POSTGRADUATE RESIDENCY PROGRAMME IN PERIODONTOLGY

Periodontology Course Manual

National University of Singapore

Compiled by
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Course Director
Postgraduate Residency Programme in Periodontology

PROGRAMME OVERVIEW

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1. Teaching Staff

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Discipline of Periodontics
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Program Co-Director: Clinical Associate Professor Marianne Ong
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NATIONAL UNIVERSITY OF SINGAPORE

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Dr. Jacinta Lu
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Dr. Jacob Chew
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Adjunct Associate Professor Chung Kong Mun
BDS (Singapore), Cert Perio (Temple USA), MS (Temple USA), FAMS

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COMMITTEE FOR PERIODONTOLOGY

Associate Professor Alvin Yeo
Clinical Associate Professor Marianne Ong
Adjunct Associate Professor Chung Kong Mun
Adjunct Associate Professor Alphonsus Tay
Dr Fu Jia Hui

2. Outline of Program, Pre-requisites & Requirements

Overview of Periodontology Program

The Periodontology Residency training programme is a 3-year programme leading to the Master of Dental Surgery in Periodontology (MDS Singapore). The course consists 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. 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. 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.

Outline of Program

The didactic component comprises of lectures, seminars and tutorials with a substantial amount of literature reviews involved. The aim of the didactic course is to provide the basic fundamentals and to encourage self-directed learning and in-depth discussion.

For the clinical component, each resident is expected to treat and document a range of cases with various complexities of periodontal problems, some of which involve multi-disciplinary care including patients requiring implants.

In research, each resident is required to carry out an original research project 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 participate in a short teaching training workshop. They will also be involved in teaching the undergraduates during the second and third year of the course.

The current proposed program is based on a 40-week term per year with 40 hours a week and an additional 316 hours of 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 1096 hours of various activities, a separate timetable is planned during the vacation term with more time allocated for research. The overview distribution of the curriculum hours in the 3-year MDS Periodontology course is tabulated and shown below

Distribution of Curriculum Hours in the 3-Year MDS Periodontology Course

	Curriculum Hours			
	Year 1	Year 2	Year 3	Total
Total number of weeks	40	40	40	120
Didactics Clinicals/Practicals Research Miscellaneous activities	487 916 90 107	354 980 205 61	343 936 188 133	1184 2832 483 301
Total	1600	1600	1600	4800
After office training hours	160	78	78	316
Vacation Time (9 weeks) excluding 3 weeks of mandatory leave • Didactics • Clinics • Research	 72 144 144	 72 144 144	 56 176 144	1096
Total	2120	2038	2054	6212

Entrance Pre-requisites

Holder of a degree in Dental Surgery with minimum two years' experience in full-time clinical practice after graduation. Complete the TOEFL or IELTS if the native tongue or medium of undergraduate instruction is not English. The minimum acceptable scores are: TOEFL score –580 (paper-based), 237 (computer-based), 92 (internet-based) & above or IELTS –7*. *Only National University of Singapore (NUS) graduates & native English speakers from G7(France, USA, UK, Russia, Germany, Italy and Canada) countries are exempted.

Schedule of Requirements

Didactics

All residents are expected to attend and participate in all scheduled didactic courses in Periodontology, implant dentistry, multi-disciplinary courses, treatment planning seminars. Clinical photography, research methodology, basic immunology and microbiology

Clinicals

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:

i. Periodontal diagnosis and treatment planning
ii. Non-Surgical periodontal therapy (oral hygiene education and motivation, scaling, and subgingival debridement, local drug delivery, anti-microbial therapy)
iii. Surgical periodontal therapy (conventional access periodontal flap, osseous surgery, mucogingival surgery, GTR procedures, bone grafting procedures)
iv. Clinical oral implant dentistry (implant surgery, peri-implant disease and implant prosthesis)
v. Clinical oral medicine (relating to the periodontium)
vi. Interdisciplinary relationship
vii. Minor occlusal therapy
viii. Periodontal management of the medically compromised
ix. Use of microscopes in diagnosis and therapy

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

Over the course of 3 years, each resident is expected to have managed at least 30 clinical cases, of which 15 cases have to be maintained for at least 1 year. These cases should be of varying complexity so that the resident will gain experience in dealing with simple to complex periodontal cases as well as multi-disciplinary cases e.g. perio-prostho/endo/ortho/OMS cases. In addition, each resident is expected to

- Perform at least 50 periodontal surgeries such as crown lengthening, periodontal flap surgery, gingivectomy, mucogingival procedures and guided tissue regenerative procedures
- Place at least 20 dental implants
- Complete 1 osteotome sinus lift
- Complete 1 lateral window sinus lift
- Complete 1 guided implant surgery i.e. starting from E&D, model scan, CBCT scan analysis, virtual surgery and design of surgical stent with Straumann Co-diagnostics, assessment of surgical stent prior to surgery and use of the stent during surgery.

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. He/She should be able to apply defined quality standards to his/her clinical performance and to implicate quality management into the treatment plan.

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

3. Objectives of Periodontology 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 and oral 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 to improve the oral health quality of care to 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 and implant dentistry.

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 and peri-implant health as well as management of peri-implant diseases 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 to effectively provide optimal oral health care to the patient.

Course Objectives 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 recognize 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.

Course Objectives 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.

Course Objectives 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 submit a quality research paper for publication.

vi. To be able to facilitate discussion effectively and guide undergraduates, junior residents and residents from other disciplines in periodontal related issues.

vii. To be able to carry out a systematic research 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)

10 Maintenance therapy

11 Antimicrobial agents, chemotherapeutics & Adjunctive therapies

12 Wound healing

13 Periodontal Medicine

14 Biomaterials – bone grafts, Membranes, growth factors, cytokines etc.

15 Interrelationship between Periodontology and other clinical disciplines: Perio-Ortho, Perio-Restorative, Perio-endo interface

16 Periodontal Practice management

III **<u>Implant Dentistry</u>**

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

b. Aesthetics

Miscellaneous

Mini implants

Socket preservation

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 TMD & occlusal therapy

8 Periodontal management of the medically compromised

9 Use of microscopes in diagnosis and therapy

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 3and 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.

Before the end of the third 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

	Year 1	**Year 2**	**Year 3**
Didactic	Core Oral Science Course Basic & advanced Periodontology Implant dentistry Multi-disciplinary topics Case presentations Literature reviews & Book reviews	Teaching methodology course Literature reviews & Book reviews Seminars Case Presentations & discussion	Literature reviews Seminars Journal club Case presentations & discussion
Clinical/ **Practical**	Basic Periodontal therapy Periodontal surgical techniques Implant dentistry practical/Technique Periodontics clinics	Periodontics clinics Implant dentistry clinics Practical workshop in basic immunology and microbiology techniques	Periodontics clinics Implant dentistry clinics

Research	Research Methodology Basic Biostatistics Preparation & presentation of research protocol	Implementation of research project Submission of a position paper/article for publication	Completion of research project and theses Submission of a research paper for publication
Assessment	End of Year Exam Competency tests (timing flexible) Assignments	End of Year Exam Competency tests (timing flexible) Assignments	Assignments Final Exam
Miscellaneous	Workshops/Conference Ethics and patient communication Medical emergency	Elective Course Teaching Workshops/Conference	Elective course Teaching Workshops/Conference

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

Final 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 final MDS examinations; and

2 successful defence of thesis.