POSTGRADUATE RESIDENCY PROGRAMME
IN PERIODONTOLGY

Periodontology Course Manual

National University of Singapore

Compiled by

Associate Professor Lim Lum Peng
Course Director
Postgraduate Residency Programme in Periodontology
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SECTION A

PROGRAMME OVERVIEW

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6 Assessment
1 TEACHING STAFF

Programme Director:  Associate Professor Lim Lum Peng
                    Faculty of Dentistry
                    National University of Singapore

Programme Co-director:  Clinical Associate Professor Marianne Ong
                        Department of Periodontics
                        National Dental Centre

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   BDS, MSc (London), FAMS

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   BDS, MSc (London), Grad Dip Dental Implantology (Singapore)

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   BDS, MSc (London)

Clinical Associate Professor Marianne Ong
   BDS, Cert Perio (Michigan), MS (Michigan), FAMS

Dr Alvin Yeo
   BDS, Cert Perio (UNC, USA)

Dr Tan Wah Ching
   BDS, MDS (Sing), MRD RCSEd, FRACDS, FAMS, Dr. Med. Dent. (Berne)
Dr Yang Jingrong  
*BDS, MDS (Sing)*

**COMMITTEE FOR PERIODONTOLOGY**

Associate Professor Lim Lum Peng  
Adjunct Associate Professor Chung Kong Mun  
Clinical Associate Professor Marianne Ong  
Dr Alphonsus Tay
The Periodontology Residency training programme is a 3-year programme leading to the Master of Dental Surgery in Periodontology (MDS Sing) and a conjoint Membership in Restorative Dentistry with the Royal College of Edinburgh (MRD Edin).

The Programme is administered by the Division of Graduate Dental Studies, Faculty of Dentistry. The Clinical component of the programme will be conducted at the Faculty of Dentistry, National University of Singapore and the National Dental Centre. For the clinical component, during term time, the Resident will spend approximately 1½ days each per week at the National Dental Centre and National University Hospital. The didactic component will be conducted mainly at the Faculty of Dentistry. Teaching will be undertaken by staff in the Faculty of Dentistry, National Dental Centre and Private Practitioners specializing in the area of Periodontology and Implant Dentistry.

Entrance Requirements

Holder of a degree in Dental Surgery with two years experience in full-time clinical practice after graduation; the period of internship is considered “full-time clinical practice”. (For purpose of pursuing residency training programmes for Master of Dental Surgery (MDS) examination, holders of degrees registrable by Dental Boards in India, Indonesia and Philippines and other qualifications approved by the Board of Graduate School of Dental Studies are acceptable and can be admitted to the programme). A TOEFL score of 550-600 or IELTS score of 7 & above are needed.

Overview of Programme

The current proposed programme is based on a 40 week term per year with 40 hours a week with an additional 316 after office training hours for implant dentistry seminars and combined treatment Planning seminars. There will be a total of 5116 scheduled training hours during term time over the period of 3 years (including after office training hours). The vacation term takes up 1080 hours of various activities, a separate timetable is planned during the vacation term, more time is allocated for research. The breakdown is as follows:
<table>
<thead>
<tr>
<th>Item</th>
<th>term time hrs</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Yr1</td>
<td>Yr2</td>
<td>Yr3</td>
<td>Total</td>
<td></td>
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<tr>
<td><strong>Total number of weeks</strong></td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>120</td>
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<tr>
<td><strong>Breakdown of hours</strong></td>
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<tr>
<td>Didactics</td>
<td>394</td>
<td>261</td>
<td>250</td>
<td>905</td>
<td></td>
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<tr>
<td>Clinical/Practical</td>
<td>916</td>
<td>980</td>
<td>936</td>
<td>2832</td>
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<tr>
<td>Research</td>
<td>90</td>
<td>205</td>
<td>188</td>
<td>483</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous activities</td>
<td>200</td>
<td>154</td>
<td>226</td>
<td>580</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>4800</td>
<td></td>
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<tr>
<td>After office training hours</td>
<td>160</td>
<td>78</td>
<td>78</td>
<td>316</td>
<td></td>
</tr>
<tr>
<td>Vacation Time timetable (9 wks)</td>
<td>144 clinic 72 didactic 144 res</td>
<td>144 clinic 72 didactic 144 res</td>
<td>176 clinic 56 didactic 144 res</td>
<td><strong>1080</strong></td>
<td></td>
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<tr>
<td>exclude 3 wks mandatory leave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (include after office training hrs)</strong></td>
<td>2120</td>
<td>2038</td>
<td>2038</td>
<td><strong>6196</strong></td>
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</tr>
</tbody>
</table>

The course consist of a **didactic**, **clinical** and **research** component. Each resident is expected to participate in seminars, case presentations, literature review and required assignments in Core oral science courses, multi-disciplinary clinical courses, Periodontology and Implant Dentistry courses. Residents are expected to treat and document at least 40 cases presenting with a range of complexities of periodontal problems, some of which involve multi-disciplinary care including patients requiring implants. Residents are required to carry out an original research in the field of Periodontology under the supervision of a staff member. This is to be supported by a thesis to be submitted at the end of the course and the defense of the thesis in an oral examination, in partial fulfillment of the MDS in Periodontology.
Besides the core course requirements, each resident may take elective courses as part of the General education requirement to broaden the scope of the resident’s intellectual pursuit. As part of the training, residents will also be involved in teaching the undergraduates during the second and third year of the course.

Assessment of the resident’s competence will be based on termly continuous assessment, competency tests, end of year examination and a final examination.

**Clinical Requirements**

On completion of the course, each resident is expected to have completed at least 30 cases, 15 of which should have maintenance care of at least 1 year. This would include a range of clinical presentations at different levels of complexity, some of which are multi-disciplinary in nature. All cases will be documented in a clinical log book. Each resident should be exposed to multi-disciplinary management of Perio-Prosthodontic cases including the placement of implants, Perio-Orthodontic cases, Perio-Endo cases, Perio-oral Maxillofacial cases, Perio-Oral medicine cases, management of physically/intellectually disabled and the medically compromised.

By the end of the course, each resident should be proficient in diagnosis and treatment planning, non-surgical and surgical management of patients presenting with varying degree of periodontal destruction. In addition to non-surgical periodontal therapy, each resident is expected to perform a range of 80-100 periodontal surgical procedures which would include crown lengthening, periodontal flap surgery, gingivectomy, mucogingival procedures and guided tissue regenerative procedures. Each resident is expected to have placed a minimum of 20 oral implants at the end of the course. The resident should be able to exercise discriminate judgment in the appropriate use of chemotherapeutic agents and local drug delivery as part of the management strategy in periodontal therapy. The resident should be able to apply defined quality standards to his/her clinical performance and to implicate quality management into the treatment plan.

**Threshold of Requirements:**

<table>
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<tr>
<th>E&amp;D</th>
<th>100</th>
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<tbody>
<tr>
<td>Perio Surgery</td>
<td>100</td>
</tr>
<tr>
<td>Implants</td>
<td>20</td>
</tr>
<tr>
<td>Maintenance of at least 1yr</td>
<td>15</td>
</tr>
<tr>
<td>Completed case</td>
<td>30</td>
</tr>
</tbody>
</table>
3 OBJECTIVES OF COURSE

The **primary objective** of the MDS course in Periodontology is to train a clinically proficient, scientifically orientated, analytical, empathetic and ethical periodontist committed to the improvement of periodontal health in the community and in clinical practice.

The **learning outcomes expected** from the Postgraduate on completion of the course are:

1. To achieve mastery of knowledge in the diverse disciplines involved in providing care for patients with periodontal disease
2. To understand the interrelationship between periodontal health and other oral/systemic problems and to be able to work efficiently as a team in improving the oral health quality of life of patients presenting with periodontal disease
3. To be able to critically evaluate scientific literature, discovering and disseminating knowledge and at the same time identify gaps and controversies in the literature that require further exploration.
4. To have an in-depth knowledge of basic science applicable to Periodontology
5. To implicate the evidence available from the literature in routine treatment planning
6. To be cognizant of the basic concepts of research methodology and be able to conduct good quality periodontal research independently
7. To be proficient in delivering high quality periodontal therapy as an integral component of overall oral health care through the surgical and non-surgical approach based on sound clinical judgment and scientific principles
8. To be clinically competent in the treatment planning, placement and maintenance of implants within the concept of comprehensive treatment plan
9. To be able to communicate with patients effectively to improve the oral health status and adherence with health care recommendations
10. To be able to communicate and co-ordinate with colleagues effectively to provide optimal oral health care to the patient

**Objectives of Course for Year 1**

i) To have in depth knowledge on the basic concepts of the oral sciences and scientific basis of basic periodontal therapy relevant to the practice of Periodontics

ii) To learn to search and evaluate scientific literature, identify consistencies, gaps and controversies.

iii) To be able to carry out an appropriate periodontal diagnosis and treatment plan for patients as an integral component of total patient care
iv) To be proficient in the non-surgical periodontal treatment using different hand instruments and ultrasonics in the delivery of periodontal therapy to patients

v) To understand the basic concepts of research methodology and design a protocol relevant to his/her research with supervising staff.

vi) To be able to identify the rationale for periodontal surgery and carry out simple periodontal surgical procedures

vii) To be able to recognise the needs and scientific merits for various restorative procedures including implant dentistry

viii) To understand the scientific concepts and practice of implant dentistry

ix) To inculcate a team approach in the total care for patients

Objectives of Course for Year 2

i) To be able to critically evaluate the scientific literature and moderate discussion in seminars and literature reviews

ii) To be proficient in periodontal diagnosis and treatment plan and effectively integrate with other clinical disciplines

iii) To participate in training of undergraduates in Periodontology

iv) To be able plan and carry out a research project independently

v) To be proficient in carrying out simple periodontal surgical procedures

vi) To be able to plan and embark on more complex periodontal surgical procedures and implant placement under close supervision

Objectives of Course for Year 3

i) To consolidate the clinical experience gained for more efficient delivery of periodontal care for patients

ii) To be able to carry out more complex periodontal surgical procedures and adjunctive treatment

iii) To compile the research project in written form as a research thesis as partial fulfillment for the degree in Master of Dental Surgery

iv) To present research findings in scientific meetings

v) To be able to facilitate discussion effectively and guide undergraduates, junior residents and residents from other disciplines in periodontal related issues
vi) To be able to carry out a systematic research with team members on a periodontal related topic
4 COURSE CONTENTS

Didactic Course

I Core Oral science course

The aim is to provide comprehensive working knowledge of various areas of the biological sciences that interrelate to Periodontology. The topics include:

1. Biostatistics & Epidemiology
2. Research Methodology
3. Bone and connective tissue biology
4. Functional Head and neck anatomy
5. Oral Pathology and Oral Medicine
6. Oral Immunology & Microbiology
7. Dental Radiology
8. Dental Pharmacology, pain and sedation
9. Occlusion, oral facial pain & disorders
10. Emergency care and CPR
11. Behavioural Management
12. Dental Photography
13. Evidence Based dentistry
14. Dental Ethics
15. Basic Teaching methodology

II Periodontology Course

The course aims to provide a comprehensive working knowledge on the art and science of Periodontology and Implant dentistry. He/she should be able to critically evaluate the literature with emphasis on the evidence-based approach. The didactic course comprise of the following:

1. Aetiology of periodontal disease / Microbiology
2. Pathogenesis & Immunology of Periodontal disease
3. Epidemiology of Periodontal disease
4. Diagnosis of periodontal disease – conventional and advanced techniques
   Treatment Planning
5. Behavioural aspects of Oral hygiene education & motivation
6. Biological and scientific basis of non-surgical periodontal therapy
7. Biological and scientific basis of different types of periodontal surgical procedures (access flaps, crown lengthening)
8. Aesthetic & Plastic Periodontal surgery
9. Guided Tissue regeneration (including ridge augmentation)
III  **Implant Dentistry**

The didactic course will be conducted in the form of seminars, lectures, group discussion, Problem solving, review of literature and case presentation. The topics covered include:

1. Biological basis for tissue integration
   - Concepts of osseointegration
   - Choice of materials
   - Concepts of soft tissue integration
2. Examination, Diagnosis, Treatment planning for dental implants
3. Surgical Procedures in Implant surgery
   - Stage I surgery (fixture installation)
   - Stage 2 surgery (fixture uncovering)
4. Post-operative Management
   - Immediate post-operative care
   - Provisional prostheses
   - Management of surgical complications
5. Maintenance care
6. Adjunctive Therapy
   - Aetiology and pathogenesis of peri-implant infections
   - Diagnosis, prevention and management of peri-implant infections
   - Guided Bone regeneration - Bone grafting, membranes
   - Sinus Lift procedures – open and closed approach
   - Soft Tissue grafts
   - Vestibuloplasties
   - Management of soft tissue deficiencies
7. Immediate Implant placement
8. Single tooth implant placement
9. Prosthodontics aspects
   a. Occlusion
Clinical Course

The clinical course aims to train the individual to be competent in the clinical skills in periodontal therapy and implant dentistry as an integral component of comprehensive oral health care. The clinical training involves:

1. Periodontal diagnosis & Treatment Planning
2. Non-Surgical periodontal therapy (oral hygiene education and motivation, scaling, root planing, local drug delivery, anti-microbial therapy)
3. Surgical periodontal therapy (conventional access periodontal flap, osseous surgery, mucogingival surgery, GTR procedures, bone grafting procedures)
4. Clinical oral implant dentistry (implant surgery, peri-implant disease, implant prosthesis)
5. Clinical oral medicine (relating to the periodontium)
6. Interdisciplinary relationship
7. Basic principles of TMD & occlusal therapy
8. Periodontal management of the medically compromised
9. Use of microscopes in diagnosis and therapy
10. Management of Peri-Implant diseases

Each resident is responsible for the care of the patient assigned. If the patient is a case referred by undergraduates or colleagues, there should be proper communication with the respective operator in the co-management of the patient. Timely follow-ups should be carried out (eg 3 and 6 months after completion of periodontal surgeries) to ensure appropriate maintenance care.
Research

Each resident is required to carry out an original research project in a periodontally related field. This may be laboratory, animal or clinical research. Depending on the nature of the research project, the resident may be required to attend special courses/attachment in relation to the project especially to develop adequate methodology.

The Resident is required to:

i) develop a research protocol and formulate hypotheses following an adequate literature search

ii) obtain permission for the performance of the research project with either human or human boards along the line of good clinical/research practice guidelines

iii) keep adequate logs and reports pertaining to the research

iv) assure use of appropriate statistical analyses in the handling of the data; the resident may if judged necessary consult with a statistician in this aspect

v) interpret and perform analysis of the data according to international standards and within the framework of the whole research project

All residents must attend local and regional research meetings and present a paper on their research at least once during the 3-year programme.

By the end of the second year, each resident is expected to have submitted at least 1 paper for publication in a refereed journal. This will be taken into consideration as part of continuous assessment.

Elective Courses

This additional component of the course is to give the individual a global aspect of higher education and research and to explore his interest beyond the boundaries of Periodontology. The resident is allowed to take electives in other areas of interest (eg Molecular Biology, animal research, Microbiology, Psychology, Pharmacology, Bioengineering, clinical disciplines in Prosthodontics, Orthodontics, Oral Maxillofacial surgery, Oral medicine, Endodontics) which may be related to the individual’s research or clinical interest.
## 5 COURSE SCHEDULE

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<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td><strong>Didactic</strong></td>
<td>Core Oral Science Course Basic &amp; advanced</td>
<td>Teaching methodology course</td>
<td>Literature reviews</td>
</tr>
<tr>
<td></td>
<td>Periodontology</td>
<td>Literature reviews &amp; Book reviews</td>
<td>Seminars</td>
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<tr>
<td></td>
<td>Implant dentistry</td>
<td>Case Presentations &amp; discussion</td>
<td>Journal club</td>
</tr>
<tr>
<td></td>
<td>Multi-disciplinary topics</td>
<td>Literature reviews &amp; Book reviews</td>
<td>Case presentations &amp; discussion</td>
</tr>
<tr>
<td></td>
<td>Case presentations</td>
<td>Case Presentations &amp; discussion</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Literature reviews &amp; Book reviews</td>
<td>Literature reviews</td>
<td>Research</td>
</tr>
<tr>
<td>**Clinical/</td>
<td>Basic Periodontal therapy</td>
<td>Periodontics clinics</td>
<td>Research</td>
</tr>
<tr>
<td><strong>Practical</strong></td>
<td>Periodontal surgical techniques</td>
<td>Implant dentistry clinics</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Implant dentistry practical/Technique</td>
<td>Practical workshop in basic immunology and microbiology techniques</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>Periodontics clinics</td>
<td></td>
<td>Research</td>
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<td></td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td>Research Methodology</td>
<td>Implementation of research project</td>
<td>Completion of research project and theses</td>
</tr>
<tr>
<td></td>
<td>Basic Biostatistics</td>
<td>Submission of a position paper/article for publication</td>
<td>Submission of a research paper for publication</td>
</tr>
<tr>
<td></td>
<td>Preparation &amp; presentation of research protocol</td>
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<tr>
<td><strong>Assessment</strong></td>
<td>End of Year Exam</td>
<td>End of Year Exam</td>
<td>Assignments</td>
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<tr>
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<td>Competency tests ( timing flexible) on Treatment planning and non-surgical treatment</td>
<td>Competency tests (timing flexible) on Perio surgery</td>
<td>Final Exam</td>
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<tr>
<td><strong>Miscellaneous</strong></td>
<td>Workshops/Conference Ethics and patient communication Medical emergency</td>
<td>Elective Course Teaching Workshops/Conference</td>
<td>Elective course Teaching Workshops/Conference</td>
</tr>
</tbody>
</table>

- **Assessment:** End of Year Exam Competency tests (timing flexible) on Treatment planning and non-surgical treatment.
- **Research:** Research Methodology Basic Biostatistics Preparation & presentation of research protocol.
- **Clinical/Practical:** Basic Periodontal therapy Periodontal surgical techniques Implant dentistry practical/Technique Periodontics clinics.
- **Didactic:** Core Oral Science Course Basic & advanced Periodontology Implant dentistry Multi-disciplinary topics Case presentations Literature reviews & Book reviews.
- **Miscellaneous:** Workshops/Conference Ethics and patient communication Medical emergency.
- **Year 1:** Year 1
- **Year 2:** Year 2
- **Year 3:** Year 3
6 ASSESSMENT

The individual’s performance will be evaluated using different approaches based on continuous assessment and formal examination. Continuous assessment takes up 40% of the final examination marks.

Each resident will be assessed in the following areas:

End of year paper –
This consists of a written paper for yr 1 & Yr 2 including a case presentation. For Yr 1 in the written paper, there is a compulsory basic science question being set.

Written Assignments
Case presentations
Literature reviews and Book Review
Research Thesis
Clinical work
Competency tests

Presentation of 4 completed cases displaying a range of clinical experience (a minimum of one implant case, one case involving management of a medically compromised patient, 2 cases of moderately advanced periodontal disease preferably one with non-surgical therapy and one with periodontal surgery being performed).

Each Resident is expected to achieve a good pass for all the continuous assessment. The individual should demonstrate professionalism in the clinical management of patients. A student may be asked to retake or terminate the course in the event of unsatisfactory performance.

A Resident may also be reprimanded or expelled in the event of professional misconduct.

A Resident will be required to successfully complete clinical competency assessment in scaling & root planing (first year) periodontal surgery (Yr 2) and implant dentistry (Yr3) before he/she could independently carry out these procedures with minimal clinical supervision. These competencies may be taken preferably at the respective year during the Residency programme.
**PART I MDS EXAMINATION**

This is no longer mandatory

**PART II MDS EXAMINATION**

The Final MDS examination will be conducted in May/June of Year 3. Residents will only be permitted to sit for the examination after having met the requirements set by the Committee. The final exam comprises of:

- Two written papers (one specialty paper, one on general dentistry/Restorative related topics)
- A research thesis & oral examination of the Research thesis;
- Oral examination & presentation of the 4 fully documented completed cases
- Oral diagnosis and treatment planning of a clinical case in Periodontology and Restorative dentistry

**AWARD OF MDS (PERIODONTOLOGY)**

The degree of Master of Dental Surgery in Periodontology will be awarded to the candidate on -

1. passing the Part II examinations; and
2. successful defence of thesis.