



Canadian Journal of Cardiology 38 (2022) 1307–1311

Training/Practice

Training in Cardiovascular Medicine and Research

2022 CCS/CAIC Guidelines for Training and Retraining in Adult Interventional Cardiology

Kevin R. Bainey, MD, MSc,^a Alexandra Bastiany, MD,^b Eric Cohen, MD,^c Janine Eckstein, MD,^d Basem Elbarouni, MBBS,^e Michelle M. Graham, MD,^a Bakhtiar Kidwai, MD,^f Andrea Lavoie, MD,^g Shuangbo Liu, MD,^c Samer Mansour, MD,^h Alexis Matteau, MD,^h Blair O'Neill, MD,^a Janarthanan Sathananthan, MBChB, MPH,ⁱ Mathew Sibbald, MD, PhD,^j Robert C. Welsh, MD,^a and Mina Madan, MD, MHS^c

^a Mazankowski Alberta Heart Institute, University of Alberta, Edmonton, Alberta, Canada

^b Thunder Bay Regional Health Sciences Centre, Thunder Bay, Ontario, Canada

^c Sunnybrook Health Sciences Centre, University of Toronto, Toronto, Ontario, Canada

^d Royal University Hospital, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

^e Cardiac Sciences Manitoba, University of Manitoba, Winnipeg, Manitoba, Canada

^f Dalhousie University, Halifax, Nova Scotia

^g University of Saskatchewan, Regina, Saskatchewan, Canada

^h Centre Hospitalier de l'Université de Montréal, Université de Montréal, Montréal, Québec, Canada

ⁱ Centre for Cardiovascular Innovation, University of British Columbia, Vancouver, British Columbia, Canada

^j McMaster University, Hamilton, Ontario, Canada

Interventional cardiology is a technical specialty that provides patient care through an integration of clinical assessment, invasive imaging-based diagnoses, and percutaneous/minimally invasive therapy for cardiovascular disease. Recently, the Royal College of Physicians and Surgeons of Canada (RCPSC) established an updated competency-based Area of Focused Competence (AFC) within the scope of adult cardiology as a diploma-training program to provide structured training in interventional cardiology. These standards provide national expertise in patient care to ensure that competencies are delivered uniformly. We highlight the core competencies of the RCPSC AFC interventional cardiology diploma program and provide recommendations on retraining/re-entry after prolonged absence from practice.

Interventional cardiology is a highly technical specialty that has evolved tremendously over the past decade. The 2010 Canadian Cardiovascular Society/Canadian Association of Interventional Cardiologists (CAIC) Guidelines for Training and Maintenance of Competency in Adult Interventional Cardiology provided structure for Canadian training with high quality standards.¹ However, the establishment of an RCPSC AFC diploma program requires updates to these standards that are fully endorsed by the CAIC. For the first time, we provide consensus guidance for re-entry into interventional practice following a prolonged absence.

Training Objectives

On completion of training in an RCPSC AFC interventional cardiology training program, a diploma is expected to practice to a national standard with a working knowledge of the core competencies as outlined below:

- Techniques of diagnostic coronary angiography.
- Interventional management of acute coronary syndrome/stable coronary artery disease (CAD).
- Interventional management of ST-segment elevation myocardial infarction.

Received for publication January 30, 2022. Accepted February 22, 2022.

Corresponding author: Dr Kevin R. Bainey, Associate Professor of Medicine, Interventional Cardiologist, Mazankowski Alberta Heart Institute, University of Alberta, Edmonton, Alberta, Canada.

E-mail: kevin.bainey@albertahealthservices.ca

See page 1311 for disclosure information.

Table 1. Minimal training requirements

Procedure	Minimum cases
Diagnostic coronary angiography	500 as primary operator • 75 using femoral access • 75 using radial access • 10 with intracoronary imaging • 10 with intracoronary physiology assessment
Therapeutic PCIs	250 cases as primary operator Logbook collection: • Diagnosis: ACS/CAD, STEMI, multi-vessel CAD, complex coronary lesion • Role in procedure: primary operator, secondary operator, other • Closure device used: Perclose, Angio-Seal, other • Hemodynamic stability • Complications
PCI in STEMI	50 cases as primary operator Logbook collection: • Identify the access site, the closure device used, and the AFC trainee's role in the procedure

ACS, acute coronary syndrome; AFC, Area of Focused Competence; CAD, coronary artery disease; PCI, percutaneous coronary intervention; STEMI, ST-segment elevation myocardial infarction.

- Interventional management of hemodynamic instability.
- Interventional approach to multivessel CAD.
- Catheter-based management of CAD with complex morphology.
- Identification and management of patients with complex conditions needing percutaneous coronary intervention (PCI).
- Medical, coronary, and noncoronary vascular complications of cardiac catheterisation and PCI.
- Diagnosis through invasive techniques and knowledge of interventional management of noncoronary artery disease.
- Catheterization laboratory management.
- Scholarly advancement in adult interventional cardiology.

The AFC IC program suggests ~ 2 years of training to be able to achieve the established core competencies. Logged cases and demonstration of core competencies are archived in an AFC portfolio where trainees are evaluated by the AFC program director (and other members of the institutional teaching program). Details of the AFC RCPSC Competency Portfolio for the Diploma in Adult Interventional Cardiology² can be found at www.royalcollege.ca. A brief summary is highlighted in Table 1.

Prerequisites for Specialty Training in Adult Interventional Cardiology

To be eligible for an interventional cardiology training program, candidates must be able to function in all essential roles and key competencies of cardiologists, as detailed in the RCPSC 2021 Adult Cardiology Competencies.³ Trainees should be RCPSC cardiology certified or eligible for RCPSC examinations in cardiology or its equivalent, equivalency including at least the following:

- 8 months of clinical cardiology (including at least 4 months in a coronary care unit).
- 3 months of cardiac catheterisation.
- 4 months of echocardiography.
- 1 month of electrophysiology.
- 1 month of noninvasive imaging (to include nuclear cardiology and stress testing).

Foreign-trained cardiologists require demonstration of equivalency for entrance.

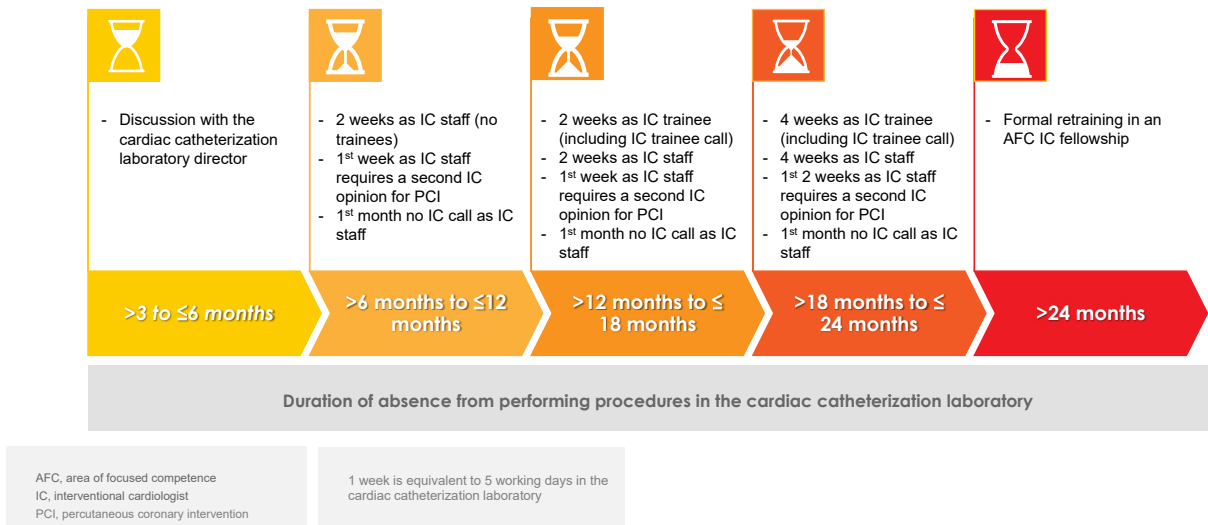
Retraining After Prolonged Absence From the Cardiac Catheterisation Laboratory

This document provides recommendations for appropriate retraining of interventional cardiologists who have taken extended leave of absence without undertaking routine and regular rotations in a cardiac catheterization laboratory. The writing committee recognises the various reasons for prolonged absence, which should factor into recommendations for reintegration with flexibility. Career interruptions affect both men and women, and a greater understanding of the circumstances surrounding the absence is critical to delineate time required for formalised reintegration. The Writing Committee strongly recommends that a discussion with the cardiac catheterization laboratory director take place with a formalised plan for reintegration using the following recommendations as support. Guiding principles for physician re-entry with a coordinated approach need to be established to ensure successful re-entry.⁴ A 3-month absence was used as a minimum standard, because shorter absences are considered safe for returning to clinical practice. Longer absences can affect skills and knowledge where supports are needed commensurate to the length of absence to ensure patient safety.⁵ A maximum of 2 years was chosen because longer absences are generally accepted as needing formal retraining.⁵ Figure 1 provides a summary of our recommendations endorsed by the CAIC.

A

Retraining following prolonged absence in interventional cardiology

Experienced Interventional Cardiologist



B

Retraining following prolonged absence in interventional cardiology

Early Career Interventional Cardiologist

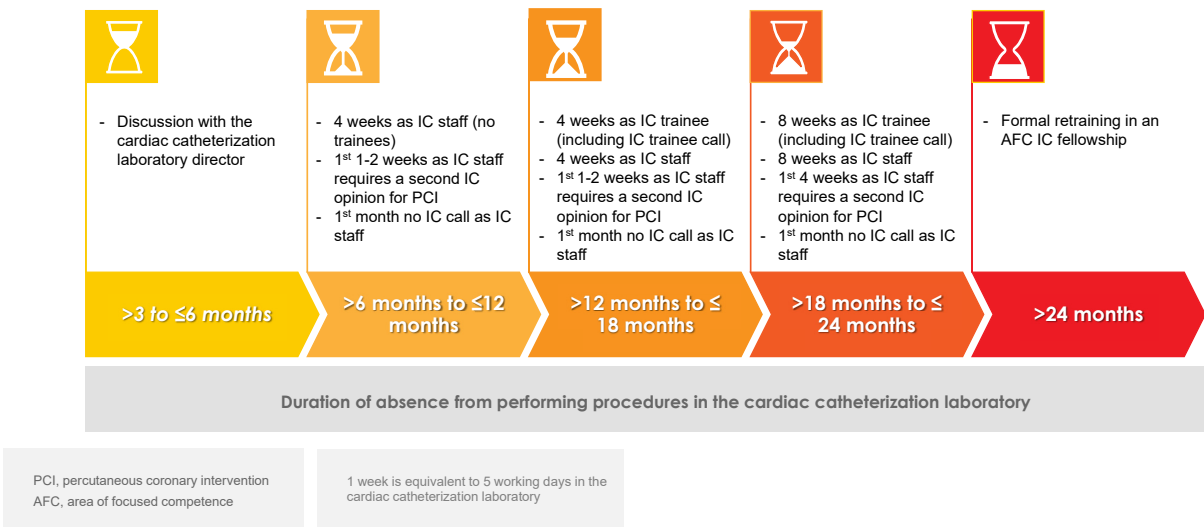


Figure 1. Guidance for retraining following prolonged absence in interventional cardiology for (A) an experienced interventional cardiologist and (B) an early-career interventional cardiologist. AFC, Area of Focused Competence; IC, interventional cardiology; PCI, percutaneous coronary intervention.

Experienced interventional cardiologist (~500 PCIs during career [not including fellowship training] and ~150 PCIs within the past 2 years [not including fellowship training])

Recommendations:

1. Absence from the cardiac catheterization laboratory for > 3 to ≤ 6 months:
 - Discussion with the cardiac catheterization laboratory director.
2. Absence from the cardiac catheterization laboratory for > 6 months to ≤ 12 months:
 - Suggest 2 weeks (or 10 working days) as interventional cardiology staff without involvement of any trainees, including core cardiology trainees or interventional fellows. This provides direct hands-on experience to reacquaint and re-establish the physician's comfort level.
 - Suggest that all PCIs receive a second opinion during the first week (or 5 working days) from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed during the first month of returning to service to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
3. Absence from the cardiac catheterization laboratory for > 12 months to ≤ 18 months:
 - Suggest 2 weeks (or 10 working days) as an interventional trainee (including interventional cardiology call) with full supervision of an experienced interventional cardiologist. This will provide direct hands-on experience and reacquaint physicians with appropriate decision making for procedures. This time will allow for enhancements in medical education and acknowledgement of new technologies in the cardiac catheterization laboratory.
 - Suggest 2 weeks (or 10 working days) as interventional cardiology staff performing cardiac catheterisation and interventional procedures without involvement of any trainees, including core cardiology trainees or interventional fellows.
 - Suggest that all PCIs receive a second opinion during the first week (or 5 working days) as interventional cardiology staff from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed for the first month of return to service (as interventional cardiology staff) to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
4. Absence from the cardiac catheterization laboratory for > 18 months to ≤ 24 months:
 - Suggest 4 weeks (or 20 working days) as an interventional trainee (including interventional cardiology call) with full supervision of an experienced interventional cardiologist. This will provide direct hands-on experience and reacquaint physicians with appropriate decision making for procedures. This time will allow for enhancements in medical education and acknowledgement of new technologies in the cardiac catheterization laboratory.
 - Suggest 4 weeks (or 20 working days) as interventional cardiology staff performing cardiac catheterization and

interventional procedures without involvement of any trainees, including core cardiology trainees or interventional fellows.

- Suggest that all PCIs receive a second opinion during the first 2 weeks (or 10 working days) as interventional cardiology staff from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed for the first month of return to service (as interventional cardiology staff) to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
5. Absence from the cardiac catheterization laboratory for > 24 months:
 - Formal retraining ideally in an AFC Diploma Interventional Cardiology Fellowship until all core competencies can be documented and achieved. This will be reviewed by the local Interventional Cardiology Fellowship AFC Committee for time and duration (based on achieving competency metrics).

Early-career interventional cardiologist (≤ 500 PCIs during career [not including fellowship training])

Recommendations:

1. Absence from the cardiac catheterization laboratory for > 3 to ≤ 6 months:
 - Discussion with the cardiac catheterization laboratory director.
2. Absence from the cardiac catheterization laboratory for > 6 months to ≤ 12 months:
 - Suggest 4 weeks (or 20 working days) as interventional cardiology staff without involvement of any trainees, including core cardiology trainees or interventional fellows. This provides direct hands-on experience to reacquaint and re-establish the physician's comfort level.
 - Suggest that all PCIs receive a second opinion during the first 1 to 2 weeks (or 5 to 10 working days) from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed for the first month of returning to service to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
3. Absence from the cardiac catheterization laboratory for > 12 months to ≤ 18 months:
 - Suggest 4 weeks (or 20 working days) as an interventional trainee (including interventional cardiology call) with full supervision of an experienced interventional cardiologist. This will provide direct hands-on experience and reacquaint physicians with appropriate decision making for procedures. This time will allow for enhancements in medical education and acknowledgement of new technologies in the cardiac catheterisation laboratory.
 - Suggest 4 weeks (or 20 working days) as interventional cardiology staff performing cardiac catheterization and interventional procedures without involvement of any trainees, including core cardiology trainees or interventional fellows.

- Suggest that all PCIs receive a second opinion during the first 1 to 2 weeks (or 5 to 10 working days) as interventional cardiology staff from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed for the first month of return to service (as interventional cardiology staff) to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
4. Absence from the cardiac catheterization laboratory for > 18 months to ≤ 24 months:
- Suggest 8 weeks (or 40 working days) as an interventional trainee (including interventional cardiology call) with full supervision of an experienced interventional cardiologist. This will provide direct hands-on experience and reacquaint physicians to appropriate decision making for procedures. This time will allow for enhancements in medical education and acknowledgement of new technologies in the cardiac catheterization laboratory.
 - Suggest 8 weeks (or 40 working days) as interventional cardiology staff performing cardiac catheterization and interventional procedures without involvement of any trainees, including core cardiology trainees or interventional fellows.
 - Suggest that all PCIs receive a second opinion during the first 4 weeks (or 20 working days) as interventional cardiology staff from an assigned interventional cardiologist.
 - Suggest that no interventional call be performed for the first 4 weeks of return to service (as interventional cardiology staff) to help focus on reintegration efforts (reading, education, updates, etc) back into the cardiac catheterization laboratory.
5. Absence from the cardiac catheterization laboratory for > 24 months:
- Formal retraining ideally in an AFC Diploma Interventional Cardiology Fellowship until all core competencies can be documented and achieved. This will be reviewed by the local Interventional Cardiology Fellowship AFC Committee for time and duration (based on achieving competency metrics).

Conclusion

The complexity of interventional cardiology practice continues to be dynamic, with a need to establish core standards for our community. We provide updated standards supported by the RCPSC and fully endorsed by the CAIC. We have provided guidance for re-entry into practice following

prolonged absence—which we acknowledge is difficult. As a supportive community, we believe in fostering a culture that is conducive to resuming procedural practice that requires collaboration, constant learning, self-assessment, and nonpunitive peer review. With these core principles in mind, we recommend that a formal needs assessment be established in conjunction with the cardiac catheterization laboratory director (and/or interventional team) for core competencies that the individual feels may have diminished during absence from practice. Refreshment of these competencies could be further individualized based on the level of pre-existing experience and duration of absence. Finally, the Writing Committee acknowledges the need for a dispute resolution mechanism, although this could be mitigated by fostering collaborative and insightful culture that will facilitate the resumption of procedural practice with a mutually acceptable retraining plan.

Funding Sources

The authors have no funding sources to declare.

Disclosures

Drs Bailey and Elbarouni are AFC program directors for interventional cardiology training programs. Dr Sibbald is the chair of the AFC Committee for Interventional Cardiology at the RCPSC. The other authors have no conflicts of interest to disclose.

References

1. Palisaitis D, Love M, Zimmerman R, et al. 2010 Canadian Cardiovascular Society/Canadian Association of Interventional Cardiologists guidelines for training and maintenance of competency in adult interventional cardiology. *Can J Cardiol* 2011;27:865-7.
2. Royal College of Physicians and Surgeons of Canada. Available at: Competency Portfolio for the Diploma in Adult Interventional Cardiology. July 2020, Version 3.0. Available at: https://www.royalcollege.ca/rcsite/documents/ibd/adult_interventional_cardiology_educatorsportfolio_e.pdf. Accessed May 23, 2022.
3. Royal College of Physicians and Surgeons of Canada. Adult Cardiology Competencies. 2021, Version 1.0. Available at: <https://www.royalcollege.ca/rcsite/documents/ibd/adult-cardiology-competencies-e.pdf>. Accessed May 23, 2022.
4. Kenagy GP, Schneidman BS, Barzansky B, et al. Guiding principles for physician reentry programs. *J Contin Educ Health Prof* 2011;31:117-21.
5. Academy of Medical Royal Colleges. Return to Practice Guidance: 2017 Revision. June 2017. Available at: http://www.aomrc.org.uk/wp-content/uploads/2017/06/Return_to_Practice_guidance_2017_Revision_0617-2.pdf. Accessed January 25, 2022.

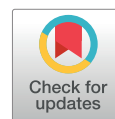
Update

Canadian Journal of Cardiology

Volume 38, Issue 12, December 2022, Page 1980

DOI: <https://doi.org/10.1016/j.cjca.2022.10.010>

Erratum to “2022 CCS/CAIC Guidelines for Training and Retraining in Adult Interventional Cardiology” [Can J Cardiol (2022):1307-1311].



In the article, “2022 CCS/CAIC Guidelines for Training and Retraining in Adult Interventional Cardiology” by Bainey et al., published in the August 2022 issue (Can J Cardiol 2022;38:1307-1311), the word “diplomat” was incorrectly

used in place of the word “diploma.” In all instances where the word “diplomat” was used, it should instead be “diploma.” This information has been corrected in the online version of the article.