



NEONATOLOGY
POST GRADUATE
DIPLOMA TRAINING
PROGRAM CURRICULUM

Contents

Introduction	2
Neonatology Diploma Curriculum.....	2
Vision	3
Mission Statement.....	3
Values:	3
Admission criteria to the post-graduate diploma in Neonatology.....	4
Teaching Methods in the Specialty Training Program in Neonatology	4
Duration of program	7
Positions.....	Error! Bookmark not defined.
Certification	7
Curriculum outcomes	7
Curriculum Outcomes Categories	7
The curriculum outline	9
Clinical Management in Neonatology	9
Hands on skills training	10
Clinical Governance	10
Leadership skills.....	10
Additional focus topics (specialty)	10
Specific Learning Outcomes.....	10
Assessment, progression and readmission.....	16
Assessment.....	16
Formative assessment	16
Summative assessment	16
Practical Clinical Skills.....	17
Bedside Procedures	18
Monitoring skills:.....	18
Therapeutic skills:.....	18
Investigative skills:.....	18
Career Progression	18
MBChB only entrants	18
Paediatrics Specialist entrants	18
Competency log book.....	0
Proposed faculty.....	Error! Bookmark not defined.
Other activities	3

Introduction

This Curriculum describes the work-based, competence-based professional training programme in Neonatology under the Zambia College of Medicine and Surgery (ZACOMS) administered by the Zambia Paediatrics Association. The intended readership for the curriculum and guideline include the following:

- Trainees, host departments and managers of Paediatrics and Child Health (PCH) healthcare services;
- Specialist Training Program (STP) PCH trainers, which includes all those involved in supervising, coordinating, assessing and delivering specialist education and training in Paediatrics and Child Health;
- Academic, administrative and professional staff within Higher Education Institutions (HEIs), the Higher Education Authority (HEA), and the Zambia Qualifications Authority (ZAQA);
- Strategic partners involved in supporting reproductive, maternal, and newborn care, and the training of healthcare practitioners in these related fields.

ZACOMS advances professional training of medical specialists using the professional competence-based certification model beyond traditional university-based specialist training. It promotes specialist training as a vital pursuit for a successful professional medical career. The ZACOMS also promotes the increase of universal health coverage (UHC) by promoting equitable access to cost-effective quality specialist care as close to the family as possible for people in Zambia at all levels of socioeconomic status and geographical location. The ZACOMS certifies and admits members and/or fellows as specialists in a medical and/or surgical specialty in any of the various specializations of medicine and surgery. The Zambia Colleges of Medicine and Surgery (ZACOMS) oversees the training of Paediatrics and Child Health specialists working through the Zambia Paediatrics Association (ZPA).

This skill-based neonatology diploma is designed to provide training for postgraduate students within Zambia. The goal of the training is to enhance the capacity of health professionals in the management and delivery of neonatal services at health facilities conducting deliveries and nursing small and sick newborns. The development of the program is prompted by the lack of skills in neonatal care which are crucial to the survival of neonates. This skill-based diploma program will reduce the pressure on the very limited tertiary beds available throughout Zambia and ultimately have a significant impact on neonatal morbidity and mortality

Neonatology Postgraduate Diploma Curriculum

A curriculum refers to the overall knowledge, skills and competences that students are supposed to learn during a whole programme or course.

The Neonatology diploma curriculum consists of learning objectives that trainees are expected to meet; the course content and the methods of learning; the books and other material used in the course; and modes of assessment.

The Neonatology diploma Curriculum is a work-based professional competence-based training situated in an accredited training facility managed by specialists in Paediatrics and Child Health. The curriculum is informed by the training requirements of the Health Professions Council of Zambia (HPCZ) and the professional creed of the Zambia Paediatrics Association (ZPA). The training programme encourages self-directed learning, life-long learning, and student-centred approaches while providing robust and structured guidance.

Vision

Our vision is to be innovative in providing a teaching and support structure that will empower every trainee to excel in Neonatology skills through internal and external collaboration.

Mission Statement

The mission of the neonatology training in Zambia is to train specialists who shall endeavour to improve the health care services to the neonates in an efficient and proficient manner to meet the needs of the Zambian community, and contribute to the field of children's health in the region and globally.

Values:

- Professional excellence
- Integrity
- Sensitivity to reproductive health needs
- Interdisciplinary, inter-institutional collaboration
- Continuous professional development
- Innovation
- Academic Excellence
- Self and peer review

Admission criteria to the post-graduate diploma in Neonatology

To be eligible for consideration for admission, a candidate shall

- (a) Have a minimum of an approved MBChB degree from an accredited national or international institution with at least 18 months internship. A letter of completion of internship will be required.
- (b) Registered as an independent practitioner with Health Professions Council of Zambia (HPCZ)
- (c) Have a written undertaking from the relevant referring institute that the candidate will receive adequate support for the implementation of the neonatal programme, also granting the candidate study leave
- (d) Have proven proficiency in written and spoken English. Fluency in English may be tested if necessary.
- (e) Have an acceptable level of computer literacy, and access to a computer and the internet
- (f) Applicants may be asked to attend an interview
- (g) Updated Curriculum vitae
- (h) A recommendation letter
- (i) 3 referees with their contacts

Teaching Methods in the Specialty Training Program in Neonatology

The Neonatology diploma training is a work-based professional competence-based programme and should encompass diverse teaching and learning approaches that are appropriate for the target educational domain, i.e., cognitive (knowledge), psychomotor (practical), or affective (attitude) domain. During the neonatology programme the specialty trainee is an integral member of the clinical work of the department in which they are training to gain the required clinical experience and competence. The work experiences should help a trainee achieve the competencies outlined in the curriculum.

Self-directed learning is an important aspect of learning in the programme and trainees should manage their time efficiently to accomplish this. This involves reading around patients; reading topics raised during various discussions with senior doctors and colleagues, and from the curriculum; preparing for presentations at various fora and when teaching junior staff.

Learning should occur during various work-related activities such as:

1. Ward rounds and bedside teaching

- Daily ward rounds independently
- Daily ward rounds with consultant input

2. On-call duties

- 24-hour calls as the second on-call as part of a team of three (3) unit doctors (consultant and Junior resident medical officer) with nights spent in the hospital
- STP PCH and Master of Medicine qualified trainees will undertake senior registrar duties

3. Handovers

- Handover of patients to the consultants and neonatal unit staff post call

4. Specialist neonatology and high risk follow-up clinics

- Minimum of one clinic per week

5. Expository lectures

- Lectures will be given at designated times throughout the academic year
- Pre-recorded audio and video lectures of all the topics especially those prepared by external faculty. The trainee should have gone through all the lectures before the end of the academic year
- Questions and clarification arising from lectures can be raised with the trainers on a particular topic

6. Clinical meetings

- Minimum of one clinical meeting per week

7. Tutorials

- Minimum of one student led tutorial per week

8. Journal clubs

- Minimum of one journal club meeting per week

9. Morbidity and mortality audits

- Minimum of one audit per month

10. Interdepartmental meetings

- As need arises based on patients seen in the department

11. ICT supported learning experiences

- Lectures on the lecture schedule will be recorded in audio or video format by experts in the particular field and made available to all trainees
- A learning group on email or a social platform e.g. whatsapp will be made for lecturers and trainees.

12. Field and community based learning

- The students will be part of the mentorship team that will be providing support to the surrounding delivery sites to improve quality of care given to neonates post-delivery and before referral to the Neonatal Intensive Care Unit (NICU) at Women and Newborn Hospital

13. Administrative and management meetings

- Attendance of administrative meetings as and when required
- Participation in the planning cycle of a hospital (Action Plan)
- Reading the administrative handbooks for Public Service e.g. Conditions of Service for Public Service book, Disciplinary Code of Conduct, Code of Ethics etc.

Certain concepts and skills are taught from early years of undergraduate training to final. However, the subject is taught in an upward spiral of difficulty and complexity, such that the competency of the practitioner becomes demonstrably more proficient.

Apart from taking part in all academic activities in the department and joining in postgraduate activities of the department such as Journal Club, clinical meetings and grand rounds, the trainees should function as senior house officers (SHO)/senior Registrar within the department with clinical duties including:

- Supervision of interns and other junior health workers
- Teaching of undergraduates, interns and junior health workers

Duration of program

The neonatology diploma will be completed over **one year** of full-time study.

Fees structure- Refer to the ZACOMS Website

Number of Training Posts

Ten (10) fellows will be admitted at any given time

Certification

The fellows will be certified by the Zambia College of Medicine and Surgery (ZACOMS)

Curriculum outcomes

The outcomes of the neonatology training are affiliated to the following curriculum outcome categories:

Curriculum Outcomes Categories

1. Patient management (diagnosis and treatment)
2. Clinical skills
3. Disease prevention and health promotion
4. Communication and interpersonal skills
5. Patient safety
6. Information management
7. Ethics, humanities and the law
8. Professionalism
9. Leadership and management
10. Child protection (safe guarding) and advocacy
11. Education and training

Curriculum Categories	Outcomes/ Competencies
Patient management (diagnosis and treatment)	<ul style="list-style-type: none"> • Understands relevant principles of physiology, anatomy, pharmacology and pathology to the care of the neonates and their conditions • Elicit and correctly interpret symptoms and signs of neonatal conditions. • Diagnose and demonstrate basic understanding of common neonatal and conditions. • Identify, initiate as well as interpret laboratory and bedside investigations required to make a diagnosis and manage the neonatal conditions. • Recognize acute life-threatening medical problems and initiate appropriate care • Demonstrate sound clinical reasoning. • Understand therapeutic options and participate in the multidisciplinary care of patients with complex problems. • Acquire the knowledge and skills necessary to assist in the management and rehabilitation of chronic diseases arising from the neonatal period. • Participate in care in a variety of settings; including knowledge about palliative care.
Clinical Skills	<ul style="list-style-type: none"> • Demonstrates advanced skills in history taking and clinical examination of neonates • Undertakes advanced neonatal clinical procedures • Recognises emergencies and carries out advanced life support. Provides advanced management for emergencies
Communication and Interpersonal Skills	<ul style="list-style-type: none"> • Develops the knowledge, skills, and attitudes needed for culturally-competent care. • To demonstrate the skills and attitudes appropriate for the care of neonates including communication with patients, their family and colleagues • Coordinates and participates in discussion and decision-making with patients and families • Work effectively with other providers in the health system. • Clearly communicate medical information in spoken and written form.
Disease prevention and health promotion	<ul style="list-style-type: none"> • Develop knowledge, skills, and attitudes to practice the basic principles of prevention. • Practice personalized health planning for long-range goals. • Understand the planning for communities and populations.
Patient Safety	<ul style="list-style-type: none"> • Identify and remove common sources of medical errors. • Understand and apply models of Quality Improvement. • Appreciate the challenges associated with reporting and disclosure.
Information Management	<ul style="list-style-type: none"> • Use information and educational technology to facilitate research, education, and patient care.

Ethics, Humanities, and the Law	<ul style="list-style-type: none"> • Develop a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity. • Incorporate ethical principles in clinical practice • To appreciate and apply evidence-based clinical neonatology practice and basic technical skills. • To understand the importance of scientific research and evidence-base for contemporary neonatology practice. • Develop a critical understanding of the multiple factors that affect the practice of medicine, public health and research. • To contribute to evidence-base knowledge for child health practice and improve the Health Systems in Zambia with regards to newborn holistic health care standards, including prevention and health promotion • To access and analyse scientific publications and research in the field of neonatology.
Professionalism	<ul style="list-style-type: none"> • Develop healthy self-care behaviours and coping skills. • Model service to patients and community. • To portrait as a role model and demonstrate professional behaviours, including understanding one’s professional limitations.
Leadership & Management	<ul style="list-style-type: none"> • Develop interpersonal and communication skills that result in leadership in patient health service delivery and health human resource management. • Supervision of interns and other junior health workers • Demonstrate leadership and role modelling to junior doctors and medical trainees.
Child protection (safe guarding) and advocacy	<ul style="list-style-type: none"> • Recognises and consults appropriately in cases where neonates are at risk of harm or need protection for harm • Works with other professionals in assessing, reporting and taking appropriate action to protect neonates from harm
Education and training	<ul style="list-style-type: none"> • Teaches and mentors junior medical staff • Plans, coordinates and participates in teaching undergraduates, interns and junior health workers

The curriculum outline

Clinical Management in Neonatology

This course provides candidates with foundation skills in clinical neonatology starting from the delivery room, and ensures safe practice as they learn basic principles in management of neonates.

The candidate will undertake a combination of dedicated clinical exposure with the neonatal staff and the clinical service (the logbook will record the number of patients, the range of conditions, and will be signed by the clinical supervisor).

The candidate should gain insight into the current recommended international guidelines relevant to practice in the field of neonatology.

The candidate should be confident with the definition, diagnosis, epidemiology, and classification of diseases which affect neonates.

Hands on skills training

The candidate should gain competency in procedures relevant to the care of sick neonates.

The candidate should be able to demonstrate the ability to translate knowledge, introduce those skills acquired and implement them across all levels of healthcare – primary to tertiary.

Clinical Governance

Clinical governance is paramount to improving the quality of neonatal care

Each candidate will be required to do a **quality improvement project** during the duration of the course

Leadership skills

The candidates will be involved in teaching medical students and interns and will be assessed on leadership skills i.e. supervision and ability to train other health workers

Additional focus topics (specialty)

The course also provides foundation work on Epidemiology, Research methods, strengthening the newborn health services and guidance on leadership and accountability. This will equip the candidate to deliver newborn care holistically

Specific Learning Outcomes.

1. Provide comprehensive care to critically ill infant on the Neonatal Intensive care unit whilst ensuring the care of well term infants on postnatal ward.
2. Neonatal resuscitation

- Understands foetal circulation and newborn transition as relates to advanced neonatal resuscitation
- Able to provide advanced neonatal life support
- Leads the team at cardiac arrest
- Able to intubate most infants without direct supervision
- Able to teach basic neonatal life support to junior health care professionals

3. Respiratory disorders:

- Able to diagnose and manage respiratory failure
- Manages Respiratory distress syndrome.
- Uses surfactant when indicated.
- Able to use non-invasive and mechanical ventilation respiratory supports.
- Describes the pathophysiology and classification of chronic lung disease.
- Understands the indications and adverse effects of postnatal steroids.
- Understands the pathophysiology and able to manage pulmonary haemorrhage.

4. Cardiac disorders:

- Able to recognise the signs of a patent ductus arteriosus (PDA) and know treatment options.
- Able to recognise when an echocardiogram is indicated.
- Diagnoses and manages heart failure.
- Diagnoses and manages hypotension in the neonate.
- Able to distinguish the difference between cyanotic heart disease and persistent pulmonary hypertension (PPHN).
- Understands the pathophysiology and manages Persistent pulmonary hypertension
- Able to diagnose duct dependent cardiac conditions and counsel families.

5. Gastrointestinal disorders:

- Recognises those infants at risk of hypoglycaemia, those symptomatic with hypoglycaemia and able to manage accordingly
- Diagnoses and manage infants with Necrotising Enterocolitis.
- Able to manage the care pre and post-operatively of neonates with gastrointestinal disease.
- Investigates infants with significant gastrointestinal pathology for example bowel obstruction and gastroesophageal reflux disease (GERD).
- Manages supporting the growth of the low birth weight infants on the neonatal unit.
- Recognises the importance of surveillance and interventions for post-natal growth failure in the high risk infants in an outpatient setting

6. Neurological disorders:

- Able to recognise and manage acutely ill neonates with Hypoxic Ischaemic encephalopathy (HIE)
- Able to use appropriate scoring systems for neonates with HIE
- Counsel families on long term implications of HIE from mild to severe
- Management of neonatal seizures
- Recognises the aetiology of periventricular haemorrhage.
- Recognises and manages neonatal hydrocephalus
- Explains pathophysiology and long term implications of periventricular leukomalacia (PVL)
- Able to recognise the floppy infant, investigate and manage accordingly

7. Nephrology and fluid balance:

- Understands Normal physiology and effect of disease of:
 - o Electrolyte and water homeostasis
 - o Acid –base balance
- Able to monitor and manage fluid balance
- Recognises the causes of hyponatraemia, hypernatraemia and hyperkalaemia
- Manages antenatally diagnosed renal tract disorders following birth

- Able to refer appropriately for complicated or urgent renal tract disorders

8. Infection and immune disorders:

- Diagnoses and manages early neonatal sepsis (< 72 hours)
- Diagnoses and manages late onset neonatal sepsis (>72 hours)
- Recognises infants with sepsis, severe sepsis and septic shock and manages appropriately
- Manage neonates at risk of perinatal HIV infection
- Diagnose and manages congenital viral infections
- Diagnose and manage congenital Syphilis.
- Demonstrates knowledge of infection control measures and applies this to practice
- Understands issues surrounding immunization in preterm neonates

9. Musculoskeletal and skin disorders

- Identifies, manages and refers appropriately neonatal fractures
- Identifies risk factors for developmental dysplasia of the hips, knows and performs correct examinations and refers appropriately

10. Metabolic and endocrine disorders

10.1 Hypothalamus and pituitary

- Embryology of hypothalamus and pituitary glands, normal control and physiological effects of hormones
- Disorders of hypothalamus and pituitary glands e.g. growth hormone deficiency

10.2 Adrenal glands

- The adrenal gland embryology, action of ACTH, aldosterone, cortisone and catecholamine and an understanding of the metabolic pathways involved in the production of these hormones.
- Disorders of hormone function e.g. CAH

10.3 Sex hormones and sexual development

10.4 Ovarian hormones: Embryology, production and actions of ovarian steroidal hormones and their pathway.

10.5 The Testis: Embryology, production of various hormones produced by the testes, their secretory control, metabolic processes, and effects.

10.6 Disorders of Sex Differentiation

10.7 Thyroid and parathyroid glands function and disorders

- Normal development of thyroid and parathyroid glands and common malformations
- Control and secretion of thyroid and parathyroid hormones and their action
- Disorders of thyroid hormone function

10.8 Pancreas endocrine gland development and disorders

- The Pancreatic insulin production, and effects of insulin
- Disorders of insulin function

11. Haematological disorders

- Manages severe haemolytic disease of the newborn, including rhesus disease and other major blood group incompatibility disorders
- Diagnoses and manages major coagulation disorders, including appropriate use of blood products
- Identifies and manages polycythemia
- Aware of investigation and management of congenital haematological disorders

12. Genetic disorders

- Diagnoses and manages common chromosomal disorders
- Understands the basics of genetic counselling and Counsels parents when genetic condition is suspected
- Investigates and manages neonates with multiple congenital abnormalities

13. Neonatal surgery

- Knowledge of common neonatal surgical conditions and their management
- Refers appropriately to surgical colleagues.
- Able to counsel parents on the neonates condition

14. End- of - Life care

- Manages and supports family of a dying infants
- Able to use pharmacologic agents were possible within end of life/comfort care
- Applies knowledge of major ethical issues in neonatology, especially of working in a low resource setting and the impact this has on care able to be delivered.

15. Neonatal follow up

- Able to run a neonatal follow up clinic with consultant support as needed
- Perform structured neurological assessment in term baby
- Diagnose and refer as needed for infants with neurodevelopmental problem detected in follow up such as cerebral palsy

16. Health care ethics and professionalism

- Understands the Principles and values in healthcare ethics
- Understands Medico-legal issues surrounding neonatal care

17. Antibiotics Stewardship in neonates

- Understands the principles underlying the mode of action and side effects of the commonly used drugs used in neonates
- Safe prescribing
- Antimicrobial resistance
- Drugs and breastfeeding

18. Nutrition

- Nutritional/caloric requirements for normal growth and development in neonates of various ages
- Breastfeeding, breast milk and breast milk substitutes
- Principles of nutrition for premature babies and small/sick newborns
- Vitamins and minerals – normal requirements, sources, its role and deficiencies.
- Parenteral nutrition in neonates

19. Growth and development

- Normal growth, development and assessment

Assessment, progression and readmission

Assessment

The assessment framework is designed to provide a coherent system of assessing both formative and summative assessment which are workplace based and in examination settings.

The ZACOMS PCH training committee has valid, reliable and appropriate methods for assessing the knowledge, clinical skills and attitude domains that should be applied in all training sites. The continuous assessments and final annual assessments are weighted at 40% and 60% of the final mark of Annual Review of Competence Progression, respectively.

Assessment are both formative and summative.

Formative assessment

Formative assessments are on-going evaluations of the performance of the trainee during the learning process to modify teaching and learning activities to improve trainee attainment. It is not graded.

Learning must be demonstrated in all the learning outcome categories. A trainee must document these learning events in a log book.

Summative assessment

Summative assessment are conducted at the end of the academic year to determine the performance of the trainees and their eligibility to write exams.

Exams will comprise a theory paper of multiple choice best answer questions, objective structured clinical examination (OSCE) and viva voce

- Candidates will be assessed by means of **formal assessments undertaken at four-monthly intervals** and a **final written examination**.
- Assessments may be of a practical and/or oral nature.
- Candidates are also required to complete a **logbook of at least 50 procedures** including blood-taking, intubation, management of CPAP and basic ventilator settings, chest drain insertion, intravenous access etc.
- Candidates are required to attend at least 80% of lectures and group supervision sessions.

- A candidate who does not achieve a coursework assessment mark of at least 50% **will not** qualify to write the final examination, except at the programme convener's and the ZACOMS examination committee's discretion. The convenors will submit a report to ZACOMS PCH examination committee to update on the performance of the trainee and log book after 6 months of training.
- Candidates are required to submit the logbook before the student may proceed to write the examination.
- Candidates who obtain 45% – 49% in an examination may be reassessed before the final mark is submitted for approval of the ZACOMS PCH examination Committee, and/or may be granted a supplementary examination at the discretion of the Committee.
- Candidates may be permitted to repeat the course if they fail, at the convener's and the PCH examination committees' discretion. Where a candidate fails the course twice, a recommendation will be made to the ZACOMS PCH Committee by the convenors to refuse readmission.
- Where a supplementary examination is granted, the mark obtained in the supplementary examination constitutes the final mark for the course.
- A candidate may **appeal** to the ZACOMS PCH examination committee through the Country Director of the Specialist training Program in case of any dispute
- The Diploma may be awarded with distinction if a student obtains an average of 75% – 100% passed at first attempt including continuous assessment results.

It is emphasized that marks from theory examinations **may not** compensate for poor scores in the clinical examinations; Students **MUST** pass the clinical examinations in order to complete the training.

Practical Clinical Skills

History and examination. History taking including a thorough newborn examination, including gestation assessment; maintenance of the warm chain, nutritional anthropometry and its assessment, assessment of growth, use of growth charts, neurological assessment, communication with parents, health functionaries and social support groups; and genetic counselling.

Bedside Procedures

Monitoring skills:

Must know: Temperature recording, capillary blood sampling, monitoring on multi-parameter monitor, arterial blood sampling, blood pressure monitoring, blood sugar monitoring and infection prevention techniques.

Should know: CVP monitoring, brain function monitoring

Therapeutic skills:

Must know: Gastric lavage, nasogastric feeding, endotracheal intubation, cardiopulmonary resuscitation, providing respiratory support: CPAP & mechanical ventilation, exchange transfusion, administration of oxygen, aerosol therapy, venepuncture and establishment of vascular access, umbilical venous cannulation, administration of fluids, blood, blood components, parenteral nutrition, intraosseous fluid administration, common dressings, abscess drainage and basic principles of rehabilitation.

Should know: umbilical arterial access, peripheral arterial line, central vascular access, peritoneal dialysis, ventricular tap.

Investigative skills:

Must know: blood draws for various investigations, Lumbar puncture, and collection of urine for culture, urethral catheterization, and supra-pubic aspiration.

Should know: ventricular tap.

Interpretation of X-rays of chest, abdomen, bone and head; ECG; ABG findings; Echocardiography, CT scan & MRI scan.

Understanding of common EEG patterns.

Career Progression

MBChB only entrants

- Entrants with only MBChB will obtain a neonatology diploma program which will be recognised in Zambia
- The neonatology diploma graduate cannot occupy a consultant position.

Paediatrics Specialist entrants

- Entrants with Master of Paediatrics and Child Health or fellows of the Paediatrics Specialist Training Program will be encouraged to apply to Levy

Mwanawasa University and proceed to do a year of training under the African Paediatrics Training Program in South Africa, write a mini-dissertation and will be locally assessed to attain a Master of Philosophy in Neonatology.

- A candidate shall be allowed a maximum of three attempts for ZACOMS Examinations. The maximum period that a trainee can complete the programme is two (2) years. A trainee can be allowed an additional one year to attempt the final exams after which s/he cannot remain in the programme.
- For ease of tracking progress and planning for Paediatrics and Child Health care, all neonatology trainees will be registered with ZACOMS and ZPA for the duration of their training and will be allocated a Health Professions Council of Zambia Specialty Registrar Index Number.
- On successful completion of the programme, the trainee will obtain an award of the Certificate of Completion of Specialty Training (CCST) by the Zambia Colleges of Medicine and Surgery (ZACOMS). Graduates are then eligible to apply to the Health Professions Council of Zambia to enter the Specialist Registers in neonatology.

Intubation of preterm infant								
Administration of surfactant								
Basic mechanical ventilator settings								
Needle thoracocentesis								
Insertion of chest drain								
Interpretation of blood gas								
Advanced neonatal resuscitation								
Cardiovascular system								
External chest compression								
Interpretation of blood pressure in neonates								
Use of inotropes								
Renal system								
Urinary catheter insertion								
Neurological system								
Positioning and nesting								

Infant neurological assessment (INA)								
Performs Lumbar puncture								
Cranial ultrasound								
HIE scoring								
GIT system/metabolic								
Interpret serum bilirubin results								
Decide on commencement or stoppage of phototherapy								
Nasal/oral gastric tube insertion								
Calculation of feeds and fluids								
Others								
Placing the baby in Kangaroo Mother care position								
KMC scoring								

Other activities

Category	When?
Academic Meetings	Weekly neonatal academic ward rounds
	Weekly neonatal academic tutorial
	Weekly high risk follow up clinics
	Weekly perinatal mortality and morbidity
Outreach	District Hospital Outreach X 3 (a week each quarter)
	District neonatal monthly academic meetings
	Quarterly District and National Maternal and Perinatal Death Surveillance Review (MPDRS) meetings

Resources

1. Journal Articles
2. Avery's Text Book Of Neonatology
3. Cloete Manual of Neonatal care
4. Nelson text book of Pediatrics
5. Kangaroo Mother Care guidelines
6. Essential Newborn Care Guidelines
7. National Neonatal protocols and drug dosages
8. Registrar survival guide on the NICU
9. National Neonatal Standards
10. National Health Strategic Plan
11. RMNCH Roadmap
12. WHO Bottleneck Analysis for Zambia