In-Training Examination in a Cardiovascular Disease Fellowship Program Curriculum: Success Towards Board Certification

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No Disclosures

Objective

- ACC ITE Overview

- Does the ITE results correlate to ABIM Cardiovascular Disease board scores?

- Program utilization of ITE for individual fellows and program education.

Fellows
Division of Cardiovascular Health and Disease

Fellow

Mahboob Ali, MD — Fellow
Muhammad Athar, MD — Fellow
Luis Bowen, MD — Fellow
Naseem Ghazanfari, MD — Fellow
Francisco Lopez, MD — Fellow
Radha Mehta, MD — Fellow
Parvathi Mudigonda, MD — Fellow
Faraaz Rahman, MD — Fellow

Sameh Girgis, MD — Fellow
Korey Maddox, MD — Fellow
Atif Hassan, MD — Fellow
Naveed Iqbal, MD — Fellow
Hans Reyes, MD — Fellow
Steven Rudick, MD — Fellow
Derek Sanford, MD — Fellow
Christopher Verdick, MD — Fellow

Sudha Jagannathan, MD — Fellow
Regina Kayse, MD — Fellow
Kelly Leipply, MD — Fellow
Zhigeng Liu, MD, PhD — Fellow
Fahad Waqar, MD — Fellow
Daniel Washko, DO — Fellow
Babak Yazmeh, MD — Fellow

Program Structure
- 19 General Cardiology fellows
- 2 Interventional Fellows
- 1 Cardiac Imaging Fellow
- 1 Heart Failure Fellow

History

- 2011 First ACC Organized In-Training Exam

- Organization Committee: Cardiology Training and Workforce Committee

  - Prior to 2011 A National Exam Was Not Available

  - Most programs developed their own in-service examination

History

- 210 programs participated in the ACC-ITE examination (2016-2017)

  – 288 ACGME Cardiology Fellowship Programs (2017 ACGME Report)

- ACC-ITE has become the primary Cardiology FIT testing tool during training in the U.S.

In-Training Exam

- Benefits your fellows by helping them to identify knowledge gaps and prepare for the ABIM certification examination.

- Helps your training program adapt to the needs of your fellows and assess for deficiencies in medical knowledge

Preparation for In-Training Exam

- ACC Identifies Dates in the Winter/Spring Year Prior

  - Usually held the 3rd Tuesday/Wednesday October

    - October 23-24, 2018
    - October 22-23, 2019

Preparation for In-Training Exam

- Fellow Preparation

    – No detailed material to review.

    – A web link will be provided for fellows to view an example question.

    – Plenty of rest the night before the exam.

The Big Day…

Total Session Time   6 hours 15 minutes

Tutorial	15 minutes
Exam Section 1 (30 items)	60 minutes
Break *	10 minutes
Exam Section 2 (30 items)	60 minutes
Break *	10 minutes
Exam Section 3 (30 items)	60 minutes
Break *	30 minutes
Exam Section 4 (30 items)	60 minutes
Break *	10 minutes
Exam Section 5 (30 items)	60 minutes
Survey	(untimed)

Results

Program Use of Scores

- Review of Scores w/Fellow During Semi-Annual Evaluation

  – PGY Program Comparison
  – PGY National Comparison

Name:
ID #:   00000
Program: University of Cincinnati College of Medicine

This report shows your performance on this examination. Information to assist you in interpreting your scores is provided in the accompanying Performance Interpretation Guidelines document.

Your Scale Score	**826**
Your Percent Correct Score	**87**

	Percent Correct Score	
	Your Score	**Third Year Fellows Mean (SD)**
Content Area		
Arrhythmias	82	56 (15)
Coronary Artery Disease	81	72 (13)

Program Use of Scores

- Review of Scores w/Fellow During Semi-Annual Evaluation

    - Program Director Compares to Peers in Program and National

    - Fellows ITE 2 and 3 year report

Program Use of Scores

In-Service Exam Report History

2014-2017

Fellow Name, MD

	2014	Natl 2014	2015	Natl 2015	2016	Natl 2016
Percent Correct	57	57	67	62	69	69
Arrhythmias	28	42	69	60	67	72
Cororonary Artery Disease	53	62	74	61	63	68
Acute Coronary Syndromes/Acute MI	61	62	72	70	72	71
Valvular Disorders	71	58	56	56	78	71
Congenital Disorders	36	44	60	55	55	70
Aorta/Peripheral Vascular Disease	79	63	100	59	85	68
Hypertension/Pulmonary Disorders	90	70	80	70	67	65
Congestive Heart Failure	47	58	58	64	65	64

Program Use of Scores

- Clinical Competency Committee Reviews Scores
  - Milestone Reporting
  - Medical Knowledge….

- Program Evaluation Committee
  - Development of annual curriculum
  - Identify clinical education focus within rotations

- ACGME WebAds/GME Annual Program Evaluation
  - Faculty recruitment needs of program/division/department
  - Development of Self-Study
    - Program AIMS
    - Environment Context: Opportunities/Threats

The score you received on this examination is indicated above. For each item you answered incorrectly, the a) ACC competency statement (CS) and b) diagnosis (D) that relates to that item are listed. The competency statement identifies the fact or concept assessed by the item, while the diagnosis gives a more detailed description. We hope that these two descriptors will help you to ascertain your knowledge gaps and to plan your future study.

Competency Statements (CS) and Diagnoses (D) by Content Area

Arrhythmias (N = 18)

-CS: 01.02.13: Perform permanent pacemaker implantation and manage complications

D: Arrhythmia, pacemaker complications

-CS: 01.03.02: Use available system technology to access patient-specific arrhythmia data and graphics (e.g., Holter event, pacemaker data)

D: Intracardiac electrograms, polymorphic ventricular tachycardia

-CS: 03.02.07: Skill to identify the ECG changes of electrolyte and metabolic abnormalities, and of drug effects

D: Long Q-T syndrome, drug-induced

-CS: 03.03.01: Know the significance and mechanisms of monitoring quality and operation of the hospital or ambulatory digital ECG system

D: ECG, artifact

-CS: 10.02.09: Identify candidates for ICD

D: Hypertrophic cardiomyopathy, risk stratification for sudden cardiac death

Coronary Artery Disease (N = 17)

-CS: 06.02.01: Order, interpret, and integrate the results of CMR report with other clinical findings in the management of patients

D: Coronary artery disease, benefits of revascularization

-CS: 14.01.09: Role of non-invasive testing in risk-assessment, including the clinical, functional capacity, ECG, and hemodynamic stress test findings indicative of advanced coronary disease or high-risk state

D: Coronary artery disease, indications for revascularization

6. Possesses Clinical knowledge (MK1)					
Not Yet Assessable	**Critical Deficiencies**			**Ready for unsupervised practice**	**Aspirational**
	Lacks the scientific, socioeconomic, or behavioral knowledge required to provide patient care	Possesses insufficient scientific, socioeconomic, and behavioral knowledge required to provide care for common medical conditions and basic preventive care	Possesses the scientific, socioeconomic, and behavioral knowledge required to provide care for common medical conditions and basic preventive care	Possesses the scientific, socioeconomic, and behavioral knowledge required to provide care for complex medical conditions and comprehensive preventive care	Possesses the scientific, socioeconomic, and behavioral knowledge required to successfully diagnose and treat medically uncommon, ambiguous, and complex conditions
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

7. Knowledge of diagnostic testing and procedures. (MK2)

Not Yet Assessable	Critical Deficiencies			Ready for unsupervised practice	Aspirational
	Lacks foundational knowledge to apply diagnostic testing and procedures to patient care	Inconsistently interprets basic diagnostic tests accurately Does not understand the concepts of pre-test probability and test performance characteristics Minimally understands the rationale and risks associated with common procedures	Consistently interprets basic diagnostic tests accurately Needs assistance to understand the concepts of pre-test probability and test performance characteristics Fully understands the rationale and risks associated with common procedures	Interprets complex diagnostic tests accurately while accounting for limitations and biases Knows the indications for, and limitations of, diagnostic testing and procedures Understands the concepts of pre-test probability and test performance characteristics Teaches the rationale and risks associated with common procedures and anticipates potential complications of procedures	Anticipates and accounts for subtle nuances of interpreting diagnostic tests and procedures Pursues knowledge of new and emerging diagnostic tests and procedures
☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐

Comments:

Program Use of Scores

- Clinical Competency Committee Reviews Scores

    - Milestone Reporting
        - Medical Knowledge….

Program Use of Scores

- Remediation
  - Fellows who fall below national average
    - 1st / 2nd year fellows
      - Review for improvement
    - 3rd year fellows
      - Prepare for ABIM subspecialty exam

  - Focused remediation w/Mentors
    - 1:1 Sessions

Program Use of Scores

- Remediation

  - Additional Board Review Sessions
    - Sessions for fellows who fell below national average or dropped in scores from previous year

  - Restructure Board Review for 2nd Half of Academic Year
    - Annual review of program outcomes
    - Program compared to National

Program Use of Scores

- Evaluation of Program
  - Survey recent graduates
    - Board review topics based on recent board examination
    - Evaluate conferences/board topics
- Review program data
  - Common themes
  - Other than structured board reviews, what other conferences or topics need covered
    - Opportunities for grand round presentations
    - ACC program directors toolbox
    - Subspecialty resources available for cath, EP, etc.
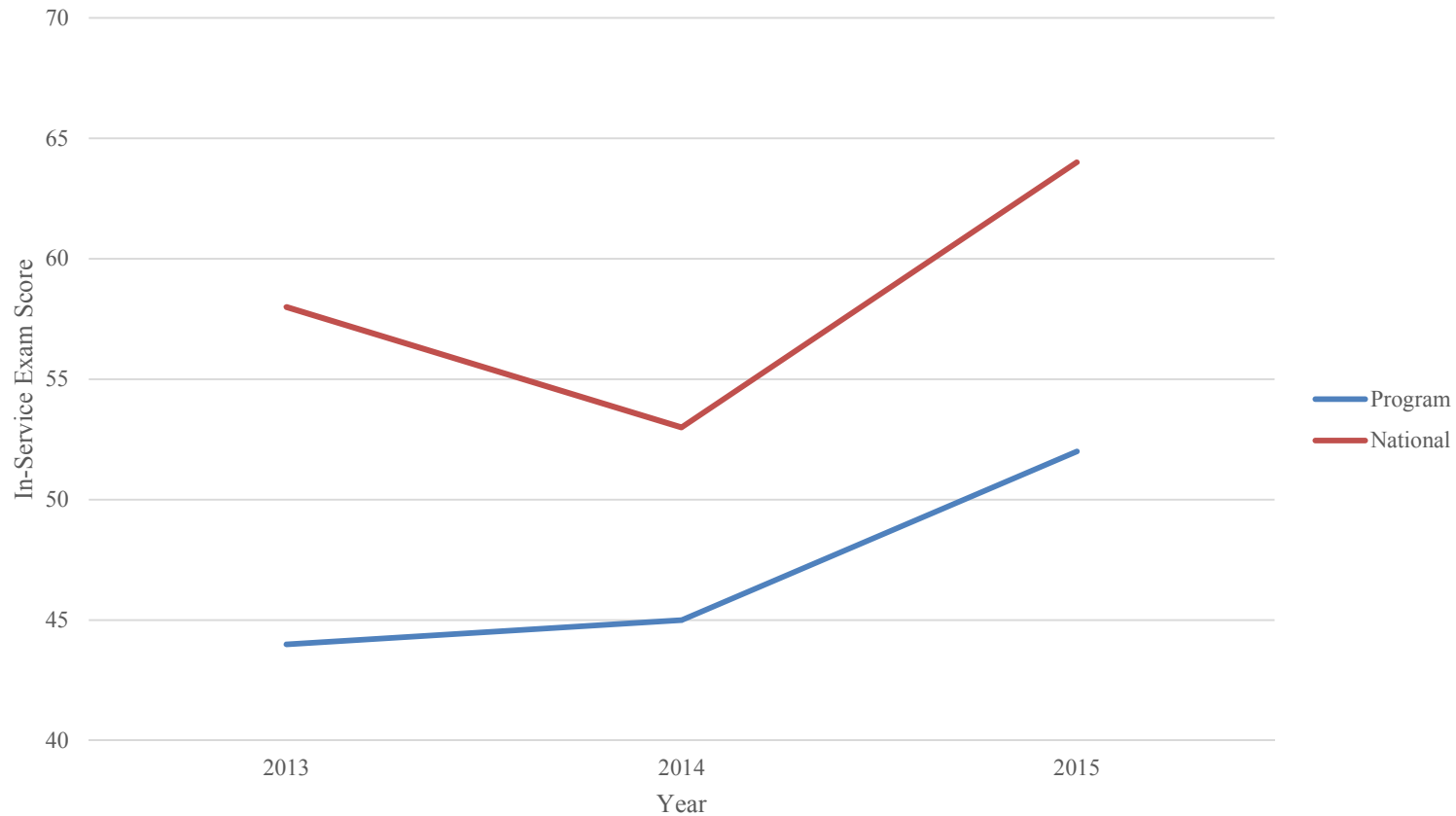   - HRS
      - SCAI
      - SCMR

Does the In-Training Exam Predict ABIM Cardiovascular Disease Board Outcomes?

What can we tell you about the Bearcat Fellows…

Example: ITE Arrhythmia

Fellows Completing 2013-2015

Example: ITE Coronary Artery Disease

Fellows Completing 2013-2015

Example: ITE Arrhythmia

Fellows Completing 2014-2016
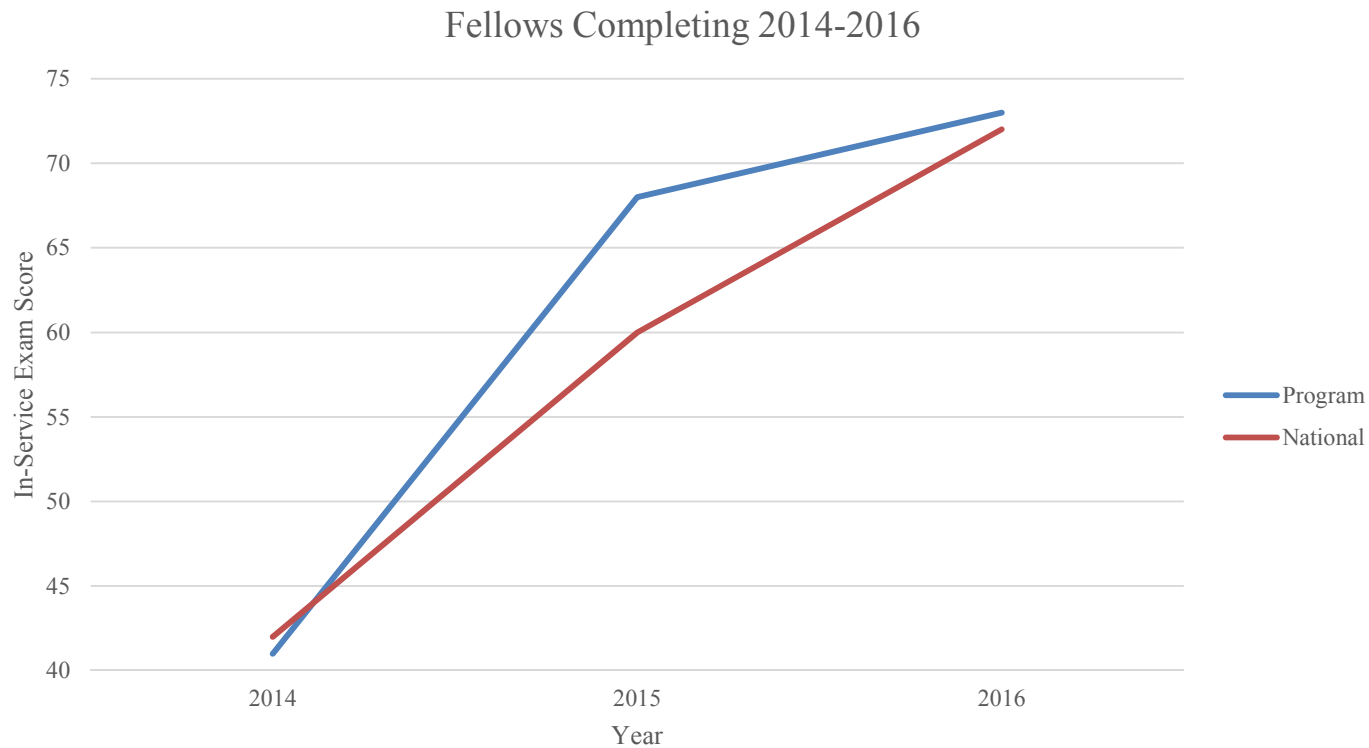
Example: ITE Coronary Artery Disease

Fellows Completing 2014-2016
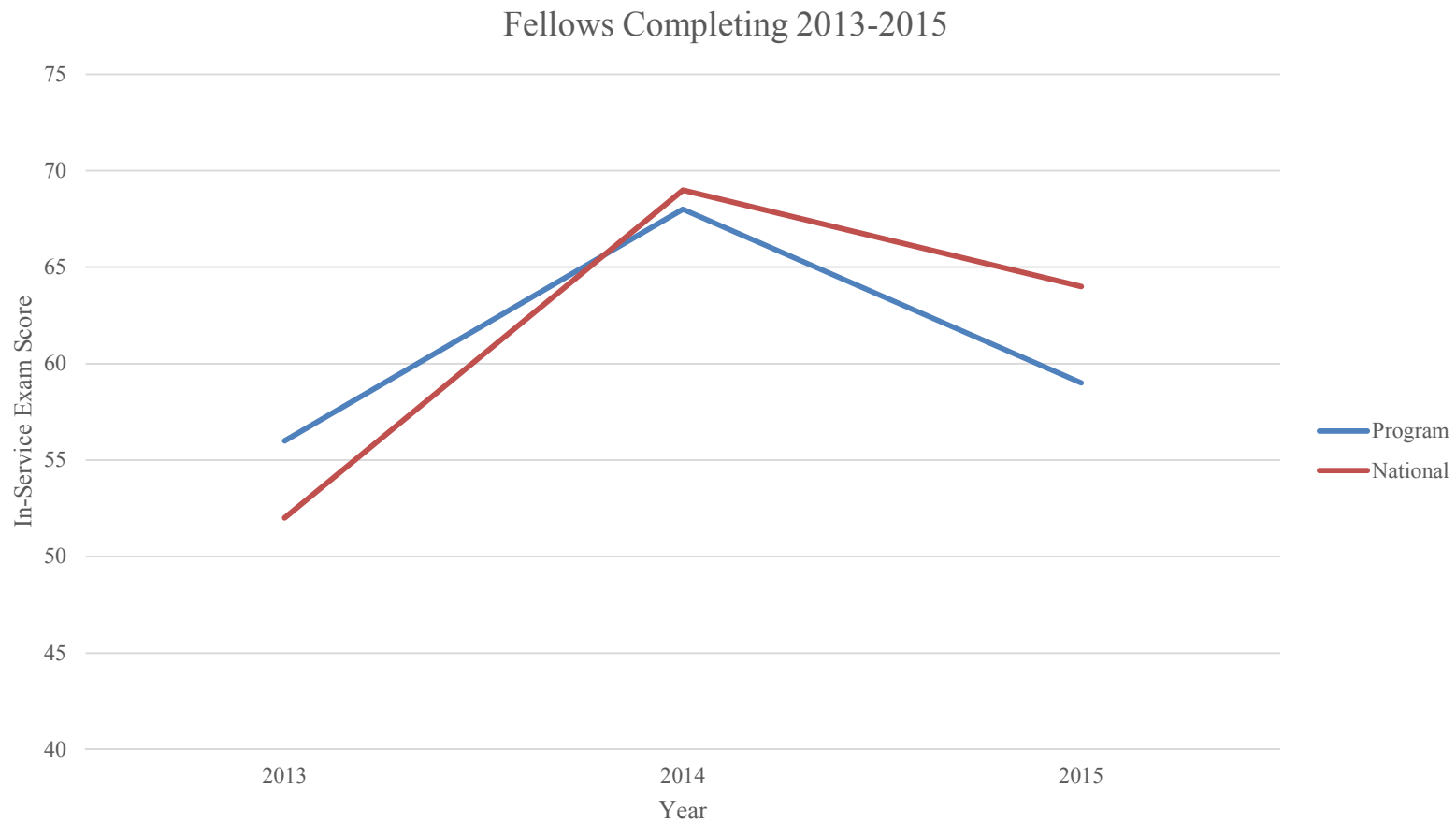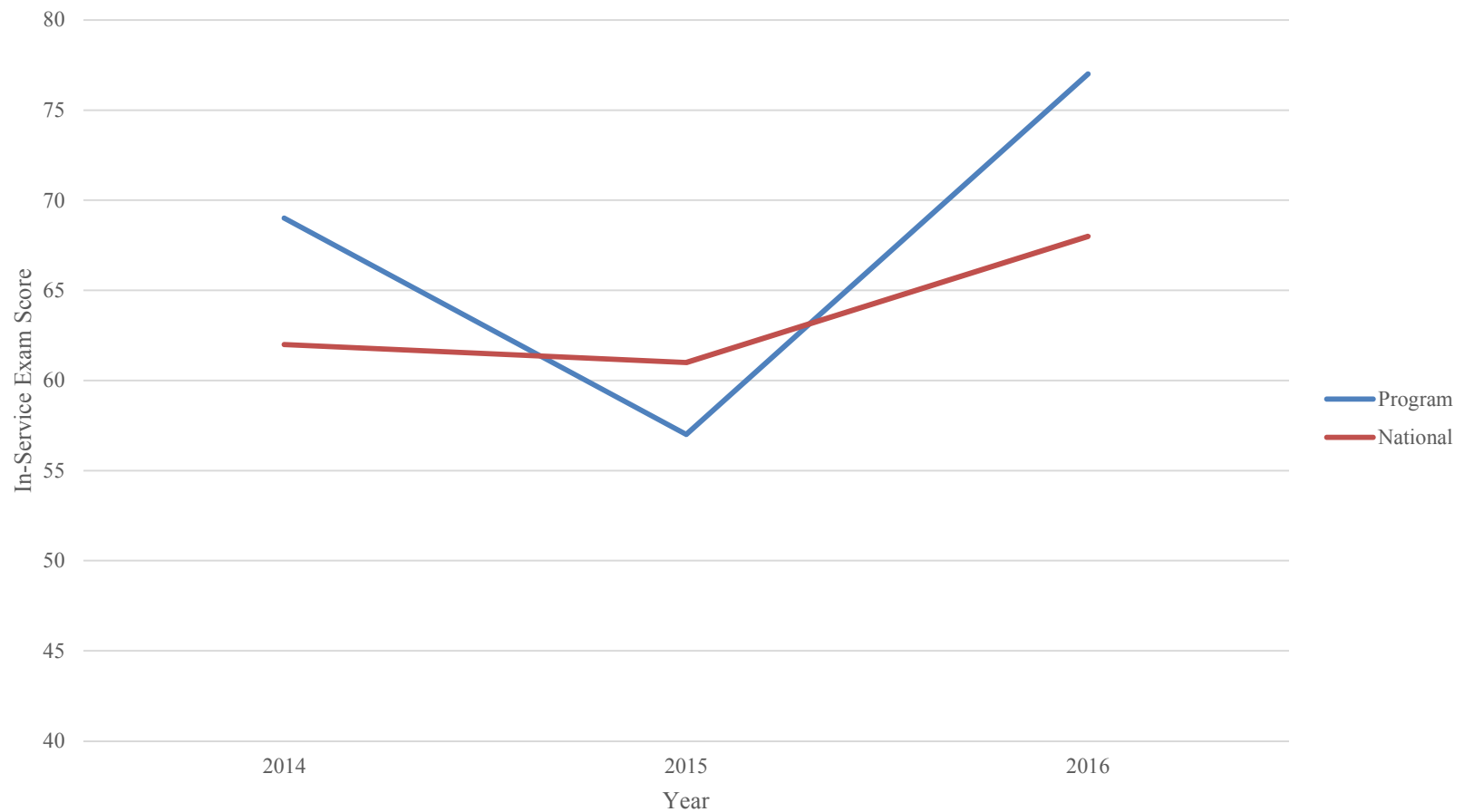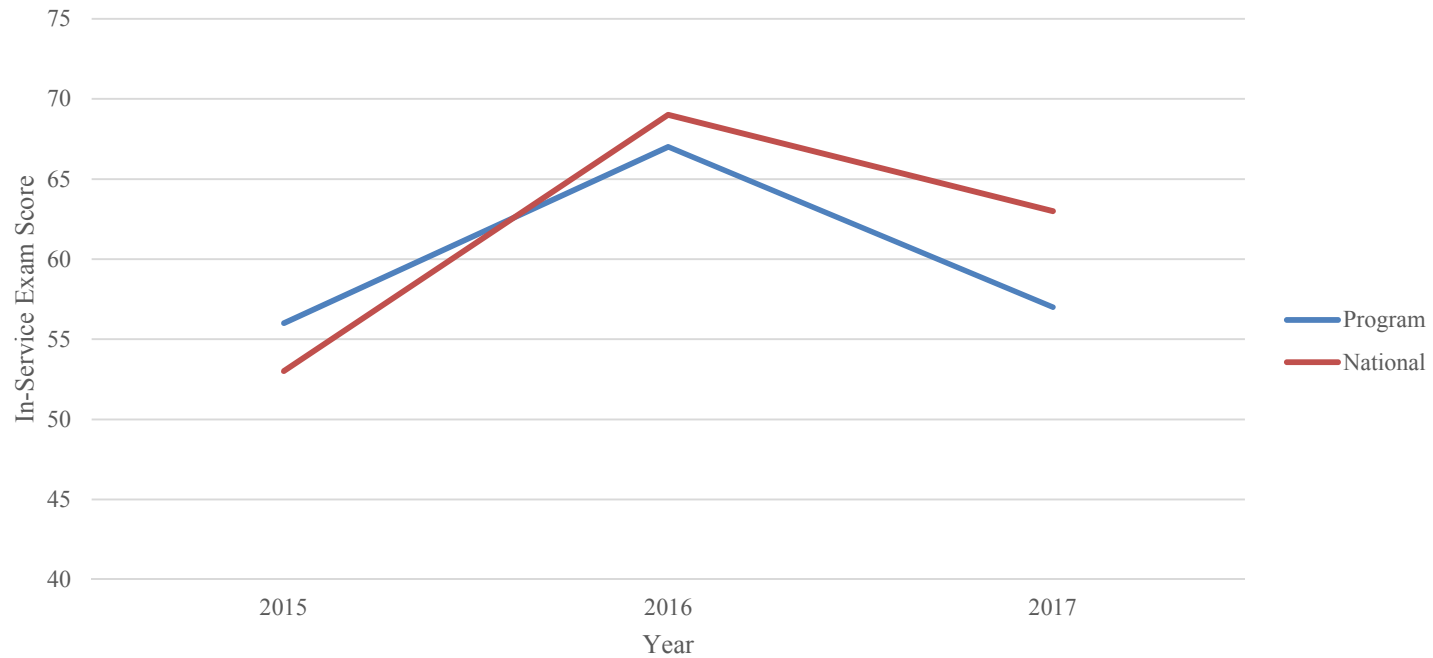
Example: ITE Arrhythmia

Fellows Completing 2015-2017

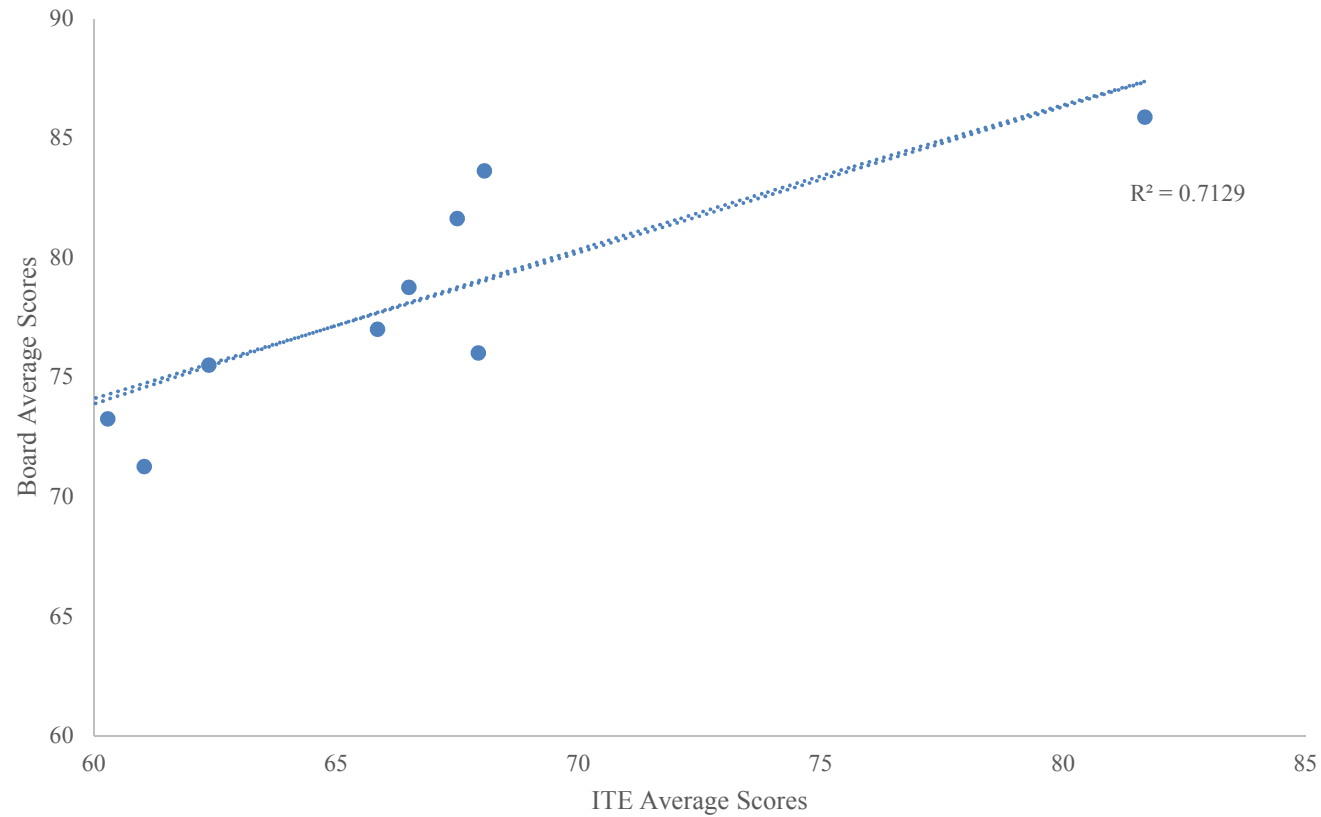# Example: ITE Coronary Artery Disease

Fellows Completing 2015-2017
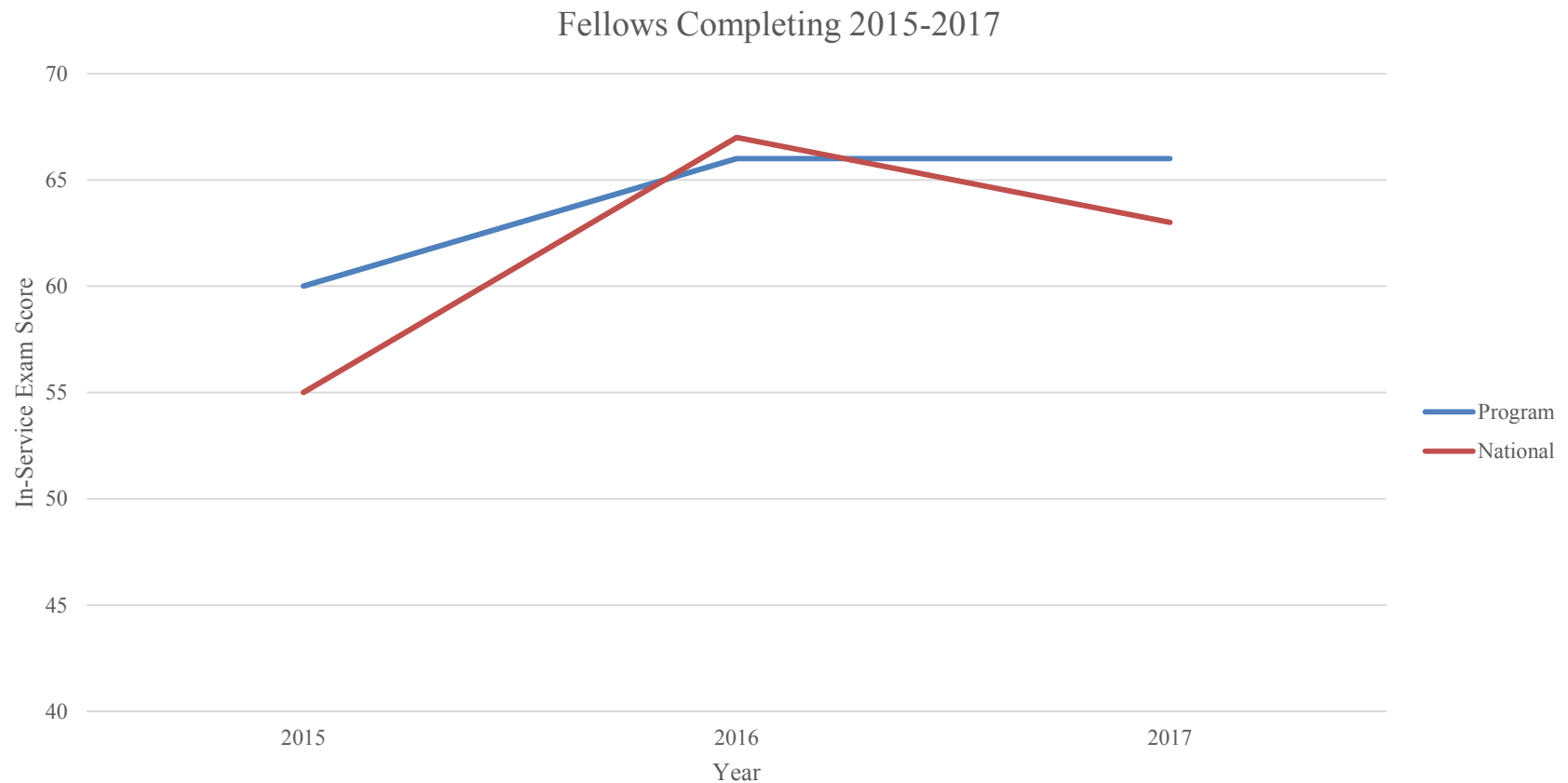
5 Year Review ITE/Board Scores

TABLE 4 Multiple Linear Regression Model to Predict ABIM CVD Certification Examination Score of Trainees With First and Third Year ACC-ITE Examination Scores

Predictor	Unstandardized Coefficient		Standardized Coefficient	t Value	p Value
	β	SE of β	β		
ACC-ITE score in first yr	0.39	0.03	0.46	11.42	<0.001
ACC-ITE score change from first to third yr	0.28	0.03	0.29	9.45	<0.001
ABIM-IM certification examination score	0.32	0.05	0.24	5.97	<0.001
USMLE step 1 score	0.25	0.20	0.05	1.28	0.200
USMLE step 2 (clinical knowledge) score	0.36	0.18	0.09	2.00	0.046
USMLE step 3 score	0.23	0.21	0.04	1.09	0.278
Age at time of ACC-ITE	−3.42	0.81	−0.12	−4.22	<0.001
Sex (male, female*)	19.94	6.40	0.09	3.12	0.002
Medical school country (U.S., international*)	8.84	5.84	0.05	1.51	0.131

*Reference group.

Abbreviations as in Tables 1 and 3.

Indik, et al
JACC 69: 2862-8, 2017

Resources

- ▾ SAPs (Self-Assessment Programs)
- ▾ MODs (Meetings on Demand)
- ▾ Heart Songs
- ▾ General Cardiology MOC Modules
- ▾ Interventional Cardiology MOC Modules
- ▾ Guideline MOC Modules
- ▾ Other MOC Modules
- ▴ Board Review Products

  - ACCSAP 9
  - 2016 Recent Advances in Clinical Nuclear Cardiolgy and Cardiac CT
  - Advanced Heart Failure and Transplant Self-Assessment Questions and Board Prep Program
  - 2016 Interventional Cardiology Board Review *Meeting on Demand*™ Program
  - Adult Congenital Heart Disease Self-Assessment Questions and Board Prep Program
  - CathSAP 4
  - Clinical Cardiac Electrophysiology Self-Assessment Questions and Board Prep Program
  - EchoSAP 7

ACC Sap breakdown

Arrhythmias:

Read:	(done: y/n)	Watch/Listen:	(done: y/n)
Cell EP		Basic EP	
Pharm of Antiarrhythmics		AAD drugs	
EP Study and Ablation		SVT	
Autonomic Disorders		Afib/flutter	
D/o of Sinus and AV conduction		Cases part 1	
Approach to syncope		Brady-arrhythmia/PPM	
Device therapy: PPM		VT	
SVT		ICD and CRT	
Prevention of Art Embolism & CVA		Approach to Syncope	
Aflutter rhythm/rate control		Cases part 2	
Afib rhythm/rate control			
V arrhythmias w/ Nl hearts			
SCD in nl hearts			
Vent arrhythmias in SHD			
Device Tx: ICD			
CRT			

Coronary Artery Disease

Patient Assessment:		Watch/Listen:	
H&P		PE	
Exercise Testing		Exercise testing	
Echo		Echo Imaging	
Nuc cardio		Nuc/PET	
CCT		Nuc/PET review	
CMR		Cardiac CT and CTA	
Hemodynamic in Cath lab		Basic Cath lab hemo	
Cor angiogram		Invasive Cor/aortic/LV angio	
Intravascular Imaging techniques		ECG	
Physio assessment of cor stenosis			
aortic & pulm CT and MR angio			
Rad safety during imagin			
Contrast media complications			
noninvasic vascular eval			

Individual Board Prep Study Plan Developed by Chief Fellow

Resources

- Mayo Cardiovascular Disease Board Review Curriculum
  - DVDs
  - Question/Answer Sets

- O'Keefe: Complete Guide to ECCGs

- ECG Source

Resources

Fellows want to know the why, not just the right answer to a question…

- A 53-year-old man with multiple atherosclerotic risk factors, including HTN, hyperlipidemia, and tobacco use, presents with a 6-month history of DOE and exertional chest tightness. He has orthopnea and paroxysmal nocturnal dyspnea. Echocardiography reveals a severely dilated LV with an EF of 20% and global ventricular hypokinesis. The ECG is normal.

- The next step in diagnostic evaluation should be:
  - A. Holter monitor
  - B. Stress test with measurement of maximal oxygen consumption
  - C. Coronary angiography
  - D. Heart transplant evaluation

- Answer: C

  This patient is at high risk for CAD since he has multiple CV risk factors, cardiomyopathy, and apparent angina. Thus, coronary angiography should be preferred and noninvasive stress bypassed. A Holter monitor and transplant evaluation are not clinically warranted at this time.

Reference: Mayo Clinic Cardiology Board Review Question/Answers Lloyd and Murphy

What Have We Learned…

- Structure Board Review

  - Review annually with in-training exam breakdown and ABIM score reports
    - Include in Annual Program Review

  - Weekly board review w/detailed schedule
    - Preparation by fellows
    - Assign material to review
    - Encourage Q/A before and after session

  - Include faculty…focus on their expertise
    - Junior Faculty Are Huge Benefit…Recent Experience/Study Preparation

  - Structure Board Review by the Program
    - Better Results in In-Training Exam and ABIM Boards
    - Independent Study Sounds Great, but Scores Not Reflected

Thank You!

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- Regina Kayse, MD (Chief Fellow)
- Caroline Meunier (Graphing)