# POSTGRADUATE INSTITUTE OF MEDICINE
# UNIVERSITY OF COLOMBO

## Prospectus

# DOCTOR OF MEDICINE (MD)
# AND BOARD CERTIFICATION
# IN CLINICAL NUTRITION

*(To be effective from the year 2016)*



BOM – 04.06.2016
Senate – 10.08.2016
Council – 14.09.2016

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"This prospectus is made under the provisions of the Universities Act, the Postgraduate Institute of Medicine Ordinance, and the General By-Laws No. 1 of 2016 and By-Laws No. 2 of 2016 for Degree of Doctor of Medicine(MD) and Board Certification as a Specialist"

# 1 Nomenclature

- Full Title: Doctor of Medicine in Clinical Nutrition & board certification in clinical nutrition
- Abbreviated Title: M.D. (Clinical Nutrition)
- University: University of Colombo
- Institute: Postgraduate Institute of Medicine
- Departments: Specialty Board of Clinical Nutrition, and Board of Study in Multi-disciplinary study courses

# 2 Background and justification/Introduction

## 2.1. Introduction to the Prospectus

This Prospectus provides detailed information on the Clinical Nutrition Programme, which leads to the award of the postgraduate degree of Doctor of Medicine (M.D.) in Clinical Nutrition of the University of Colombo, and board certification in Clinical Nutrition by the Postgraduate Institute of Medicine (PGIM), University of Colombo. These activities come under the academic supervision of the Specialty Board of Clinical Nutrition in and Board of Study in Multi-disciplinary study courses of the PGIM. The award of the MD (Clinical Nutrition) degree and board certification in Clinical Nutrition stands at Level 12 in the Sri Lanka Qualification Framework (SLQF) of the Ministry of Higher Education, published in 2012 by the University Grants Commission and updated in 2015.

## 2.2. Background to the Programme

The academic matters of the Programme are determined by the Specialty Board in Clinical Nutrition, in concurrence with the relevant units of the PGIM. It has representations from medical faculties, Ministry of Health, Ceylon College of Physicians, College of Surgeons of Sri Lanka, College of Anaesthesiologists of Sri Lanka, College of Paediatricians of Sri Lanka College of Obstetricians and Gynaecologists of Sri Lanka, College of Rheumatologists, Endocrinologist society of Sri Lanka, Nutrition Society of Sri Lanka, Health Informatics Society of Sri Lanka and Local and International centres of excellence in Clinical Nutrition. The training is conducted in units in teaching hospitals of the Ministry of Health and units in the state and private sectors recognized for this purpose by the Specialty Board of Clinical Nutrition. The PGIM is therefore in the ideal position to provide this Programme for the whole nation, in terms of its access to expertise and facilities, and its inclusivity and representativeness, which have evolved and developed over the past decades. This development has taken into consideration both national requirements and international trends, paid due regard to academic standards and rigor suitable for the postgraduate level, and has taken account of the practical situation of the state and private health care sectors.

## 2.3. Justification for the Programme

In Sri Lanka, nutritional and nutrition related disorders have continued to be, not only a serious public health concern but also a common problem in the clinical context to both adults and children.

From a public health perspective, malnutrition remains a serious problem among Sri Lankans especially among children, pregnant and lactating mothers. Overall, the nutritional status of children under 5 years in Sri Lanka has not shown much improvement during the past ten years. A national level study conducted in 2012, reported that 13 percent of children were stunted, 22 percent underweight and 19 percent were wasted compared with 18.4 percent stunting, 22.8 percent underweight and 15.5 percent wasting reported in Demographic and Health Survey in 2000. Percentage of low birth weight babies has continued to be about 16 – 18 percent over the past decade. Relationship of low birth weight to later life chronic diseases is a matter of concern.

Sri Lanka is beginning to experience the double burden of malnutrition in both adults and children. Overweight and obese individuals have a greater risk of developing Non-Communicable Diseases (NCD): diabetes, high blood pressure, stroke, cardiovascular disease, and some forms of cancer. NCDs, often precipitated by poor nutrition, presently account for 60% of global deaths and 65% of deaths in Sri Lanka. It is predicted that by 2020, NCDs and obesity are likely to cause 73% of all deaths and 60% of all diseases globally.

From an individual perspective, there are many clinical situations where nutrition management is required not only as a focus on primary and secondary prevention but also in actual management of the individual patients. Such inputs require specifc nutrition and dietetic instructions to prevent complications of the clinical condition and need to be precise and best delivered by the clinicians.

The Ministry of Health has established several nutrition clinics to improve nutrition care in Out Patients Departments (OPD) employing medical officers with MSc in Human Nutrition. However, there is no specialist who is trained to coordinate nutrition related activities and provide comprehensive nutrition care. Therefore clinicians with specialized nutrition training will be in the forefront of clinical nutrition management i.e. nutrition care of critically ill patients, in patients and OPD patients. Clinical Nutrition is an accepted specialty in many developed countries involving nutrition management of critically ill, medical, surgical/trauma, paediatric and gynaecology and obstetrics patients. These specialists are specifically trained for above through a specialist training programme similar to other clinical specialties. This training will result in provision of optimum nutrition care, effective disease management, fast recovery and guided rehabilitation of patients. The ultimate aim is to ensure coverage of all districts of the country with these highly trained and Specialist in Clinical Nutrition, resident whilst on duty at Nutrition Units of all District, Provincial and Teaching Hospitals.

## 3 Eligibility for entry into training programme

Prospective applicants must satisfy the following requirements:

a. A medical degree registered with the Sri Lanka Medical Council
b. Satisfactory completion of internship acceptable to the Sri Lanka Medical Council
c. Satisfactory completion of one year work experience in Sri Lanka, after completion of internship.
d. Successful completion of MSc in Human Nutrition of the Postgraduate Institute of Medicine, University of Colombo within the last six years.

e. One year of experience working in a clinical nutrition unit after obtaining the MSc in Human Nutrition.
f. Complying with any other PGIM general regulations relevant to selection of trainees.

The criteria prescribed in paragraphs a) to f) must have been satisfied by the applicants as at the date of closure of applications. If a shortfall has occurred due to any reasons, including sick leave, maternity leave or any other form of leave, the doctor concerned should complete such shortfall in order to become eligible to apply for the selection examination.

Applications shall be invited at regular intervals (usually annually) by the Director of the Postgraduate Institute of Medicine from medical officers in the state and non-state sector fulfilling the above "e*ligibility criteria"* for enrolment for pre MD training programme.

## 4 Selection Examination

To enter the programme, a candidate is required to pass the MD Clinical Nutrition Selection Examination. The examination questions shall be based on the clinical nutrition module of the MSc curriculum.

The Board of Examiners, consisting of the chief examiner and the other examiners, shall be appointed, for each examination, by the Board of Management of the PGIM and the Senate on the recommendation of the Specialty Board of Clinical Nutrition.

The examination consists of a Multiple Choice Question (MCQ) paper, which is a 90 minutes paper, and consists of two parts:

a) 20 MCQs of the True / False type MCQ, each having 5 responses. Each correct response will be awarded +1 mark; each incorrect response should be awarded -1 mark, and if no response is marked, zero. There will be no negative carry over, so that each question will carry a maximum of 5 marks and a minimum of zero. This subcomponent carries a total of 100 marks.
b) 15 MCQs of the Single Best Answer type, each with 5 responses. Each correct answer will be awarded +3 marks; incorrect responses and no responses should marked zero. This subcomponent carries a total of 45 marks.

The marks of the two subcomponents (100 and 45) are added up and converted to a mark out of 100.

To be successful in the selection examination, a candidate must obtain a minimum aggregate of 50%. The permitted number of attempts at the selection exam is unlimited.

## 5 Number to be selected for training

The number to be admitted to the training programme (from the candidates who have passed the MD Clinical Nutrition Selection Examination) will depend on the training facilities available and the requirements of the Ministry of Health, as determined by the Specialty Board of Clinical Nutrition. The number to be admitted each year will be indicated in the circular/newspaper advertisement calling for applications. The number may vary from year to year.

Allocation of training posts would be done by a subcommittee appointed by the Specialty Board of Clinical Nutrition according to the available training posts based on the ranking obtained at the Selection Examination and the preference of the candidate. Recommendations and requirements of the Ministry of Health will be taken in to account when applicable.

The merit ranking of candidates who are enrolled into the training programme shall be done by taking into consideration the numerical order of the attempt by the candidate (those who pass after a lesser number of attempts will be placed above those who pass after a greater number of attempts) and the total mark obtained by him/her at the given selection examination, as given above.

Candidates will be selected to the course according to rank order of marks at the selection examination and the number of positions available and in compliance with the General Regulations of the PGIM and relevant Examination Circulars.

## 6 Outcomes, competencies and learning objectives

The overall aim is to produce "a lead clinician who can assume a leadership role to coordinate interdisciplinary clinical nutrition services, provide nutritional care during illness, manage common nutrition problems, provide education for fellow health care professionals with confidence and competence, and make decisions, at individual, community and population levels, whilst preventing diet related diseases."

By the end of the training programme, the trainee should be:

- capable of providing nutrition care for patients and safely manage common nutrition problems, with confidence, and is competent to make decisions, at individual level and provide guidance to programme at *community and population levels where relevant*, whilst preventing diet related diseases.
- Able to provide a leadership role in coordinating interdisciplinary clinical nutrition services and education in health care settings.

For this purpose the trainee should be able to:

- Demonstrate adequate knowledge and competency to manage a range of nutritional disorders in a hospital setting and possess an advanced knowledge of clinical nutrition, at biological, social and policy levels.
- Interpret and synthesise different types of data used to assess nutritional problems.
- Assess critically, select and apply a range of appropriate research skills and techniques and be able to evaluate critically the findings of scientific studies of clinical nutrition.
- Possess a sound knowledge of community resources to identify and formulate appropriate responses and intervention strategies to address nutritional issues, taking into account the public health and social policy contexts to improve the nutrition well-being of patients
- Apply knowledge of effective teamwork and communication skills in dealing with children, parents and relatives to solve problems and achieve goals.

- Demonstrate leadership role in coordinating interdisciplinary clinical nutrition services and education in hospital settings.
- Demonstrate high standards of moral and ethical behaviour towards patients, and their families and co-workers

## 7 MD Curriculum

This is a Competency based model (Annex-1). The syllabus outline is prepared under following theme areas,

1. General Medicine
2. General Paediatrics
3. Gynaecology and Obstetrics
4. General Surgery / Anaesthesia

## 8 Structure of pre-MD training programme

Total duration of the program will be 24 months. Candidates who are selected in to this programme after the selection examination will be allocated as Registrars to the available vacancies in teaching hospitals to train under a supervisor who is a recognized trainer by the PGIM. Trainees will rotate through various appointments as given in section 8.1 to 8.5 below.

The learning outcomes of these appointments will be to focus on achieving the overall outcomes and learning objectives listed in Section 6. These may be developed and changed from time to time, with regard to changing practices and needs.

The pre-MD training programme consists of six components:

**8.1.** Registrar training in general medicine, which will be done under one supervisor/trainer, who is a specialist physician, over a period of 6 months.

**8.2.** Registrar training in general paediatrics, which will be done under one supervisor/trainer, who is a specialist paediatrician, over a period of 6 months.

8.3. Registrar training in general surgery, which will be done under one supervisor/trainer, who is a specialist surgeon, over a period of 3 months.

**8.4.** Registrar training in gynaecology and obstetrics, which will be done under one supervisor/trainer, who is a specialist obstetrician and gynaecologist, over a period of 3 months.

**8.5.** Registrar training in general anaesthesia, which will be done under one supervisor/trainer, who is a specialist anaesthetics, over a period of 3 months.

8.6. Registrar training in nutrition clinic/unit, which will be done under one supervisor/trainer at a time, over a total period of 3 months. This period will include a one-week appointment on-site in a nutrition clinic in TH, cardiology, neurology, dermatology, endocrinology, gastroenterology, nephrology, psychiatry/psychological medicine, respiratory medicine, rheumatology, clinical oncology and geriatrics in a teaching or non-teaching hospital (non-TH). This appointment will be arranged by the supervisor/trainer in the nutrition clinic conjunction and discussion with the consultant in charge of the particular unit, and supervised by both, with the TH supervisor/trainer as the overall supervisor.

Full-time, hands-on training in the clinical setting in the general medicine, general paediatric, general surgery, Obstetrics& gynaecology, anaesthesia and short appointments; with both in-patient and out-patient duties; which include second-on-call (with the intern house officer as the first-on-call doctor); including public holidays and weekends; under the supervision of the supervisor/trainer (the consultant of the unit).

i. In the in-patient setting, the registrar is responsible for the initial nutrition assessment and periodic reassessment of each patient relevant to the training; the conduct of the ward rounds; attending to referrals; the performance of practical procedures appropriate to the patient and relevant to the training; the liaison with other units as appropriate; the maintenance of basic ward organization and efficiency; the practice of appropriate patient- and staff-safety procedures; the teaching of medical students and allied healthcare staff/students; counselling and communicating with patients' family members, relatives and bystanders; and assisting the supervisor/trainer in the carrying out of clinical duties, including the conducting of clinical assessments of medical students/graduates and postgraduate trainees.

ii. In the out-patient setting, the registrar is responsible for the nutrition care of out-patients; and assisting the supervisor/trainer in running the clinics efficiently.

## 9 Learning activities during pre-MD training

### 9.1. Types of learning activities

The learning activities during the pre-MD training programme will be as follows:

1. The selected candidates should cover the areas listed below preferably within the first year of training and obtain certification from the PGIM in association with other contributing academic agencies. It may include lectures, practical classes, workshops, videos and interactive sessions, hands on training, simulations and assessments approved by the specialty board of clinical nutrition. Details are provided in **Annex-2.**

   - Enteral and Parenteral nutrition support
   - Feeding devices
   - Leadership and professionalism
   - Information Technology
   - Ethical issues in nutrition
   - Communication skills
   - Clinical Audits

2. Regular ward-based teaching sessions such as ward classes, case discussions, journal/book clubs, other teaching sessions and multi-disciplinary meetings, which are organized and/or recommended by the supervisor/trainer and the Specialty Board of Clinical Nutrition.
3. Academic teaching, such as academic/Continuous Medical Education (CME) / Continued professional development (CPD) events conducted by the Sri

Lanka Medical Nutrition Association (SLMNA), other regional or national clinical or professional societies/associations/colleges, and the PGIM.

4. Library-based and web-based learning, from textbooks, manuals, periodicals and scholarly journals.
5. Maintaining a reflective portfolio. It is a key document in the assessment of the trainee during the pre-MD training programme. Objectives and guidelines are provided in **Annex-3**.
6. Conduct clinical audit**.** As a part of portfolio, it is preferable for the trainees to do a comprehensive Clinical Audit and formally present it at the hospital where they are working.
7. Conduct of a research project leading to a dissertation. The Research Project to be undertaken during the pre MD period. It should be a cross sectional, longitudinal, or interventional study. Candidate should submit the pre proposal to be assessed and deemed to be satisfactory by the Specialty Board of Clinical Nutrition *before embarking on the proposed study*. After obtaining the approval for pre proposal, a comprehensive detail project proposal has to be submitted to the Specialty Board of Clinical Nutrition and approval obtained, prior to commencing the study including recruitment of patients and data collection. Two supervisors should be selected and to be approved by the Specialty Board of Clinical Nutrition. Guidelines for preparation of the Research Project and submission of the Dissertation is given in **Annex-4**.

## 10 Trainers and training units

The supervisors/trainers and training units for the programme will be approved by the Board of Management of the PGIM, on the recommendation of the Specialty Board of Clinical Nutrition, in accordance with *PGIM General Regulations and Guidelines*. Accordingly, specialists with at least 3 years' experience after board certification may be appointed as supervisors/trainers. Training units must be accredited by the Specialty Board of Clinical Nutrition.

## 11 Monitoring progress during pre-MD training

### 11.1. Log book

Log book will be used to keep record of training throughout the 2 years period in brief. Objectives and guidelines are provided in **Annex-5**.

### 11.2. The Portfolio

The Portfolio will be used to guide the trainee regarding training requirements, progress achieved, and discussions carried out with the trainer regarding the training.

The objective of maintaining a Portfolio is:
(a) To help the trainees to record their training in brief so that the experience acquired can be assessed and deficiencies identified and remedied and
(b) To help trainers and assessors to evaluate the overall training and provide guidance in areas where it is needed.

The Portfolio should consist of documentation of all aspects of training and learning experienced by the trainee. This should include;

1. Log book of stipulated practical procedures
2. Case records (minimum of 10)
3. Exposure to new technologies (A minimum of 3).
4. Details of Continuing Professional Development activities (A minimum of 5)
5. Records of Scientific Presentations made (A minimum of 5).
6. Case Based Discussions (CBD) (A minimum of 5).
7. Regular reflective entrees on all aspects of patient care and professional training
8. A record of individual activity-based entrees on the trainee's own experience
9. Clinical Audit
10. Voluntary work especially involving professional associations

The portfolio should be maintained in separate sections to conform to the above format. Entries in the Portfolio should be made by the trainee at the time of acquiring the skill and authorized by the trainer. Guidelines are provided in **Annex 3**.

The trainee should submit evidence supportive of satisfactory completion of the 2 years of clinical training; log book: **Annex 5**; the portfolio (**Annex 3**) and satisfactory peer team ratings (PTR form C: **Annex 6**). These reports should be received by the PGIM 8 weeks prior to the MD examination.

## 12 MD Examination

### 12.1. Eligibility to register for the MD examination:

In order to be eligible to sit for the MD examination, trainees must

1) Completion the two **year** clinical training, satisfactorily, with 80% attendance in each component
2) Submission of log book and portfolio at least eight weeks before the MD Clinical Nutrition examination for the purpose of assessment.

### 12.2. Components of the MD Clinical Nutrition examination

This shall consist of written component, clinical component and viva**.**

#### i. Written Component:

Written Component consists of three papers.

**Paper I** **Structured Essay Question Paper–100 marks–Three hours**

This will consist of five (5) structured essay type questions. Each question will be marked out of 100 by two independent examiners. An average of the marks given by the two examiners would be taken for each question. The final calculated mark for paper I will be 100.

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**Paper II** **Data interpretation paper-100 marks–Two hours**

This will consist of 10 Data evaluation questions. Each question will be marked out of 100 on conference marking. Final calculated mark will be out of 100.

**ii. Clinical Component**

Clinical component consists of a long case and short cases. An external examiner appointed by the Senate on the recommendation of the BOS/BOM with suitable qualifications and international experience in postgraduate examinations is mandatory for the clinical component.

**Segment I Long case–100 marks–75 minutes**

The long case will consist of 1 patient, who will be allocated to a candidate for 45 minutes, during which time the candidate must take a history, perform a relevant physical examination, and be ready to carry out a comprehensive holistic discussion with two examiners over 30 minutes.

The mark will be allocated independently by the two examiners. The total maximum mark obtainable is 100. Marks will be allocated as follows: history taking (30%), physical examination (20%), plan of management (30%), and relevant background knowledge (20%).

**Segment I1 Short cases-100 marks-40 minutes**

This will consist of four clinical stations to assess the candidates' ability on clinical examination. These stations will cover the following areas: Medicine (1 patient); surgery (1 patient); Paediatrics (1 patient); and Gynaecology and obstetrics (1 patient).

A candidate will be examined at each station for 10 minutes by two examiners, one of whom is a specialist in the relevant specialty to the case and the other from the clinical nutrition specialty whenever feasible. Each Station carries equal marks; the maximum mark obtainable for each station is 100. The mark will be allocated independently by each examiner. The final total mark is 100%.

The following areas will be examined. Methodical, systematic, sequential and correct technique of examination; eliciting of signs correctly and their interpretation; awareness of patient welfare and comfort; and professionalism.

**Segment I1I Objective Structured Clinical Examination (OSCE)-100 marks-75minutes**

This will consist of 10 Clinical Oriented questions (5 minutes for each station). Video station, photos, clinical problems, brief clinical scenario will be provided and the candidate will be assessed on clinical skills and Communication skills. Each question will be marked out of 100 on conference marking. Final calculated mark will be out of 100.

**iii. The viva voce component**

**Portfolio and portfolio based viva**

Portfolio will be assessed by a panel of two examiners appointed by the Specialty Board of Clinical Nutrition. Two examiners shall objectively assess the portfolio independently and marked out of 100. An average of the marks given

by the two examiners would be taken. The final calculated mark will be out of 100.

The viva shall be a minimum of 20-30 minutes. The student shall appear with a copy of his/her portfolio before a two member examiner panel who have assessed the portfolio of the student. The panel will allow student to select 3 cases and another 3 cases will be randomly selected by two examiners for discussions. At this portfolio viva the performance of the trainee will be marked by examiners using the rating scale given in table 3.

**Table 3: Rating Scale for the assessment of portfolio viva**

| | | |
|---|---|---|
| Failure | 1 | <40% |
| Borderline | 2 | 40 - 49% |
| Pass | 3 | 50 - 59% |
| Good pass | 4 | 60 - 69% |
| Excellent pass | 5 | ≥70% |

**12.3. Marking grid**

The marking grid for the long case, short cases, and viva voce components will be as follows:

| | |
|---|---|
| Fail | <40% |
| Borderline | 40-49% |
| Pass | 50-59% |
| good pass | 60-69% |
| Excellent | ≥70 |

**12.4. Criteria for passing the MD Examination**

The final computation of marks shall be as follows:

| **Examination component** | **Marked out of** | **Percentage of final mark** |
|---|---|---|
| Structured Essay Question Paper | 100 | 15 |
| Data interpretation paper | 100 | 15 |
| OSCE | 100 | 10 |
| Long cases | 100 | 20 |
| Short cases | 100 | 20 |
| Portfolio | 100 | 10 |
| Portfolio viva | 100 | 10 |
| **Total** | **700** | **100** |

**12.5.** Requirements to pass the MD Examination

To pass the MD Clinical Nutrition candidates will be required to obtain the followings:

- A total aggregate minimum of 50% and
- Minimum of 50% in the theory component, with at least 40% in each paper

- Minimum of 50% in the clinical component, with a minimum of 40% in the long case and a minimum of 50% in the short cases.
- Minimum of 40% in the viva component.

**12.6.** Repeat attempts

Passed theory or clinical component carried over only for one subsequent attempt. In such situation portfolio marks will be carried to subsequent examinations indefinitely. In the event that a candidate does not pass the repeat examination, he / she shall have to sit for the entire MD end-of-course examination. The permitted number of attempts is limited to six attempts within eight years from the date of the first attempt at the MD Clinical Nutrition, unless the Senate has permitted extension for valid reasons.

## 13 Post-MD training

There will be 3 components in post-MD training till board certification;

13.1. Senior Registrar in Clinical Nutrition (Year 3 and 4)

13.2 Research Project

13.3. Portfolio

### 13.1. Senior Registrar in Clinical Nutrition (Year 3 and 4)

The two year Senior Registrar period will commence immediately after successfully completion of the MD Clinical Nutrition examination. This will be for a period of one year training abroad and one year of training under supervision of Board Approved Trainers in Sri Lanka in a nutrition clinic. The allocation to training centres will be done according to merit, and will be done in accordance with *PGIM General Regulations and Guidelines*. The merit position will be decided on the basis of following criteria: Trainees who have passed the examination at the first attempt will get priority over those who passed at a second or subsequent attempt; When the number of attempts are the same, the trainee with higher marks get priority; If both the number of attempts and marks are similar then the senior trainee get priority over the junior.

### 13.2. Research Project leading to a dissertation

Successfully carrying out a research project, directly relevant to Clinical Nutrition, is a mandatory requirement that needs to be fulfilled to be eligible to appear for the Pre-Board Certification Assessment (PBCA).

The Research Project could be undertaken at any time, either in Sri Lanka or abroad. It should be a cross sectional, longitudinal, or interventional study. Candidate should submit the pre proposal to be assessed and deemed to be satisfactory by the Specialty Board of Clinical Nutrition *before embarking on the proposed study*. After obtaining the approval for pre proposal, a comprehensive detail project proposal has to be submitted to the Specialty Board of Clinical Nutrition and approval obtained, prior to commencing the study including recruitment of patients and data collection. Two supervisors should be selected and to be approved by the Specialty Board of Clinical Nutrition.

Guidelines for preparation of the Research Project and submission of the Dissertation is given in **Annex-4**.

All research projects should obtain ethical clearance, would need informed written consent. Interventional studies have to be registered with the Sri Lanka Clinical Trials Registry.

### 13.3. Portfolio

The Portfolio for Stage 3 (**Annex 7**) will document evidence of learning in the following areas:
The 6 areas identified by the PGIM for assessment of the PBCA, which are:

1. Subject expertise
2. Teaching experience
3. Research and audit
4. Ethics and medico-legal issues
5. Information technology
6. Lifelong learning
7. Reflective practice

### 13.4. Assessment: local senior registrar training

After successfully completing the four year training period, following components will be needed for board certification. This will constitute following:

i. A portfolio viva, at the end of the local training. This is known as the Clinical Nutrition Senior Registrar Portfolio Viva.

ii. The research project report, which must be approved by the Board of Study in Clinical Nutrition.

Acceptance of the research project by the BOS based on fulfilment of either of the following:

- Publication of the research findings as an **original full paper** (not case reports) in a **peer-reviewed journal** (preferably indexed) with the trainee as first author. No further evaluation is required on the premise that a paper which is already peer-reviewed.

- Submission of a detailed project report to the BOS. A specified format is given in **Annex 4.** This should be evaluated by 2 assessors nominated by the BOS, and marked as either satisfactory, or unsatisfactory.

    a. If the project is considered unsatisfactory by both assessors, the trainee will be requested to revise and resubmit, with written feedback on the required revisions. If the project report is still unsatisfactory, the trainee may, at the discretion of the BOS, be asked to extend the same research project or undertake a new research project which will have to go through the same procedure of approval as the initial project.
    b. If there is disagreement between the two assessors, with only one assessor's decision being 'unsatisfactory', the project report should be sent to a third assessor for a final decision.

c. Presentation of the research findings at a recognized scientific congress, either local or international, as oral or poster presentation, with a published abstract, with the trainee as first author, should be given credit during the assessment process.

The research report must be accepted prior to the completion of the study period defined in the prospectus (for example, in the case of a 2 year post MD study programme, the research project must be completed and accepted at the point when both local and overseas components of training are completed.) Once the research report is accepted by the BOS, the trainee should be encouraged to submit the research findings to a suitable conference or journal, if not already done.

iii. The supervisor's/trainer's confidential appraisal/report (**Annex 8**).

### 13.5. Overseas training

The overseas senior registrar training will be for a period of one year, and will be carried out in an overseas training centre approved for that purpose by the Board of Study in Clinical Nutrition.

The appraisal of the overseas training will consist of quarterly appraisals by the overseas trainer, in the prescribed form (**Annex 9**).

## 14 Eligibility for Pre-Board Certification Assessment (PBCA)

All the following criteria have to be accomplished for eligibility for the PBCA.

- Successful completion of the MD Clinical Nutrition examination
- Provision of satisfactory Progress Reports from Supervisors, to cover the entire period of training
- The completed dissertation and its satisfactory assessment by the Board of Study and a minimum pass grading
- Submission of the completed Portfolio for Stage 3.
- Any other requirements that is prescribed by the PGIM.

### 14.1. Format of Pre-Board Certification Assessment (PBCA)

The PBCA will be carried out by a board of examiners appointed by the Board of Study. This board will consist of 2 trainers. The PBCA will consist of the following components:

i. A brief ***presentation*** of the post-MD training program, including the overseas training experience. This should normally be about 10-15 minutes long. Self-evaluation of the training received and the trainee's vision for the future development of medical nutrition therapy in Sri Lanka and further career development. This should be acceptable to the BOS.

ii. A ***portfolio viva.*** This examination will be based on the Portfolio for Stage 3 in Clinical Nutrition. It will last 30 minutes, and will examine each of the 6 components of the Portfolio and reflective practice.

The overall decision of the panel/s will be one of the following categories:

- Successful.
- Unsuccessful

If unsuccessful, the PBCA will be followed by counselling regarding improving the portfolio, and re-sitting of the PBCA after a minimum period of 3 months. If the trainee is successful at this sitting, the date of board certification will not be delayed. If the trainee is unsuccessful at this attempt as well, then a further training (in a unit selected by the Specialty Board in Clinical Nutrition) of a minimum of 6 months will be prescribed, followed by another PBCA, in which case the date of board certification will be the date of the passing PBCA. A trainee who is unsuccessful in such PBCA may be required to re-do further training (minimum period of 6 months) and re-sit the PBCA. The date of board certification will be determined by the *PGIM General Regulations and Guidelines*.

## 15 Board certification

A trainee who has successfully completed the PBCA is eligible for Board Certification as a Specialist in Clinical Nutrition on the recommendation of the Specialty Board of Clinical Nutrition.

## 16 Recommended reading

Text book and journal oriented theory knowledge, theory and practical knowledge of special equipment, patient oriented discussions, tutorials, small group discussions, cyber learning etc.

***Recommended Journals***

- The Journal of Clinical Nutrition
- American Journal of Clinical Nutrition
- European Journal of Nutrition
- Annals of Food and Nutrition
- Journal of Nutrition
- Food and Nutrition Bulletin

***Recommended Text books***

- Nutrition Guide for Clinicians (Latest Edition) Neal D. Barnard, Rick Weissinger, Brent J. Jaster, Scott Kahan, Charles Smyth, Physician Committee for Responsible Medicine
- Text Book of Nutrition and Dietetics (Latest Edition) Kumud Khanna, Sharda Gupta, Santosh Jain Passi, Rama Seth, Ranjana Mahana, Seema Puri.
- Simplified Diet Manual (Latest Edition), Andrea K. Maher, IOWA Dietetic Association
- Clinical Nutrition (Latest Edition), Michael J Gigney, Marinos Elia, Olle Ljunqvist and Julie Dowsett
- European Journal of Clinical Nutrition, New England Journal of Medicine, British Medical Journal, Lancet

## ANNEX-1: THE CURRICULUM

### 1. BASIC CLINICAL AND NUTRITION SKILLS

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| *1.1.* Assess and identify nutritional problems and imbalances of patients and understand how these may contribute to an individual's diseases, symptoms and health concerns in the hospital context. | *1.1.1. Demonstrate basic clinical skills related to nutrition* | 1.1.1.1. Acquire proficiency in taking a focused history from patient, from patient's family, caregivers and other professionals<br>1.1.1.2. Acquire proficiency in physical examination, General examination, system examination and nutrition assessment |
| *1.2.* To treat and recommend treatment for such nutritional imbalances by undertaking medical nutrition therapy | *1.2.1. Understand principles of nutrition management to calculate needs* | 1.2.1.1. Able to calculate the nutritional requirements of acute and chronic conditions and critically ill patient in Intensive care units with special needs<br>1.2.1.2. Able to learn energy, carbohydrate, fat, protein, vitamins, minerals and trace elements with water and nitrogen balance for the various metabolic situations |
| | *1.2.2. Understand principles of nutrition management to prescribe* | 1.2.2.1. Able to prescribe normal feeding, therapeutic enteral nutrition, therapeutic parenteral nutrition, ideal formulae for the above patients |
| | *1.2.3. Demonstrate commonly used procedural skills* | 1.2.3.1. Demonstrate proficiency in enteral and parental feeding;<br>1.2.3.2. Understand equipment uses and their pitfalls for enteral and parental feeding, intravenous nutrition feeding catheters, Naso-gastric tubes, Naso-jejunal tubes, PEG tubes, jejunostomy tubes |

| | | |
|---|---|---|
| | 1.2.4. *Understand principles of nutrition management and complications* | 1.2.4.1. Acquire proficiency to start of enteral and parenteral feeding; escalation of feeds; drip feeding; pump feeding; transition from parenteral to oral, enteral feeding and tube to oral feeding;<br>1.2.4.2. Acquire proficiency Combined feeding ( supplemental parenteral feeding);<br>1.2.4.3. Acquire proficiency of immune-nutrition and hormonal therapy as required;<br>1.2.4.4. Acquire proficiency of line infections; gastrointestinal infections; Intolerance; Dumping syndrome;<br>1.2.4.5. Acquire knowledge of structure and facilities required in feed preparation rooms |
| | 1.2.5. *Understand the place of investigations in a variety of situations* | 1.2.5.1. Aware of basics chemistry, fluid balances, basic investigations and interpretations related to common disorders |

## 2. DIAGNOSIS AND MEDICAL NUTRITION THERAPHY

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 2.1 To work closely with allied health professionals to ensure that the patient receives the highest level of nutrition care at each stage of their treatment process. | 2.1.1 *use the knowledge and skills acquired during the clinical appointments in the comprehensive management of patients under theme areas* | 2.1.1.1 Specific competencies under theme areas given below in No. 8. |
| 2.2 To provide guidance on relevant nutrition requirements in special groups, such as athletics, service personnel, displaced populations etc. | *2.2.1 Understand principles of nutrition management and calculate needs* | 2.2.1.1 Able to calculate the nutritional requirements<br>2.2.1.2 Able to learn energy, carbohydrate, fat, protein, vitamins, minerals and trace elements |

| | | |
|---|---|---|
| 2.3 To assess critically the effectiveness of preventive nutrition interventions, nutrition and meal programmes, and nutrition services through audit and evaluations in the hospital context | *2.3.1 Understand the role of situations unique to nutrition interventions and services* | 2.3.1.1 Able to calculate the nutritional requirements of acute and chronic conditions and critically ill patient in Intensive care units with special needs<br>2.3.1.2 Able to learn energy, carbohydrate, fat, protein, vitamins, minerals and trace elements with water and nitrogen balance for the various metabolic situations |

## 3. PUBLIC HEALTH COMPETENCIES

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 3.1. To prevent of diet and nutrition related diseases in the hospital context | 3.1.1. *Demonstrate ability liaise with community* | 3.1.1.1. Effectively deliver information to the patient and family, general practitioner, community agencies, diseases prevention, media |
| *3.2.* To learn and identify nutritional problems and interventions and understand how these may contribute at population level to prevent nutrition disorders | *3.1.1. Understand the role of situations unique to nutrition interventions and services at population level* | 3.1.1.1. Advocate in promoting healthy eating for healthy living.<br>3.1.1.2. Identify factors related to diet and disease and work within a multidisciplinary framework to promote healthy living to minimize the diet related diseases.<br>3.1.1.3. Work alongside health and non-health administrators and service providers in planning and developing healthy eating opportunities for the general public for healthy living.<br>3.1.1.4. Acquire a leadership role within the multi-disciplinary team providing diet and nutrition management in hospital context and other settings.<br>3.1.1.5. Liaise with relevant authorities at all levels |

| | | |
|---|---|---|
| | | for the development and provision of resources to promote healthy diet for the general population in the interest of heath gain.<br>3.1.1.6. Liaise with the field health staff, local authorities, education sector, the UN agencies, non-governmental agencies and private sectors in promoting the nutritional status of specific communities.<br>3.1.1.7. Acquire communication skills to communicate effectively with patients, colleagues and health care staff in oral and written form. |

## 4. EFFECTIVE COMMUNICATION

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 4.1 To provide a high level of clinical expertise and to communicate effectively with clinicians referring patients for a professional opinion | 4.1.1. *Understand modes and methods of effective Communication With colleagues* | 4.1.1.1. Referral writing<br>4.1.1.2. Summarizing<br>4.1.1.3. Report writing |
| | *4.1.2.* *Understand modes and methods of effective Communication with Patients and Caregivers* | 4.1.2.1. Use of lay language<br>4.1.2.2. Use of interpreter<br>4.1.2.3. Use of counselling skills |
| | *4.1.3.* *Demonstrate ability to refer appropriately* | 4.1.3.1. Within relevant specialists and relevant hospital staff<br>4.1.3.2. Preventive staff team |

## 5. PROFESSIONALISM

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 5.1. Demonstrate the capacity to work in multi-professional teams | 5.1.1. *Understand clearly the roles and responsibilities of other team members* | 5.1.1.1. Recognize and respect competencies and diverse roles of team members<br>5.1.1.2. Participate effectively inter-professional meetings<br>5.1.1.3. Respect team ethics including confidentiality<br>5.1.1.4. Demonstrate leadership where appropriate,<br>5.1.1.5. the importance of the nutrition team in the health care system |

## 6. LEADERSHIP AND MANAGERIAL COMPETENCIES

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 6.1. Demonstrate the capacity to work in multi-professional teams | 6.1.1. *Understand clearly the roles and responsibilities of other team members* | 6.1.1.1. Recognize and respect competencies and diverse roles of team members<br>6.1.1.2. Participate effectively inter-professional meetings<br>6.1.1.3. Respect team ethics including confidentiality<br>6.1.1.4. Demonstrate leadership where appropriate,<br>6.1.1.5. the importance of the nutrition team in the health care system |
| 6.2. Ability to maintain efficient administration | *6.2.1. Understand role as an administrator* | 6.2.1.1. Team work concept – Responsibility, leadership, delegation, organization structure, planning, communication<br>6.2.1.2. Supervision, Enhance productivity, quality improvements |

## 7. CLINICAL AUDIT, EDUCATION AND RESEARCH

| Educational outcome | Core competencies | Content areas |
|---|---|---|
| 7.1. Able to review clinical practice, identify areas for change and implement change through provision of guidelines and teaching | 7.1.1. *Effectively carry out clinical audits related to clinical nutrition practice* | 7.1.1.1. Understand clinical audit – Design, objectives, data collection and interpretation,<br>7.1.1.2. Implement improvements in practice |
| | *7.1.2. Able to conduct research to acquire new knowledge* | 7.1.2.1. Understand Research methodology, Sample size, choice of research method, enrolment/ consent, randomization, bias, concealment, validity, gold standard, planning<br>7.1.2.2. Understand evidence based medicine, Evidence generation, evidence interpretation, evidence application |

| | | |
|---|---|---|
| 7.2. Demonstrate ability to teach | 7.2.1. *Able to teach informally and in specified circumstances in a more formal setting* | 7.2.1.1. Bed-side – Demonstration, simulation, case discussion<br>8.2.1.1. Teacher led – Lectures, tutorials<br>8.2.1.2. Student led – Promote self-directed learning, case scenarios |
| 7.3. Understand the principles of critical appraisal and research methodology and apply these to acute care situations | *7.3.1. Understand Audit and clinical outcomes* | 7.3.1.1. Clinical audit – Critical review of current practice and comparison against predefined standards<br>7.3.1.2. Identification of key features of clinical practice allowing relevant lessons to be learnt,<br>7.3.1.3. Identify areas in which knowledge could be improved or is deficient,<br>7.3.1.4. Suggesting the need for research<br>7.3.1.5. Research – Interventional studies, observational studies |
| | *7.3.2. Able to conduct Critical appraisal* | 7.3.2.1. Portfolio management – A log of procedures carried out, reflective practice, teaching experience, research and audit involvement,<br>7.3.2.2. Information technology use,<br>7.3.2.3. Ethics issues,<br>7.3.2.4. Professional development activities,<br>7.3.2.5. Peer, patient, community feed back |
| | *7.3.3. Understand Information management* | 7.3.3.1. Management of databases – Confidentiality, data retrieval<br>7.3.3.2. Records room – Filing systems, document retrieval, storage, security |

## 8. SPECIFIC COMPETENCIES UNDER SPECIALITIES

Specific competencies provide knowledge, management, skills, follow up and referral.

### 8.1. General Medicine and critical care

Trainees should have formal instruction, clinical experience, opportunities to acquire expertise in the nutrition assessment, evaluation, nutritional management, and prevention of the following disorders:

1. ***acute medical conditions***
    a. myocardial infarction
    b. acute renal disease
    c. acute liver disease
    d. acute respiratory tract infections
    e. acute gastrointestinal infections
2. ***chronic medical conditions***
    a. cardiovascular diseases
    b. chronic renal diseases
    c. chronic liver diseases and gastrointestinal disorders
    d. chronic pulmonary conditions
    e. non communicable diseases-ex: diabetes mellitus with\without complications, hypertension, dyslipidaemia
    f. stroke
    g. food allergy
3. ***a critically ill patient in MICU with special needs***
    1. critically ill with myocardial infarction
    2. organ dysfunction- respiratory, liver, kidney, cardiac
    3. septic
    4. ventilated
    5. over-weight
    6. obese
    7. underweight
4. ***Endocrinology – adults***
    *a.* Type 2 DM, Type 1 DM, and additional co morbidities such as dyslipidaemia and Hypertension
    *b.* Under weight,
    *c.* Overweight,
    *d.* Cushing syndrome,
    *e.* metabolic syndrome,
    *f.* hyper and hypothyroidism hyper parathyroidism and other syndromes which need nutrition intervention
    *g.* Osteoporosis
5. ***Neurology***
    *a.* Stroke,
    *b.* Parkinsonism,
    *c.* Epilepsy,
    *d.* Guillen bare syndrome,
    *e.* Multiple sclerosis,
    *f.* Encephalitis,
    *g.* TB meningitis,
    *h.* Prior to the neurosurgery,
    *i.* After the neurosurgery
6. ***Respiratory diseases***
    a. Tuberculosis
    b. Chronic Obstetric Pulmonary Diseases
    c. Pulmonary cachexia syndrome

d. Malignancies ( lung carcinoma)
e. patients diagnosed of having lung diseases with other comorbidities ( diabetes, Anaemia, HIV/AIDS)
f. Disease progression with medical nutrition therapy e.g. empyema and TB
g. Diet in hypercapnia ( low carbohydrate and high fat)

***7. Nephrology***

a. Chronic Kidney Disease
b. Acute Kidney Injury
c. End Stage Kidney Disease on Haemo-dialysis
d. End Stage Kidney Disease on Peritoneal dialysis
e. Nephrotic Syndrome
f. End Stage Kidney Disease awaiting Renal Transplantation
g. Post op Renal Transplantation
h. Renal stones

***8. Gastroenterology***

a. Pre surgical patient – Improve the fitness for surgery
b. Post-surgical patient
c. Patient with special needs
d. Cirrhosis patients
e. Waiting for Liver transplant
f. Pancreatitis
g. Inflammatory bowel disease
h. GI cancer patients

***9. Geriatric nutrition***

a. Chronic illnesses
    a. Hypertension/DM/IHD/Dyslipidaemia/ Stroke/OA
b. Acute conditions
    a. Critically ill/sepsis/Delirium/Dysphagia/Constipation/Diarrhoea
c. Bed ridden patients
d. Chronic malnutrition
e. Psychological conditions:
    a. Depression/Dementia
f. Cancer
g. Liver failure
h. Renal failure
i. COPD /BA
j. Oral health problems

*10.* ***Cardiovascular Diseases***

a. Dyslipidaemia
b. Metabolic syndrome
**c.** Hypertension
d. Chronic heart disease
e. Heart failure
f. Post myocardial infarction
g. Congenital heart disease
h. Pre and post CABG
i. Co-pulmonale
j. Rheumatic fever

***11. Psychiatry***

a. Depression
b. Eating disorders
c. Bipolar disorder,
d. Schizophrenia and anxiety disorders
e. Attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD) addiction

**8.2 General Paediatrics**

Trainees should have formal instruction, clinical experience, opportunities to acquire expertise in the nutrition assessment, evaluation, nutritional management, and prevention of the following disorders:

***Growth and malnutrition***

a. Under nutrition
b. Moderate acute malnutrition
c. Severe acute malnutrition
d. Growth faltering and failure to thrive
**e.** Overweight and obesity
f. Breast feeding practices before discharge from the hospital
g. Management of therapeutic feeding program from hospital to the community
h. Knowledge of the metabolic derangements in a patient with SAM, Addressing the Difficulties in treating dehydration in a patient with SAM
**i.** Feeding schedule with stabilization and rehabilitation phase.(F-75,F-100,BP-100)
j. Management of associated dehydration, hypoglycaemia, electrolyte, metabolic imbalances, hypothermia and micronutrient deficiencies.
k. Supplementary feeding (thriposha)
l. Nutritional follow up till patient achieving weight for height +1SD
m. Knowledge about the metabolic derangement of the patient with SAM and difficulty in assessing dehydration in patient with SAM.
n. Changes of metabolism. Catabolic-anabolic with nutrition rehabilitation.
o. Refeeding syndrome
p. Definition, basic intervention suspected patients with refeeding syndrome.
q. Basic metabolic derangement of refeeding syndrome.
r. How to avoid the refeeding syndrome in management of SAM.
s. Breast feeding management and milk
   - Composition of Breast milk in different phases of lactation-foremilk, hind milk,
   - Mature breast milk
   - Able to assess breast feeding techniques of mothers
   - Able to identify problems in breast feeding
   - Able to correct and augment breast feeding practices
   - Able to counsel and support mothers with breast feeding difficulties
**t.** Knowledge in baby friendly hospital initiative
**u.** Skills and knowledge to continue breast feeding during illness (ICU/In ward)

***Diabetes and endocrinology problems***

a. Childhood obesity
b. Diabetes mellitus {type 1}
c. Specific metabolic diseases.
d. Definition associated endocrine disorders.
e. Associated metabolic derangements.
f. Metabolic syndromes
g. Therapeutic interventions therapeutic changes of life styles. The commitment of parents (family) to achieve optimal outcome.
h. Nutrition promotion in non-communicable disease clinic and long term follow up of obese child in non-communicable disease clinic

***Special categories/Surgical***

a. Nephrotic and Nephritic syndrome
b. Leukaemia and cancers
c. Viral fever
d. Wheezy bronchitis and acute respiratory tract infections
e. Gastroenteritis
f. Pre surgical patient
g. Post-surgical patient

h. Patient with special needs – critically ill with organ dysfunction- respiratory, liver, kidney, cardiac, septic, ventilated
i. Burned
j. Trauma
k. Pancreatitis
l. Short gut
m. Surgical ( e.g. Necrotizing entero-colitis / Congenital Heart Disease)

***Knowledge about inborn errors of metabolism related to specific dietary components***.

a. Galactocaemia
b. Phenylketonuria
c. Non ketotic hypoglycaemia
d. Maple syrup urine disease
e. Glycogen storage disease
f. Thyrocinaemia
g. Glucose-galactose co transporter deficiency Etc.

***Special diets***

a. Ketogenic diet for seizure disorders
b. Duchenne muscular dystrophy
c. Nutrition of child with long standing chronic illnesses and organ damage/failures (acute, chronic).
d. Chronic liver failure(pre-transplant)
e. Chronic renal failure
f. Chronic lung disease

***Gastroenterology***

a. Cystic fibrosis/celiac disease
b. Inflammatory bowel disease
c. Ulcerative colitis
d. Crohn's disease
e. Chronic biliary obstruction(pre-operative)
f. Short bowel syndrome

***Cardiovascular diseases***

a. Congenital heart diseases(cyanotic/a cyanotic)-with severe failure to thrive awaiting cardiac surgery

***Psychiatry***

a. Refusals of feeds and disease related to food aversion(eating disorders)
b. Psychosomatic
c. Anorexia nervosa
d. Bulimia nervosa

***Food allergy***

a. Severe food allergy
b. E.g. Cow's milk protein allergy, Management of cow's milk protein allergy

***Micronutrient deficiencies***

a. Isolated micronutrient deficiencies
b. Iron- Daily requirement/metabolism/supplementation
c. Iodine deficiency
d. Associated endocrine
e. Foods containing high Iodine
f. Vitamin D deficiency
g. Nutritional Rickets
h. Metabolism of Vitamin D
i. Different types of Rickets
j. Zinc deficiency
k. Daily requirements
l. Clinical manifestation of Zinc deficiency
m. Management of patient with Zinc Deficiency

***Parenteral Nutrition and special feeding***

a. Indications of parenteral nutrition In neonate/premature, In paediatric age group
b. The knowledge about the energy/Na/electrolytes/calcium/Phosphate requirements of individual patients.
c. Initiation , staging up and weaning parenteral nutrition
d. Acquire the knowledge and skills about Different kinds of central lines
e. Management of complications of central lines
f. Complications of long term parenteral feeds.
g. Knowledge about the parenteral nutrition preparations available in Sri Lanka and the cost.
h. Feeding of sick new-borns
i. When to start enteral feeds
j. Non-nutritive feeding(trophic feeding)minimum enteral feeds
k. Stepping up of feeds and stepping down of feeds.
l. How to manage feeds of sick new-borns.
m. Optimize the nutrition of new-borns
n. Different feeding methods.(cup/NG bolus/Continuous NG/trans pyloric)
o. Different feeding Schedules.
p. Multicomponent fortifiers and the indications of using fortifiers.

**Special formulas**

a. Composition of cow's milk (unmodified) and modified cow's milk base formulas.
b. Specific milk formulas (Therapeutic) available in Sri Lanka.
c. Patient with GORD- Enfamil AR, Galactamin B19,Pregestimil
d. Milk thickness and milk fortifiers, indications, the cost and availability

**Nutrition programmes**

a. The knowledge about the nutritional intervention programs in Sri Lanka and how to integrate patients after nutritional rehabilitation to above programs.

***Team work***

a. The trainee should be an integral part of the management team (multidisciplinary) in managing patients with nutritional deficiencies, e.g.: CP child with feeding issue- Paediatric/ENT surgeon/Speech therapist/nursing officer/nursing officer/physiotherapist/stoma –care nurse etc. Trainee should liaise with the whole team in dealing with patient care.

### 8.3. Surgery and anaesthesia /critical care

Trainees should have formal instruction, clinical experience, and opportunities to acquire expertise in the nutrition assessment, evaluation, nutritional management, and prevention of the following disorders:

a. a pre surgical patient
b. a post-surgical patient
c. a surgical patient with special needs
d. critically ill with organ dysfunction- respiratory, liver, kidney, cardiac
e. cancer (GI tract including oesophageal, pancreatic, liver)
f. septic
g. ventilated
h. burned
i. trauma( including head & neck, GI)
j. patients with gastrointestinal disorders (e.g. inflammatory bowel disease, dysmotility, celiac disease and structural abnormalities of the gastrointestinal tract) associated with malnutrition,
k. obesity, non-alcoholic fatty liver disease and the sequelae of anti-obesity therapy (including Bariatric surgery)
l. pancreatitis and pancreatectomy
m. short gut
n. enterocutaneous fistula, High output fistula
o. ostomy complications (including ileostomy flux)

p. Organ transplant (liver, renal)
q. Chronic wounds &pressure ulcers
r. Intestinal pseudo obstruction
s. Parenteral and enteral feeding of critically ill / ICU patients and follow up

**8.4. Gynaecology and Obstetrics (duration 6 weeks)**

Trainees should have formal instruction, clinical experience, and opportunities to acquire expertise in the nutrition assessment, evaluation, nutritional management, and prevention of the following disorders:

***A Pre pregnant woman***

***a.*** A sub fertile female
***b.*** Diabetes mellitus and planning for pregnancy
***c.*** Obesity and planning for pregnancy
***d.*** Arthritis and planning for pregnancy
***e.*** Heart disease and planning for pregnancy
***f.*** Liver diseases and planning for pregnancy
***g.*** Gastrointestinal disease and planning for pregnancy
***h.*** Malnutrition, underweight and planning for pregnancy
***i.*** Cancer and planning for pregnancy
***j.*** Pulmonary diseases and planning for pregnancy

**An *antenatal* mother**

***a.*** Nutrient and health needs during normal pregnancy
***b.*** Nutrition recommendations and Dietary Guidelines
***c.*** Food source and nutrients
***d.*** Optimal weight gain
***e.*** Hyperemesis Gravidarum
***f.*** Food and flavour preference development
***g.*** Effect of alcohol, tobacco and illegal drug and pregnancy outcomes
***h.*** Laboratory assessment during pregnancy (Serum and anaemia)
***i.*** Nutrition related concerns and common complaints during pregnancy
***j.*** Nutrient needs and factors related to high-risk pregnancy
***k.*** Obesity and Pregnancy
***l.*** Nutrition in Multifetal Pregnancy
***m.*** Adolescent Pregnancy
***n.*** Anorexia Nervosa and Bulimia Nervosa During Pregnancy,
***o.*** Diabetes, Preeclampsia or AIDS/HIV and Pregnancy
***p.*** Popular diets, dietary supplements during pregnancy, vegetarian diets, iron and folate requirements etc.

***A postnatal mother***

a. Nutritional issues during lactation
b. Estimating Energy Requirements
c. Postpartum Weight Retention
d. Balance of diet and exercise for mom and baby (Calcium, iron, folate, vitamin B12, Long-chain polyunsaturated fatty acids)
e. Postpartum depression and the role of nutritional factors
f. Postpartum nutritional care and breastfeeding advantages
g. Postpartum weight loss
h. Diet during lactation
i. Indications for nutrition referral: lactation
j. Breastfeeding algorithm
k. Various breastfeeding concerns and resources
l. A gynaecological patient with malignancy

## ANNEX-2: DETAILS OF WORKSHOPS/SEMINARS/TUTORIALS

### 1. ENTERAL AND PARENTERAL NUTRITION SUPPORT AND FEEDING DEVICES – 4 WEEKS

Video, skill laboratory, self-study and tutorial

i. **Enteral Nutrition Content:**–

- Naso-duodenal and Jejunal Tubes
- Percutaneous Gastrostomy (PEG), Jejunostomy (PEJ) Tubes and Buttons
- Complications of PEG and PEJ
    i. Infectious
    ii. Skin
    iii. Peritonitis
    iv. Viscus Perforation
    v. Colo-cutaneous Fistula
    vi. Tube Migration
    vii. Haemorrhage

ii. **Parenteral Nutrition Content:**

- Catheter Types
- Catheter Complications and catheter care
    i. During Insertion
    ii. Occlusion
    iii. Thrombotic
    iv. Non-Thrombotic
    v. Infections

### 2. LEADERSHIP AND PROFESSIONALISM TRAINING – 1 WEEK

Work shop, e-learning, tutorials

This competency model is divided into three main groups:

i. Core Competencies

- Basic Communications
- Negotiating
- Teamwork
- Creative Problem Solving
- Interpersonal Skills
- Manage Patient Relationships
- Self-Direction
- Flexibility
- Build appropriate relationships
- Professionalism
- Financial

ii. Leadership Competencies

- Leadership Abilities
- Visioning Process
- Create and Lead Teams
- Assess Situations Quickly and Accurately
- Foster Conflict Resolutions (win-win)
- Project Management
- Coach and **Train Peers and Subordinates**

iii. Professional Competencies

- Adult Learning

- Instructional Design
- Instruction

**3. INFORMATION TECHNOLOGY WORKSHOP – 1 WEEK**

**Content:**

i. Data management

Plans, develops and manages data storage and retrieval systems by applying generally accepted data models, standards and processes.

- Working knowledge of relational database management systems.
- Considers the challenges of development, the benefits and applications of data warehouses, and best practices to implement applications.
- Utilizes knowledge of data mining and its various uses to perform duties.
- Knows bibliographic data management systems and databases for scientific research, such as PubMed.
- Learns, stays up to date on and incorporates the basic components of a data, records, and knowledge management process.
- Considers the differences between data management and records management and how they may support one another.
- Maintains, analyses and/or updates a computer database.

ii. Health informatics

Combines computer science, information science, and healthcare information with the latest IT systems to optimize the acquisition, storage, retrieval, and use of information in health and bio-medicine.

- Creates and advances databases, algorithms, computational and statistical techniques, and theory to solve formal and practical problems arising from the management and analysis of biological data.

**4. ETHICAL ISSUES IN NUTRITION – 1 WEEK**

Workshop, self-study and tutorial

**Content:**

- Implications of the law for the organization and conduct of nutritional support
- Law regard enteral nutrition – basic care or a medical treatment
- In case of doubt whether enteral tube feeding will be beneficial or when the prognosis of the underlying condition is uncertain
- Law regard withdrawing or withholding tube feeding
- In cases of severe brain damage where the prospect of recovery is extremely unlikely, how does the law regard withdrawal of food and fluid administration by tube
- Role of enteral feeding in dementia
- Role of Enteral feeding in terminal cancer
- Ethical tradition guide on dying patients
- Threats to medical ethics

**5. COMMUNICATION SKILLS WORKSHOP – 1 WEEK**

Workshop, self-study and tutorial

**Content:**

Choose appropriate, effective ways to communicate in diverse situations.

- communicate in a respectful tone and manner
- listen actively and communicate effectively with others
- write clearly and accurately in a variety of contexts and formats
- listen and ask questions to understand other people's viewpoints
- communicate issues in a timely manner
- are aware of and responsive to verbal and nonverbal communication styles
- recognize cultural differences in communication
- use effective cross-cultural communication skills

**6. PORTFOLIO WORKSHOP – 3 WEEKS**

Detail in Annex- 4

**6. CLINICAL AUDIT WORKSHOP – 1 WEEK**

**Clinical audit** is a process that has been defined as "a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change"

**Content:**

- How To: Choose and Prioritize Topics.
- How To: Set an Audit Sample & Plan Your Data Collection.
- How To: Engage Patients, Service Users & Carers in Clinical Audit.
- How To: Apply Ethics to Clinical Audit.

## ANNEX-3: PORTFOLIO FOR STAGE 1

The portfolio should be maintained in separate sections to conform to the above format. Entries in the Portfolio should be made by the trainee at the time of acquiring the skill and authorized by the trainer.

**Guidelines to maintain the portfolio:**

- The trainee is expected to keep it updated regularly.
- The trainers will use the portfolio to assess the progress of the trainee and to provide a feedback at the end of each segment of training.
- The trainers are expected to assess the level of competencies in different areas of training and provide advice and assistance to the trainees to achieve the expected levels of skills empowerment.
- It is the responsibility of the trainees and the trainers to ensure that the entries in the Portfolio are authentic and made regularly.
- It is essential to provide the trainee with accurate feedback about their performance during the training period.
- The multidisciplinary board (specialty board in clinical nutrition) expects the trainee and the trainers to make the best use of the portfolio in order to achieve the objectives of the training programme.
- The portfolio should be kept as a ring binder document which will allow easy insertions by the trainee.

## ANNEX-4: GUIDELINES FOR PREPARATION OF RESEARCH PROJECT AND SUBMISSION OF THE DISSERTATION

The preparation and submission of dissertation is in two stages.

**1. Pre-proposal -**

This should be prepared once a research problem has been identified. The Pre-proposal should not exceed two A 4 size pages on one side.

The following areas should be covered in the Pre-proposal.

- Title of the proposed study
- Research question- statement of problem/justification and rationale for the study
- Objectives – general and specific
- Methodology- This part should briefly cover the following areas
    - -Study setting
    - -Study population
    - -Study design
    - -Sampling
    - -Data collection techniques
    - -Ethical issue

Candidate can select 2 supervisors. The Pre- proposal will be reviewed by the research proposal review committee (RPRC) and once approved it will be registered by the Board of Study in the name of the candidate. Following the approval of the pre proposal candidate is required to submit quarterly progress reports regarding the status of the study through the supervisor to the PGIM.

**2. Detailed Research proposal –**

This should be prepared once a pre-proposal is approved. Detailed proposal should cover the following areas.

- Title of the proposed study
- Introduction
    - -brief description of the research area
    - -conceptual framework of the research topic
- Research Question
    - -statement of problem /justification and rationale for the study
- Review of the relevant literature
- Objectives
    - -general
    - -specific
- Methodology
    - - study area
    - - Study population - exclusion criteria if any
    - - Research design
    - - Sample – technique
    - - sample size calculation
    - - study factors, variable, operational variable and measures
- Data collection
    - - Methods to be used
    - - Study instrument (instrument to be annexed)
    - - Data collection technique - if interviewers are to be employed, type of interviewers and training that should be given to them etc.
- Ethical issues and how they are going to be addressed
- Plan of Data analysis
    - -data entry, cleaning etc.
    - -statistical packages and statistical methods to be used
- Gantt chart

Detailed proposal should be submitted to the Board in two (02) copies with comments of the pre proposal given by the RPRC.

Approval of the Board for the detailed proposal is a requirement to conduct the study. Following the approval of the detailed proposal candidate is required to submit quarterly progress reports regarding the status of the study through the supervisor to the PGIM. The supervisor shall be contacted and the guidance obtained at all stages of the research.

**Submission of Dissertation**

- It is recommended that the dissertation should be type written with a standard font (Times new roman, Arial, courier) and font size 12 using double spacing on good quality A4 size paper on one side only.
- The dissertation should contain 8000-10,000 words.
- A margin of not less than 44 mm should be allowed on the left hand side to facilitate binding, and margins of 20 mm should be left on the right, top and bottom.
- Chapter headings should be capitalized and centred whilst subdivision heading should be typed from left hand margin in lower case type underlined.
- Tables and figures should be placed as near as possible to the part of the text to which they refer.
- Contents of the dissertation should be given under the following headings
    i. Title
    ii. Authors name and degrees
    iii. Summary
    iv. Table of contents
    v. List of tables
    vi. List of figures
    vii. Introduction
    viii. Review of literature
    ix. Materials and methods
    x. Results
    xi. Discussion
    xii. Limitations of study
    xiii. Recommendations (if any)
    xiv. Acknowledgements
    xv. References (Vancouver system should be used.)
    xvi. Annexes
- Final dissertation should be submitted to the PGIM with the approved detailed proposal. Three copies of the dissertation should be submitted loose bound to the PGIM for evaluation. On submission of the dissertation it will be evaluated by two examiners appointed by the Specialty board in Clinical Nutrition.
- When the dissertation is accepted it should be bound in a hand cover with the author's name, the degree and year printed in gold on the spine (bottom upwards). The cover should be black. Front cover should carry the title on top, the authors name in the centre and the year at the bottom printed in gold. Three copies of the dissertation should be submitted to the Director, PGIM. Two copies shall be property of the PGIM while the third copy will be returned to the candidate.
- Satisfactory completion of dissertation is a prerequisite for Board Certification as a Specialist in Clinical Nutrition.

**ANNEX 5: LOG BOOK-PRE MD TRAINING**

# MD CLINICAL NUTRITION

# POSTGRADUATE INSTITUTE OF MEDICINE COLOMBO

The purpose of the log book is;
1) To help trainees record his/her training in brief detail so that the experience acquired can be assessed and deficiencies identified and remedied.
2) To help supervisors assess the overall training and provide guidance in the areas where it is needed.

Entries in the log book should be made by the trainee at the time of acquiring the skill and **Counter signed** by the supervisor **immediately following the procedure**.

During the appointment an assessment based on the log book will be done by the supervisor. **It is the trainees responsibility to get the assessments sheets completed by the supervisors within 2 weeks of completion of the appointments. Completed log books are essential to assess the eligibility of the candidate to sit for the examination.**

**INSTRUCTIONS TO SUPERVISORS**
It is also the responsibility of the supervisor to see that the entries in the log book are authentic and made regularly. Please take the assessment seriously. It is vital to give the trainee accurate feedback on your views about the trainee's performance in the job. Please review regularly the trainee's record of educational activities. It is also necessary to review the record of medical training and if there are deficits, attempts must be taken to rectify these.

**PERSONAL DETAILS**
Surname……..
Other names……
Address……
Telephone ……
Date of commencing MD Training……..

## 3.1. CLINICAL APPOINTMENT TIME TABLE

| Name of the Clinical Rotation | Period of training | Supervisor |
|---|---|---|
| 1. General Medicine ward | | |
| 2. General Paediatrics ward | | |
| 3. Gynaecology and Obstetrics ward | | |
| 4. Surgery ward | | |
| 5. Anaesthesia | | |
| 6. Nutrition clinic | | |

## 3.2. CERTIFICATION OF ATTENDENCE

**Name of the Appointment: …….**

Period of Training: From…… To……

| Weekly Programme | AM | PM |
|---|---|---|
| Monday | | |
| Tuesday | | |
| Wednesday | | |
| Thursday | | |
| Friday | | |
| Saturday | | |
| Sunday | | |
| On call commitment | | |
| Departmental CME | | |

### 3.3. ACTIVE PARTICIPATION AT MEETINGS

**Name of the Appointment: …….**

Case presentations, Journal clubs, Lectures, workshops, meetings etc.

| Date | The event & a brief summary of the presentation |
|---|---|
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### 3.4. ATTENDANCE AT CME OUTSIDE THE TRAINING UNIT

**Name of the Appointment: …….**

Conferences, Lectures, Symposia, Grand ward rounds, Journal clubs, Audit meetings etc.

| Date | Event | Duration | Place | Organizer |
|---|---|---|---|---|
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### 3.5. TEACHING EXPERIENCE

**Name of the Appointment: …….**

(Teaching done in the unit)

| Date | Topic | Target group | Brief summary |
|---|---|---|---|
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## 3.6. RECORD OF PROCEDURES PERFORMED

**Name of the Appointment: …….**

Procedures performed should be recorded in this page and certified by the supervising Consultant/ senior registrar on the same day. Base on the entries the supervisor will attempt to correct any deficits and provide opportunity for acquiring the required skills.

| Name of the Procedure | Date | BHT No | Signature of Supervisor |
|---|---|---|---|
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### 3.7. LEAVE RECORD DURING THE CLINICAL APPOINTMENTS

Leave should be approved by the supervising consultant

| Date | Name of the appointment | Type of leave | Approved or not | Signature of Consultant |
|---|---|---|---|---|
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## ANNEX-6: PEER TEAM RATINGS FORM C OF PGIM (PTR FORM)

## PGIM PTR ASSESSMENT OF REGISTRARS/ SENIOR REGISTRARS

PTR FORM

***Confidential***

**Dear Colleague,**

You have been your invited to participate in Peer Team Rating of this doctor. PTR is a tool for multi-source feedback $360^0$ assessment. We value your independent and honest rating of our trainees.

**Please indicate your profession by filling in one of the following circles**

O Consultant O Registrar O SHO or HO

O Allied Health Professional O Senior Registrar O Nurse

O Clerical or Secretarial Staff O Other specify…….

Your scoring should reflect the performance of this trainee against that which you would reasonably expect at his/her stage of training and level of experience. Please feel free to add any other relevant comments about this doctor's strengths and weaknesses.

Please place form in the attached self-addressed envelope and return to the Trainer named on the envelope. DO NOT return to the trainee concerned.

**THE PTR IS NOT AN ASSESSMENT OF KNOWLEDGE OR PRACTICAL SKILLS**

| **Name of trainee:**<br>**Specialty:**<br>**Date:** | **Strongly Disagree**<br>**1** | **2** | **3** | **4** | **Strongly Agree**<br>**5** |
|---|---|---|---|---|---|
| ***1. Attitude to staff:*** Respects and values contributions of other members of the team | **1** | **2** | **3** | **4** | **5** |
| ***2. Attitude to patients:*** Respects the rights, choices, beliefs and confidentiality of patients | **1** | **2** | **3** | **4** | **5** |
| ***3. Reliable & punctual*** | **1** | **2** | **3** | **4** | **5** |
| ***4. Communication skills:*** communicates effectively with patients and staff | **1** | **2** | **3** | **4** | **5** |
| ***5. Team player skills:*** Approachable, Supportive and accepts appropriate responsibility | **1** | **2** | **3** | **4** | **5** |
| ***6.Leadership skills:*** Takes responsibility for own actions and actions of the team | **1** | **2** | **3** | **4** | **5** |
| ***7. Honesty and Integrity:*** do you have any concerns? | Yes | | | | No |

**8. What is your overall rating of trainee's professionalism?**

**Very poor** **Extremely good**

**1 2 3 4 5 6 7 8 9 10**

**Comments**

Name: Signature:

Date:

## ANNEX 7: PORTFOLIO FOR STAGE 3

*Please see from overleaf*

Postgraduate Institute of Medicine
University of Colombo

Clinical Nutrition Programme

PORTFOLIO
FOR STAGE 3 IN CLINICAL NUTRITION

2016

### Details of the trainee

Name:

Permanent address:

E-mail address:

Contact phone numbers:

Date of registration as a PGIM trainee:

Date of passing the MD (Clinical Nutrition) Examination:

***This book contains information that is very important to a doctor who is training to serve as a consultant nutrition physician in the future. In case this book is lost and found, please return it to the owner above, or contact the owner, or please return it to:***

***Postgraduate Institute of Medicine, 160 Nandadasa Kodagoda Mawatha, Colombo 07 (telephone +94 11 2696261 or +94 11 2697758).***
***Thank you.***

**What does this portfolio have?**

This portfolio provides a framework for you to gather evidence of the acquisition of the necessary knowledge, skills and attitudes to be a consultant nutrition physician (which are encompassed in the outcomes and learning objectives, listed in section 6 of the *Prospectus)*. This framework consists of 7 sections (of which the first 6 are recommended by the PGIM), namely:

1. Subject expertise
2. Teaching experience
3. Research and audit
4. Ethics and medico-legal issues
5. Information technology (IT)
6. Life-long learning
7. Reflective practice

The evidence you record in this portfolio will be used to assess you at the PBCA, which will use this framework.

**LERANING ACTIVITIES TO BE COMPLETED DURING LOCAL AND FOREIGN TRAINING AFTER MD EXAMINATION**

1. Professional Development – active participation in CME activities (Annex-7:Form -1)
   Trainee should do a minimum number of two (02) case presentations and two (02) journal clubs during post MD local training (Annex-7:Form -2)
2. Teaching ( undergraduates / postgraduates/ nurses / midwives )
   Trainee should carry out a minimum number of ten (10) teaching sessions during post MD local training.
3. Audit
   Trainee should carry out a minimum number of one (01) audit during post MD local training.
4. Programme or preventive activities
   Trainee should plan and implement a minimum number of four (04) preventive activities (workshops, awareness programmes etc.) during post MD local training.

   All these to be entered in the portfolio and to be presented for board certification.

**ANNEX-7: FORM -1**
**ATTENDANCE AT CME**

(Conferences, lectures, symposia, grand ward rounds, journal clubs, audit meetings etc.)

| Date | Event | Duration | Place and organizer |
|---|---|---|---|
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**ANNEX-7: FORM -2**

**ACTIVE PARTICIPATION AT MEETINGS**

Case présentations, Journal clubs, Lectures etc.

| Date | The event & a brief summary of the presentation |
|---|---|
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## ANNEX 8: TRAINER'S APPRAISAL FOR THE SENIOR REGISTRAR LOCAL TRAINING

| Date of report |
|---|

### APPRAISAL FORM

***EVALUATION OF THE POST-MD (CLINICAL NUTRITION) TRAINEE***

***POSTGRADUATE INSTITUTE OF MEDICINE, SRI LANKA***

(First part to be filled by the trainee and handed over to the trainer at the end of the SR training)

| | |
|---|---|
| Trainee's Name: | Date of commencement of the training: |
| Supervisor's Name: | Date of completion of the training: |
| Training Unit & Address: | |
| Special interests of the unit and educational & training opportunities available to the trainee: | |

***SELF APPRAISAL BY THE TRAINEE***

(To be completed by the trainee before handing over to the supervisor)

| **Attendance at** | **Per month** | **Comments** | | |
|---|---|---|---|---|
| Grand rounds | | | | |
| Audit meetings | | | | |
| Journal clubs | | | | |
| Research/Clinical meetings | | | | |
| Outpatient Clinics | | New patients | | |
| | | Old patients | | |
| | | Supervised | Yes | No |
| | | | | |
| | | | | |
| Others | | | | |
| Special Procedural skills acquired | | | | |

Presenting cases, literature reviews at postgraduate meetings:

| |
|---|
| Research undertaken |
| Are there any new areas in which you would like to be involved? |
| Are there any specific areas where further training might improve your performance? |
| |

***COMMENTS BY THE SUPERVISOR***

(to be completed and sent directly under confidential cover by the supervisor to the Director, Postgraduate Institute of Medicine, No.160, Norris Cannel Road, Colombo 8, Sri Lanka)

Please comment on the following abilities the trainee has developed during the period

| |
|---|
| Medical Knowledge |
| Clinical skills (taking histories, clinical examination, presenting cases, making decisions etc.) |
| Communication skills (talking to patients, families & GPS, breaking bad news, communicating with team members, record keeping, writing referral letters etc.) |
| Skills in patient-management & procedures |
| Attitude and commitment to work & participation at educational activities |
| In your opinion, what do you see as trainee's main strengths in his ability to practice at a consultant level? |
| What weakness do you think the trainee needs to improve on in order to practice effectively at a consultant level? |
| Are there any special matters of concern? |
| General comments and recommendations |

Name & Signature of the Supervisor

Date

## ANNEX 9: TRAINER'S APPRAISAL FOR THE SENIOR REGISTRAR OVERSEAS TRAINING

**FORMAT FOR PROGRESS REPORT ON TRAINEES - POST MD (STAGE 5 - OVERSEAS TRAINING)**

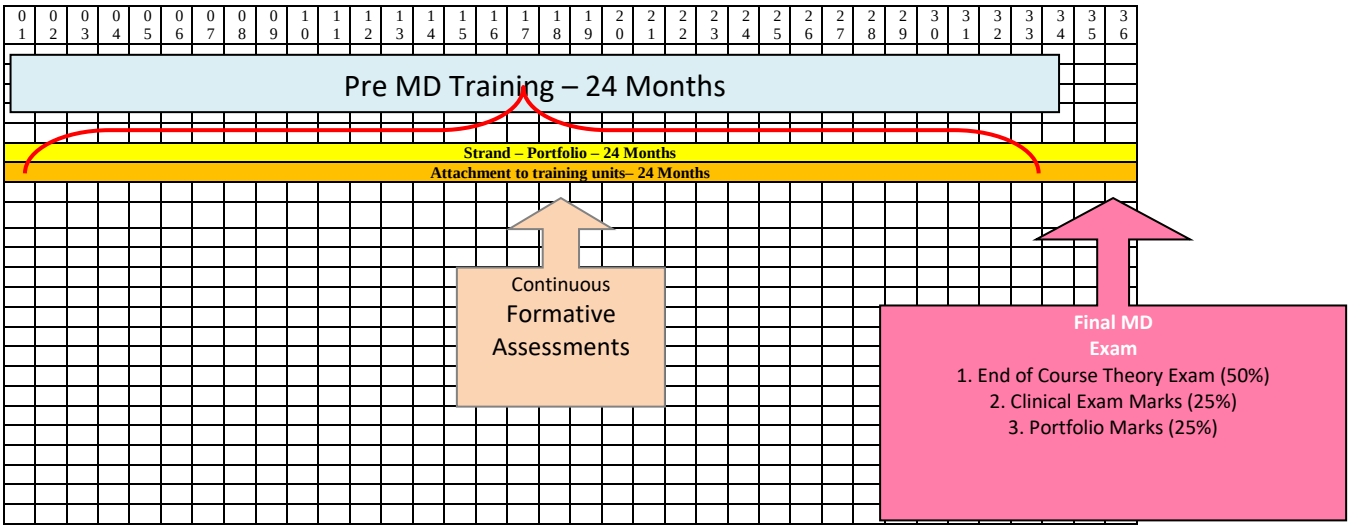
**NAME OF TRAINEE:** **SPECIALTY:**

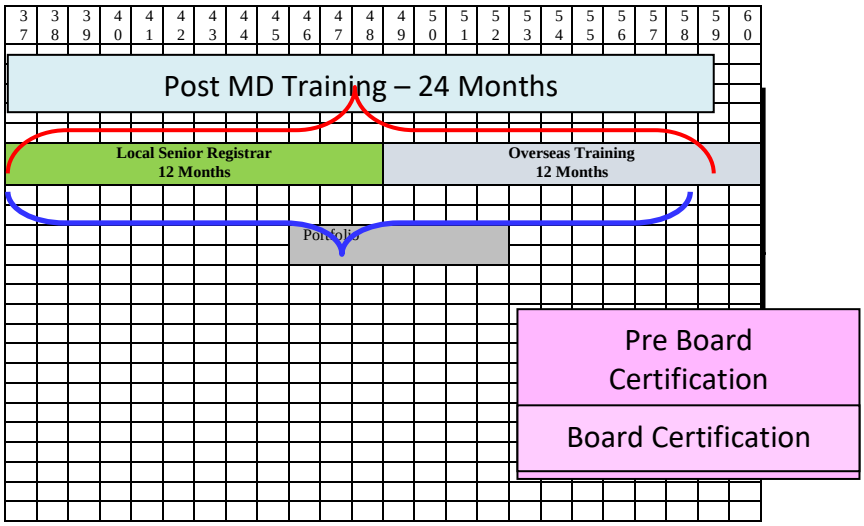
**PERIOD OF TRAINING:**

**HOSPITAL AND UNIT:**

**NAME OF THE SUPERVISOR:**

| | Excellent | Good | Average | Poor |
|---|---|---|---|---|
| Operative skills | | | | |
| Ability to cope with emergencies and complications | | | | |
| Thinks independently and rationally | | | | |
| Seek appropriate consultations | | | | |
| Ability to follow instructions | | | | |
| Quality of documentation | | | | |
| Dedication to work | | | | |
| Professional attitudes | | | | |
| Reliability | | | | |
| Availability/punctuality | | | | |
| Communication skills | | | | |
| Doctor-patient relationship | | | | |
| Relationship with colleagues | | | | |
| Relationship with other staff | | | | |
| Supervises and help juniors | | | | |
| Teaching of medical student/junior staff | | | | |
| **Other Comments:** | | | | |


Pre MD Training – 24 Months
Strand – Portfolio – 24 Months
Attachment to training units– 24 Months
Continuous
Formative
Assessments
Final MD
Exam
1. End of Course Theory Exam (50%)
2. Clinical Exam Marks (25%)
3. Portfolio Marks (25%)


Post MD Training – 24 Months
Local Senior Registrar
12 Months
Overseas Training
12 Months
Portfolio
Pre Board
Certification
Board Certification