

ECHOCARDIOGRAPHY
CARDIOLOGY RESIDENCY PROGRAM
McMASTER UNIVERSITY

ROTATION SUPERVISOR: DR. OMID SALEHIAN

OVERVIEW

The echocardiography rotation is primarily based at the HGH and JHCC. In the PGY4 year residents also spend time at MUMC to develop their scanning techniques. Each site provides a unique clinical caseload and gives the resident exposure to the echocardiographic assessment of a broad spectrum of cardiac pathology. A core group of echocardiography staff selected for their teaching excellence supervises the residents at all three sites and provides a homogeneous teaching experience.

Overall, cardiology trainees are expected to obtain Level 2 training during the Core Cardiology Training Program. Extremely motivated trainees, who demonstrate interest, excellent work habits and talent will be encouraged to participate in advanced echocardiography procedures such as transesophageal echocardiography, stress echocardiography, strain imaging and tissue Doppler techniques. This will be accommodated in the Laboratory if possible. When Echocardiography Fellows are present in the Laboratory, they may take priority for advanced echocardiographic procedures.

Expectations for the Echocardiography Rotation:

1. Trainees are expected to come to the Laboratory every morning at 8:00 a.m. unless they have teaching rounds that are part of the Core Program. During those days when teaching rounds are being conducted, they are expected to come to the Echocardiography Laboratory immediately upon completion of such rounds (for example: after Catheterization and Hemodynamic Rounds on Monday, trainees will be expected to be present in the Echocardiography Laboratory at 9:00 a.m.).
2. The trainees are expected to stay in the Lab at least until 4:30 p.m. and if reading sessions with the echocardiologist on service are performed, until the reading sessions are completed.
3. Trainees are expected to enquire about the following day's schedule. The schedule is to be discussed with the echocardiologist on service or the senior technologist and a decision will be made a day in advance about the activities in which the trainees will be involved (for example: which studies they will be involved in scanning, etc.).
4. During the first two to three blocks of training, trainees will be expected to spend a significant amount of their time in the Echocardiography Laboratory performing echocardiographic studies. They will be attached to a technologist and learn from the technologists the various scanning techniques and whenever possible will be expected to scan themselves.
5. Trainees are expected to keep a log which will have:
 - (a) Echocardiographic examinations performed (scanned) by the trainee.
 - (b) Echocardiographic examinations scanned by a technologist observed by the trainee.
 - (c) Echocardiographic examinations read under supervision
 - (d) Transesophageal studies performed by the trainee.
 - (e) Transesophageal studies observed by the trainee.
 - (f) Echo-guided pericardiocentesis examinations performed by the trainee.
 - (g) Stress echocardiography procedures read under supervision.
6. Echocardiography trainees are expected to participate in Echocardiography Rounds according to the schedule developed by the Chief Resident in conjunction with the echocardiologists. The rounds are on Thursdays at 13:00 and the trainees are expected to be punctual. The timing of the rounds is not flexible as it is necessary that the echocardiography sonographers be available.
7. While not mandatory, echocardiography trainees are encouraged to write up interesting cases and will be assisted by the echocardiography staff in trying to publish work conducted in the Echocardiography Laboratory.

8. An Echo Quiz will be conducted periodically (average once monthly or once every other month). This is mainly to prepare trainees for the Royal College examinations. Trainees need not be concerned or intimidated by such exercises. This is meant to outline deficiencies in their training and areas that need improvement.

GOALS AND OBJECTIVES

The goals and objectives for the echocardiography rotation have been formulated to guide cardiology residents in identifying and acquiring the key competencies required to succeed as a consultant cardiologist and are based on the CanMEDS 2015 framework of the Royal College of Physicians and Surgeons of Canada. These key competencies include: medical expert, communicator, collaborator, leader, health advocate, scholar and professional. The rotation provides graded responsibility in achieving these objectives based on the resident's level of training and previous echo experience.

PGY 4:

The resident:

1. Demonstrates knowledge of the ultrasound equipment and is able to perform a basic 2D echo study.
2. Demonstrates knowledge of the two-dimensional appearance of cardiac structures.
3. Understands the 2D and Doppler features in the evaluation of LV function and valvular heart disease.
4. Understands the 2D and Doppler features in the evaluation of the cardiomyopathies.
5. Understands the role of echocardiography in the evaluation and management of cardiac tamponade.
6. Demonstrates a framework for reporting of echocardiographic studies.

PGY 5:

The resident builds on the previous skill set and:

1. Is able to perform a complete echocardiographic study independently.
2. Understands the 2D and Doppler features in pericardial disease, cardiac masses, pulmonary hypertension and simple congenital heart disease.
3. Demonstrates competence in performing and interpreting contrast-enhanced echocardiograms.
4. Demonstrates knowledge of the trans-esophageal appearance of cardiac structures.
5. Understands the trans-esophageal features in the evaluation of cardiac pathology.
6. Demonstrates competence in supervising and interpreting stress echocardiograms.

PGY 6:

The resident develops core consultant level skills and:

1. Is able to efficiently perform a complete 2D and Doppler echocardiographic study.
2. Is able to accurately and efficiently interpret and report complete 2D echocardiographic studies.
3. Understands the 2D and Doppler features in more complex congenital heart disease.
4. Is able to fully interpret trans-esophageal studies.
5. Demonstrates an understanding of more advanced echo techniques such as strain echo and 3D echo.
6. Is able to integrate echocardiographic findings in patient management and can provide recommendations based on the echo interpretation.

CANMEDS COMPETENCIES

A MEDICAL EXPERT

Global Objective: To acquire the medical knowledge and clinical skills necessary to provide high quality and safe patient-centered care.

1. To acquire the knowledge needed for reading transthoracic echocardiograms with high level of accuracy.
2. To acquire the skills needed to perform complete transthoracic examinations.

3. To understand the indications for transesophageal echocardiography, to understand the echocardiographic views used in transesophageal echocardiography and to be able to interpret transesophageal echocardiographic examinations (please note performing transesophageal echocardiographic examinations is not an objective of the Core Cardiology Training Program).
4. To understand the indications for exercise and pharmacologic stress echocardiography and to acquire the knowledge needed to interpret stress echocardiographic examinations (there may be some limitations related to the relatively low volume of stress echocardiography in our laboratory).
5. To be able to identify and accurately evaluate simple congenital abnormalities by echocardiography.

B COMMUNICATOR

Global Objective: To develop relationships with patients, families, and health professionals which facilitate the gathering and sharing of information essential for effective health care

1. Develop expertise in obtaining and synthesizing the relevant history from patients and families and obtaining informed consent for stress echo, echo-guided pericardiocentesis, or TEE.
2. Gain experience in providing preliminary/verbal reports to the medical team about patients admitted to hospital.
3. Be able to accurately and efficiently communicate the formal results of the study and any treatment recommendations to the referring physician.

C COLLABORATOR

Global Objective: To work effectively with other health care professionals to provide safe, high quality, patient-centered care

1. Collaborate with the echo staff to triage patients based on medical urgency.
2. Collaborate effectively with colleagues to evenly distribute the workload and balance scanning with study interpretation.

D LEADER

Global Objective: To develop a vision of a high quality health care system and take responsibility for effecting change to move the system toward the achievement of that vision

1. Contribute to quality improvement by understanding the appropriate use criteria for echocardiography, stress echo, and TEE and integrating this information into effective evidence-based practice.
2. Develop an understanding of the health care costs of echocardiography and use best evidence to provide cost-appropriate care.
3. Develop effective time management skills.

E HEALTH ADVOCATE

Global Objective: To develop a partnership with patients, their families, and support agencies to influence health determinants

1. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients.
2. Recognize personal, cultural, and socio-economic impediments to care and propose strategies to overcome these barriers.

F SCHOLAR

Global Objective: To demonstrate a lifelong commitment to excellence in practice through continuous learning, the teaching of others, the evaluation of evidence, and contributions to scholarship

1. Recognize gaps in knowledge and develop strategies to fill these gaps through reading and consulting other members of the health care team.

2. Demonstrate the ability to critically appraise the medical literature and integrate best available evidence into practice.
3. Attend and contribute to echocardiography rounds and actively participate in the education of junior learners.

G PROFESSIONAL

Global Objective: To demonstrate ethical practice, high personal standards of behavior, dedication to the profession and maintenance of personal health

1. Deliver care with integrity, honesty and compassion.
2. Adhere to the professional and ethical codes, standards of practice, and laws governing practice.
3. Develop self-awareness of personal limitations and seek assistance when appropriate.

Is able to provide preliminary/verbal reports to the medical team about patients admitted to hospital.	0	0	0	0	0	0
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Collaborator

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Collaborates with the echo staff to facilitate patient flow and appropriately triage patients based on medical urgency.	0	0	0	0	0	0

Scholar

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Attends and contributes to echocardiography rounds and actively participates in the education of junior learners.	0	0	0	0	0	0

Professional

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Interacts with patients and families with care and compassion.	0	0	0	0	0	0
Is aware of the ethical standards in obtaining informed consent for stress echo, echo-guided pericardiocentesis, or TEE.	0	0	0	0	0	0

OVERALL COMPETENCE (FOR LEVEL OF TRAINING)

	Incomplete 1	Unsatisfactory 2	Provisional Satisfactory 3	Satisfactory 4
Please check the appropriate box for the overall competency of this learner's training level	0	0	0	0

Was input sought from other faculty, allied health professionals, or patients and their family members? Yes No
(If yes, please please specify in the comment box provided immediately below)

Comments

Summative Comments

(Any item evaluated above or below a 3, must include comments and examples to justify the rating)

Formative Comments

(Please provide 1-2 items for the resident to improve upon in order to progress along the competency continuum)

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PG ITER - Cardiology/Internal Medicine

Rotation: Echocardiography
Level: PGY5

Legend:

N/A - Non Applicable

- 1 - **Unsatisfactory**: Performs significantly lower than level of training
- 2 - **Provisional Satisfactory**: Performs lower than level of training
- 3 - **Satisfactory**: Meets expectations at level of training
- 4 - **Very Good**: Exceeds expectations for level of training
- 5 - **Outstanding**: Significantly exceeds expectations for level of training

NOTE: If the learner functions at their training level, then the learner should obtain a score of Satisfactory.

Medical Expert

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Is able to perform a complete echocardiographic study independently.	0	0	0	0	0	0
Understands the 2D and Doppler features in pericardial disease, cardiac masses, pulmonary hypertension and simple congenital heart disease.	0	0	0	0	0	0
Demonstrates competence in performing and interpreting contrast-enhanced echocardiograms.	0	0	0	0	0	0
Demonstrates knowledge of the trans-esophageal appearance of cardiac structures.	0	0	0	0	0	0
Understands the trans-esophageal features in the evaluation of cardiac pathology.	0	0	0	0	0	0
Demonstrates competence in supervising and interpreting stress echocardiograms.	0	0	0	0	0	0

Communicator

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Is able to accurately and efficiently communicate the formal results of the study and any treatment recommendations to the referring physician.	0	0	0	0	0	0

Is able to provide preliminary/verbal reports to the medical team about patients admitted to hospital.	0	0	0	0	0	0
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Collaborator

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Collaborates with the echo staff to facilitate patient flow and appropriately triage patients based on medical urgency.	0	0	0	0	0	0

Scholar

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Attends and contributes to echocardiography rounds and actively participates in the education of junior learners.	0	0	0	0	0	0

Professional

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Interacts with patients and families with care and compassion.	0	0	0	0	0	0
Is aware of the ethical standards in obtaining informed consent for stress echo, echo-guided pericardiocentesis, or TEE.	0	0	0	0	0	0

OVERALL COMPETENCE (FOR LEVEL OF TRAINING)

	Incomplete 1	Unsatisfactory 2	Provisional Satisfactory 3	Satisfactory 4
Please check the appropriate box for the overall competency of this learner's training level	0	0	0	0

Was input sought from other faculty, allied health professionals, or patients and their family members? Yes No
(If yes, please please specify in the comment box provided immediately below)

Comments

Summative Comments

(Any item evaluated above or below a 3, must include comments and examples to justify the rating)

Formative Comments

(Please provide 1-2 items for the resident to improve upon in order to progress along the competency continuum)

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Is able to provide preliminary/verbal reports to the medical team about patients admitted to hospital.	0	0	0	0	0	0
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Collaborator

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Collaborates with the echo staff to facilitate patient flow and appropriately triage patients based on medical urgency.	0	0	0	0	0	0

Scholar

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Attends and contributes to echocardiography rounds and actively participates in the education of junior learners.	0	0	0	0	0	0

Professional

	Unsatisfactory 1	Provisional Satisfactory 2	Satisfactory 3	Very Good 4	Outstanding 5	N/A
Interacts with patients and families with care and compassion.	0	0	0	0	0	0
Is aware of the ethical standards in obtaining informed consent for stress echo, echo-guided pericardiocentesis, or TEE.	0	0	0	0	0	0

OVERALL COMPETENCE (FOR LEVEL OF TRAINING)

	Incomplete 1	Unsatisfactory 2	Provisional Satisfactory 3	Satisfactory 4
Please check the appropriate box for the overall competency of this learner's training level	0	0	0	0

Was input sought from other faculty, allied health professionals, or patients and their family members?
(If yes, please please specify in the comment box provided immediately below)
 Yes No

Comments

Summative Comments

(Any item evaluated above or below a 3, must include comments and examples to justify the rating)

Formative Comments

(Please provide 1-2 items for the resident to improve upon in order to progress along the competency continuum)

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