UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE
SCHOOL OF MEDICINE
SKOOL VIR GENEESKUNDE
HAEMOTOLOGY AND CELL BIOLOGY
HEMATOLOGIE EN SELBIOLOGIE

University of the Free State

Department of Haematology and Cell Biology

Haematology@UFS - A guide for registrars

Updated: May 2018

Haematology
What type of work?
Haematologists investigate, diagnose and treat diseases such as anaemia, leukaemia and lymphoma. They also care for patients with blood-clotting abnormalities and are responsible for ensuring that blood transfusions are safe and available when they are needed. Haematologists work in laboratories as well as with patients in clinics and on the wards. They can be involved throughout the patient's journey, from the first hospital visit, through laboratory diagnosis to treatment. Hundreds of thousands of blood tests are done every day. Haematologists give advice to other doctors about any abnormalities that show up and may recommend further tests to get to the bottom of the problem.

What skills are needed?
Haematologists work with many groups of staff as well as with patients, so they need good interpersonal and written communication skills. They need to be able to discuss complex test results with scientists and doctors, and explain complicated diseases and treatments to patients and their relatives. Haematologists also need a very broad understanding of medicine as they treat patients who may have complicated medical problems. Haematologists are members of The Royal College of Physicians as well as The Royal College of Pathologists to reflect this wide role.

There have been enormous advances in the understanding of blood proteins and the management of many conditions has been transformed in the last 20 years. Exciting and sophisticated new drugs have been developed to treat previously fatal conditions such as leukaemia and lymphoma. The preparation of blood products has improved the safety of transfusions and the treatment of clotting disorders.

Did you know?
Over 130 million haematology tests are performed in England every year.
https://www.rcpath.org/discover-pathology/i-want-a-career-studying/blood/haematology-careers.html (accessed 19 May 2018)

Also see ***A day in the life of...Dr Joel Newman, Haematologist*** https://www.rcpath.org/discover-pathology/i-want-a-career-studying/day-in-the-life/dr-joel-newman-haematologist.html (accessed 19 May 2018)

The purpose of this document

This document serves as a guideline to registrars joining the Department of Haematology and Cell Biology and provides details of what will be required from you during your four-year stay in the department. It outlines the structure of your four year residency as well as the day-to-day programme. The following are important websites.

For an overview of the Department please visit our website https://www.ufs.ac.za/health/departments-and-divisions/haematology-and-cell-biology-home.

The Department falls under the School of Pathology of the Faculty of Health Sciences https://www.ufs.ac.za/health/departments-and-divisions/school-of-pathology-home and

For rulebooks of the University of the Free State please visit www.ufs.ac.za.

For an overview of the NHLS please visit www.nhls.ac.za.

Please regularly check the websites of:

- the Colleges of Medicine of South Africa (www.cmsa.co.za) and
- the website of the HPCSA (www.hpcsa.co.za).

This is a living document and will be updated as necessary.

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1. Personnel

Consultant Haematological Pathologists

Prof MJ Coetzee	Head of Department (HOD) (coetzeemj@ufs.ac.za)
Dr J Joubert	Pathologist
Dr L Haupt	Pathologist
Vacant	Pathologist
Dr R Weyers	Pathologist (Affiliated, Ampath)
Dr R van der Linde	Pathologist (Affiliated, Australia)
Dr Z Djordjevic	Pathologist (Affiliated, Ampath)
Dr A Pooe	Pathologist (Affiliated, VRP/Lancet)

Medical scientists

Prof Chris Viljoen	Head of the School of Biomedical Sciences (Molecular Biology)
Prof Muriel Meiring	Special Haemostasis
Dr Wattie (WJ) Janse van Rensburg	Haemostasis and BMedSc(Hons) programme
Dr André de Kock	Tissue Typing Laboratory
Mr Jan Roodt	Flow cytometry

Consultant Clinical Haematologists:

Dr J le R Malherbe	Head of Clinical Unit: Division of Clinical Haematology, Department of Internal Medicine
Dr Claire Barrett	Physician with experience in clinical haematology

Current Haematology Registrars (Pathology):

The Department has six HPCSA registrar numbers, but currently only four (4) are funded by NHLS. Two of the six are for international (supernumerary) registrars.

Secretary

Ms Portia Chidi, Tel (051) 405 3043, chidibp@ufs.ac.za, Fax (051) 405 2923

2. Location

The Department functions from the NHLS Universitas Academic Laboratories, and Department of Haematology and Cell Biology, School of Pathology, Faculty of Health Sciences, University of the Free State.

3. Applying for a registrar appointment

Contact a consultant or the HOD and spend (shadow) two full days in the Department. This will allow you to see what a haematologist does and if you actually like it. If you spend this time we can also answer any questions. Medical students do not have much exposure to laboratory medicine of haematology.

Send your CV to the HOD (coetzeemj@ufs.ac.za) so that we are aware of you and can contact you as soon as new posts become available. Please include an official academic transcript of your marks as an undergraduate medical student.

Posts are advertised early in the year for the July intake, and early in the second semester for the January intake. The NHLS has official advertisements which the Department can also distribute.

Submit your applications to the Academic Affairs, Research and Quality Assurance (AARQA) HR of the NHLS by email. Please include an official academic transcript of your marks as an undergraduate medical student. Applications are shortlisted according to a standardised system that acknowledges academic, professional and leadership achievements. Currently you cannot do your Part I exams before becoming a registrar, but any additional post-MBChB qualifications help.

From AARQA the applications are distributed to the relevant Departments. Here the applicants are shortlisted and invited to formal interviews.

The interviews are standardised and include broad questions about laboratory work and haematology. If you have spent time shadowing in haematology these ought not to be difficult.

If you are successful, you will be offered a contract.

4. What will ensure a successful registrar career?

- If you have decided to become a specialist, you have decided to make yourself into a specialist. The NHLS and UFS are there to assist you and give you opportunities, not to spoon-feed you.
- When you are a pathologist you have to take significant responsibility for many medical and other decisions, as well as your own professional development. Make a point of preparing yourself so that you will be able to transition into that role easily. Every specimen or patient you manage is an opportunity to improve your skills. Take responsibility for sorting out problems.
- Learn as many generic skills as possible, e.g. IT. This makes you marketable.
- Hone your own time management and study methods.
- Remember that potential employers phone the lab personnel to ask which registrars are the best.
- A guitarist becomes a better guitarist mainly by playing the guitar, not by reading about the guitar. You become a better haematologist mainly by doing practical haematology, not just by reading about it.
- The golfer Gary Player said “The harder I practice, the luckier I get”.

5. In order to register with the HPCSA as a specialist you need

- Proof that you have been registered as a registrar in a designated HPCSA training post for four years. In order to obtain this registration, you need to be registered for the MMed(Haem).
- Proof that you have satisfied all the academic requirements:
    - Passed the National Exit Exam (FCPath(SA) Haem)
    - Completed your research project

In order to receive any training in the Department you need to be registered for the MMed(Haem) degree at the UFS, each year.

The contract with the NHLS is a temporary appointment for a maximum of four years. If you do not qualify yourself as a pathologist in four years you have to get employment elsewhere. There may be extenuating circumstances for you to extend your training time that needs to be approved by both the University and the NHLS.

Familiarise yourself with all the rules and regulations of the HPCSA, NHLS and the UFS, and check for updates continually. Adhere to them.

Join us in having fun doing haematology.

6. Critical information about your NHLS appointment

- Registrars are different from medical officers. Registrars are people who are busy transforming themselves into pathologists every minute of the day.
- Become academically literate. Academic literacy involves "reading, writing, listening, speaking, critical thinking, use of technology, and habits of mind that foster academic success" (Intersegmental Committee of the Academic Senates. Academic Literacy: A Statement of Competencies Expected of Students Entering California's Public Colleges and Universities. ICAS: 2002 t http://www.academicsenate.cc.ca.us/icas.htm)
- The contract with the NHLS is a temporary appointment for a maximum of four years. If you do not qualify yourself as a pathologist in four years you have to get employment elsewhere. There may be extenuating circumstances for extending your training that need to be approved by both the University and the NHLS.
- Please check you appointment contract carefully and read the fine print.
- If you qualify within four years, you can become a pathologist sooner.
- The NHLS has stopped the two-year work back clause. Opportunities as a pathologist in the NHLS are on a supply and demand basis at present.
- The NHLS and UFS are in discussion about registrars regularly.
- If you do not pass your Part I exams within two years you should rethink your career in pathology.
- Read you NHLS email regularly. There is often important information about salaries, tax, and important NHLS announcements.
- You are allowed 20 days of paid study leave per two years. You will not be granted more than these days if you have to repeat an exam.
- No private work is allowed.

7. Working conditions and HR matters

a. Working hours

The working hours of the department are from 08:00 – 17:00, Monday to Friday. Registrars are entitled to a one-hour lunch break, which may be taken off-site. A tea room and kitchen with a microwave oven and refrigerator is also available. If you have convincing reasons to start earlier and leave earlier these will be accommodated.

The core laboratory is open 24 hours a day, seven days a week. After hours, the laboratory is manned by a medical technologist but there is always a registrar as well as a consultant on call.

The basic core working week is 40 hours, with 16 hours of overtime per week. Registrars are expected to keep a logbook of their overtime work.

b. Leave

- All leave (sick leave, annual leave, family responsibility leave, etc.) is governed by the rules of the NHLS. Registrars apply for leave online. In addition, annual leave will only be granted to registrars by the HOD if the following three criteria are met:
- Registrars must make arrangements with their colleagues to cover their sections for them whilst on leave
- They must obtain permission from their registrar colleagues to take leave
- Leave is submitted online and approved by the Head of Department

A registrar is entitled to 20 days of study leave per two year cycle.

You are entitle to four months paid maternity leave twice. Your registrar contract is extended accordingly.

8. Reporting structures

- We expect professional behaviour at all times.
- Registrars report to the consultants and HOD.
- The HOD reports to the Head of the School of Pathology, who reports to the Dean of the Faculty of Health Sciences.
- Registrars do not report to Laboratory Managers (Operational NHLS). Respect them however. We work together with our professional colleagues, the medical laboratory technologists. They have a University degree and are registered with the HPCSA. In a sense our relationship with them is similar to that between a clinical doctor and nursing staff. They cannot work without each other.
- If a clinical doctor has an issue with you, involve one of the pathologists immediately.
- If someone has a complaint about a registrar or a pathologist the HOD should be involved. We "praise in public and scold in private".
- In the same way we ask you to channel any complaints via the pathologists or HOD. Please do not jump the gun! In this way problems are solved at the lowest level possible. If the HOD does not want to assist you, you are then welcome to escalate the issue.
- Email etiquette:
    - If you copy the whole world when you send work-related emails, the implication to the primary recipient is that you place the recipient under pressure, or want to shame or disgrace the recipient. Carefully consider who you copy with every email.
    - Never delete any email related to work
    - Be polite at all times. Angry emails are bad for your reputation.
    - If you fail a College exam, follow the prescribed complaint procedure. It will get you much further than an outburst.

9. After-hours duties

a. The management of calls

It is the duty of the registrars to provide a call roster to the Departmental Secretary a week before the end of each calendar month. Calls usually last one week from Monday morning 08:00.

If for a valid reason calls have to be exchanged, notify the: consultant on call, the Service Laboratory, and the UAH switchboard.

Registrars on call must make certain that they can be contacted by telephone at all times. Therefore they must have reception and airtime, and not have their cell phones on voicemail.

b. Manage phone calls professionally

Registrars on call must be able to reach the laboratory within 20 minutes.

The registrar does "first call" and the consultant "second call".

Remember that as a medical practitioner you remain fully responsible for your actions. If you have any doubt, contact the consultant on call. The consultant then takes responsibility for the medical decision.

Being on call adds value to the service we render.

c. Duties while on call

The registrar on call is responsible for managing clinical and laboratory queries after hours. This would include:

- Telephonic consultations and microscopic review of certain urgent peripheral blood smears or other tests.
- Registrars may be consulted about patient management. It is not their duty to accept or decline patients for referral, or to see patients after-hours. This falls within the scope of the Division of Clinical Haematology.
- The registrar on call is also responsible for management of the routine laboratory workload on weekends, which usually involves being present in the laboratory most of Saturday and Sunday morning.
- It is not necessary for registrars to remain on-site once the routine weekend work is finished, but they should remain available to return to the laboratory should the need arise.

10. Managing difficulties in your job or studies

We are here to help you. Remember that we take responsibility for the Department. You get the quickest and easiest solution to any difficulty when you report it to your consultant or HOD immediately. Even the worst surprise is much easier to manage while it is still “fresh”. It is also better for the HOD to hear it first hand from you. Honesty is the best policy.

If you have any problem with studies, ask for help immediately. It is our duty to help you. Do not leave unresolved issues until just before exam. If you leave things until the last minute the options to help you are usually very limited and the consequences dire.

11. Structure of the Department

The activities of the Department can broadly be divided into three sections:

- Service Delivery
- Teaching
- Research

a. Service delivery

The Department of Haematology and Cell Biology renders tertiary laboratory and clinical services to the Universitas Academic Hospital, National District Hospital, and Pelonomi Tertiary Hospital in Bloemfontein, as well as to all NHLS laboratories and hospitals in the Free State and Northern Cape provinces. Clinical services are organised under the umbrella of the Division of Clinical Haematology of the Department of Internal Medicine and also the Division of Paediatric Oncology, Department of Paediatrics while laboratory services fall within the ambit of the Universitas Academic Laboratories of the NHLS. You will take part in clinics after we have obtained indemnity from the Department of Health.

We find that the clinical work allows you to conceptualise haematological conditions much easier. It also helps you to write pathology reports that are clinically useful. It also prepares you for the clinical cases in the Part II exam.

i. Service Laboratory

All tests with a rapid turnaround time (TAT) which have an immediate impact on patient management are performed at this site. In haematology, these consist mainly of full blood counts and coagulation profiles. Registrars from the Department are always available in the core laboratory both to assist with the

interpretation of results and to provide advice to clinicians regarding the work-up of patients with haematological disease.

Registrars must familiarise themselves with the principles underlying all instrumentation, as well as their mode of operation. They must also understand the scientific basis and the standard operating procedure of all tests performed. The core laboratory provides the ideal environment for gaining insight into aspects such as quality assurance, laboratory design and inventory control.

ii. Special haematology

More specialised tests are also performed at this site and at the Special Haemostasis Unit of the Department. These include bone marrow aspirates and trephine biopsies, haemoglobin (Hb) electrophoresis, platelet aggregometry, PFA-100, TEG, TGA, blood grouping, Coombs tests, antibody identification and titre, flow cytometry with immunophenotyping, FISH and other molecular assays, as well as a wide range of other specialised haematological examinations.

The laboratory participates in the quality assurance programmes of the NHLS, Royal College of Pathologists of Australasia (RCPA) and UK NEQAS (UK National External Quality Assurance Scheme). The laboratory maintained its SANAS accreditation for many years.

iii. INR Testing facility

A warfarin dosage service is provided by means of a point-of-care INR-testing facility at the Universitas haematology clinic, for outpatients from the surrounding areas.

Registrars are expected to participate in all the activities mentioned above.

iv. The Tissue Typing Laboratory

Many PCR tests, and FISH investigations, are done here. This is also the HLA cross matching laboratory for central South Africa. It also does paternity and kinship testing.

v. Clinical Services

The adult haematology outpatient clinic at Universitas Academic Hospital provides the mainstay of registrars' clinical haematology exposure. It also serves as an important vehicle for the teaching of undergraduate medical students as well as internal medicine registrars. Haematology (pathology) registrars are expected to see and manage patients in this outpatient clinic on Monday and Wednesday mornings.

Members of the department also provide valuable input into the Paediatric Haematology Clinic, but do not generally attend this clinic. We are involved in the monthly Paediatric Haemophilia Clinic. Registrars are also expected to perform bone marrow aspiration and trephine biopsies in the clinics and on the wards, when consulted. In general, all paediatric bone marrows are performed by the Department of Paediatrics. Registrars are however expected to rotate at Paediatric Oncology for a period of two weeks during their training, to familiarise themselves with paediatric oncology haematology practice.

vi. Bleeding Disorder Clinic

The Universitas Haematology Clinic also houses a Haemophilia Treatment Centre that is recognised by the World federation of Hemophilia (WFH). It is called the Bleeding Disorder Clinic because it offers a specialised clinic to all persons with bleeding disorders on the first and last Thursday morning of every month. Registrars are expected to see and manage patients in this clinic.

vii. Ward rounds

Although registrars are expected to be familiar with the haematology patients currently admitted to the adult and paediatric wards, they are not expected to participate in routine ward rounds or other aspects of the in-patient management of these patients, at present. The registrar on call and the Part II candidates

are however expected to attend the Academic Grand Ward Round in the adult haematology wards on Tuesday mornings, for teaching purposes. Registrars present cases to the clinical haematologists during these rounds as a way of preparing for the clinical exams.

viii. Outreach clinics

The department operates two outpatient Outreach Haematology Clinics, run by registrars, on Wednesday mornings. Kimberley Hospital is visited twice a month, using an NHLS vehicle. Registrars are expected to divide the clinics up amongst themselves.

b. Teaching

If you participate in undergraduate teaching, you may claim discount on your UFS registration fees by completing a form.

The Department is responsible for the training of undergraduate medical, BSc and optometry students, as well as postgraduate BMedSc(Honours), Masters and Doctoral students and registrars. Registrars also contribute towards undergraduate training, which currently entitles them to a 50% rebate on their university class fees.

i. Undergraduate teaching

The Rule Book Faculty of Health Sciences contains the latest programme information. Curricula and module codes may be updated.

1. Immunology as part of Microbiology for MBChB I

This module is presented by the Department of Medical Microbiology and primarily focuses on infections and antimicrobial drugs. The Department of Haematology and Cell Biology presents basic introductory lectures on immunology during this module, which are then expanded on in MHAE2724. Registrars may be expected to participate in some of the interactive workbook sessions.

2. Haematology and Immunology for MBChB II

This module is the medical students' first contact with haematology and consists of 16 sessions, comprising lectures, group work, interactive workbook sessions and case studies. The lectures cover topics such as haematopoiesis, clinical and laboratory assessment of haematological disease, nutritional and haemolytic anaemias, bone marrow failure, haematological and lymphoid malignancy, disorders of haemostasis, thrombosis, basic haematology physiology, immunology, blood transfusion, and molecular haematology, and are presented over the course of one semester. Registrars are expected to facilitate all the workbook sessions of this module.

3. Clinical Skills for MBChB II

This is a multidisciplinary practical module during which time students are taught how to take a history from patients and examine them, including patients with haematological conditions. They are also taught how to perform the complete laboratory work-up for malignancy, including bone marrow aspiration and biopsy. Registrars may be expected to participate in some of these sessions.

4. Immunology and Haematology for B.Optom

This module is presented over one semester by the department to undergraduate optometry students in the School of Allied Health Professions and covers introductory haematology and immunology as applicable to the eye. Registrars may be expected to participate in this module.

5. Undergraduate BSc programme

Members of the Department are also involved in the undergraduate BSc training programme for Human Molecular Genetics. Registrars may be expected to participate in some components of this programme.

6. Small-Group Tutorials for MBChB IV and V

Final year medical students are taken for two small-group tutorials during their rotation in the department as part of their Internal Medicine rotation. These tutorials are the registrars' responsibility. The first tutorial covers the approach to a patient with thrombophilia, while the second tutorial is a microscope session, covering basic peripheral blood morphology. They are taught how to request and interpret haematology tests and how to best use the laboratory rationally.

7. Postgraduate Teaching

Registrars and consultants take part in Internal Medicine and other postgraduate programme *ad hoc*.

12. Registrar postgraduate training and academic programme

A comprehensive practical and theoretical teaching programme has been put in place for registrars in haematology which seeks to cover the whole syllabus over a four year period, based on the FCPath(SA) (Haem) Regulations and FCPath(SA) (Haem) Examination Blueprint (please get thee latest copy from www.cmsa.co.za).

Please consult the website of the Colleges of Medicine of South Africa (CMSA) website regularly (www.cmsa.co.za) as regulations may change from time to time. Haematology falls under the College of Pathologists.

Please consult your Faculty of Health Sciences Rulebook. The one published in the year that you begin as registrar applies to you throughout your training.

A lot of the information and training is done electronically. It is important that you keep up to date with developments in IT.

Teaching of registrars takes place daily in the laboratories and clinics mentioned above. Registrars report on bone marrow aspirates and trephine biopsies independently but comments are always formulated in conjunction with a consultant who will authorize the final report, after joint review around the teaching microscope.

Special attention has been given to aspects of theoretical haematology, quality assurance and management and these are addressed in weekly lectures prepared for the department by consultants and registrars. These lectures are designed to stimulate registrars to read about theoretical aspects of haematology in preparation for the final examination.

Registrars also receive informal training in the haematology clinic and are encouraged to interact with their clinical colleagues in providing interpretation of laboratory tests and by participating in the management of patients with haematological disease.

Registrars in haematology are expected to attend and pass a course in research methodology (NAM702) and health care practice (GPV703) within the first 24 months of registering for the MMed(Haem) programme.

Within the first 18 months of appointment, registrars are expected to complete the primary (FCPath(SA) Haem Part I) examination.

The FCPath(SA) (Haem) Part I exam concentrates on molecular pathology, immunology, blood transfusion and physiology.

Please consult the CMSA website for the dates of the exams, as you need to register six months ahead of the exam. The Part I exam consists of two written papers that are written in Bloemfontein.

Registrars will receive weekly tutorials aimed at preparing them for the Part I or II exams.

Attend the honours molecular biology courses that are offered by Microbiology or Haematology.

We encourage the registrars to do the annual Immunology Course at Wits. This is run over two weeks. It provides you with most of the immunology tools you need as a haematologist, and is wonderful preparation for the Part I. It is usually in March and April. It is generally for the registrar's own cost, even though special leave is granted. We try to ensure that the NHLS pays the expenses of NHLS registrars.

We encourage the registrars to do the annual DNA Course at UCT. This is run over three days. It provides you with much of the molecular genetics tools you need as a haematologist, and is wonderful preparation for the Part I. It is usually in September. It is generally for the registrar's own cost, even though special leave is granted. We try to ensure that the NHLS pays the expenses of NHLS registrars.

There are other courses and conferences that you should try to attend, e.g. the Federation of Societies of Pathology of South Africa (FSASP) congresses, haemogloinopathy workshops, etc.

a. Formal training sessions:

The following formal training sessions are scheduled in the registrar programme:

i. Clinic meetings

Here all patients seen in the clinic are briefly presented and discussed, so that everyone can have the opportunity to learn from all the cases seen that day in the clinic.

ii. Tuesday Science meetings

Science lecture: presented by scientists in the department, with scientific laboratory content, aimed at registrars, PhD, Masters and Honours students.

iii. Clinicopathologic conferences:

- Weekly presentation of interesting morphology cases to clinicians for discussion. Known colloquially as "Show & Tell".

iv. Clinical Haematology and Haematology Pathology Academic Programme:

- This consists of weekly lectures presented by consultants and registrars of the department and the Division of Clinical Haematology on a broad range of topical and current subjects in haematology.

v. Quality control and quality assurance training:

- included in weekly QA meeting.

vi. Journal discussions:

- discussion of selected recent articles in haematology journals, by consultants and registrars in the department. During this session separate tutorials are also held for registrars preparing for their primary exams.

b. Rotations:

In order to facilitate both training and service delivery, registrars are required to rotate through the different sub-disciplines of haematology. While rotating through a specific section, registrars are responsible for all the routine work done in that section. Certain specialised rotations are also arranged off-site. The formal training programme and routine work programme is summarised in the tables below.

i. Year One: Pre-Primary Phase.

Abbreviations: COAG Coagulation, FLOW Flow cytometry, IMM Immunology, MORPH Morphology (can be subject to change).

PRE-PRIMARY PHASE													
Focus:	Call readiness		Day-to-day functioning				Prepare for primary exam						
Month	1	2	3	4	5	6	7	8	9	10	11	12	PRIMARY EXAM*
Standard activities and rotations:	Orientation (one week). Morphology + Mini (one day) rotations		Calls start Morphology + Midi (one week) rotations in COAG, FLOW, IMM				Full rotations start COAG	IMM	MORPH FLOW	MORPH	MORPH	COAG	
Supplementary rotations or activities							Molecular and cytogenetics (one week)	Immunology course (one week, off-site)	Special haemostasis	DNA diagnostics course (one week, off-site)			

*Plan this date as soon as you begin as a registrar!

ii. Year Two: Post Primary Phase.

POST-PRIMARY PHASE												
Focus:	Research Project											
Month	1	2	3	4	5	6	7	8	9	10	11	12
Standard activities and rotations:	IMM	MORPH FLOW	MORPH	MORPH	COAG	IMM	MORPH FLOW	MORPH	MORPH	COAG	IMM	MORPH FLOW
Supplementary rotations or activities							Deadline for completion of primary exam*					

*Plan this date as soon as you begin as a registrar!

NB. Registrar are not allowed to register for the Part II exam without having had their research project examined first.

iii. Year Three: Post Primary Phase and Pre-Final Phase.

POST-PRIMARY PHASE							PRE-FINAL PHASE					
Focus:	Research Project						Preparation for final exam					
Month	1	2	3	4	5	6	7	8	9	10	11	12
Standard activities and rotations:	MOR	MOR	COAG	IMM	MOR FLOW	MOR	MOR	COAG	IMM	FLOW	MOR	MOR
Supplementary rotations or activities							Deadline for completion of Research Project*					

*Plan this date as soon as you begin as a registrar!

iv. Year Four: Pre-Final Phase and Final Phase.

PRE-FINAL PHASE						FINAL PHASE							
Focus:	Preparation for final exam					Preparation for final exam							
Month	1	2	3	4	5	6	7	8	9	10	11	12	FINAL EXAM*
Standard activities and rotations:	COAG	IMM	FLOW	MOR	MOR	ROTATIONS AS REQUIRED FOR EXAM PREPARATION							
Supplementary rotations or activities	SANBS Rotation (2-4 weeks as required, off-site)	Molecular and cytogenetics (2-4 weeks as required, off-site)	Special haemostasis (one week)	Special flow cytometry and special haematology (one week, off-site)	Ward residency for clinical exam preparation (1-2 weeks)	Paediatric haematology/oncology residency (two weeks)	Exam prep at examination venue (one week, possibly off-site)	Additional supplementary rotations as required.	Calls end (service delivery permitting)	As required	As required	As required	

*Plan this date as soon as you begin as a registrar!

c. Weekly Programme. (Formal Training Sessions In Bold).

Attending every one of these sessions builds academic stamina and depth!
Meal times tend to be fitted into the schedule flexibly
No registrar or consultant leaves until all the routine diagnostic work for the day is complete

<table>
<tr><th>Time</th><th>Monday</th><th>Tuesday</th><th>Wednesday</th><th>Thursday</th><th>Friday</th></tr>
<tr><td>08:00</td><td rowspan="4">Haematology Clinic</td><td>Science Academic programme</td><td>Clinicopathologic conference</td><td>Academic Programme</td><td>QA meeting</td></tr>
<tr><td>09:00</td><td rowspan="2">Registrar on call Academic Ward Round
Other registrars: Routine Lab work</td><td rowspan="2">Registrar on call Routine Lab Work
Other registrars: Haematology Clinic or Outreach Clinic.</td><td rowspan="3">Reg-on-call: Lab Work
Others: Bleeding Disorders Clinic</td><td>Review of logbooks
Flow case of the week</td></tr>
<tr><td>10:00</td><td>Journal Discussion</td></tr>
<tr><td>11:00</td><td>Registrar on call: Present a clinical case to Clin Haem</td><td>Separate tutorials for Part I and Part II</td></tr>
<tr><td>12:00</td><td rowspan="5">Lab Work</td><td></td><td></td><td rowspan="5">Lab Work</td></tr>
<tr><td>13:00</td><td>Clinic Meeting</td><td>Clinic Meeting</td><td>Clinic Meeting</td></tr>
<tr><td>14:00</td><td rowspan="3">Lab Work</td><td rowspan="3">Lab Work</td><td rowspan="3">Lab Work</td></tr>
<tr><td>15:00</td></tr>
<tr><td>16:00</td></tr>
</table>

13. Curriculum

Please look at the CMSA website to regularly to check for any updates.

The curriculum and HPCSA rules under which you started your training usually stay valid until you have qualified. This is usually despite any changes in rules during your training. If you do not qualify within four years, a complicated situation may arise, with lots of red tape. It is much easier to work hard and qualify on time.

The curriculum is based on the syllabus of the College of Pathologists of South Africa, which is available online. There are four main areas of subject matter included within the curriculum of haematology. These are summarised below:

a. Laboratory aspects of haematology.

Specialist clinical haematology including the diagnosis and management of:

- Anaemia
- Benign white cell disorders
- Thrombocytopenia and platelet function defects
- Acute leukaemia
- Chronic leukaemia
- Myeloma and lymphoma
- haemophilia & related disorders
- Thrombophilia & thrombosis
- Acquired bleeding disorders
- Haemoglobinopathies
- Bone marrow failure syndromes
- Myelodysplasia
- Myeloproliferative disorders
- Specialist areas of haematology.
- The trainees will acquire a basic knowledge of transfusion medicine, paediatric haematology, haemostasis and thrombosis, haematology of pregnancy and marrow transplantation.
- Quality assurance and management issues in haematology.

The final examination (FCPath(SA) Haem Part II) is taken after a minimum of 42 months and usually extends over a period of a few days. It consists of two written papers as well as practical examinations in morphology, coagulation, blood transfusion, cytogenetics, immunophenotyping, special haematology and molecular haematology. It also involves clinical cases. An oral examination will conclude the evaluation process.

Every registrar must also keep a logbook, recording all meetings, seminars and discussions attended as well as all competencies acquired. This logbook must be available for inspection on request by consultants, external examiners and accreditation personnel. This logbook is based on the Colleges of Medicine of South Africa (CMSA) Portfolio of Learning and is available from the CMSA website.

At the end of four years of training, registrars should be fully conversant with:

1. All aspects of theoretical haematology
2. The full range of laboratory tests available and their interpretation
3. Quality assurance procedures
4. Health & Safety
5. Management and layout of a haematology laboratory
6. Current transfusion practice

14. Reading

Most journals are available electronically at the UFS Library website. Registrars are expected to be familiar with the latest editions of standard haematology texts:

- Hoffbrand – Postgraduate haematology
- Dacie & Lewis – Practical haematology
- WHO – Classification of Tumours of the haemopoietic and Lymphoid Tissues
- Bain – Bone Marrow Pathology
- Bain – Blood Cells
- Rossi – Principles of Transfusion Medicine
- Williams – Hematology
- Wintrobe – Clinical Hematology

The following journals should also be read regularly, concentrating especially on reviews and guidelines:

- Blood
- British Journal of Haematology
- Thrombosis and Haemostasis
- Journal of Haemostasis and Thrombosis
- European Journal of Haematology
- Haematologica
- New England Journal of Medicine
- Haemophilia

15. Research

- Every registrar is required to devise and execute an independent research project based on a subject of his or her choice, depending on local expertise and opportunity.
- Be familiar with the Rule Book for the MMed(Haem) concerning the research project. It is submitted for external evaluation.
- Remember that the object of the exercise is to prove that you can initiate and complete are small research project, in the time available to you.
- Remember that there are often administrative and practical delays. The earlier you start, the easier it is to complete the project
- An initial protocol should be written with the assistance of a supervisor (usually one of the consultants in the department) and this must be submitted to the UFS Faculty of Health Sciences Ethics Committee for approval, in collaboration with a biostatistician. This protocol should also

incorporate a literature search and review. Approval must also be obtained from the Department of Health and the relevant hospital's clinical manager.
- Following these formalities, the student must gather and analyse data in order to formulate a scientific conclusion based on the statement of an initial hypothesis or question.
- Funding, if required, can be obtained from various sources:
    - NHLS – K funding and NHLS Trust
    - MRC
    - NRF
    - Discovery Foundation

As a condition for attendance at a "Pathology Congress" (the annual FSASP Congress) (Federation of South African Societies of Pathology), a registrar will be required to present a poster or a paper at such a congress. It is highly recommended that registrars present their research project at the UFS Faculty of Health Sciences Forum as well as at a national congress.

It is recommended that each registrar present at least two poster or paper presentations at the UFS Forum and a local congress, within their four year residency period.

Try to publish the results of your research project as soon as possible, possibly even before you submit your dissertation for evaluation. In that way, your research will have been peer-reviewed even before it is marked by the evaluators.

16. Your first week as a registrar

- You will be shown round the Department and introduced to everyone. With time all the venues and routine will be explained.
- You will be given time to do the following. You will need to have many forms signed by the HOD.
- Remember that you might not have had much laboratory exposure, and that you will undergo a steep learning curve
- UFS obligations
    - Register with the UFS for the MMed(Haem) and get a student number
    - Obtain your student card
    - Use it to register for access to the campus
    - Use it to register at the Library
    - Obtain an access tag to the Department and necessary buildings
    - Gain access to you UFS email and internet
    - Register on Blackboard (where some teaching material is kept online)
    - Make certain that you are officially registered as a registrar with the HPCSA
    - Familiarise yourself with the UFS website (www.ufs.ac.za)
- NHLS obligations
    - With the help of HR obtain
        - A salary number
        - Register your bank account details with the NHLS
    - With the IT Department
        - Access to the NHLS email and internet
        - Access to the Laboratory Information System

    - Access to the laboratories
    - Obtaining white coats and other personal protective equipment
    - Start a “personnel file” with copies of all your registrations and qualifications, as well as certified copies of your ID
    - Complete all the health and safety questionnaires.
    - Check your hepatitis B immunisation is up to date. The NHLS will provide vaccine and do the necessary blood tests.
- The secretary will help you with the following:
    - Getting your office keys
    - Learning where the fax machines and scanner are
    - Obtaining a telephone list
    - Obtaining PIN to use the UAH telephone exchange
    - Be registered on the telephone system
    - Obtain a personal speed dial number
    - Obtaining access to the Hospital Information System, the radiology system, etc.
    - Obtaining indemnity from the Free State Department of Health to work in the hospital.

17. Timeline ("Milestones"):

- Good time management is crucial in a course with a learning curve as steep as is found in haematology. Important "Milestones" that need to be achieved, can be summarised as follows:
- First six days: spent on orientation, induction paperwork, introductions, general laboratory familiarization, etc.
- First six weeks: spent on obtaining "call-readiness" which involves training in basic morphology, the recognition of morphological haematological emergencies, basic coagulation etc.
- First six months: spent on obtaining the skills and abilities necessary to function on a day-to-day basis in the department, focusing on bone marrow morphology, coagulation, flow cytometry, immunology and clinical skills.
- During the next six months, the focus shifts towards preparation for the College Primary exam (FCPath(SA) Haem Part I). The aim should be to have successfully passed the Primary by 12-18 months after starting the course.
- During the next 6-12 months, the focus shifts towards completing the MMed research project. The aim should be to have completed the research project by 2-2½ years after starting the course.
- During the next 12-18 months the focus shifts toward preparation for the final exam (FCPath(SA) Haem Part II).

18. General Rules and Recommendations for Registrars

1. All registrars are expected to be on duty between 08:00 and 17:00.
2. If you are sick you or your next of kin must phone the Department ASAP. Text messages are not valid.
3. At all times (including clinic days), one registrar must be on duty in the core lab to consult with clinicians and to deal with problems which may arise.
4. There is no objection to registrars studying or working on research projects during working hours with the proviso that service delivery always comes first and that all outstanding work must be completed as quickly as possible.
5. It is critically important for registrars to be "hands-on" in both the clinic and the laboratory. This involves active participation in seeing and managing haematology patients, as well as practical work on the bench in the laboratory. Hours and hours of studying, without practical bench-side and bedside exposure, is pointless. Registrars should aim to present at least six clinical cases per year to the Clinical Haematologists, under exam conditions, in order to be familiar with proper presentation and exam technique. Registrars should aim to personally perform as many of the tests in the laboratory as possible, in order to be familiar with their principles. Registrars should also aim to personally perform as many bone marrow aspirations and trephine procedures as possible, as this is also a CMSA logbook requirement.
6. Registrars largely "drive" the activities of our department and are responsible for the image we project to the broader medical community. We depend on your loyalty and dedication to enhance our profile and maintain the positive perception which outsiders have of us. Haematology is a close-knit fraternity in South Africa and cordial relations with your senior and junior colleagues are also important.
7. Although numerous formal training sessions are offered, registrars must realise that postgraduate students need to be self-motivated, and that it is ultimately each student's own

responsibility to equip himself/herself to be able to function independently one day as a specialist.

8. Registrars are required to maintain their HPCSA registration annually. Make certain what your HPCSA training post number is and that you are registered as a registrar with that number. Your HPCSA registration number is also important.
9. The NHLS requires that you maintain HPCSA registration as a condition of service. It collects proof that you are registered annually. You receive a stipend to help cover your annual registration early in every year.
10. Registrars have to register for the MMed(Haem) annually. You cannot receive any training from the Department unless you are registered as a student.
11. It is highly recommended that registrars obtain membership of a medical indemnity organisation such as MPS, for state work. Fortunately this is not too expensive. Registrars work in clinical areas in the hospital and are partially covered as NHLS employees, but should note that in case of a medical negligence claim against the province or NHLS, due to the alleged negligence of a registrar, there will be a secondary respondent, namely the registrar involved. Please do not rely on legal help from the NHLS, as in in some cases the NHLS or Province may be laying a case against a registrar.
12. Please remember that consultants are always willing to assist with problems and to add value to your theoretical knowledge based on their insight and experience in haematology. They enjoy teaching and chose to work in a teaching environment because of this.

We trust you will find your time in the department pleasant and fulfilling. You are about to embark on one of the most challenging but rewarding journeys of your entire professional life – specialization. We will do our utmost to make it a thoroughly enjoyable and worthwhile experience.

Acknowledgements
This is based on the Registrar Guide of the Department of Haematology, University of Pretoria, with kind permission of Prof Roger Pool.

Prof MJ Coetzee
Head: Department of haematology and Cell Biology

Revised: May 2018

19. Registrar commitment

Each of these milestones need to be signed and dated by the HOD and registrar
Registrar's name: _____
Registrar's signature: _____
Date of starting as a registrar: _____
Date of end of NHLS registrar contract: _____
Planned date for sitting Part I exam _____
Date of passing Part I exam _____
Planned date for start of research project _____
Planned date for completion of research project _____
Planned date for sitting Part II exam _____
Date of passing Part II exam_____
Date of registration as a pathologist (haematological) _____

_____	_____
Head of Department	Registrar
Date:_____	Date: _____