Thoracic Surgery Milestones 2.0

The Accreditation Council for Graduate Medical Education

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The Arthur B. and Patricia B. Modell Professor of Thoracic Surgery
The Johns Hopkins Medical Institutions
TSDA General Session
New Orleans, 1/25/2020

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Overview

- **Brief historical review**
- **Milestones National Report 2019**
- **Issues with Milestones 1.0**
- **What's new with Milestones 2.0**
- **Timeline for rollout (poll)**

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Milestones 1.0: History

- **2012: Chair - Carolyn Reed, Walter Merrill**
- **Representatives: ABTS, JCTSE, TSDA, TS-RRC**
- **Rolled out academic year 2014-15**
- **Review process 3-5 years**
- **MS 2.0 Summit Dec 2016 – decide where changes were needed based on >300 peer-reviewed publications**
- **MS 2.0 revisions based on research, >200 program visits, focus groups, and feedback sent directly to the ACGME**

MILESTONES

NATIONAL REPORT 2019

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Accreditation Council for Graduate Medical Education

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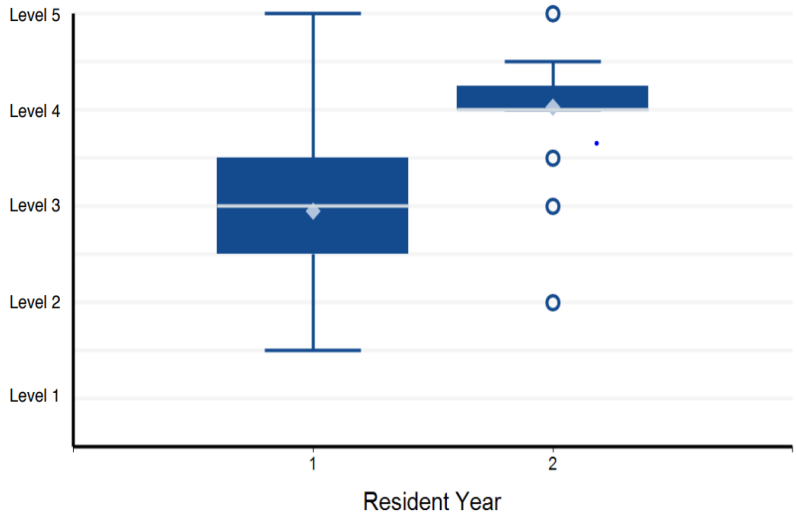
Specialty Box Plot Report - Milestone Evaluation by Resident Year: Year-End 2018-2019

Specialty: **Thoracic surgery (2-Year Program)**

Resident Year	1	2	Total Residents*
# of Residents	75	68	143

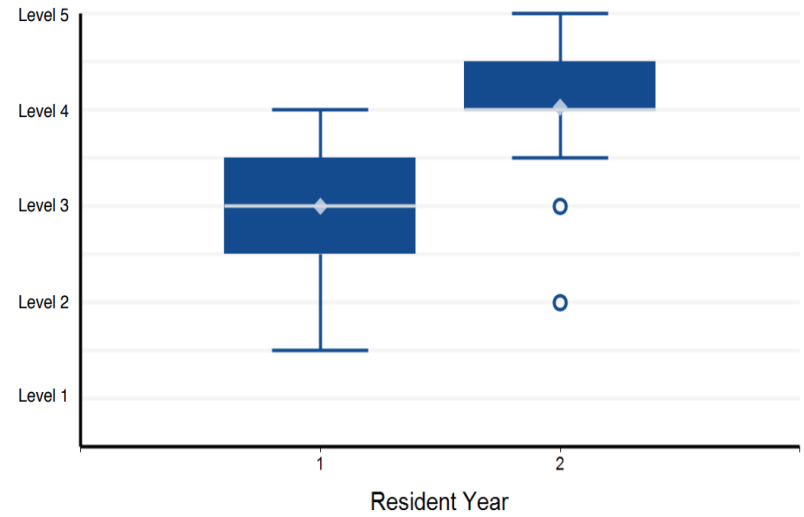
*Note: There is 1 resident with an incomplete milestone evaluation that is excluded from the box plots below.

1. Patient Care - Ischemic Heart Disease — Patient Care and Technical Skills



Note: 2 of 142 residents have a status of "Not Yet Rotated" and are not included in the analysis.

2. Medical Knowledge - Ischemic Heart Disease — Medical Knowledge



Note: 2 of 142 residents have a status of "Not Yet Rotated" and are not included in the analysis.

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PPV Table 133a - Milestone Evaluation by Resident Year: Year-End 2018-2019

Specialty: **Thoracic surgery (2-Year Program)**

Subcompetency	Threshold	Yr1, Mid-Year	Yr1, Year-End	Yr2, Mid-Year
MK01				
	≤ Level 5.0			
	≤ Level 4.5			
	≤ Level 4.0			
	≤ Level 3.5			
	≤ Level 3.0		24.5	54.2
	≤ Level 2.5	15.8	38.9	
	≤ Level 2.0	28.5	39.7	
	≤ Level 1.5	34.2	45.0	
	≤ Level 1.0			

Predictive Probability Values **(PPV) are estimates that Milestone ratings will fall below Level 4 (the recommended graduation target) at the time of graduation.**

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TS Work Group Milestones 2.0

Thoracic Surgery Milestones Work Group

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The ACGME would like to thank the following organizations for their continued support in the development of the Milestones:

American Board of Thoracic Surgery

Review Committee for Thoracic Surgery

Thoracic Surgery Directors Association

Milestones 1.0: General Issues

- **Difficult to use across all types of programs (traditional, 4/3, I6)**
- **Programs would "tie" the milestones to evaluations and promotion criteria, which was not the intention**
- **Variability among specialties and inconsistencies within the different milestones: unable to share assessment tools and provide comprehensive faculty development across programs**
- **Across the 26 core specialties, there were more than 230 different ways of describing PROF, 171 for PBLI, 176 for ICS, and 122 for SBP**

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What's different now with the TS Milestones?

Characteristic	MS 1.0	MS 2.0
Organization	Organ-based	Competency-based

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Ischemic Heart Disease — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5

Ischemic Heart Disease — Patient Care and Technical Skills				
Level 1	Level 2	Level 3	Level 4	Level 5

Patient Care 1: Ischemic Heart Disease				
Level 1	Level 2	Level 3	Level 4	Level 5

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What's different now with the TS Milestones?

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Type of training program	Traditional, 4/3 and I6	Separate MS for I6 (cong coming)

Patient Care 9: Technical Skills for General Surgery (Integrated Only)

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates limited tissue-handling skills	Inconsistently demonstrates careful tissue handling	Consistently demonstrates careful tissue handling	Adapts tissue handling based on tissue quality	Identifies innovative operative techniques, instrumentation, operative approaches, or significant improvement in established techniques
Requires prompting to identify appropriate tissue plane	Identifies appropriate plane but requires redirection to maintain dissection in the optimal tissue plane	Visualizes tissue plane, identifies and dissects relevant normal anatomy	Visualizes tissue plane, identifies and dissects relevant abnormal anatomy	
Moves forward in the operation only with active direction	Moves forward in the operation but requires prompting to complete the operation	Moves fluidly through the course of the operation and anticipates next steps	Adapts to unexpected findings and events during the course of the operation	
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

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Type of training program	Traditional, 4/3 and I6	Separate MS for I6 (cong coming)
# Milestones	**26**	**23/24 (I6)**

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MS 1.0 vs 2.0: # *Milestones*

Competency	1.0	2.0
Medical knowledge	**10**	**3**

Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

- **Cardiovascular surgical**
- **General thoracic surgical**
- **Congenital heart disease**

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Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

- **Ischemic heart disease**
- **Mechanical circulatory support**
- **Valvular disease**
- **Great vessel disease**
- **Esophagus**
- **Lung and airway**
- **CW/mediastinum/pleura/ diaphragm**
- **Critical care**
- **Technical skills for general surgery (I6 only)**

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# Milestones	26	23/24 (I6)
"Soft competencies" (PRO, ICS, SBP, PBLI)	**Specialty specific**	**Harmonized**

Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

- **Ethical principles**
- **Professional behavior and accountability**
- **Administrative tasks**
- **Well-being**

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Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

  - **Patient- and family-centered communication**
  - **Interprofessional and team communication**
  - **Within health care system**

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Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

- **Patient safety and QI**
- **System navigation for patient-centered care**
- **Physician role in health care system**

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Specific Milestones

- **Medical knowledge**
- **Patient care**
- **Professionalism**
- **Interpersonal/ communication skills**
- **System-based practice**
- **Practice-based learning and improvement**

- **Evidence based and informed practice**
- **Reflective practice and commitment to personal growth**

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# Milestones	26	23/24 (I6)
"Soft competencies" (PRO, ICS, SBP, PBLI)	Specialty specific	Harmonized
Milestone level descriptors	**Multi-rowed**	**3 row limit (eliminated specific examples)**

Ischemic Heart Disease — Medical Knowledge

Level 1	Level 2	Level 3	Level 4	Level 5
• Knows basic anatomy and pathology (identifies coronary anatomy on angiogram) • Knows basic cellular and vascular physiology • Lists clinical manifestations of ischemic heart disease (e.g., angina, myocardial infarction) • Lists diagnostic tools available for evaluation of ischemic heart disease • Lists treatment options for ischemic heart disease (e.g., coronary artery bypass graft [CABG], percutaneous coronary intervention [PCI]) • Knows basic complications for ischemic heart disease	• Understands common variations in anatomy and pathology (e.g., left dominant system) • Understands physiologic changes accompanying ischemic heart disease (e.g., ischemia, ischemia reperfusion injury, infarction, recovering myocardium) • Generates differential diagnosis of disease with similar manifestations (e.g., esophageal and aortic problems, pleurisy) • Understands advantages and disadvantages of diagnostic tools in evaluating ischemic heart disease (e.g., electrocardiogram [EKG] vs. echocardiogram vs. angiogram) • Understands advantages and disadvantages of various treatment options for ischemic heart disease • Understands risks, benefits and complications of treatment modalities	• Understands complex integrations between anatomy and pathology (e.g., anomalous coronary artery) • Understands the role of treatment on physiology of ischemic heart disease • Identifies the common variants of the clinical manifestations of ischemic heart disease (e.g., unstable angina, acute myocardial infarction, silent ischemia) • Interprets normal and common abnormalities associated with ischemic heart disease (e.g., reads coronary angiogram, complex EKG) • Identifies appropriate treatment for routine patient with ischemic heart disease. • Familiar with American College of Cardiology [ACC]/Society for Thoracic Surgery [STS]/Association of American Thoracic Surgeons [AATS] guidelines • Knows basic outcome literature for ischemic heart disease (e.g., SYNTAX Trial)	• Understands complex variations in anatomy and pathology, including congenital (e.g., able to identify coronary anatomy in reoperative surgery) • Adapts therapeutic management based on understanding of physiology of complications of ischemic heart disease (e.g., post infarct ventricular septal defect [VSD], ischemic mitral regurgitation) • Distinguishes the complex clinical manifestations and complications of ischemic heart disease • Interprets and integrates complex abnormalities associated with ischemic heart disease • Identifies appropriate treatment for complex patient with ischemic heart disease (e.g., hybrid CABG) • Knows outcomes for all treatment modalities and complications, including databases and clinical trials (e.g., STS Database)	• Understands implications of SYNTAX score • Presents on outcomes of ischemic heart disease at local, regional, or national meeting

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Comments:

Not yet rotated ☐

Patient Care 1: Ischemic Heart Disease

Level 1	Level 2	Level 3	Level 4	Level 5
Performs a disease specific history and physical and develops a diagnostic plan for a patient with ischemic heart disease	Interprets diagnostic testing and develops a treatment plan, including outpatient follow-up, for a patient with routine ischemic heart disease	Develops a treatment plan, including outpatient follow-up, for a patient with complex ischemic heart disease	Develops a treatment plan, including outpatient follow-up, for a patient with multiple comorbidities and complex ischemic heart disease	
Assists in routine coronary procedures, including set-up and positioning	Performs components of coronary procedures	Performs basic coronary procedures and recognizes intra-operative complications	Performs complex coronary procedures and manages intra-operative complications	Performs advanced coronary procedures
Performs routine post-operative care and recognizes complications of coronary procedures	Manages simple post-operative complications of coronary procedures	Recognizes and creates a plan for complex complications of coronary	Manages complex complications of coronary procedures in critically ill patients	Manages advanced intra- and post-operative complications of coronary procedures in critically ill patients

Comments:

Not Yet Completed Level 1 ☐
Not Yet Assessable ☐

Version 01/14 Thoracic Surgery Milestones, ACGME Report Worksheet

Ischemic Heart Disease — Patient Care and Technical Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Orders basic diagnostic and pre-operative assessment tests for ischemic heart disease (e.g., cardiac cath, stress test) • Lists basic treatment options for routine ischemic heart disease (e.g., medical management, PCI vs. CABG) • Demonstrates basic surgical skills (simulation vs. operation room [OR])	• Interprets and prioritizes diagnostic and physiologic assessment tests for routine patient with ischemic heart disease • Recognizes routine post-operative complications (e.g., cerebral vascular accident [CVA], shock, tamponade, interprets abnormal EKG) • Suggests treatment plan for patient with routine ischemic heart disease • Assesses and harvests conduits (e.g., vein mapping) • Performs surgical opening and closing • Provides basic intra-operative assisting • Performs proximal coronary anastomosis	• Establishes a diagnostic and assessment plan for patients with routine ischemic heart disease (e.g., role of functional testing in ischemic heart disease) • Manages routine post-operative complications (e.g., return to the OR vs. return to cath lab) • Selects ideal treatment option for patient with routine ischemic heart disease (e.g., institutes treatment per ACC/STS/AATS guidelines) • Institutes and weans patient from cardiopulmonary bypass • Performs routine CABG	• Establishes a diagnostic and assessment plan for complex patients with ischemic heart disease • Manages complex post-operative complications (e.g., need for ventricular assist) • Selects ideal treatment option for patient with complex ischemic heart disease (e.g., combined coronary and carotid disease) • Manages complex coronary disease (e.g., redo CABG, VSD, ischemic mitral regurgitation [MR], off pump)	• Independently performs reoperative coronary bypass grafting • Independently performs coronary endarterectomy
☐	☐	☐	☐	☐
Comments:				**Not yet rotated** ☐

Version 2 Thoracic Surgery, ACGME Report Worksheet

Patient Care 1: Ischemic Heart Disease				
Level 1	Level 2	Level 3	Level 4	Level 5
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Comments:				Not Yet Completed Level 1 ☐ Not Yet Assessable ☐

ACGME

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# Milestones	26	23/24 (I6)
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Milestone level descriptors	Multi-rowed	3 row limit (eliminated specific examples)
Competency examples	**Within specific milestone**	**Supplemental guide**

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☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Not yet rotated ☐

Supplemental Guide:
Thoracic Surgery

ACGME

January 2020

Patient Care 1: Ischemic Heart Disease				
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☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				

PC1: Ischemic Heart Disease

Diseases	
Routine	**Complex**

Procedures		
Routine	**Complex**	**Advanced**
Primary CABG, Normal EF, First Sternotomy	Primary CABG, Low EF, First Sternotomy Primary Valve-CABG Redosternotomy, Primary CABG	Redo CABG LV Aneurysm Repair Post-infarct VSD

Complications		
Routine	**Complex**	Advanced
Atrial fibrillation, postoperative hypotension, bleeding,	Graft occlusion, tamponade, iatrogenic type A dissection,protamine reaction, failure to wean off bypass	

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Patient Care 1: Ischemic Heart Disease		
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☐	☐	☐ ☐ ☐
Comments:		

Patient Care 1: Ischemic Heart Disease **Overall Intent:** To manage patients with ischemic heart disease	
Milestones	**Examples**
Level 1 *Performs a disease specific history and physical and develops a diagnostic plan for a patient with ischemic heart disease*	• Identifies risk factors for coronary disease, performs physical exam including vascular exam, and knows the indications for ordering coronary angiography and echocardiogram
Assists in routine coronary procedures, including set-up and positioning	• Properly positions the patient for sternotomy and holds retraction of the heart, and lists steps of the procedure
Performs routine post-operative care and recognizes complications of coronary procedures	• Orders electrolyte replacement, interprets rhythm disturbances, removes chest tube, and recognizes a wound infection and bleeding
Level 2 *Interprets diagnostic testing and develops a treatment plan, including outpatient follow-up, for a patient with routine ischemic heart disease*	• Identifies stenosis and targets on coronary angiogram • Identifies wall motion abnormalities on echocardiogram • Knows the indications for a primary coronary artery bypass grafting (CABG) and can discuss conduit selection and targets for different patients
Performs components of coronary procedures	• Performs conduit preparation, cannulation, or proximal anastomosis
Manages simple post-operative complications of coronary procedures	• Manages atrial fibrillation, postoperative hypotension, bleeding
Level 3 *Develops a treatment plan, including outpatient follow-up, for a patient with complex ischemic heart disease*	• Identifies concomitant valvular disease on echocardiogram • Suggests appropriate revascularization for a redo-CABG
Performs basic coronary procedures and recognizes intra-operative complications	• Performs primary CABG in a patient with preserved ventricular function • Recognizes failure to wean off bypass or protamine reactions
Recognizes and creates a plan for complex complications of coronary	• Recognizes and develops management plan for graft occlusion or tamponade
Level 4 *Develops a treatment plan, including outpatient follow-up, for a patient with multiple comorbidities and complex ischemic heart disease*	• Develops a treatment plan for a patient with primary CABG with low ejection fraction
Performs complex coronary procedures and manages intra-operative complications	• Performs repeat CABG, CABG for patients with low ejection fraction, primary valve-CABG, or primary CABG in patients with multiple prior stents • Manages protamine reaction or failure to wean off bypass
Manages complex complications of coronary procedures in critically ill patients	• Manages graft occlusion or tamponade in patients who are hemodynamically unstable
Level 5 *Performs advanced coronary procedures*	• Performs left ventricular aneurysm repair (LVAR) or post-infarct ventricular septal defect (VSD)
Manages advanced intra-and post-operative complications of coronary procedures in critically ill patients	• Manages iatrogenic type A dissection • Manages air embolus
Assessment Models or Tools	• Direct observation • End of rotation evaluation • Medical record (chart) review • Mock orals • Simulation
Curriculum Mapping	•
Notes or Resources	• Thoracic Surgery Directors Association (TSDA). Cardiac Surgery Simulation Curriculum. https://tsda.org/. 2020. • The Society of Thoracic Surgeons (STS). www.learnctsurgery.org. 2020.

Patient Care 1: Ischemic Heart Disease

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Comments:

Patient Care 1: Ischemic Heart Disease

Overall Intent: To manage patients with ischemic heart disease

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Assessment Tools

360 evaluations/Global evaluations
Case based-discussion
Case conferences
Certificate of completion
Chart audit
Chart stimulated recall
Clinical and Educational Logs
Clinical management conferences
Clinical Skills E
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EM
End evaluations
Entrustable Professional Activities (EPAs)
Examinations
Faculty evaluations
Grossing laboratory metrics review (number of cases/blocks grossed by a resident on a given day)
Individual interview
Institutional patient safety E-module multiple choice tests
Institutional reporting of conflict of interest
In-training exam
Journal club
Learning Plan Review
Literature review
Mentor evaluation
Mentored review of clinical management plan
Mentored review of learning plan

Mini CEX
Mock oral examination
Morbidity and mortality conference presentation
Operative Performance Rating System (OPRS)
Ophthalmic Knowledge As
Ophth
/checklist
dure logs
QI Metrics
QI Project
Research Portfolio
Role playing
SECURE - Kalamazoo Essential Elements Communication Checklist (Adapted)
SEGUE - Skills needed to Set the state, Elicit information, Give information, Understand the patient, and End the encounter
Self assessment
Self Refelction
Simulation (low or high fidelity)
Standardized patients
Surgical pathology metrics and quality review
Surgical pathology report (and/or gross specimen review) to determine accuracy of dictation and gross description
Turn-Around Times
Virtual reality simulators
Assessment of evidence-based practice (PICO format; Fresno testm, etc.)

OCAT

Milestones are not an assessment tool, merely a reporting vehicle

Patient Care 1: Ischemic Heart Disease

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Comments:

Patient Care 1: Ischemic Heart Disease

Overall Intent: To manage patients with ischemic heart disease

Milestones	Examples
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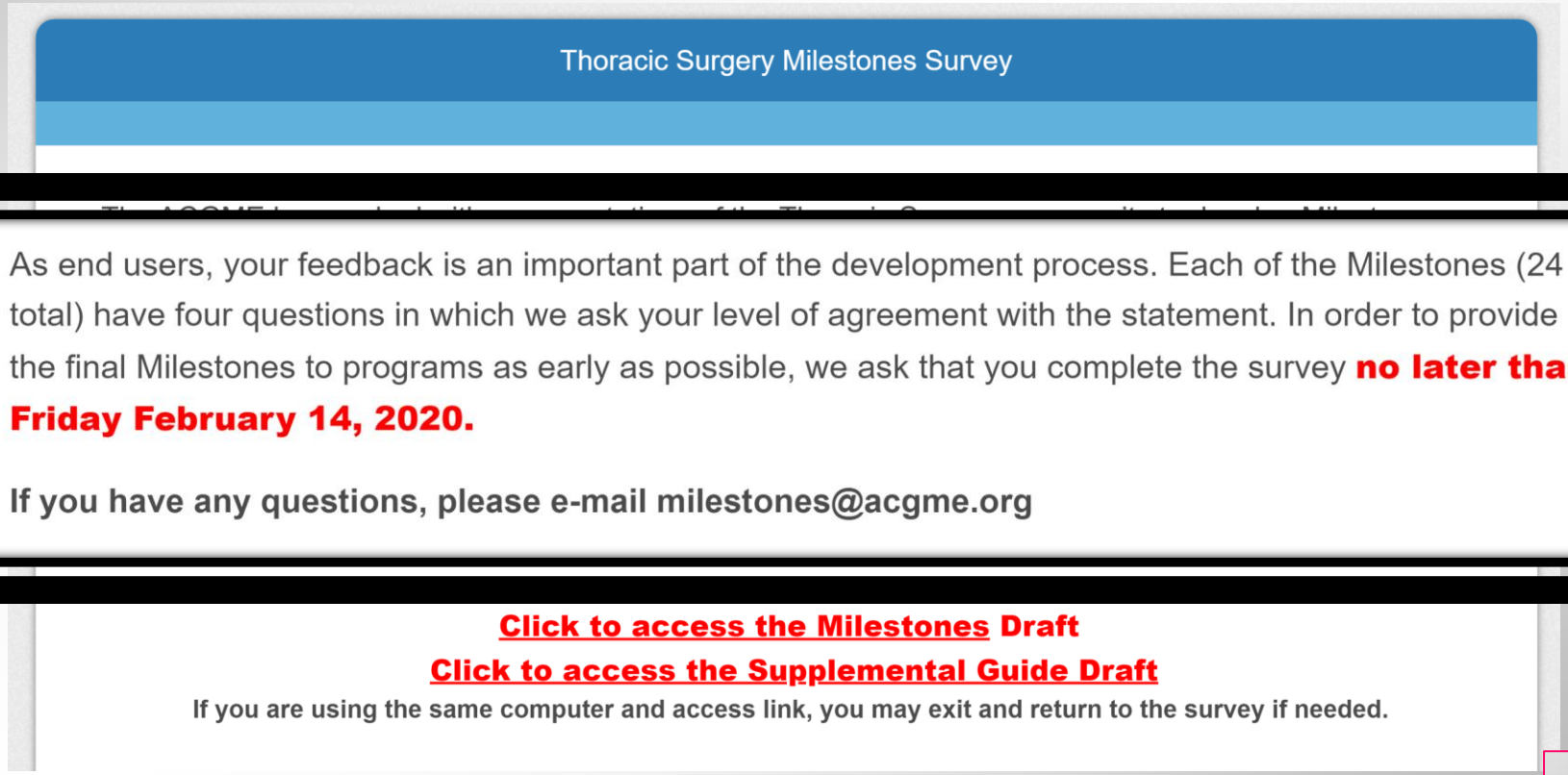
Assists in routine coronary procedures, including set-up and positioning	• Properly positions the patient for sternotomy and holds retraction of the heart, and lists steps of the procedure
Performs routine post-operative care and recognizes complications of coronary procedures	• Orders electrolyte replacement, interprets rhythm disturbances, removes chest tube, and recognizes a wound infection and bleeding
Level 2 *Interprets diagnostic testing and develops a treatment plan, including outpatient follow-up, for a patient with routine ischemic heart disease*	• Identifies stenosis and targets on coronary angiogram • Identifies wall motion abnormalities on echocardiogram • Knows the indications for a primary coronary artery bypass grafting (CABG) and can discuss conduit selection and targets for different patients
Performs components of coronary procedures	• Performs conduit preparation, cannulation, or proximal anastomosis
Manages simple post-operative complications of coronary procedures	• Manages atrial fibrillation, postoperative hypotension, bleeding
Level 3 *Develops a treatment plan, including outpatient follow-up, for a patient with complex ischemic heart disease*	• Identifies concomitant valvular disease on echocardiogram • Suggests appropriate revascularization for a redo-CABG
Performs basic coronary procedures and recognizes intra-operative complications	• Performs primary CABG in a patient with preserved ventricular function • Recognizes failure to wean off bypass or protamine reactions
Recognizes and creates a plan for complex complications of coronary	• Recognizes and develops management plan for graft occlusion or tamponade
Level 4 *Develops a treatment plan, including outpatient follow-up, for a patient with multiple comorbidities and complex ischemic heart disease*	• Develops a treatment plan for a patient with primary CABG with low ejection fraction
Performs complex coronary procedures and manages intra-operative complications	• Performs repeat CABG, CABG for patients with low ejection fraction, primary valve-CABG, or primary CABG in patients with multiple prior stents • Manages protamine reaction or failure to wean off bypass
Manages complex complications of coronary procedures in critically ill patients	• Manages graft occlusion or tamponade in patients who are hemodynamically unstable
Level 5 *Performs advanced coronary procedures*	• Performs left ventricular aneurysm repair (LVAR) or post-infarct ventricular septal defect (VSD)
Manages advanced intra-and post-operative complications of coronary procedures in critically ill patients	• Manages iatrogenic type A dissection • Manages air embolus
Assessment Models or Tools	• Direct observation • End of rotation evaluation • Medical record (chart) review • Mock orals • Simulation
Curriculum Mapping	•
Notes or Resources	• Thoracic Surgery Directors Association (TSDA). Cardiac Surgery Simulation Curriculum. https://tsda.org/. 2020. • The Society of Thoracic Surgeons (STS). www.learnctsurgery.org. 2020.


ONE BILLION
ACTION ITEMS

Please fill out the survey!

https://www.surveymonkey.com/r/Q59LG2W



Thoracic Surgery Milestones Survey

As end users, your feedback is an important part of the development process. Each of the Milestones (24 total) have four questions in which we ask your level of agreement with the statement. In order to provide the final Milestones to programs as early as possible, we ask that you complete the survey **no later than Friday February 14, 2020.**

If you have any questions, please e-mail milestones@acgme.org

Click to access the Milestones Draft

Click to access the Supplemental Guide Draft

If you are using the same computer and access link, you may exit and return to the survey if needed.

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Vote: Impeachment

Vote: Implementation

Academic year 2020-21	*Academic year 2021-22*

Milestones 2.0 Timeline

- **Survey on public comment closes**
- **Final version – discussion TSDA General Session**
- **Implementation**

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Summary: Milestones 2.0

- **Milestones have been shortened and reduced, and supplemented with appendices of definitions and examples**
- **Remains NOT an assessment tool but a report to help gauge the progress of your trainees AND your program**
- **Review the documents on-line, send to your faculty, provide feedback by Feb. 14, 2020**
- **Implementation academic year 20__.....**

ACGME

Thank you!

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