

**TRANSPLANT NEPHROLOGY FELLOWSHIP
ATTACHMENT PROGRAMME IN SGH**

Components	Information
1. Division/ Department	Medicine/ Department of Renal Medicine
2. Title of Programme	Fellowship Training in Transplant Nephrology
3. Relevant Registrations	<ul style="list-style-type: none"> • Temporary Registration with Singapore Medical Council (SMC) • Training employment pass application with Ministry of Manpower, Singapore (MOM) (upon successful Temporary Registration with Singapore Medical Council)
4. Overview 4.1 Background information	<p>The renal transplant programme at the Singapore General Hospital is the oldest and largest renal transplant unit in Singapore. With over 800 patients on long-term follow-up and annual transplant intake of 40-50 new transplant recipients, the renal transplant programme offers a wide range of clinical exposure that enriches the learning experience. It also runs a busy inpatient services with an average of 20 to 30 transplant inpatients. The renal transplant programme provides comprehensive services that include ABO/HLA incompatible living kidney transplantation and expanded criteria donor dual kidney transplantation. It also operates a variety of outpatient services that include outpatient transplant biopsies, outpatient treatment of rejection, acute transplant transition clinic, living kidney donor transplant assessment clinic, wait-list management clinic and living kidney donor follow-up clinic. It also holds a weekly multidisciplinary inpatient meeting to discuss management of inpatient cases and work-up for living kidney donor transplantation. There are also 6-monthly audits of acute transplant outcomes and biweekly didactic transplant teaching sessions. The renal transplant programme also cares for non-renal transplant recipients with chronic or end-stage kidney disease and offers immunosuppression and extra-corporeal therapies support for non-renal transplants.</p> <p>The Clinical Fellow will also have access to all teaching activities made available to renal residents and senior residents of the department of renal medicine at SGH. These teaching activities include weekly morbidity/mortality meetings, lunch time tutorials, journal clubs, research meetings, monthly histopathology meetings, monthly radiological meeting, and peer review learning sessions.</p>
4.2 Goal/ aim(s)	<p>The programme offers a 12-month intensive fellowship programme to ensure sufficient clinical exposure. The Clinical Fellow will be a key member of the renal transplant team and is expected to actively participate in the clinical and academic aspects of the renal transplant programme. The programme will aim to enable the Clinical Fellow to gain experience, knowledge and competency in the subspecialty of transplant nephrology. It is also hoped that the Clinical Fellow will be able to return to their home countries as future leaders in this area.</p>
4.3 Duration	12 months
4.4 Hyperlinks/URL Sites	https://www.sgh.com.sg

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<p>5. Target Audience</p>	<p>Physicians who have been accredited as nephrologists in their own country and would like exposure and training in transplant nephrology at SGH.</p>
<p>5.1 Pre-requisite /eligibility requirement(s)</p>	<p>General requirements for Temporary Registration for training (required by SMC):</p> <ul style="list-style-type: none"> • A basic medical degree from an accredited medical university or medical school • Passed the relevant national licensing examination in the country of conferment of basic degree, where applicable • Evidence of at least 12 months houseman-ship / internship with a certificate of satisfactory completion of houseman-ship or equivalent • Been registered as a medical practitioner in the country where he is currently practising • Been certified to be of good standing by the Medical Council or the relevant national authority <p>Note: the doctor should be in active clinical practice for the 3 years preceding the application for medical registration.</p> <p>In addition to the above criteria, Clinical Fellow must:</p> <ol style="list-style-type: none"> a) Have a minimum of 3 years of relevant working experience as a medical officer (or equivalent) b) Fulfil English Language requirements of SMC if the medium of instruction for the basic medical qualification is not in English c) Preferably have obtained a postgraduate diploma or degree in his country or overseas d) As a Clinical Fellow, the doctor will be allowed to be involved in patient care and make entries in patients' case note, communicate care plans to patients and fellow healthcare professionals, and perform procedures under <u>direct</u> supervision or Level 1 supervision <p>Department's requirement, if any (only for Clinical Fellow in this subspecialty):</p> <ol style="list-style-type: none"> 1. Postgraduate diploma or degree in general medicine e.g. MRCP, ABIM or equivalent in Internal Medicine 2. Postgraduate diploma or degree or specialist certification as a general nephrologist 3. Candidate must be willing to be rostered for after office hours calls (for deceased donor assessment and kidney transplantation) 4. Candidate must be willing to participate and complete a research project during the fellowship programme
<p>6. Learning Objectives</p>	<p>By the end of the transplant fellowship, the Clinical Fellow would be able to</p> <ol style="list-style-type: none"> 1. Assess living and deceased kidney donors 2. Assess and prepare candidates for kidney transplantation 3. Safely interpret histocompatibility tests and be able to interact with the histocompatibility team for further analysis and interpretation 4. Understand and describe surgical techniques in donor nephrectomy and kidney transplantation 5. Recognize and manage surgical complications in collaboration with transplant urologists 6. Diagnose and manage acute peri-operative and post-operative early transplant complications

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	<ol style="list-style-type: none"> 7. Diagnose lesions seen on histopathology and be able to Banff grade the lesions 8. Diagnose and manage chronic late transplant complications 9. Know how to apply preventive transplant care such as vaccinations 10. Safely use immunosuppressive drugs and perform therapeutic drug monitoring 11. Prescribe and monitor plasma exchange and immunoadsorption therapies 12. Understand and appreciate the legal, psychosocial, financing and ethical framework of transplantation 13. Perform transplant biopsies safely and adequately 14. Understand and interpret radiological imaging of renal allografts 15. Appreciate roles and contributions of members of a multidisciplinary transplant team 16. Read transplant literature and perform transplant-related audits/research 17. Participate in quality improvement audits and initiatives 18. Appreciate the administrative aspects of running a renal transplant programme
<p>7. Course/Training Syllabus</p>	<ol style="list-style-type: none"> 1. Immunology and Immunogenetics of transplantation 2. Histocompatibility testing 3. Transplant pharmacology 4. Organ procurement, preservation and allocation of kidneys from deceased donors 5. Psychosocial and economic aspects of kidney donation and transplantation 6. Legal and ethical aspects of kidney donation and transplantation 7. Pre-transplant evaluation and management of the transplant candidate 8. Pre-transplant evaluation and management of the kidney donor 9. Management of dialysis patients on the waiting list 10. Surgical techniques of kidney donation and transplantation 11. Physiology of the transplanted kidney 12. Perioperative management of kidney transplant candidates and donors 13. Post-operative management of kidney transplant recipients and donors 14. Epidemiology of major causes of post-transplant morbidity and mortality 15. Management of EARLY post-transplant complications 16. Management of LATE post-transplant complications 17. Diagnosis, prophylaxis and management of post-transplant rejection 18. Infectious diseases in kidney transplantation 19. Cancer and kidney transplantation 20. Pregnancy and kidney transplantation 21. Technical and practical aspects of performing kidney transplant biopsies 22. Interpretation of kidney transplant biopsies and histopathology 23. Use and interpretation of radiological tests in kidney transplantation care 24. Use of plasmapheresis and other extra-corporeal techniques used in desensitization procedures for transplantation 25. The management of the elderly transplant recipient 26. The management of the failing kidney transplant and return to dialysis 27. Overview of pancreas and simultaneous kidney-pancreas transplantation 28. Overview of administration and leadership in operating a kidney transplant programme
<p>8. Training Method</p>	<p>Method of Supervision:</p>

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	<p>Direct observation and feedback. Clinical Fellow will be supervised by an assigned supervisor at all times.</p> <p>Observed Only: The Clinical Fellow will have opportunities to observe the following procedures:</p> <ul style="list-style-type: none"> • Deceased and Living Kidney Donor Nephrectomy • Deceased and Living Kidney Donor Transplantation <p>Hands-On Experience: The Clinical Fellow will assist in the following procedures under supervision:</p> <ul style="list-style-type: none"> • Dialysis and central venous catheter insertions • Renal transplant biopsies 												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="background-color: #A9A9A9; text-align: left;">TRAINING ACTIVITIES & METHODOLOGY</th> </tr> <tr> <th style="width: 35%;">Name of activity</th> <th style="width: 35%;">Frequency / No. of sessions / Length of session</th> <th style="width: 30%;">Teaching methodology</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">Ward rounds</td> <td style="vertical-align: top;">Daily on weekdays – so average 20 days a month and be rostered to do weekend rounds – so average 4 weekend days a month – so total of 24 days per months for rounds</td> <td style="vertical-align: top;">The Clinical Fellow will be expected to come early to do pre-rounds and be prepared to present the patient's problems to the rounding consultant. During these presentations, the consultant will teach around the case whenever appropriate. The Clinical Fellow will also engage in experiential learning as he cares for these patients during rounds and post-rounds. During these rounds, there will be opportunity to learn how to prescribe plasma exchange and immunoadsorption therapies as well as understand the techniques and risks behind these procedures.</td> </tr> <tr> <td style="vertical-align: top;">On call activations for deceased donor assessment or recipient preparations for transplant surgery</td> <td style="vertical-align: top;">Not predictable but on average 2-4 times a month. Clinical Fellow will be expected to return to hospital after office</td> <td style="vertical-align: top;">The Clinical Fellow will be expected to review and assess potential deceased donors and potential deceased</td> </tr> </tbody> </table>	TRAINING ACTIVITIES & METHODOLOGY			Name of activity	Frequency / No. of sessions / Length of session	Teaching methodology	Ward rounds	Daily on weekdays – so average 20 days a month and be rostered to do weekend rounds – so average 4 weekend days a month – so total of 24 days per months for rounds	The Clinical Fellow will be expected to come early to do pre-rounds and be prepared to present the patient's problems to the rounding consultant. During these presentations, the consultant will teach around the case whenever appropriate. The Clinical Fellow will also engage in experiential learning as he cares for these patients during rounds and post-rounds. During these rounds, there will be opportunity to learn how to prescribe plasma exchange and immunoadsorption therapies as well as understand the techniques and risks behind these procedures.	On call activations for deceased donor assessment or recipient preparations for transplant surgery	Not predictable but on average 2-4 times a month. Clinical Fellow will be expected to return to hospital after office	The Clinical Fellow will be expected to review and assess potential deceased donors and potential deceased
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		<p>hours. Calls are expected to last for 12 to 24 hours.</p> <p>donor kidney transplant recipients. They will be expected to also prepare potential transplant candidates for transplant surgery. The Clinical Fellow will have to present their findings and assessment to the consultant on call who will then supervise and teach. During these times, the Clinical Fellow will learn how to assess deceased kidney donors and prepare candidates for deceased kidney donor transplantation in a timely, safe and appropriate manner.</p>
	Kidney transplant biopsies and central line insertions	<p>At least once a week or more as required.</p> <p>There will be direct supervision by a consultant or associate consultant until credentialing is done by consultant or associate consultant for a Clinical Fellow to perform these procedures independently of supervision. During these sessions, the Clinical Fellow will gain experience and competency in performing transplant biopsies and inserting central venous catheters under ultrasound guidance.</p>
	Acute transplant transition ambulatory clinic	<p>Once a week</p> <p>The Clinical Fellow will be allocated patients to see in the clinic and assess the patient accordingly. The Clinical Fellow will then present the case to the consultant in charge and a discussion can be</p>

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			initiated about the subsequent assessment and management of the case. During these sessions, the Clinical Fellow will learn how to follow-up and manage patients during the first 3 months after kidney transplantation surgery.
	Chronic transplant follow-up ambulatory clinic	Once a week	The Clinical Fellow will be attached to one of the transplant consultant own transplant follow-up clinic to gain experience in the assessment and management of vintage kidney transplant recipients. The Clinical Fellow will see patients on their own and then present the case to the consultant in charge for a discussion on assessment and management of the patient. Clinical Fellow will learn to assess and manage long-term complications of kidney transplantation.
	Kidney Transplant Assessment Clinic (KTAC)	Once a week	The Clinical Fellow will be given the opportunity to assess potential living kidney donor and recipient candidates. They will then present the case to the transplant consultant who will then discuss subsequent assessment and management. The Clinical Fellow will learn how to assess and counsel potential living kidney donors and living kidney donor recipients.

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	Waitlist management clinic	Once a week	The Clinical Fellow will review and assess candidates for deceased donor kidney transplantation. They will then present the case to the consultant in charge who will then discuss subsequent assessment and management. The Clinical Fellow will learn about optimal management of dialysis patients on the waiting list for a deceased donor kidney transplantation.
	Living kidney donor follow-up clinic	Once a month	The Clinical Fellow will review ex-living kidney donors and discuss their condition with the consultant in charge. The Clinical Fellow will learn how to follow-up living kidney donors.
	Morbidity and mortality meeting	Once a week	The Clinical Fellow will prepare and deliver presentations on patients who have died or have suffered significant morbidity for peer review and discussion. During these sessions, the Clinical Fellow will appreciate various complications after kidney transplantation and develop appropriate mindset on quality improvement and professional governance.
	Histopathology meeting	Once a month	The Clinical Fellow will prepare and present cases for histopathological discussion. The Clinical Fellow will learn through

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			these sessions on how to read kidney transplant biopsies and derive a histological diagnosis.
	Radiology meeting	Once a month	The Clinical Fellow will prepare and present cases for radiological discussion. The Clinical Fellow will learn through these sessions on how to interpret radiological images and reports pertaining to transplantation.
	Deceased donor procurement	At least twice a year	The Clinical Fellow will be attached to the transplant surgeon who is performing deceased donor procurement and attend the procurement surgery as an observer. The Clinical Fellow will observe and learn the techniques and steps of donor procurement.
	Kidney transplant surgery	At least twice a year	The Clinical Fellow will be attached to the transplant surgeon who is performing kidney transplant surgery and attend the transplant surgery as an observer. The Clinical Fellow will observe and learn the techniques and steps of kidney transplant surgery.
	Histocompatibility Lab	Once during fellowship	The Clinical Fellow will attend a tour of the histocompatibility lab and learn the techniques and equipment used for histocompatibility assessment.

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	Renal transplant audit meeting	Twice a year	The Clinical Fellow will prepare a presentation on outcomes of renal transplants performed at SGH in the last 6 months at the renal transplant audit meeting which is jointly held with the National Transplant Organ Unit and the National University Centre of Organ Transplantation.
<p>9. Assessment and Evaluation</p>	<p>Clinical Fellow will need to demonstrate their proficiency level based on the following competencies:</p> <p>1) Patient Care</p> <ul style="list-style-type: none"> a) Able to take a detailed history and physical examination of a potential kidney donor/recipient or kidney transplant recipient b) Able to perform an adequate psychosocial assessment of donors, candidates or recipients c) Able to present fluently and systematically the details of a kidney donor or recipient condition and prior transplant history d) Able to order appropriate diagnostic tests for kidney transplantation e) Able to come to a diagnostic and care plan of acute and chronic complications related to the kidney transplant condition f) Able to formulate daily assessments and care plans that can be effectively communicated verbally and through the medical records g) Able to create and share preventive care plans with patient and team members h) Able to determine if a kidney donor is suitable for donation i) Able to determine if a patient is a suitable candidate for kidney transplantation j) Able to prepare a kidney transplant candidate for surgery k) Able to demonstrate the safe and effective use of immunosuppressive drugs l) Able to assess and manage kidney transplant emergencies e.g. delayed graft function, acute graft dysfunction, infection m) Able to assess and manage acute complications after kidney transplantation n) Able to assess and manage chronic complications after kidney transplantation o) Able to manage a patient with a failing renal allograft and transition to dialysis p) Able to manage special kidney transplant populations e.g. the elderly, pregnancy after kidney transplantation 		

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	<ul style="list-style-type: none"> q) Able to interpret histocompatibility tests, radiological and biopsy reports r) Able to identify lesions on biopsy specimen slides s) Able to perform kidney transplant biopsies and catheter insertion safely and independently of supervision t) Able to manage a kidney transplant candidate on the waiting list u) Able to prescribe plasmapheresis and immunoadsorption
	<p>2) Medical Knowledge</p> <ul style="list-style-type: none"> a) Able to describe immunological basis of histocompatibility tests and rejection b) Able to describe mechanism of action of immunosuppressive drugs, adverse effects, therapeutic drug monitoring, drug interactions and pharmacokinetics c) Able to summarize landmark trials in clinical immunosuppression and their application to the bedside d) Able to describe various surgical techniques for procurement, implantation and donor nephrectomy e) Able to describe various methods of organ preservation f) Able to describe the techniques, indications, contraindications and risks of plasma exchange and immunoadsorption therapies g) Able to describe physiology of the transplanted kidney and ischemia reperfusion injury h) Able to cite transplant guidelines and transplant related literature as part of evidence based transplant practice i) Able to describe incidence, risk factors, natural history, diagnosis and management of acute and chronic complications of kidney transplantation j) Able to describe the Banff criteria for renal transplant histopathology k) Able to describe the indications and possible results of various radiological imaging l) Able to describe considerations of a patient with a failing renal allograft and how to assist patients in the transition period m) Able to perform good literature review when requested and apply them to the clinical situation – be able to critically appraise literature
	<p>3) Practice-Based Learning and Improvement</p> <ul style="list-style-type: none"> a) Able to incorporate basic knowledge of evidence-based medicine in evaluation and management of patient medical problems b) Develop a habit of a continual process of acquiring skills and knowledge c) Acquire ability for personal insights into gaps in knowledge, skills and safety of patient care while seeking assistance to improve on gaps d) Able to seek and accept feedback from peers and faculty e) Participate in quality improvement activities and root cause analysis f) Able to teach students, junior residents and peers effectively g) Develop skills in the use of information technology to improve safety and effectiveness of patient care
	<p>4) Interpersonal and Communication Skills</p>

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	<ul style="list-style-type: none"> a) Able to portray oneself as a patient advocate in the outpatient and inpatient setting b) Able to communicate effectively with patient and next of kin by providing empathic, compassionate, confident and evidence-based counselling of kidney transplant options and post-transplant complications c) Able to obtain proper informed consent for transplant-related procedures d) Able to appropriately perform open disclosures of transplant-related adverse events e) Able to communicate effectively to physician colleagues and non-physician colleagues at all levels f) Able to discuss care plans with a multidisciplinary transplant team and generate an effective and holistic care plan g) Able to maintain comprehensive and understandable medical records including biopsy and radiological requests h) Able to communicate effectively through concise, logical and clinically useful discharge summaries i) Able to deliver effective case presentations and discussions <p>5) Professionalism</p> <ul style="list-style-type: none"> a) Demonstrate courtesy, respect, compassion and integrity to all those that he/she interact with b) Responsiveness to the needs of patients, team and partners in healthcare that supersedes self-interest c) Honesty and accountability to patients, the team, department and profession d) Commitment to excellence and on-going professional development e) Demonstrate ability to practice according to ethical principles of providing or withholding of clinical care, confidentiality of patient information, obtaining informed consent and general practice of medicine f) Demonstrate sensitivity and responsiveness to a diverse patient population including but not limited to diversity in gender, age, culture, race, religion or disabilities g) Demonstrate understanding, appreciation and application of practice of medicine within the legal and governance framework of the program, department and hospital <p>6) Systems-Based Practice</p> <ul style="list-style-type: none"> a) Able to develop a patient first and patient safety mindset, taking into consideration the multidisciplinary framework of transplant practice b) Able to work as a collegial, responsible, responsive and collaborative member of the transplant team c) Able to utilize multidisciplinary resources to provide holistic care to kidney transplant recipients and their donors d) Able to interact and work with medical social workers and psychiatrists to provide holistic psychosocial support for donors and recipients of kidney transplants

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	<ul style="list-style-type: none"> e) Able to provide and coordinate effective and seamless transition of transplant care between different care settings including discharge planning and execution f) Able to provide medication reconciliation in the setting of transplant related polypharmacy among different healthcare providers g) Understand the legislation supporting organ procurement and transplant economics in Singapore h) Appreciate the ethical and psychosocial framework of kidney transplantation and organ allocation i) Able to describe the key aspects of running a renal transplant programme including auditing performance and quality of service delivery j) Able to comply and participate in regulatory policies and practices prescribed by the hospital and transplant oversight committees k) Able to appreciate and participate in programme oversight and quality improvement as directed by the transplant programme director 						
9.1 Assessment approaches	<p>Formative assessment:</p> <ul style="list-style-type: none"> • Regular evaluation between Clinical Fellow and Supervisor / Head of Department • Reflective journal- logbook recordings of training activities <p>Summative assessment: Periodical assessment reports as required by Singapore Medical Council</p> <p>Feedback:</p> <ul style="list-style-type: none"> • End-of-training feedback form as required by Singapore Medical Council • End-of-training feedback session with SGH-PGMI 						
9.2 Evaluation Process 9.2.1 General overall grading system	<p>The general overall grading system evaluates the Clinical Fellow's performance upon completion of the fellowship programme. All Clinical Fellow will be given a general overall grading status at the end of the fellowship programme based on the grading criteria requirements incorporating the six competencies based knowledge, skills and performance that Clinical Fellow must demonstrate throughout the programme.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4F81BD; color: white;"> <th style="width: 15%;">Grading Status</th> <th style="width: 45%;">Description</th> <th style="width: 40%;">Grading Criteria Requirements</th> </tr> </thead> <tbody> <tr> <td style="background-color: #D9E1F2;">CMP</td> <td style="background-color: #D9E1F2;">Completes the programme</td> <td style="background-color: #D9E1F2;"> <ul style="list-style-type: none"> • Observe 1 deceased donor assessments and perform 2 deceased donor assessments </td> </tr> </tbody> </table>	Grading Status	Description	Grading Criteria Requirements	CMP	Completes the programme	<ul style="list-style-type: none"> • Observe 1 deceased donor assessments and perform 2 deceased donor assessments
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	<ul style="list-style-type: none"> • Observe 1 living kidney donor assessment and performed at least 4 living kidney potential donors assessment over 1 year • Observe 1 living kidney donor transplant candidate assessment and performed at least 4 living kidney donor transplant candidates over 1 year • Observe 1 acute kidney transplant clinic session and subsequently assess and follow-up at least 10 acute kidney transplant recipients over a period of 3 months after kidney transplant surgery over 1 year • Observe 1 chronic kidney transplant clinic session and subsequently reviewed at least 20 vintage kidney transplant recipients in the ambulatory setting over 1 year • Observe 1 wait-list clinic and subsequently reviewed at least 20 wait-listed patients over 1 year • Observe 1 living kidney donor follow-up clinic and subsequently reviewed at least 20 previous living kidney donors in the living kidney donor follow-up clinic over 1 year • Observe 1 transplant biopsy and subsequently performed at least 5 biopsies under supervision. The Clinical Fellow can then be credentialed to perform biopsies independently by a consultant or associate consultant if the Clinical Fellow is deemed safe and competent. • Attended at least 1 local or regional or international transplant meeting • Completed and published a research project in a peer reviewed journal • Received good 360 degree feedback from peers and non-renal healthcare professionals • Pass an end of fellowship viva and MCQ examination

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9.2.2 Options for Clinical Fellow who was graded with a (USP) for unsatisfactory performance	To be reviewed by faculty on a case by case.									
9.3 Criteria for Early Termination	<p>The attachment programme will be terminated early on the ground of the Clinical Fellow's poor performance, misdemeanour, misconduct, negligence or breach of any terms stipulated or referred to in the Fellowship Letter of Offer and Institution Terms and Conditions.</p> <p>The Clinical Fellow may also request to terminate the attachment programme for reasons such as serious illness or other personal obligations. The institution will review all requests for early termination with the Clinical Fellow and the Supervisor / Head of Department.</p>									
10. Course Administration	<p>Type of Certification: Certificate of Training</p> <p>Training Fee: S\$3,210 per month</p> <p>Programme Funding source: Self-funded</p>									

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11. Number of Clinical Fellow to be accepted at any one time	2