NHLS ANNUAL REPORT 1st April 2011 – 31st March 2012

DEPARTMENT OF PATHOLOGY

DIVISION OF MEDICAL MICROBIOLOGY

HEAD: PROF E. WASSERMAN

DIAGNOSTIC SERVICE

The Division of Medical Microbiology has been SANAS-accredited since February 2009. We offer a high quality diagnostic service in microbiology, immunology and serology.

The molecular facility to aid in the early diagnosis of TB, is a fully operational diagnostic service, and has significantly reduced the turnaround time of TB specimens and the screening of resistance to first-line agents.

Other new tests that have been implemented at NHLS Tygerberg include:

- 16SRNA PCR plus sequencing for identification of bacteria
- Pan-fungal PCR plus sequencing for identification of fungi

Consultants from the Division conduct regular ward-rounds and clinical discussions and offer an academic programme well attended by clinicians and post-graduate students. Our service platform has recently been extended to incorporate Karl Bremer Hospital and the surrounding clinics. Further changes in the areas of service delivery are expected soon. Our clinical staff interact on a regular basis with our clients at Tygerberg Hospital, as well as, Karl Bremer Hospital, to improve the service and communication. Telephone consultations, ward-rounds and clinical meetings with clinicians ensure a continuing comprehensive service.

Prof E. Wasserman & Dr M. Esser attend regular expert committee meetings with UCT and Greenpoint laboratories. Discussions included amongst other topics, standardized testing, post-graduate programmes and a syllabus for staff training.

This Division again collaborated with colleagues at the University of Cape Town to publish an updated booklet on Antimicrobial Guidelines for Academic Hospitals of the Western Cape. This booklet is distributed to doctors at Tygerberg and Groote Schuur Hospital, as well as to doctors in peripheral hospitals.

RESEARCH

This Division has three well defined research focus areas:

1. The laboratory diagnosis of tuberculosis
2. The epidemiology and pathogenesis of staphylococcal infections
3. Immunopathology in HIV-exposed children

We are currently involved in the following projects/ collaborations:

- Full participation in the national surveillance programs directed by the NICD
• A collaboration concerning the pathogenesis of staphylococcal infection with researchers at Würzburg University, Germany: Mr Will Oosthuysen – PhD candidate in the Division spent six months (July 2011 – January 2012) at the Julius-Maximilian-Universität in Würzburg, Germany to complete his research project on the virulence factors in *Staphylococcus aureus* in complicated infection. This research is funded by the NRF and an equivalent German partner agency. Prof Wasserman is also co-supervising another PhD student working at Würzburg.

• In collaboration with the University of British Colombia a 24 month pilot birth cohort study on HIV exposed uninfected infants was completed. A funding application with the Peter Wall Institute of Advanced Studies from Vancouver was successful for a larger birth cohort study to focus on the immune and environmental risk parameters of HIV-exposed infants which will commence in 2012, Dr Esser and Prof Mark Cotton from the KIDCRU Unit in Tygerberg Hospital are the local investigators for the study.

• The Primary Immunodeficiency Registry of South Africa, Principal investigator M. Esser, continues to promote the networking for laboratory diagnosis and treatment of patients with Primary Immunodeficiencies. Almost 200 patients are recorded nationally.

• Close collaboration with the African Society of Immunodeficiencies (ASID) was again established with a teaching school for Primary Immunodeficiencies hosted at the Allergy Congress in Sun City in September 2011 by Dr Esser. A national working group for PID – PIDSA was constituted under the auspices of the Allergy Society of South Africa, with Dr Esser chairing the group.

### Research Projects

**Evaluating the capability of a recently qualified Medical Microbiologist to practice in the rapidly changing South African healthcare environment.**
Principal researcher: Dr R. Hoffmann

**Population structure, host cell interaction and pathogenesis of *Staphylococcus aureus* strains isolated at Tygerberg Hospital, South Africa.**
Principal researcher: Prof E. Wasserman

**A phenotypic and genotypic characterization of strain types, virulence factors and agr groups of colonizing *S. aureus* strains associated with bloodstream infection.**
Principal researcher: Prof E. Wasserman

**Primary Immunodeficiency South African Registry/ Database.**
Principal researcher: Dr M. Esser

**Pilot Study of Innate Immune Abnormalities in HIV exposed Uninfected infants.**
Principal researcher: Dr M. Esser

**Investigation of biofilm formation in *Staphylococcus aureus* causing bacteraemia in patients admitted to Tygerberg Hospital, Western Cape Province, South Africa.**
Principal researcher: Prof E. Wasserman

**The relevance of anti-cyclic citrullinated peptide measurement in the HIV infected patient.**
Principal researcher: Dr M. Esser

**An evaluation of the diagnostic utility of peripheral blood-culture versus bone marrow culture in children with suspected disseminated tuberculosis.**
Principal researcher: Prof E. Wasserman

**Immunological parameters of HIV exposed uninfected infants with severe infectious morbidity.**
Principal researcher: Dr M. Esser

Real time PCR as a diagnostic tool for detecting BTK mutations in agammaglobulinaemia.
Principal researcher: Dr M. Esser

Development and validation of flow cytometry based assays as alternatives to the isotope incorporation assay for the diagnosis of immune dysfunctions.
Principal researcher: Dr M. Esser

A characterisation of S. aureus causing bacteremia in patients admitted to TBH.
Principal researcher: Prof E. Wasserman

Improving laboratory diagnostic techniques to detect M. tuberculosis complex and C. neoformans as the causative agents of chronic meningitis in the cerebrospinal fluid of adult patients.
Principal researcher: Dr K. Hoek

Molecular Diagnosis of Mycobacterium tuberculosis from Urine and Stool specimens of patients with suspected Tuberculosis disease.
Principal researcher: Dr K. Hoek

**HONOURS**

Two lecturers from the Division of Medical Microbiology received awards for the most influential lecturer contributing to the academic success of first year medical students four years in a row. Prof Arderne Forder (right) received it for three consecutive: years 2009 – 2011 and Prof Elizabeth Wasserman (left) received it in 2012.
TEACHING AND TRAINING

Undergraduate

This Division has maintained its extensive involvement in training MBChB students in their different modules. It has also presented modules to the BSc Dietetics programme.

Trainee medical technologists from the Cape Peninsula University of Technology have done their practical training in the division and received lectures and practical training from technologists in this Division.

During 2011 the Division received a 2 year accreditation from the HPCSA for the training of 1 Intern Scientist.

The Immunology Section of this Division received a 5 year accreditation from the HPCSA for the training of 3 Intern Scientists. Members of the HPCSA were specifically impressed with the extensive exposure to clinical work that interns would receive.

Postgraduate

Registrars from this Division rotate on a regular basis to Green Point, Worcester and Paarl laboratories. Registrars also rotate for six months through the Virology Division as well as a three month rotation in the Infection Control Unit at Tygerberg Hospital.

PROFESSIONAL DEVELOPMENT

Postgraduate candidates graduated: 3 (1 MSc MedSc, 2 Hons BSc)
Postgraduate candidates enrolled: 9 (4 MMed (Micro), 2 doctoral, 2 MSc MedSc, 1 Hons BSc)

Dr Rena Hoffman, a consultant from the Division, is continuing her MPhil studies in Health Science Education presented by Stellenbosch University.

Prof Elizabeth Wasserman is in the final year of her MSc (Clinical Epidemiology) studies.

Mr Noel Nel – Laboratory Manager enrolled for a year part-time Management Development Course with UNISA and attended the first study school from 18-21 July 2011 in Sandringham.

New consultant, Dr Catherine Samuel (from Groote Schuur Hospital) joined the Medical Microbiology Division at the beginning of June 2011.

RESEARCH OUTPUT

Publications:


Conference presentations:

International: 3


World Immunology Conference, New York – 2-5 June 2011 attended by Dr Monika Esser.


National: 2 presentations

4th FIDSSA Congress, 8-12 September 2011, Durban. The epidemiology and pathogenesis of Staphylococcal infection. Plenary presentation: E Wasserman.


22nd Biennial National Congress of the South African Arthritis and Rheumatism Association (SAARA) – Muldersdrift, Gauteng – Sept 11 attended by Dr Monika Esser.

NHLS Symposium on Legionnaires Disease – 12 May 2011 attended by Dr Shareef Abrahams.

Local: 3 presentations

