DEPARTMENT CARDIOTHORACIC SURGERY

HEAD OF DEPARTMENT: PROF FRANCIS E SMIT

### PERSONNEL AND ACADEMIC

1. **PERSONNEL**
2. ***Medical***

Head of Department : Prof F E Smit

Principal specialist : Prof A G Linegar (left end of Oct 2010)

Senior specialist : Dr M A Long

Registrars : Dr J A T Stroebel,

Dr T de Huis (left end June 2010),   
 Dr I de V Jonker (left end October 2010),

Dr B Melonas,

Dr J Honing

1. ***Non-medical***

Manager Clinical Technology : Mrs M Jansen van Vuuren.

Control Clinical Technologist : Mr D Bester

Chief Clinical Technologist : Me L Liebenberg (left April 2010)

Mr Z A A Musa

Mrs A Crous

Mrs L Thompson Jooste

Me N Montjoie (left May 2010)

Me S Jacobs (join Dept Oct 2010)

Senior Clinical Technologist : Mr R G Haumann (left August 2010)

Student Clinical Technologist : Me L Marais

1. ***Professional***

Specialist Medical Scientist : Mr J J van den Heever

Assistant Director Medical

Scientist (CUT) : Dr L Botes

Medical Natural Scientist : Me C Prins (left April 2010)

1. ***Administrative***

Administrative Officer : Mrs J M Erasmus

Senior Secretary : Me M Lucas (left June 2010)

Mrs D Khoete (left Aug 2010)

Mrs A Haasbroek (started Des 2010)

Senior Administrative clerk : Mrs R Jansen

***e) Social and general***

**EACTS Applied Science for the Cardiothoracic Surgeon/advanced surgical course: 15-17 March 2010**

Prof Smit as part of the International Cooperation Committee of the European Association of Cardiothoracic Surgery (EACTS) looked at development and training in Africa and after four years working at it we are extremely honoured that EACTS have selected the University of the Free State and specifically Bloemfontein to be the site for their African Training and Education outreach. EACTS have send and funded flights for seven world renowned surgeons, including three past presidents of EACTS, to present a training course in Bloemfontein from 15-17 March 2010 which also included the Annual Hannes Meyer Registrar Symposium.

The format was a two day scientific course that addressed research issues. All the invited speakers are well known and established researchers. They all have been editors/editorial staff members of the major international (top three) journals. The EACTS course was attended by 75 cardiothoracic consultants and registrars, 8 cardiothoracic surgeons from Africa and 20 medical technologists (perfusion).

**Inaugural Lecture: Prof F E Smit**

Prof Smit had his Inaugural Lecture on 28 April 2010 on “Cardiothoracic Surgery: Simple complexity of complex simplicity?”.

**The Wheels of Hope Outreach Project:**

This projectinitiated by Prof Francis Smit, Head of the Department of Cardiothoracic Surgery is aimed at heart and lung disease of the adult and paediatric populations of Central South Africa. The project focuses on heart disease and the most important debilitating diseases of the chest. This is the result of co-operation between different role players. We are thankful for the support of Life Health Rosepark Hospital in Bloemfontein, who donated a state of the art Mobile Echocardiography machine to the project and also sponsors a driver, insurance and travelling costs of the team. They also employed a marketing co-ordinator and have made a project coordinator from Consumer Psychology lab, available to the project. Barloworld, through John Williams Motors, Bloemfontein, has made a Mercedes Vito available to the project. The Departments of Health and Education of the Free State and Northern Cape and the Department of Paediatric Cardiology and other departments at the Medical School are some of the important role players in this project.

The Wheels of Hope Project addresses diagnostic and treatment aspects of heart and lung conditions as well as training and education programs for physicians, nursing and allied health professionals. Education programs aimed at the general public are included. It is envisaged that further research projects will follow addressing the prevalence of congenital heart disease, aspects of ischemic heart disease and certain chest conditions.

The project starts off with a research project into the prevalence of Rheumatic Heart Disease in Central South Africa. This project has a local team of investigators complimented by Prof Jonathan Carapetis, Director of the Menzies School of Health Research, Australia, and a world renowned authority in the field. To date a total of 300 learners have been screened and we aim to screen at least 3000 learners in 3 years.

Dr L Botes was invited to visit Fremantle Hospital in Perth, Australia and delivered a talk on “Cardiac Allografts a 24 year experience”, in October 2010.

Website development and upgrade of the Department of Cardiothoracic surgery: www.heartcentre.info.

1. **ACADEMIC ACTIVITIES**
2. ***Teaching***
3. **Undergraduate teaching**

Dr C J Jordaan gave 4 hours of lectures to undergraduate 4th and 5th year medical students. This minimal exposure of the student to an important part of clinical medicine detracts from optimal care of patients at primary and secondary care level and ideally should be expanded in the future.

Dr Jordaan is also a lecturer and examiner for the MMed Intermediate candidates.

1. **Postgraduate teaching**

Post graduate training in cardiothoracic surgery consists of:-

1. Theoretical understanding of disease and the principles of patient selection, surgery, and post operative care of the patient. The theoretical part of the post graduate program is based on a curriculum, adapted from the European Society of Cardiothoracic Surgeons curriculum. It is covered in self learning by the registrar and in weekly tutorials (Wednesday afternoons) supervised by the departmental consultants.

2. Practical approaches to radiological imaging and other special investigations in   
 cardiac and thoracic surgery.

3. Theatre skills and practical operating techniques

4. Principles of clinical governance and administration

5. Principles of clinical research

6. Wet lab facilities

7. A 6 monthly written exam with viva voce, run according to standards and practice of the College of Cardiothoracic Surgeons of SA. A non-compulsory monthly written test in thoracic surgery serves as a revision tool and an opportunity to guide self study and examination technique. Individual feedback is provided to each registrar, in the form of an interview discussion.

The Wheels of Hope Project addresses diagnostic and treatment aspects of heart and lung conditions as well as training and education programs for physicians, nursing and allied health professionals at Bongani Hospital, Welkom on a weekly basis.

Dr Jordaan also lectures to General Practitioners on an annual basis at Dept Family Medicine.

1. ***Research***

The effect of pre-harvest ischemic time on valvular homograft performance – an experimental study. PhD student:  Prof FE Smit

Preoperative risk factor analysis as predictor of surgical outcomes of on-pump and off-pump coronary artery bypass graft surgery. M Tech Clinical Technology Student: Ms C Prins B Med Sc Human Biology, B Med Sc Hons Physiology.

Inflammatory marker comparison of patients with acute coronary syndromes undergoing on-pump versus off-pump coronary artery bypass graft surgery. M Tech Clinical Technology student: Ms H Potgieter B Tech Biomedical Technology.

Evaluation of oximetry values during on- and off pump coronary artery bypass graft surgery. M Tech Clinical Technology student: Ms L Liebenberg B Tech Clinical Technology.

Evaluating the relationship of lactate and glucose levels and operative SIRS in CABG patients. M Tech Clinical Technology student: Mrs A Crous B Tech Clinical Technology.

Reference Echocardiographic measurements for premature and low- birth- weight infants

M Tech Clinical Technology student: Miss S Jacobs B Tech Clinical Technology

The National South African Heart Association Database of Cardiac and Thoracic Surgery.

Development of a polyurethane heart valve – D J Wheatley, F E Smit

Artificial valve testing in a pulse duplicator system. – F E Smit, D J Wheatley, R W M Frater

A prospective comparative study on the effect of aortic valve stenosis on von Willebrand multimers in South African patients and the reversibility after aortic valve replacement F E Smit, C J Jordaan

Prevalance of rheumatic Heart disease in Gr12 learners of the Free state and Northern Cape- F E Smit, S Jacobs

1. **ATTENDANCE OF CONGRESSES/COURSES AND PAPERS** *(Name of congress, venue and date, followed by names of persons who attended, with the titles of papers presented).*
2. ***Papers***

African Heart Summit; Accra, Ghana; 16-19 January 2010

* The development of cardiothoracic surgical programs; Prof F E Smit
* Prosthetic valve use in SA; Prof F E Smit

EACTS Applied Science for the Cardio-Thoracic Surgeon/advanced Surgical Techniques course, 15-17 March 2010.

* Hosted by the Department Cardiothoracic Surgery, Bloemfontein. Surgical research in Africa: pitfalls and advices; Prof F E Smit
* Prosthetic valve challenges in SA; Prof F E Smit.
* New concepts in Hemostasis and acquired coagulopathy; Dr C J Jordaan.

South African Society of Anaestesiologists International Conference, Ilanga Estate, Bloemfontein, March 2010 (Invited papers)

* Prof F E Smit; The role of non- transplant surgery in the treatment if Ischemic Cardiomyopathy
* Dr C J Jordaan: HIV in the ICU.
* Prof A Linegar: What can be done about the burden of lung disease in SA?

Holistic Heart Care, SA Heart Association Congress 2010, Sun City, 8 – 11 August 2010.

* Prediction of surgical outcomes in acute coronary syndromes: Framework for a proposed integrated risk model; Prof F E Smit.
* Selecting children with severe pulmonary hypertension for cardiac surgery. Prof F E Smit.
* Infective endocarditis in Africa. Dr J A T Stroebel (Received medal for best Scientific Paper).
* Evaluation of near infra-red spectroscopy in patients with acute coronary syndrome undergoing on- and off-pump coronary artery bypass graft surgery; Dr L Botes.
* Inflammatory marker comparison of patients with acute coronary syndromes undergoing on-pump versus off-pump coronary artery bypass graft surgery; Ms H Potgieter.

Critical care society of southern Africa conference, Champagne sports resort, Drakensberg, October 2010.

* Dr C J Jordaan; HIV in the ICU-Should they be admitted?

***b) Congresses and courses attended***

African Heart Summit; Accra, Ghana; 16-19 January 2010, Prof F E Smit

CTSNet Editorial Training, Ford Lauderdale, USA, 22 January 2010; African Editor:   
 Prof F E Smit

Society of Thoracic Surgeons 46th Annual Meeting and American Association of Thoracic Surgeons, Ford Lauderdale, USA; 23-27 January 2010; Prof F E Smit

EACTS Applied Science for the Cardio-Thoracic Surgeon/advanced Surgical Techniques course, 15-17 March 2010. Hosted by the Department Cardiothoracic Surgery, Bloemfontein.

Prof F E Smit, Prof A G Linegar, Dr M A Long, Dr J A T Stroebel, Dr T de Huis , Dr I de V Jonker, Dr B Melonas, Dr J Honing, Mr J J van den Heever, Dr L Botes, Me C Prins, Mrs M Jansen van Vuuren, Mr D Bester, Me L Liebenberg, Mr Z A A Musa, Mrs A Crous, Mrs L Thompson Jooste, Me N Montjoie, Me S Jacobs, Mr R G Haumann, Me L Marais

South African Society of Anaestesiologists Conference, Ilanga Estate, Bloemfontein, March 2010. Prof F E Smit, Prof A G Linegar, Dr C J Jordaan.

Holistic Heart Care, SA Heart Association Congress 2010, Sun City, 8 – 11 August 2010. Prof F E Smit, Dr J A T Stroebel, Dr L Botes, Me H Potgieter.

Critical care society of southern Africa conference, Champagne sports resort, Drakensberg, October 2010. Dr C J Jordaan.

24th EACTS Annual Meeting; Palexpo Conference and Exhibition Centre, Geneva, Switzerland; 11-15 September 2010; Prof F E Smit, Dr JAT Stroebel.

Successful completion of the 12 weeks TPM Online Tissue Banking Course, University of Barcelona, Spain; Mr J J van den Heever

1. **PERSONNEL ACHIEVEMENTS**
2. ***Committees***
3. Prof F E Smit: EXCO member SA Society Cardiothoracic Surgeons

EACTS Chairman of Education Committee for Africa

ICC Committee of EACTS

SAHA member of Ethics committee

EXCO member Medical School, University Free State

SAHA database committee

Chair, Practice Management Committee, Faculty of Health Sciences, University of the Free State

Member Working Group FS Health Department on re-development of academic platform.

1. Prof AG Linegar: EXCO member SA Society Cardiothoracic Surgeons

Treasurer SA Society Cardiothoracic Surgeons   
 Secretary College of Cardiothoracic Surgeons SA

Examiner College of Medicine (Critical Care)

1. Dr C J Jordaan: Member and Chair of the Interfaculty Animal Research Ethics   
    committee.

Member of the Critical Care Society of South Africa, Annual Congress Organising Committee

Adverse event committee member, Universitas Hospital

Drugs and therapeutics committee member, Pelonomi Hospital

Member of the risk committee, Pelonomi Hospital

1. Mr J J vd Heever: Member of the South African Transplantation Society

Current national representative for Tissue Banks on the SATS EXCO

***b) Prizes***

***c) Awards***

Candidate : D Bester

Award : S2A3 medal – CUT

For : Best Masters Degree at CUT 2010

Title *:* Effects of warm ischemic times on harvested homografts

Candidate : H Potgieter

Award : Best Novice Researcher 2010

For : Best Novice researcher at Prestige Research Day - CUT

Title *:* Inflammatory marker comparison between patients with   
 acute coronary syndrome undergoing on-pump versus   
 off-pump coronary artery bypass graft surgery.

Candidate : Dr J Brink

Award : CMSA FCS Cardio- medal

For : Best candidate in cardiothoracic surgery

Candidate : Dr J A T Stroebel

Award : Best Scientific Paper at SA Heart Congress

For : Infective endocarditis in Africa

1. **OTHER ACHIEVEMENTS**

**M Med Cardiothoracic Surgery**

Dr R Schulenburg

Dr. JAT Stroebel

**CMSA FCS Cardio**

Dr R Schulenburg

Dr. JAT Stroebel

1. **FUTURE PROSPECTS**

*(Only concrete and realistic projections).*

The Department received confirmation that we will again be hosting the EACTS African Training course in June 2011.

The Wheels of Hope Outreach Project will be officially launched in 2011

DEPARTMENT CARDIOTHORACIC SURGERY

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### PUBLICATIONS

##### A. SCIENTIFIC PUBLICATIONS

1. ***Full-length articles***

Subsidy-bearing publications

Prins C, I de Villiers Jonker, Botes L, Smit FE. A review of risk stratification models for cardiac surgery in sub-Saharan Africa. Cardiovascular Journal of Africa (In press).

Linegar A, Van Zyl G, Goldstraw P, Smit F.  
The relationship of clinical activity to academic productivity in thoracic surgery.   
SA J Anaesthesia and Analgesia. 2010; 16(1):101-102

Linegar A, Van Zyl G, Goldstraw P, Smit F.  
What can be done about the burden of lung disease in SA?    
SA J Anaesthesia and Analgesia. 2010; 16(1):123-124

Linegar A, Smit F, Van Zyl G, Goldstraw P.   
Pleuro-pulmonary disease in central South Africa: A thoracic surgical perspective.    
S Afr Med J.  2010; 100: 510-512.

Linegar A, Smit F, Stroebel A, Schaafsma E.   
A South African National Database in Cardiothoracic Surgery.   
African J Cardiovasc Surg.  , 2010; 21:152-153.

Botes L, van den Heever JJ, Smit FE, Neethling WML. Cardiac Allografts –a 24 yr experience. Tissue and Cell Banking

Non-subsidy-bearing publications

None

1. ***Abstracts***

***PUBLISHED ABSTRACTS***

Smit FE, Prins C, Jonker I, Botes L. Prediction of surgical outcomes in acute coronary syndromes: Framework for a proposed integrated risk model. SA Heart Journal 2010; 7:225.

Botes L, Liebenberg L, Smit FE, WML Neethling. Evaluation of near-infrared spectroscopy in patients with acute coronary syndrome undergoing on- and off-pump coronary artery bypass graft surgery. SA Heart Journal 2010; 7:193.

Potgieter H, Smit FE, Botes L, Neethling WML. Inflammatory marker comparison between patients with acute coronary syndrome undergoing on-pump versus off-pump coronary artery bypass graft surgery. SA Heart Journal 2010; 7:220.

Stroebel JAT, Smit FE, Prins C, Brown SC, Cloete J. Infective Endocarditis in Africa. SA Heart Journal 2010; 7:226.

Smit FE. The role of non- transplant surgery in the treatment in Ischemic Cardiomyopathy? Southern African Journal of Anaesthesia and Analgesia. SASA Congress Edition 2010; Volume 16, number 2, Mar/Apr 2010

Dr C J Jordaan; HIV in the ICU-Should they be admitted? Southern African Journal of Critical Care; volume 26 No 2

1. ***Books, monographs, chapters in books***

Linegar AG, Schulenburg R.   
Bronchial Gland Tumours.   
Text book of Thoracic Surgery of the European Society of Thoracic Surgeons,   
In Press.

Linegar AG, Schulenburg R.   
Tracheobronchial Injuries.   
Text book of Thoracic Surgery of the European Society of Thoracic Surgeons,   
In Press.

Linegar AG, Schulenburg R.   
Tracheobronchial Foreign Bodies.   
Text book of Thoracic Surgery of the European Society of Thoracic Surgeons,   
In Press.

Obstetrics in South Africa. Cronje H S, Grobler CJF, Visser AA. Dr C J Jordaan was responsible for 4 chapters in this book.

1. ***Published proceedings of national and international congresses***

Smit FE, Prins C, Jonker I, Botes L. Prediction of surgical outcomes in acute coronary syndromes: Framework for a proposed integrated risk model. SA Heart Journal 2010; 7:225.

Botes L, Liebenberg L, Smit FE, WML Neethling. Evaluation of near-infrared spectroscopy in patients with acute coronary syndrome undergoing on- and off-pump coronary artery bypass graft surgery. SA Heart Journal 2010; 7:193.

Potgieter H, Smit FE, Botes L, Neethling WML. Inflammatory marker comparison between patients with acute coronary syndrome undergoing on-pump versus off-pump coronary artery bypass graft surgery. SA Heart Journal 2010; 7:220.

Stroebel JAT, Smit FE, Prins C, Brown SC, Cloete J. Infective Endocarditis in Africa. SA Heart Journal 2010; 7:226.

Smit FE. The role of non- transplant surgery in the treatment in Ischemic Cardiomyopathy? Southern African Journal of Anaesthesia and Analgesia. SASA Congress Edition 2010; Volume 16, number 1, Jan/Feb 2010

Dr C J Jordaan; HIV in the ICU-Should they be admitted? Southern African Journal of Critical Care; volume 26 No 2

1. ***Published research reports***

None

##### B. PATENTS REGISTERED

None

DEPARTMENT CARDIOTHORACIC SURGERY

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### SERVICE DELIVERY

1. **CLINIC AND LABORATORY STATISTICS**
   1. **Tissue Laboratory (Mr. J J Van der Heever)**

A total of 76 aortic valves, 29 pulmonary valves and 8 pulmonary bifurcations were dissected out of 76 donor hearts. From these, 53 valves were not fit for use due to HIV/HepB/HepC/venereal diseases (18), Positive cultures (6) and calcification/atherosclerosis/pathology (29).

During 2010, a total of 32 aortic valves, 20 pulmonary allografts and 6 pulmonary bifurcations were cryopreserved for clinical use. Ten valves (1 Ao + 9 Pu) were inplanted locally and 23 valves(18 aortic & 5 pulmonary) and one pulmonary bifurcation were distributed to six other cardiac units within South Africa. One pulmonary valve had to be bought from the bank in Pretoria due to a shortage of the valve size that was required. There is a constant demand for these valves to be transplanted into recipients, while the availability of suitable donor valves remains extremely limited and is becoming an ever increasing problem due to various reasons.

The local preparation of bovine pericardial patches as replacement tissue in cardiac procedures has been terminated, and a much more durable commercially available product are currently being used. Glutaraldehyde used for fixation of autologous pericardium are still being prepared, but only about 20 samples used in 2010.

1. **FUTURE PROSPECTS**

Polyurethane Valve development project in collaboration with Prof DJ Wheatley of Glasgow, Scotland.

Website development and upgrade-Department of Cardiothoracic surgery: [www.heartcentre.info](http://www.heartcentre.info)

Mr J J van den Heever enrolled for a PhD in Decellurized Homografts, under Prof WML Neethling from Perth, Australia and Prof F E Smit

Mr D Bester enrolled for a PhD on Polyurethane Valve development- Prof F E Smit and Prof D J Wheatley

Dr C J Jordaan enrolled for a PhD on the interaction between fluid mechanics and Coagulation in artificial valves – Prof F E Smit and Prof D J Wheatley

Mrs L Thompson Jooste will start her M Tech on Model of Flow of different valves – Prof F E Smit, Prof R W M Frater

**Ongoing research projects:**

* Prevalence of Rheumatic heart disease among Gr. 12 learners , of the Free State and Northern Cape
* Effect of different ischemic times on the performance of pulmonary homograft implants in sheep.
* The National South African Heart Association Database of Cardiac and Thoracic Surgery.
* Development of a polyurethane heart valve.
* Artificial valve testing in a pulse duplicator system.
* A prospective comparative study on the effect of aortic valve stenosis on von Willebrand multimers in South African patients and the reversibility after aortic valve replacement

DEPARTMENT CARDIOTHORACIC SURGERY

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### HIGHLIGHTS

1. **HIGHLIGHTS OF SPECIAL INTEREST**

**EACTS Applied Science for the Cardiothoracic Surgeon/advanced surgical course: 15-17 March 2010**

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The format was a two day scientific course that addresses research issues. As we know, South Africa is not nearly producing enough research and in Cardiothoracic Surgery, only two departments are active in research and development. All the invited speakers are well known and established researchers. They all have been editors/editorial staff members of the major international (top three) journals. The EACTS course was attended by 75 cardiothoracic consultants and registrars, 8 cardiothoracic surgeons from Africa and 20 medical technologists (perfusion).

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Website development and upgrade of the Department of Cardiothoracic surgery: [www.heartcentre.info](http://www.heartcentre.info).

Prof Smit was appointed Africa editor for CTS-Net.

1. **ACTIVITIES / RESEARCH / ACTIONS**

Website development and upgrade-Department of Cardiothoracic surgery: [www.heartcentre.info](http://www.heartcentre.info)

“Wheels of hope” Outreach Project (Includes Launch and DVD)

**Ongoing research projects:**

* Prevalence of Rheumatic heart disease among Gr. 12 learners , of the Free State and Northern Cape
* Effect of different ischemic times on the performance of pulmonary homograft implants in sheep.
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