 June 1996.

31. Schaaf HS, Beyers N, Gie RP, Vermeulen H, Botha P, Groenewald P, Coetzee GJ, Donald PR. The 5-year outcome of multidrug resistant tuberculosis (MDR TB) patients in the Cape Province of South Africa. 7th International Congress for Infectious Diseases, Hong Kong, 10-13 June 1996.
32. Warren R, Richardson M, Hauman J, Sampson S, Beyers N, Donald P van Helden PD. The molecular epidemiology of *mycobacterium tuberculosis* - a study of disease dynamics in a high-incidence community. Glaxo-Wellcome Action TB Meeting, Stevenage, UK.
33. Warren RM, Richardson M, Hauman JH, Sampson S, Beyers N, Donald P, van Helden PD. *Mycobacterium tuberculosis* strains: diversity and population dynamics. Glaxo-Wellcome Action TB Meeting, Stevenage, UK.
34. Weber HC, Beyers N, Gie RP, Schaaf HS, Donald PR. Retrospective study of adolescent tuberculosis. International Paediatric Respiratory Congress. Sydney Convention and Exhibition Centre, Darling Harbour, Sydney. 16-19 March 1997
35. Beyers N, Gie RP, Bester D, Cooper RC, Bouic PJD, Rook GAW, Donald PR. Hormonal changes and the regulation of the Th1/Th2 balance in adolescents with tuberculosis. International Paediatric Respiratory Congress. Sydney Convention and Exhibition Centre, Darling Harbour, Sydney. 16-19 March 1997.
36. Gie RP, Beyers N, Heyns L, Kling S, Samaai P, Schaaf HS. The diagnosis, clinical course and outcome of children with tuberculosis (TB) admitted to a PICU. International Paediatric Respiratory Congress. Sydney Convention and Exhibition Centre, Darling Harbour, Sydney. 16-19 March 1997.
37. Gie RP, Beyers N, Mouton J, van der Wal B, Joubert JR, Donald PR. Lung function tests in adolescents after treatment for tuberculosis (TB). International Paediatric Respiratory Congress. Sydney Convention and Exhibition Centre, Darling Harbour, Sydney. 16-19 March 1997.
38. Beyers N, Gie RP, Warren R, Hauman J, van Helden P, Zietsman L, Donald PR. The distribution and spread of TB in an area with a high TB incidence. International Paediatric Respiratory Congress. Sydney Convention and Exhibition Centre, Darling Harbour, Sydney. 16-19 March 1997.
39. Beyers N, Bester D, Ellis J, Gie RP, Donald PR. Sociological and anthropological factors related to the community management of tuberculosis in two western cape suburbs. International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998
40. Beyers N, Gie RP, Bester D, Cooper RC, Bouic PJD, Rook GAW, Donald PR. Hormonal changes and the regulation of the immune response balance in adolescents with tuberculosis (TB) International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998 (Poster Abstract)
41. Van Rie A, Beyers N, Gie RP, Donald PR, Kunneke M, Zietsman L. The use of a geographical information system (GIS) to evaluate the epidemiology of childhood tuberculosis (TB) in a high incidence community. International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998
42. Schaaf HS, Vermeulen HAS, Beyers N, Gie RP, Donald PR. An evaluation in a developing community of the childhood contacts of adults excreting multidrug resistant *M.Tuberculosis* organisms. International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998
43. Beyers N, Adams J, Fenhalls G, Bardin P, Beyers AD. Immune response in healthy children and adults in a community with a high incidence of tuberculosis. International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998 (Poster Abstract)

44. Gie RP, Van Zyl S, Beyers N, Norrie G, Donald PR. A comparative study of mantoux and the tuberculin skin tests in the diagnosis of childhood tuberculosis International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998 (Poster Abstract).
45. Beyers N, Classen C, Warren R, Van Helden P, Kunneke M, Zietsman L, Donald PR. The distribution and molecular epidemiology of tuberculosis in households. International Congress Paediatric Surgery and Pediatrics. Cape Town - 1-6 February 1998
46. Beyers AD, Van Rie A, Adams J, Gie RP, Beyers N. Th2 lymphocyte response in an area with a high incidence of tuberculosis. Global Congress on Lung Health, 29th World Conference of the International Union Against Tuberculosis and Lung Disease. Bangkok – Thailand 23 – 26 November 1998.
47. Schaaf HS, Vermeulen HAS, Gie RP, Beyers N, Donald PR. Evaluation of children in contact with adults with multidrug resistant pulmonary tuberculosis. Global Congress on Lung Health, 29th World Conference of the International Union Against Tuberculosis and Lung Disease. Bangkok – Thailand 23 – 26 November 1998.
48. Gie RP, Van Zyl S, Beyers N, Schaaf HS, Norrie G, Donald PR. A comparative study of Mantoux and Tine tuberculin skin tests in the diagnosis of childhood tuberculosis. Global Congress on Lung Health, 29th World Conference of the International Union Against Tuberculosis and Lung Disease. Bangkok – Thailand 23 – 26 November 1998.
49. Beyers N, Van Rie A, Schaaf HS, Gie RP, Donald PR. Persistent cough in children. Pulmonary tuberculosis in children. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
50. Van Rie A, Warren R, Richardson M, Van der Spuy G, Victor T, Gie RP, Enarson D, Beyers N, Van Helden P. Exogenous reinfection is a common cause of tuberculosis recurrence after cure. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
51. Warren RM, Richardson M, Sampson S, Bourn W, Van der Spuy G, Hide W, Heersma H, Beyers N. RFLP analysis of *M.tuberculosis* demonstrates strain-dependent evolution. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
52. Booyesen C, Beyers N. The medicalized community DOTS volunteer. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
53. Van Rie A, Gie RP, Enarson D, Beyers N. The outcome of MDR-TB patients in an urban area of South Africa. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
54. Beyers N, Adams J, Van Rie A, Van Aardt M, Beyers AD, Gie RP. Th2 lymphocyte response in an area with a high incidence of tuberculosis. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
55. Van Rie A, Warren R, Richardson M, Gie RP, Enarson D, Beyers N, Van Helden P. Transmission of drug-resistant *Mycobacterium tuberculosis* strains in an epidemic area. 30th IUATLD World Conference on Lung Health, Madrid, Spain 14 – 18 September 1999.
56. Enarson D, Beyers N, Zhang L. The TB Pandemic Today. Routes of Transmission; New Target Groups. Nobel Symposium 114, The Karolinska Institute : Prevention and treatment of tuberculosis in the coming century. 23-26 August 2000.
57. Schaaf HS, Gie RP, Kennedy M, Beyers N, Donald PR. Evaluation of young children in household contact with adult multidrug-resistant pulmonary tuberculosis: a 30-month follow-up. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
58. Schaaf HS, Gie RP, Beyers N, Donald PR. Drug management of children in household contact with adult multidrug-resistant pulmonary tuberculosis cases. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.

59. Beyers N, Michaelis I, Gie RP, Schaaf HS, Richardson M, Warren R, Fourie B, van Helden P. Transmission of tuberculosis (TB) to children in a high incidence area. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
60. Hesselting A, Gie RP, Schaaf HS, Beyers N. A critical review of scoring systems used in the diagnosis of childhood tuberculosis. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
61. Kara S, Van Zyl S, Bester D, Gie RP, Faure M, Van Helden P, Engelke E, Beyers N. Bacterial detection of Mycobacterium tuberculosis (MTB) in nasopharyngeal aspirates and gastric aspirates in children under 5 years old. A comparative study. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
62. Gie RP, Beyers N. Factors influencing children's lung health in the developing world. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
63. Verver S, Warren R, Munch Z, van Helden P, Richardson M, Van der Spuy G, Enarson D, Borgdorff M, Beyers N. Risk factors for transmission of tuberculosis in a high incidence suburb in South Africa. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
64. Booysen CN, Munch Z, Enarson D, Beyers N. Tuberculosis treatment delays at patient and health care level in a high incidence community. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
65. Adams JFA, Fincham JF, Lombard C, Gie RP, Beyers N, Van Helden PD, Beyers AD. Association between BCG scar status, Mantoux skin test responses and prevalence of intestinal parasites. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
66. Münch Z, Van Zill SWP, Booysen CN, Zietsman LH, Beyers N. Tuberculosis transmission patterns in a high-incidence area. 32nd World Conference on Lung Health of the IUATLD, Paris, Nov 2001.
67. Gie RP, Goussard P, Kling S, Beyers N. Unusual forms of intrathoracic tuberculosis in children and their management. Fifth International Congress on Pediatric Pulmonology. Nice, France, 18-21 February 2002.
68. Gie RP, Beyers N, Schaaf HS, Goussard P. The challenge of diagnosing tuberculosis in children : Perspective from the developing world. Fifth International Congress on Pediatric Pulmonology. Nice, France, 18-21 February 2002.
69. Goussard P, Gie RP, Kling S, Beyers N. Expansile pneumonia caused by Mycobacterium tuberculosis (MTB): Clinical, radiological and bronchoscopic appearance. Fifth International Congress on Pediatric Pulmonology. Nice, France, 18-21 February 2002.
70. Hesselting AC, Werschkul H, Westra A, Donald PR, Hussey G, Beyers N, Heymans HAS, Schaaf HS. The clinical features and outcome of confirmed tuberculosis (TB) in human immunodeficiency virus (HIV) infected children. IUATLD, Montreal, Canada, 6 – 10 October 2002
71. Beyers N. Improving diagnosis and value of contact tracing. IUATLD, Montreal, Canada, 6 – 10 October 2002
72. Verver S, Warren RM, Munch Z, Richardson M, van der Spuy GD, Borgdorff MW, Beyers N, Van Helden PD. Tuberculosis transmission in the household in a high incidence area. IUATLD, Montreal, Canada, 6 – 10 October 2002
73. Verver S, Warren RM, Borgdorff MW, Beyers N, Richardson M, Van Helden PD. Reinfection and relapse in a high incidence suburb. IUATLD World Conference, Paris, France. 29.10.2003 – 02.11.2003.

74. Marais BJ, Hesseling AC, Schaaf HS, Starke JR, Gie RP, Donald PR, Beyers N, Enarson DA. Childhood pulmonary tuberculosis – a review of the natural history of disease. IUATLD World Conference, Paris, France. 29.10.2003 – 02.11.2003.
75. Obihara C, Van Lill S, Gie R, Kimpen J, Beyers N. The relationship between atopy, asthma and tuberculin skin test in children living in an area with high prevalence of tuberculosis. IUATLD World Conference, Paris, France.
76. Marais BJ, Hesseling AC, Schaaf HS, Starke JR, Gie RP, Donald PR, Beyers N, Enarson D. Childhood pulmonary tuberculosis -a review of the natural history of disease. Kidz 'n All Conference, 13-17 August 2004, Cape Town International Convention Centre.
77. Obihara CC, Marais BJ, Gie RP, Potter P, Bateman E, Lombard CJ, Beyers N, Kimpen JLL. Prolonged breastfeeding and maternal smoking influence atopy in children from a poor urban community. Kidz 'n All Conference, 13-17 August 2004, Cape Town International Convention Centre.

National

1. Berger GMB, Van der Westerhuizen JH, Beyers N, Moosa A. Iatrogenic hyperosmolality in a neonate. South African Society of Pathologists Congress, July 1978.
2. Van der Westerhuizen JH, Berger GMB, Beyers N, Moosa A. Iatrogenic hyperosmolality in a neonate. South African Pediatric Association Biennial Congress, September 1978.
3. Thompson PAC, Folb PI, Beyers N. The effects of teratogenic agents on embryonic central nervous system development. South African Pharmacology Congress, Port Elizabeth, October 1980.
4. Henning PA, Beyers N. Neonatal statistics, Tygerberg-hospital 1983. Perinatal Congress, Houwhoek, March 1984.
5. Gie RP, De Beer FC, Kirsten GF, Beyers N, Strachan AF. The value of C-reactive protein in meningitis. South African Pediatric Association Biennial Congress, Johannesburg, September 1984.
6. Beyers N, Alheit B, Taljaard JJF, Hough FS. Bone and mineral metabolism in the neonate. South African Pediatric Association Biennial Congress, Johannesburg, September 1984.
7. Beyers N, Shires J, Alheit B, Taljaard JJF, Opperman L, Ross P, Hough FS. Bone and mineral metabolism in babies with obstructive jaundice. South African Pediatric Association Biennial Congress, Cape Town, September 1986.
8. Beyers N, Shires J, Alheit B, Taljaard JJF, Opperman L, Ross P, Hough FS. Bone and Mineral Metabolism in babies with obstructive Jaundice. 23rd SEMDSA and 2nd Bone Mineral Metabolism Congress. Cape Town, September/ October 1986.
9. Beyers N, Alheit B, Taljaard JJF, Hough FS. Osteopenia in preterm babies. 23rd SEMDSA and 2nd Bone Mineral Metabolism Congress. Cape Town, September/October 1986.
10. Beyers N, Shires J, Gie RP, Bester MR, Klopper JF. The value of radionuclide ventilation studies in determining the extent of disease in post- infective bronchiectasis. SA Pulmonology Congress, Pilanesberg, March 1990.
11. Beyers N, Alheit B, Taljaard JJF, Hough FS. High turnover osteopenia in preterm babies. 26th SEMDSA Congress, Wilderness, March, 1990.
12. Beyers N, Alheit B, Taljaard JJF, Hough FS. High turnover osteopenia in preterm babies. 19th Biennial Pediatric Congress, Wildernis, August 1990.
13. Shires J, Gie RP, Beyers N, Bester MR, Klopper JF. The value of radionuclide ventilation studies in determining the extent of disease in post-infective bronchiectasis (PIBE) in children. 19th Biennial Pediatric Congress, Wildernis, August 1990.

14. Carlini SM, Cotton M, Donald PR, Van Zyl L, Oosthuisen J, Beyers N. The standardisation of adenylyate kinase measurements in cerebrospinal fluid (CSF). 19th Biennial Pediatric Congress, Wilderness, August 1990.
15. Gie RP, Beyers N, Schaaf HS, Donald PR. Missed opportunities in diagnosing pulmonary tuberculosis in children. 10th Epidemiological Conference, Cape Town, July 1991
16. Beyers N, Gie RP, Schaaf HS, Donald PR. Clinical picture of tuberculosis in children. 10th Epidemiological Conference, Cape Town, July 1991.
17. Gie RP, Beyers N, Schaaf HS, Donald PR. Missed opportunities in diagnosing pulmonary tuberculosis in children. SA Pulmonology Association Congress, September 1991.
18. Esser MM, Cooper R, Bouic P, Beyers N. Immunological parameters of children with Pulmonary tuberculosis. Immunology & Allergy Congress of South Africa, Kaapstad, Februarie 1992.
19. Gie RP, Beyers N, Schaaf HS, Donald PR. Tuberculous pleural effusion in children. Tuberculosis 1992, Club Mykonos, Cape, September 1992.
20. Gie RP, Beyers N, Schaaf HS, Donald PR. Missed opportunities in diagnosing pulmonary tuberculosis in children. 20th Biennial Pediatric Congress, Wild Coast Sun, Natal, Junie 1992.
21. Gie RP, Beyers N, Schaaf HS, Smuts N, Donald PR. Respiratory conditions often confused with pulmonary tuberculosis in children. Tuberculous pleural effusion in children. Tuberculosis 1992, Club Mykonos, Cape, September 1992
22. Gie RP, Beyers N, Schaaf HS, Smuts N, Donald PR. Lung diseases often confused with pulmonary tuberculosis in childhood. Tuberculosis 1992. University of Stellenbosch, Club Mykonos, Cape, September 1992.
23. Gie RP, Beyers N, Schaaf HS, Smuts N, Fourie PB, Donald PR. Evaluation of criteria for the diagnosis of pulmonary tuberculosis in children living in a developing country. XI South African Pulmonology Society Congress, Wild Coast, Natal, April 1993.
24. Schaaf HS, Gie RP, Beyers N, Smuts N, Donald PR. Tuberculosis in children less than 3 months of age: a comparative study. XI South African Pulmonology Society Congress, Wild Coast, Natal, April 1993.
25. Wiid IJF, Werely CJ, Beyers N, Donald PR, Van Helden PD. A unique marker for strain identification of Mycobacterium tuberculosis. South African Biochemical Society. Twelfth Congress. Stellenbosch. 24 - 26 January 1994.
26. Schaaf HS, Beyers N, Gie RP, Nel ED, Donald PR, Smuts NA, Scott F, Fourie PB. Tuberculosis in children: An evaluation of clinical features, special investigations as diagnostic criteria. Tuberculosis - Towards 2000 Conference. University of Pretoria, Pretoria. 13 - 17 March 1994.
27. Weber HC, Schaaf HS, Gie RP, Beyers N, Donald PR. Adolescent tuberculosis. Tuberculosis - Towards 2000 Conference. University of Pretoria. Pretoria. 13 - 17 March 1994.
28. Schaaf HS, Botha P, Beyers N, Nel ED, Groendewald PJ, Coetzee G, Gie RP, Donald PR. A retrospective analysis of the outcome of patients with multiple drug resistant tuberculosis in the Cape Province. Tuberculosis - Towards 2000 Conference. University of Pretoria, Pretoria. 13 - 17 March 1994.
29. Gie RP, Beyers N, Schaaf HS, Nel ED, Donald PR, Talent JM. Delay in the diagnosis, notification and initiation of treatment and compliance in children with tuberculosis. Tuberculosis - Towards 2000 Conference. University of Pretoria, Pretoria. 13 - 17 March 1994.
30. Van Zyl S, Gie RP, Jollings C, Beyers N, Schaaf HS, Donald PR. Assessment of contact tracing in an urban tuberculosis clinic. Tuberculosis - Towards 2000 Conference. University of Pretoria, Pretoria. 13 - 17 March 1994.

31. Wiid IJF, Werely CJ, Beyers N, Donald PR, Van Helden PD. A unique marker for strain identification of *Mycobacterium tuberculosis*. Tuberculosis - Towards 2000 Conference. University of Pretoria. Pretoria. 13 - 17 March 1994.
32. Werely CJ, Wiid IJF, Beyers N, Donald PR, Van Helden PD. DNA fingerprinting as an indicator of drug susceptibility in strains of mycobacteria. SA Biochemical Society 12th Congress, Stellenbosch, 1994.
33. Beyers N, Smuts NA, Gie RP, Schaaf HS, Donald PR. The value of the lateral chest radiograph in the diagnosis of pulmonary tuberculosis in children. Paediatric Congress. Karos Lodge, Eastern Transvaal, 14-18 August 1994.
34. Schaaf HS, Beyers N, Gie RP, Donald PR, Smuts NS, Scott F, Fourie PB. Tuberculosis (TB) in children: An evaluation of clinical features and special investigations as diagnostic criteria. Paediatric Congress. Karos Lodge, Eastern Transvaal, 14-18 August 1994.
35. Gie RP, Beyers N, Schaaf HS, Donald PR. An evaluation of children suspected of having pulmonary tuberculosis. Paediatric Congress. Karos Lodge, Eastern Transvaal, 14-18 August 1994.
36. Gie RP, Beyers N, Schaaf HS, Van Zyl S, Nel E, Talent JM, Donald PR. Evaluation of children under 5 years in contact with tuberculosis in an area with a high TB incidence. XIIth South African Pulmonology Society Congress, 28th August - 1st September 1994.
37. Gie RP, Beyers N, Schaaf HS, Donald PR. An evaluation of children suspected of having pulmonary tuberculosis. XIIth South African Pulmonology Society Congress, 28th August - 1st September 1994.
38. Warren R, Wiid I, Werely C, richardson M, Beyers N, Donald PR, van Helden PD. Mycobacterium tuberculosis strain identification in a high incidence area by DNA fingerprinting. Federation of S.A. Societies of Pathology: 34th Annual congress, Cape Town, 1994.
39. Warren R, Richardson M, Wiid I, Werely C, Beyers N, Donald PR, van Helden P. Estimation of recent transmission of tuberculosis in a high incidence community in the Cape by molecular epidemiology. Tuberculosis and AIDS 1995, Stellenbosch, 30-31 January 1995.
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COMMUNITY PROJECTS:

Through our work and activities in the communities of Ravensmead and Uitsig we are involved in a variety of community projects.

These projects are not research orientated, but is important for empowering the people in the communities and participation, trust and collaboration in these communities. All the projects involve active participation from the community, promote capacity building and are aimed at being sustainable. Capacity building in the community is very basic in the sense that an atmosphere of organized disciplined community meetings is created which then leads to organized community groups focusing on and working towards specific goals. The ultimate goal of the community projects is to make the projects self-sustaining and to create job opportunities.

Project 1: Development of a sport complex (1995)

Objective: To develop sport facilities for health recreation in Uitsig where there are no recreational facilities for the young people (no library, no sport fields, no swimming pool, no movies).

The sport field was developed with major input from the community and opened officially by representatives from the sponsor company and the Provincial Administration Western Cape and the Education Department.

PROJECT 2: the use of educational drama to educate children about TB, aids, child abuse

Objective: To educate standard 4 and 5 pupils about TB, AIDS and child abuse using educational drama.

Through this project more than 200 000 primary school children in the Western Cape have been educated on TB, HIV and child abuse. The drama was written by artists from the Market Theatre and performed by a youth group from Ravensmead. These 7 young people were previously unemployed and were involved in this project for over 2 years. Through the empowerment obtained by the drama project, they have all gone into the private market and all have permanent employment at the moment.

PROJECT 3: : The use of an educational puppet show : "GET WISE, GET ASTHMA WISE"

Objective : To educate 5-8 year old children about asthma by using a puppet show.

This script for this project was written by health care professionals and a puppet theatre expert. Youth from Ravensmead performed the drama at schools and communities.

Project 4: Home schools.

In Uitsig many children drop out of school before the age of 12 years. With the help of Dr Gerrie Smit an educational psychologist, 5 home schools have been established in Uitsig. Children who are expelled from school or who have dropped out of school and are now just "hanging around" in the streets are motivated to attend the home schools in an attempt to prevent them from becoming gang members. The home schoolteachers are ladies from the community who were trained in a short but effective course on how to teach and motivate these children. The home schools serve as a "halfway station" between the streets and mainstream schooling. Every year a number of these children were placed back into mainstream schooling. This project is done in collaboration and with the co-operation and support of the headmasters of all schools in the area.

PROJECT 5: Job creation project: See separate documents on Tyger Trade and Training.

Project 6: Nutrition Kitchen

This project ran for a couple of years, but due to lack of funds is not active at the moment. The project was being managed completely by volunteer workers from the community. Approximately 200-250 people were fed every day. Children with TB and/or malnutrition and adults with TB were fed preferentially. If not for the kitchen these people will not have a proper plate of food a day. The *Department of National Health* subsidised the kitchen with a small amount per person per day. This was enough to buy the basic lentils, beans, rice and soy protein. All other food came from irregular

donations. Often the transfer of money from National Health was delayed and ingredients had to be supplied by the health care personnel. The budgeting for the kitchen was well controlled and was done by the volunteers who have, through a training programme, been empowered to take care of the finances.

Project 8: Child Development Group

The children from Uitsig all come from very poor homes and often their parents are not literate. These children have a severe developmental backlog by the time they have to go to school. A play group for these children has been started and operated well for a couple of years so that they can get some developmental stimulation in the mornings. Attendance at this play group was free of charge. Training of the personnel attending to the children was done by Grassroots Educare. Tables and chairs were bought from a donation from *Rotary Club*. Outdoor play equipment is erected by a generous donation from the *Nelson Mandela Children's Fund*. Unfortunately, due to a burglary and theft of all the equipment, this project is not active at the moment.

PROJECT 9: Implementation of TB control programme and training of health care workers

Ravensmead and Uitsig formed one of the 4 demonstration areas for implementation of the programme. The programme has been fully implemented in Ravensmead and Uitsig and the most important goals achieved are:

- The TB register for recording and reporting cases are functioning
- >95% microbiological coverage
- 85% cure rate of new smear positive cases
- all health care workers have received training in the new TB control programme

With generous support from Glaxo Wellcome a TB training manual has been developed and 30 sets of overhead slides and 150 sets of training manuals are being printed. These were used for the training of health care workers throughout the Western Cape Province.