

National Heart Centre Singapore Cardiothoracic Anaesthesia Programme

A. Components of the Cardiothoracic Anaesthesia Programme

1. The curriculum contains the following components:
 - a. Clinical hands-on experience so that the Fellow will learn progressive responsibility for patient care and management;
 - b. Didactic sessions;
 - c. Scholarly activities; and
 - d. Assessments

B. Education and competency-based goals of the Programme

1. Through clinical and didactic sessions, the Programme provides education and experiential learning opportunity for the Fellow to:
 - a. Be competent in the interpretation of coronary angiogram;
 - b. Be competent in the independent delivery of cardiothoracic anaesthesia for a range of routine cardiologic, cardiothoracic and vascular operations;
 - c. Be competent in performing transoesophageal echocardiographic (TEE) examination and be able to recognize markedly abnormal cardiac structure and function, severe hypovolemia, large pericardial effusions, and the presence of intracardiac air;
 - d. Gain knowledge of the pathophysiologic changes associated with cardiopulmonary bypass;
 - e. Gain knowledge of postoperative care of the cardiothoracic surgical patient;
 - f. Gain knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care; and
 - g. Prepare a manuscript ready for publication.
2. Interpretation of coronary angiogram
 - a. The Fellow will learn to interpret coronary angiogram through independent reading and study, and from the surgical faculty.

- b. The Fellow will have to keep a log of such interpretations and each entry must be verified by the faculty.
- 3. Clinical experience
 - a. Through hands-on participation in the perioperative care of the cardiothoracic surgical patient, the Fellow will gain clinical experience in the delivery of cardiothoracic anaesthesia for a range of routine cardiologic, cardiothoracic and vascular operations.
 - b. The Fellow must keep a log of each clinical experience and each entry must be verified by the faculty.
- 4. Basic TEE training programme
 - a. The essential components of basic training include independent work, supervised activities, and assessment.
 - b. The Fellow should acquire an understanding of the principles of ultrasound and indications for perioperative echocardiography through independent reading and study.
 - 1) This independent work will be supplemented by regularly scheduled didactics such as lectures and seminars designed to reinforce the most important aspects of transoesophageal echocardiography.
 - c. Under appropriate supervision, the Fellow learns to place the TEE probe, operate the ultrasonograph, and perform a TEE examination. Subsequently, some clinical work should be performed with progressively more independence.
 - 1) A practitioner with advanced training will review every examination performed by the Fellow with him/her.
 - d. The Fellow should be able to master the comprehensive examination defined by the The American Society of Echocardiography (ASE) and the Society of Cardiovascular Anesthesia (SCA).
 - 1) The Fellow should be able to acquire all 20 of the recommended cross sections in the event

- they are needed for remote consultation with an advanced practitioner.
- e. For basic training, the Fellow should perform 50 complete examinations under appropriate supervision. These examinations must include the full spectrum of commonly encountered perioperative diagnoses.
 - f. The Fellow will be taught how to convey and document the results of his/her examination effectively.
 - g. The Fellow will have to keep a log of TEE examinations and each entry must be verified by the faculty.
 - h. Periodic formal and informal evaluations of the trainee's progress will be conducted during training.
5. Principles associated with the intervention of cardiopulmonary bypass and various ventricular assist devices
- a. The Fellow will have a 2-week attachment with the Perfusion Unit.
 - b. The Fellow will be provided with a recommended list of reading material.
 - c. The Fellow must keep a log of TEE examinations, and each entry must be verified by the faculty.
 - d. By the end of the 2-week attachment, the Fellow should be able to explain the mechanics and components of heart-lung machine, and principles of cardiopulmonary bypass and various ventricular assist devices.
 - e. Both formal and informal evaluations of the trainee's progress will be conducted during the training, and the Fellow must complete a formal evaluation, using a multiple-choice question format, at the end of the 2-week attachment.
6. Principles of postoperative care of the cardiothoracic surgical patient
- a. The Fellow will have a 2-week attachment in the Cardiothoracic Intensive Care Unit.

- b. The Fellow will be assigned to follow the postoperative care of patients from designated surgical teams.
 - c. The Fellow will acquire an understanding of the principles of postoperative care of the cardiothoracic patient through independent reading and study, and didactics such as lectures and seminars designed to reinforce the fundamental concepts of the various interventions.
 - c. The Fellow must keep a log of each patient care experience, and each entry must be verified by the faculty.
7. Basic principles of research
- a. The Fellow will learn to interpret the principles of evidence-based medicine and statistics by knowing the principles and statistical techniques necessary for these analyses (e.g., ARR, NNT, p values, risk ratios, meta-analyses)
 - b. The Fellow will learn to locates search engines (e.g., Ovid, MD Consult) to effectively search the literature

C. Learning objectives

1. At the end of the year's education and experiential learning in cardiothoracic anaesthesia, the Fellow should:
 - a. Be able to interpret coronary angiogram;
 - b. Be able to provide independent delivery of cardiothoracic anaesthesia for a range of routine cardiologic, cardiothoracic and vascular operations;
 - c. Be able to acquire all 20 of the recommended cross sections of TEE examination, and be able to recognize markedly abnormal cardiac structure and function, severe hypovolemia, large pericardial effusions, and the presence of intracardiac air;
 - d. Be able to explain the pathophysiologic changes associated with cardiopulmonary bypass;
 - e. Be able to direct postoperative care for the cardiothoracic surgical patient;
 - f. Be able to direct a clinical research; and
 - g. Have a manuscript ready for publication.

D. The Faculty

1. Members
 - a. Programme Director;
 - b. Supervisor of the Fellow;
 - c. Core faculty, which should include appointed representation from members of the Department of Cardiothoracic Anaesthesia, and appointed faculty from the transoesophageal echocardiography, perfusionist, and Cardiothoracic Intensive Care services; and
 - d. Non-core faculty.
2. The members of the core faculty have demonstrated scholarship by one or more of the following:
 - a. peer-review funding
 - b. publication of original research or review articles in peer-reviewed journals, or chapters in textbooks;
 - c. publication or presentation of case reports or clinical series at local, regional, or national professional and scientific society meetings; or
 - d. participation in national committees or educational organisations.

E. Duration of Fellowship

1. It is recommended that the duration of the Cardiothoracic Anaesthesia Programme be one year.
2. However, the duration may vary according to the needs of the sponsoring institution.
3. The letter of certification that the Fellow receives at the end of the Fellowship will reflect the duration of Fellowship and the competencies that were achieved during the duration of Fellowship.

F. Financial support for the Fellow

1. Cardiothoracic Anaesthesia Fellow may receive financial support in the following ways:
 - a. Sponsoring institution of own country.
 - b. Self-funded.

G. Responsibilities

1. Fellow's responsibilities

- a. The Fellow must comply with:
 - 1) Local laws of Singapore;
 - 2) Policies of the National Heart Centre Singapore and affiliated training sites;
 - 3) Policies and procedures set by the Department of Cardiothoracic Anaesthesia, National Heart Centre Singapore; and
 - 4) Policies of the Cardiothoracic Anaesthesia Programme.
 - b. The Fellow must participate in the assigned clinical and academic activities, and scholarly activity such as continuing medical education sessions.
 - c. The Fellow must maintain a log on the clinical and academic experience, and scholarly activities.
 - d. The Fellow must fulfil the learning objectives of the Programme.
 - e. The Fellow must not consume more than seven working days of annual leave within each six-month period of the Programme, and more than 14 working days of annual leave within the one-year Programme.
 - 1) Failure to comply with this leave of absence requirement will automatically result in non-completion of the Programme and this will be cited in the Fellow's testimonial.
 - 2) The Certificate of Completion of the Cardiothoracic Anaesthesia Programme will not be issued in the event of failure of completion of the Programme.
2. Faculty's responsibilities
- a. The Programme Director, members of the faculty, National Heart Centre Singapore and other participating education sites will provide adequate education resources to facilitate the Fellow's involvement in scholarly activities.
 - b. The Supervisor, together with the Faculty will supervise and ensure that the Fellow:
 - 1) Provides safe and effective patient care;
 - 2) Receives didactic and clinical education;

- 3) Receives progressive responsibilities appropriate to the level of education, competence, and experience;
 - 4) Participates in continuing medical education and other scholarly activities;
 - 5) Fulfils the learning objectives of the Programme.
- c. The Supervisor will ensure that Fellow's performance and progress are assessed and evaluated in a timely manner.
 - d. The Supervisor and/or the Programme Director will ensure that the Fellow receives feedback on his or her performance and progress.

H. Evaluation

1. Fellow evaluation

a. Formative evaluation

- 1) The supervisor of the Fellow is responsible for the process of evaluation for the Fellow.
- 2) The Fellow will be objectively evaluated monthly for the first 6 months and once every three months for the second 6 months of a one-year Programme
 - i. Evaluation reports for the 3rd, 6th and 12th months will be submitted to The Singapore Medical Council.
- 3) The Fellow will be objectively assessed on competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and compliance with institutional practice and policies.
- 4) Multiple evaluators will be used, who will include the faculty, peers, patients, self, nursing staff, and other professional staff.
- 4) The evaluation report will document progressive performance improvement.
- 5) The Fellow will be provided with feedback on performance and progress.

b. Summative evaluation

- 1) The Programme Director will provide a summative evaluation for the Fellow at the 6th and 12th months.
- 2) The summative evaluation will document the Fellow's performance during each 6-month period.
- 3) At the final summative evaluation the Faculty will decide if the Fellow has demonstrated sufficient competence to enter cardiothoracic anaesthesia practice without direct supervision.
- 4) This evaluation will become part of the Fellow's permanent record maintained by National Heart Centre Singapore, and will be accessible for review by the Fellow in accordance with the policy of National Heart Centre Singapore.

2. Faculty and Programme evaluation

- a. At six monthly intervals, a written confidential evaluation on faculty performance, as it is related to the Programme, will be submitted to the Programme Director by the Fellow. A copy of the report will also be submitted to the Clinical Affairs, National Heart Centre Singapore.
- b. The evaluation will include a review of the faculty's:
 - i. Clinical teaching abilities,
 - ii. Commitment to the educational programme,
 - iii. Clinical knowledge,
 - iv. Professionalism, and
 - v. Scholarly activities.
- d. During the internal review process of the Programme, any improvement to the Programme and the need for Faculty development will take into account the confidential report from the Fellow.

I. Certification

1. At the end of the Programme, the Fellow will receive:
 - a. A summative log of the number and the types of clinical experience that the Fellow had been involved in;
 - b. A testimonial from the Programme Director describing the Fellow's duration of education

experience with the Programme, competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, compliance with institutional practice and policies, overall performance during the final period of education, and will state if the Fellow has demonstrated sufficient competence to enter practice without direct supervision; and

- c. A Certificate of Completion of the Cardiothoracic Anaesthesia Programme issued by the National Heart Centre Singapore, if the Fellow has satisfactorily completed the one-year Programme.

J. Grievance procedures and due process

1. The Clinical Affairs of National Heart Centre Singapore, will provide the Fellow with fair, reasonable, and available written institutional policies and procedures for grievance and due process. These policies and procedures help adjudicating parties in addressing:
 - a. Academic or other disciplinary actions taken against the Fellow that could result in dismissal or other actions that can significantly threaten a Fellow's intended career development; and,
 - b. Adjudication of Fellow's complaints and grievances related to work environment or issues related to the programme or faculty.

K. Professional coverage

1. The Fellow must provide and maintain own liability protection, health and disability benefits to support own well being.

L. Leaves of absence

1. The Fellow in the Programme is allowed the following:
 - a. 14 working days of annual leave;
 - b. 14 calendar days of sick leave; and
 - c. 3 days of compassionate leave.

2. The Fellow must not consume more than seven working days of annual leave within each six-month period of the Programme.
3. Consuming more than seven working days of annual leave within each six-month period of the Programme will result in non-completion of the Programme.

M. Counselling services

1. The National Heart Centre Singapore will facilitate the Fellow's access to confidential counselling, medical and psychological support services.

N. Physical impairment

1. The Fellow who is discovered to be impaired as a result of substance abuse will be asked to leave the Programme.

O. Harassment

1. National Heart Centre Singapore does not tolerate sexual or other forms of harassment.
2. Any staff discovered to be subjecting the Fellow to any form of harassment, should be reported to the Clinical Affairs, National Heart Centre Singapore.

P. Agreement of appointment

1. The Clinical Affairs of National Heart Centre Singapore, and the Programme Director of the Cardiothoracic Anaesthesia Programme will provide the Fellow with a written agreement of appointment outlining the terms and conditions of the appointment to the programme.
2. The Clinical Affairs of National Heart Centre Singapore, will monitor the Programme with regards to implementation of terms and conditions of the appointment by the programme director.
3. The Clinical Affairs of National Heart Centre Singapore, the Programme Director of the Programme, and the Supervisor of the Fellow, will inform the Fellow of and the Fellow must adhere to established educational and clinical practices, policies, and procedures in all sites to which the Fellow is assigned.