ACC Accreditation Services™

Formerly

Society of Cardiovascular Patient Care (SCPC)

AMERICAN COLLEGE of CARDIOLOGY

Troponin Essentials: Implementing the Guidelines

Ruth Cantu, BSN, RN, AACC

May 2017

AMERICAN COLLEGE of CARDIOLOGY

Speaker Overview

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Program Manager

Accreditation Review Specialist

Objectives

- **Identify** guideline-driven best practice recommendations on the use of biomarkers in the treatment of Acute Coronary Syndrome (ACS)
- **Review** updates to the Myocardial Infarction (MI) Definition and Non-ST elevation Acute Coronary Syndromes (NSTE-ACS) guidelines
- **Discuss** troponin turn-around-time (TAT) recommendations and documentation requirements
- **Share** quality practices that optimize the care and outcomes of ACS patients

ACC Position Statement: Laboratory

- Focuses on ID and Management of MI and ACS
- Each facility responsible for vendors
  - ACC provides Guidance and Education
- Facility should know the recommendations
- Facility should review their protocols for Troponin

Position Statement: Laboratory

FREQUENTLY ASKED QUESTION:

"Does ACC Accreditation Services monitor or validate concordance between POCT and Central Lab Analyzers?"

POSITION:

We does not promote or endorse lab based testing or point-of-care testing (POCT) rather focuses on processes and protocols for the identification and management of the Myocardial Infarction (MI) and Acute Coronary Syndrome (ACS) continuum.

Hospitals are responsible to ensure all appropriate policies and protocols for correlations, validations and assay concordance are in place per laboratory regulatory requirements (i.e.: CLIA, CAP, TJC, DNV…).

ACC Goals

Establish a comprehensive quality improvement solution to hospitals and other facilities that combines accreditation and ACC's registry services, quality initiatives and education.

To develop and share quality practices that optimize the care and outcomes of patients with acute cardiovascular disease worldwide through innovative cross-disciplinary processes and education by…

Taking Science to the Bedside™

Background: Chest Pain Accreditation

Chest Pain Center (CPC) Accreditation tool is a strategic planning document:

- Assessment of all Acute Coronary Syndrome (ACS) conditions
- Previously defined as “cycles”
  - —incorporates expectations from previous cycles
- Emphasis on education and annual reinforcement
- Metrics used to validate ongoing performance improvement
- New programs changed to “versions”
  - —updated in a more timely manner versus every 3 years

Definitions for Reperfusion

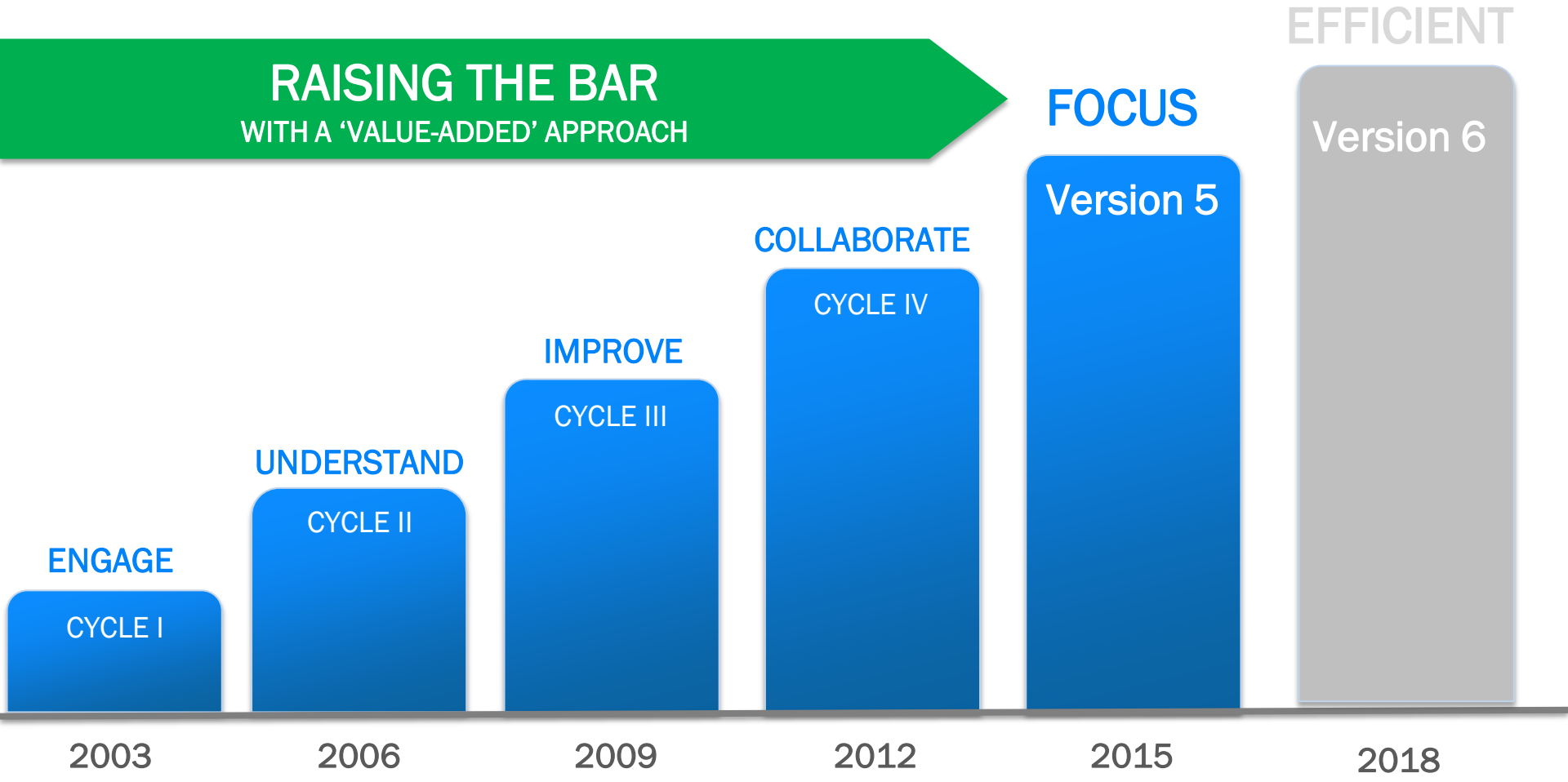
- **Percutaneous Coronary Intervention (PCI)** – most frequently used invasive method of treating the narrowing, or stenosis, of coronary arteries; performed in cardiac catheterization facilities (cath lab) at acute care hospitals

- **Primary PCI (PPCI)-** also known as (aka) emergency angioplasty, is a life-saving intervention performed during a heart attack (STEMI)

- **Non-primary PCI** - aka: elective angioplasty, scheduled intervention to relieve the narrowing of the artery; goal of preventing a heart attack from occurring in the future

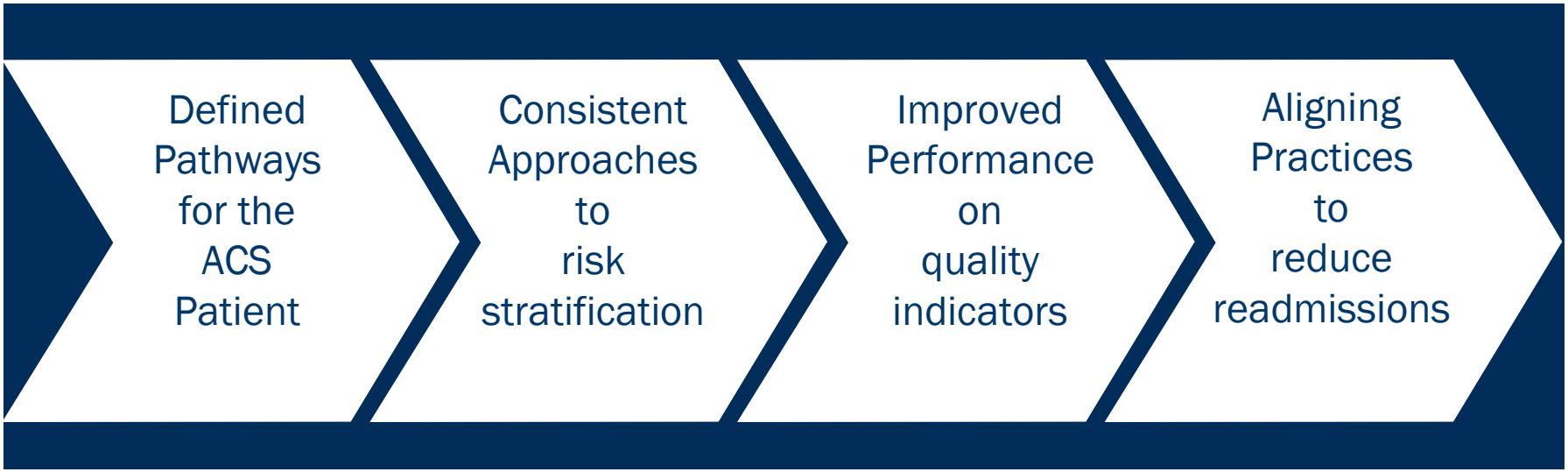
Key Point: All laboratorians should be very familiar with the protocols and facility diagnostic capabilities (cath lab, PPCI, thrombolytics, transfer) to address acute cardiac events.

Continuum of Improvement



Accreditation Benefits

Accreditation Supports



Accreditation Drives

3rd Universal Definition of (MI)

1st worldwide consensus document

- **TROPONIN (I or T) - preferred** biomarker overall
- Diagnosis of acute MI = **a rise and/or fall**
- 99th percentile URL ***designated*** **as the decision level**
- Coefficient of Variation (CV) <20% at the 99th %ile
- > 20% CV at URL should not be used
- Blood samples 1st assessment; repeated 3– 6 h later

Third Universal Definition of Myocardial Infarction (MI)
Kristian Thygesen, Joseph S. Alpert, Allan S. Jaffe, Maarten L. Simoons, Bernard R. Chaitman and Harvey D. White *Circulation.* published online August 24, 2012

Coefficient of Variation (CV)

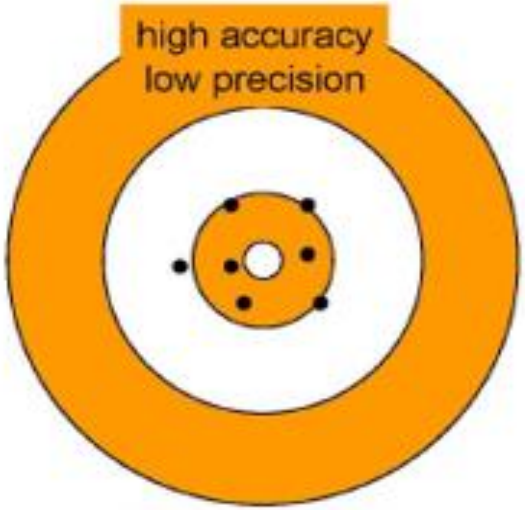
Q: When the test is run multiple times on the same sample, how frequently do you get the same result?

A: The standard answer is…rarely, if ever.

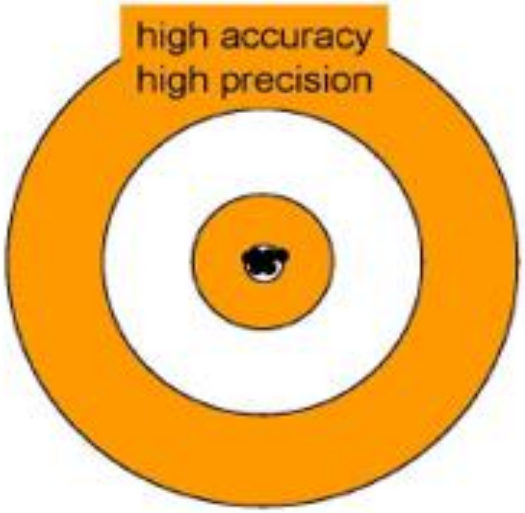
In real world terms, measured by running sample at least 20 times and identifying the percentage (%) of variation within that set of results.

The 3rd Universal of MI allows from 10% to 20%

High Accuracy, Different Precision



18% CV



10% CV

Contemporary Cardiac Troponin Assays are more precise

Courtesy of Dr. Robert Christenson, University of Maryland; SCPC Webinar 10/14/15

99th Percentile

Troponin is unique!

- One of few analytes where 99th % ile reference range is recommended

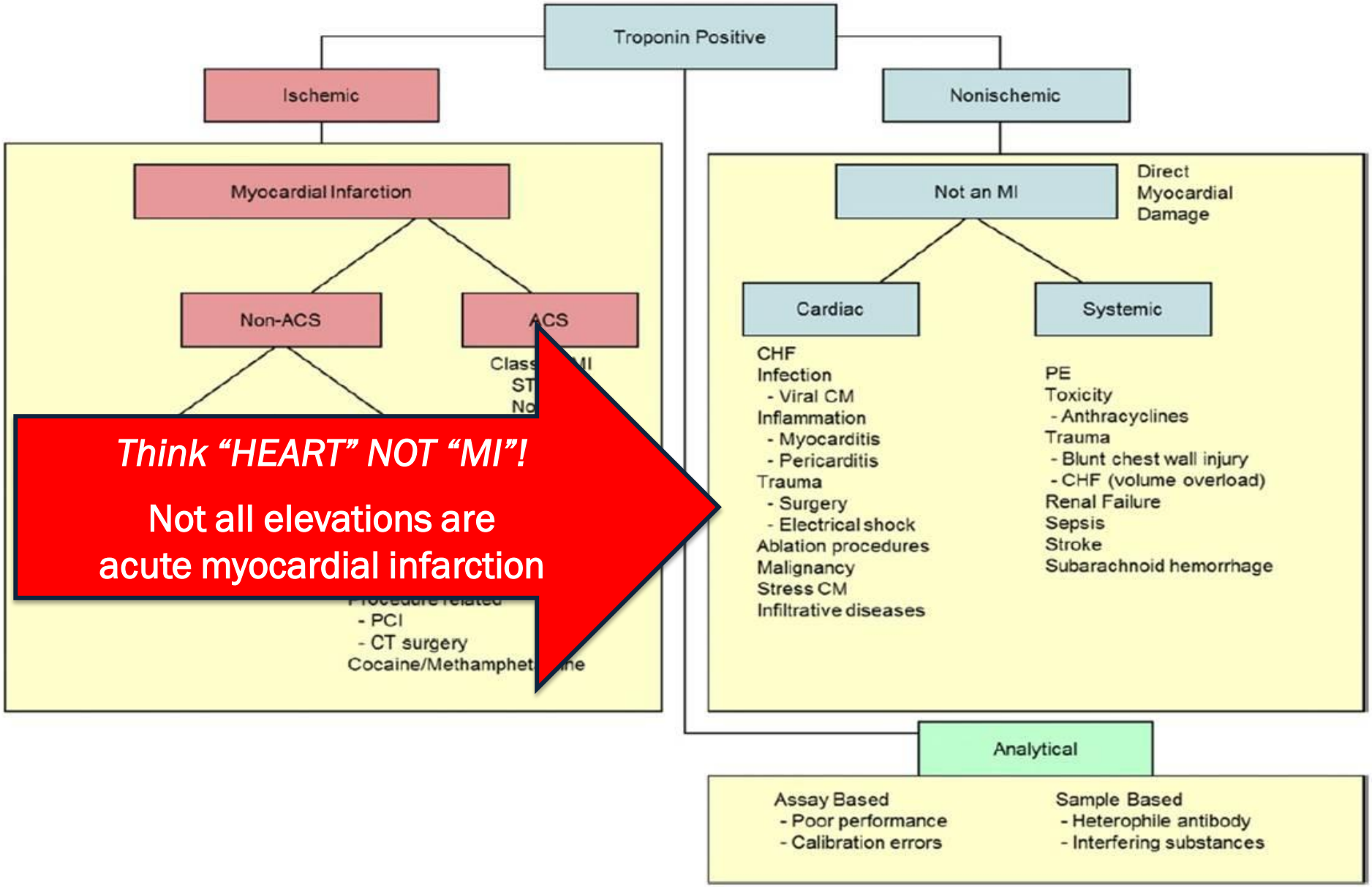
The reason:

- Goal of early prediction to pick up results early in the elevation cycle

Example:

In the case of **Analyzer X** the published 99th % URL is 0.07 ng/ml, meaning that when 100 "*normal*" pts. were tested 99 of the results fell between 0 and 0.07.

- Results outside that range would then be considered "positive"; rise and fall assessment required



ACCF 2012 Expert Consensus Document on Practical Clinical Considerations in the Interpretation of Troponin Elevations. (2012). Newby LK, Journal of the American College of Cardiology, 60 (23), 2012.

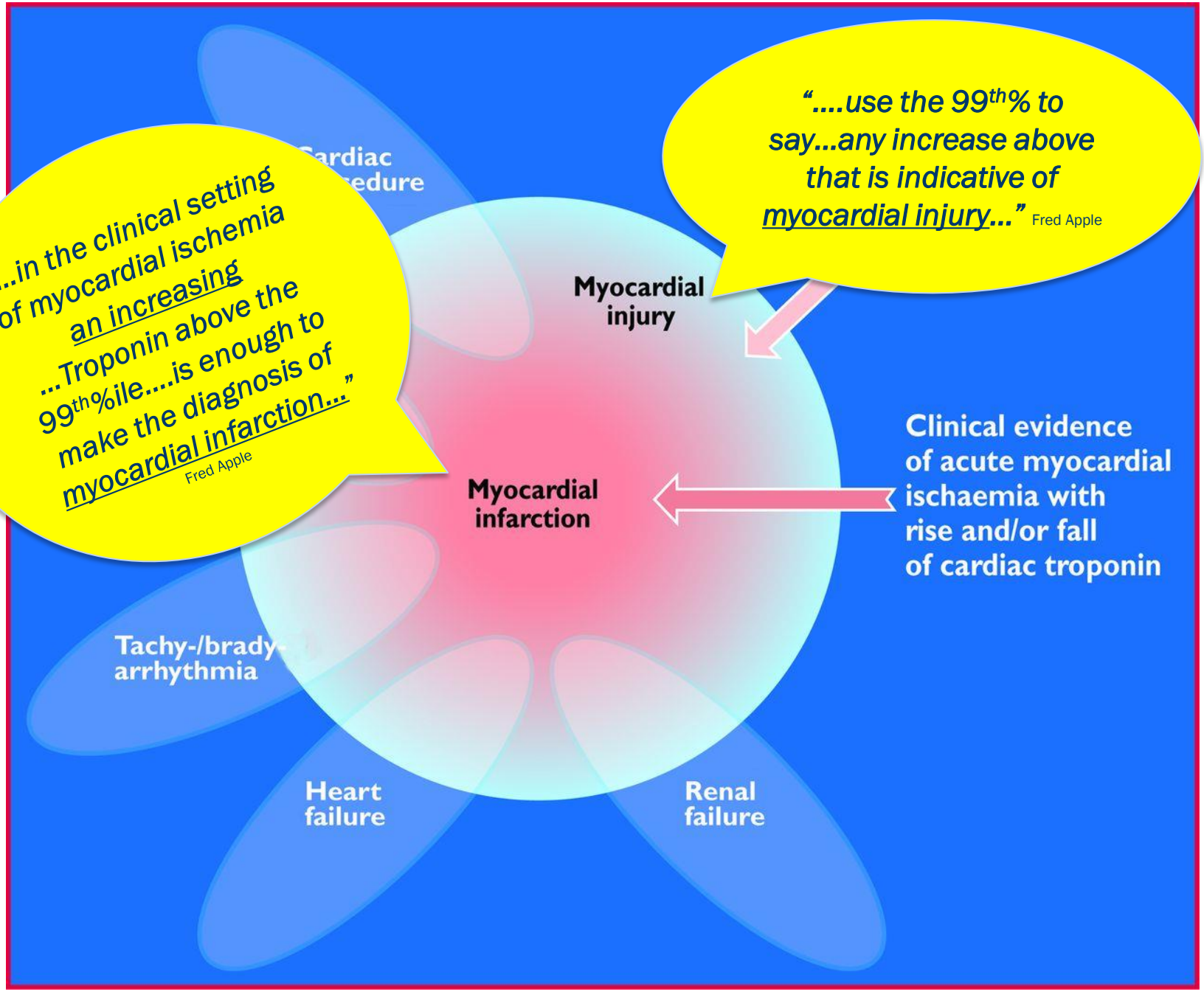
Understanding the Definition of MI

Dr. Fred Apple:

Currently, the guidelines are predicated on the 99th percentile of cardiac troponin, and we use that 99th percentile first to say, any increase above that is indicative of myocardial injury, number one.

Secondly, we use that cutoff to say that in the clinical setting of myocardial ischemia and an increasing cardiac troponin above the 99th percentile, those two criteria are enough to make the call of a diagnosis of myocardial infarction.

Clinical Chemistry PODCAST – May 2009 with Dr. Fred Apple –Professor of Laboratory Medicine in the Department of Laboratory Medicine and Pathology at the University of Minnesota and Medical Director of Clinical Laboratories and the Clinical Chemistry and Toxicology Laboratories at Hennepin County Medical Center

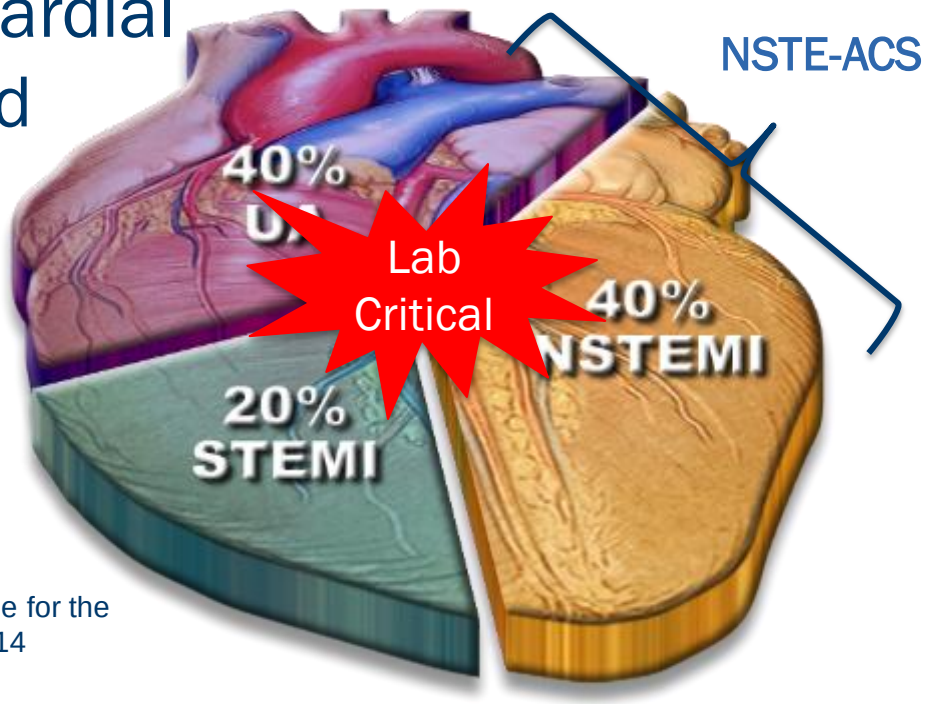


Thygesen K et al. Circulation 2012;126:2020-2035

NSTE-ACS 2014 Guidelines

"Non–ST-Elevation Acute Coronary Syndromes (NSTE-ACS)"

Emphasizes the continuum between Unstable Angina (UA) and Non-ST Elevation Myocardial Infarction (NSTEMI)…UA and NSTEMI can be indistinguishable and …considered together…



Amsterdam, E., et al, 2014 AHA_ACC Guideline for the Mgmt of Pts with NSTEMI ACS, Circulation 2014

NSTE-ACS 2014 Guidelines

- **Full revision** of the 2007 ACCF/AHA CPG for the management of patients with UA and NSTEMI and the 2012 focused update

- Supports the **3rd Universal Definition of MI** for Troponin and Serial Testing

2014 AHA/ACC NSTE-ACS Guidelines:
0, and 3 – 6 hours

Universal Definition of MI:
0, 3, 6 hours

1. Amsterdam, E., et al, 2014 AHA_ACC Guideline for the Mgmt of Pts with NSTEMI ACS, Circulation 2014
2. Thygesen K, Alpert JS, Jaffe AS, et al. Third universal definition of myocardial infarction. J Am Coll Cardiol. 2012;60(16):1581- 1598

NSTE-ACS 2014 Guidelines

Class I

- Cardiac- …oponin I or T when a contemporary assay is used) levels should b… …sentation and 3 to 6 hours after symptom onset in all patients … …ymptoms consistent with ACS to identify a rising and/or falling p… …dence: A)*

- Additior… …hould be obtained beyond 6 hours after symptom onset in p… …erial examination when electrocardiographic cha… …tion confer an intermediate or high index of suspicion for AC…

- If the time o… …nset is ambiguous, the time of presentation should be considered the … …f onset for assessing troponin values. *(Level of Evidence: A)*

Standing orders/Cardiac panel should no longer include:

CK-MB
MYO
Total CK

Class III: No Benefit

- With contemporary troponin assays, creatinine kinase myocardial isoenzyme (CK-MB) and myoglobin are not useful for diagnosis of ACS. *(Level of Evidence: A)*

Amsterdam, E., et al, 2014 AHA_ACC Guideline for the Mgmt of Pts with NSTEMI ACS, Circulation 2014.

2012 MI Definition: Follow-up Article

Clinical implications of the Third Universal Definition of Myocardial Infarction

White HD, Thygesen K, Alpert JS et al
Heart 2013;00:1–9. doi:10.1136/heartjnl-2012-302976

Summary:

- Comparative update from previous 2000 and 2007 Universal Definitions to the 2012 Third Universal Definition of MI
- Overview of the recommendations by category with a focus on clinical implications and practice considerations

"The new MI definition has important changes, which have been achieved by international consensus. It is hoped that they new definition will be embraced worldwide and be used to improve patient care."

2012 MI Definition: Follow-up Article

How to Use High-Sensitivity Cardiac Troponins in Acute Cardiac Care
Kristian Thygesen et al
European Heart Journal doi:10.1093/eurheart/ehs154 PDF online 2012

Summary Regarding Use of hsCardiac Troponin in Clinical Routine:

- Use 99th%ile concentration
- Serial testing…a minimum change of >20% in follow-up testing is required
- Blood sampling …admission and 3 h later…repeated 6 h after admission in patients of whom the 3 h values are unchanged but…clinical suspicion of AMI is still high.
- Other markers, such as myoglobin or creatine kinase MB no longer needed

2014: Follow-up Article

Cardiac Troponin Serial Ordering Recommendations: For Today and Tomorrow
Sara Love, PhD and Fred Apple, PhD
Clinical Lab News, May 2014, vol 40, no. 5

Summary:

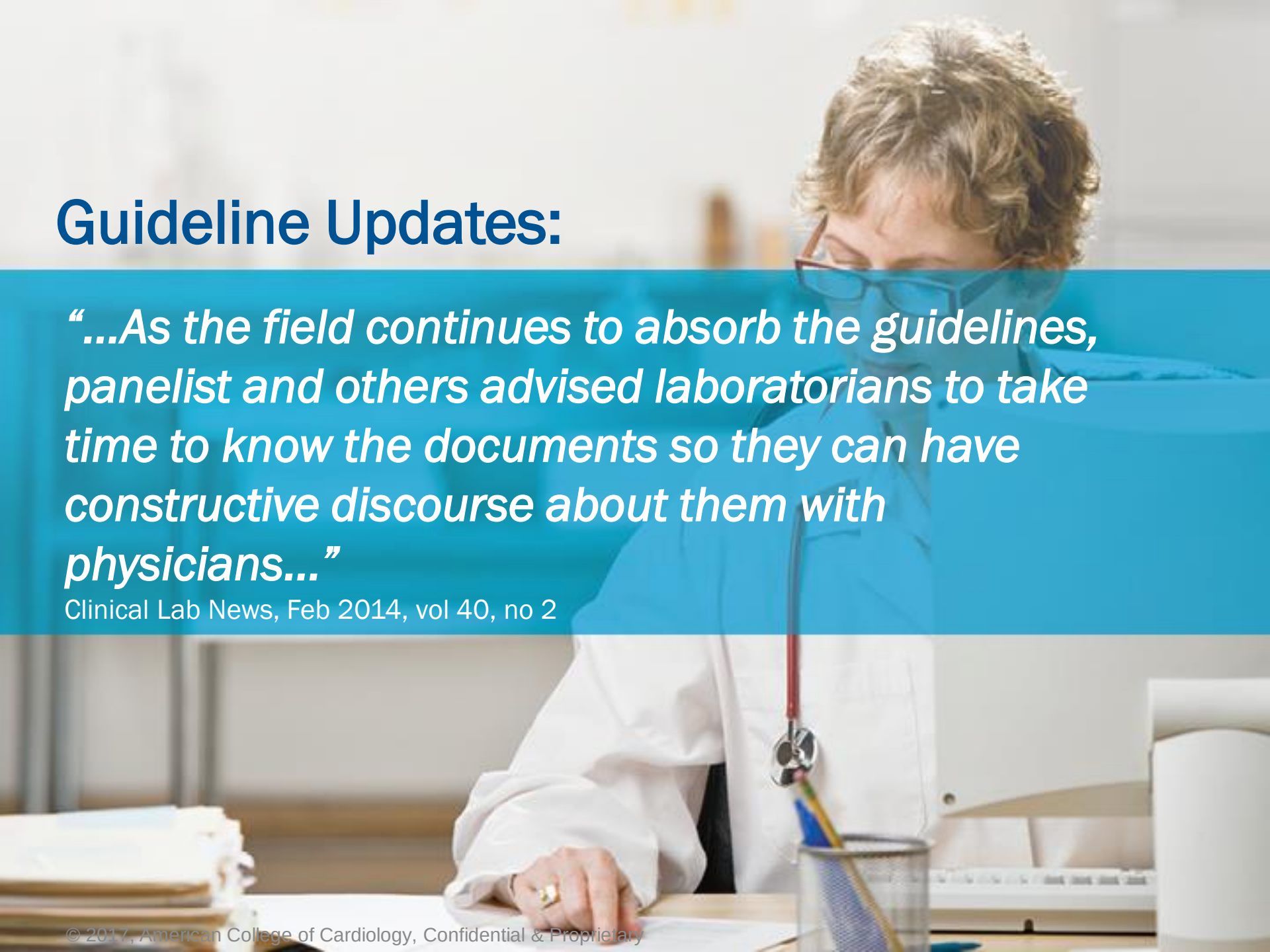
- Implementation practices by facility addressing updated 2012 MI definition

"....*serial cTn ordering is a critical component of acute MI diagnosis readily understood in terms of timing, frequency and duration of cTn measurements*..."

Guideline Updates:

"...As the field continues to absorb the guidelines, panelist and others advised laboratorians to take time to know the documents so they can have constructive discourse about them with physicians..."

Clinical Lab News, Feb 2014, vol 40, no 2



Survey Results (For discussion purposes only)

Are you using the 99th %ile for Troponin?

(n ~ 100)

Yes	49%
No	11%
Not sure	40%

Lab invited to Quality Improvement Meetings?

(n ~ 100)

Yes	40%
No	40%
Not sure	19%

Protocols and Reperfusion Strategy

- Assist laboratorians to understand role in facility reperfusion strategy
- Laboratorians should present Process Improvement (PI) projects relevant to guideline changes.
- Laboratorians should be familiar with the protocols and diagnostic capabilities to address acute cardiac events, to include:
  - Cath lab
  - Primary PCI versus non-primary PCI
  - Thrombolytics
  - Transfer and Receiving protocols
  - Registry Requirements
  - Accreditation Requirements

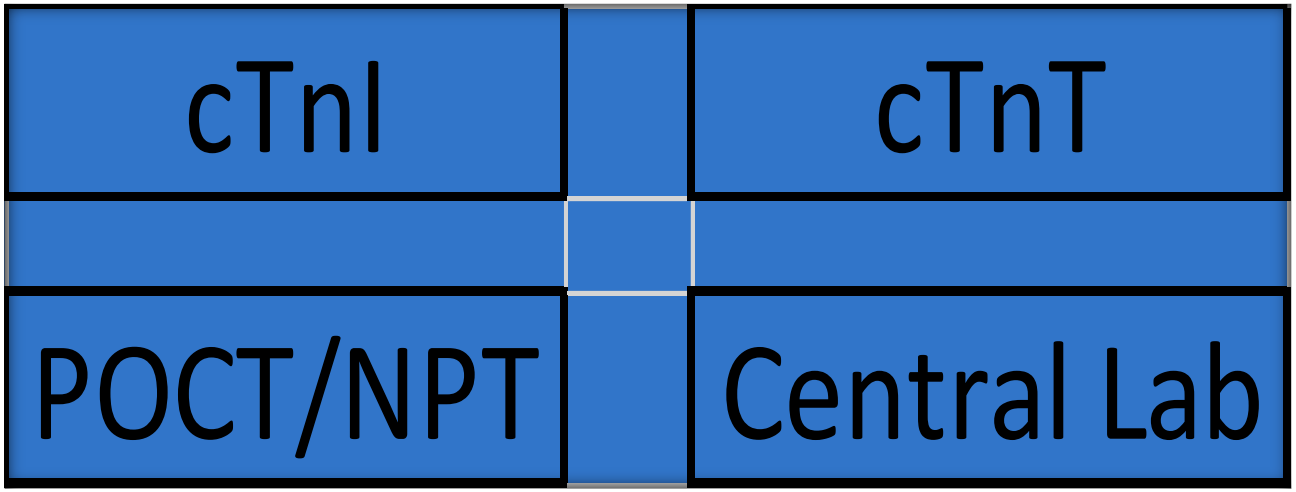
Understanding the Differences

Not interchangeable

- Troponin T (cTnT) and Troponin I (cTnI)
- cTnI and cTnI

No single reference standard in laboratory medicine for cardiac troponin I assays

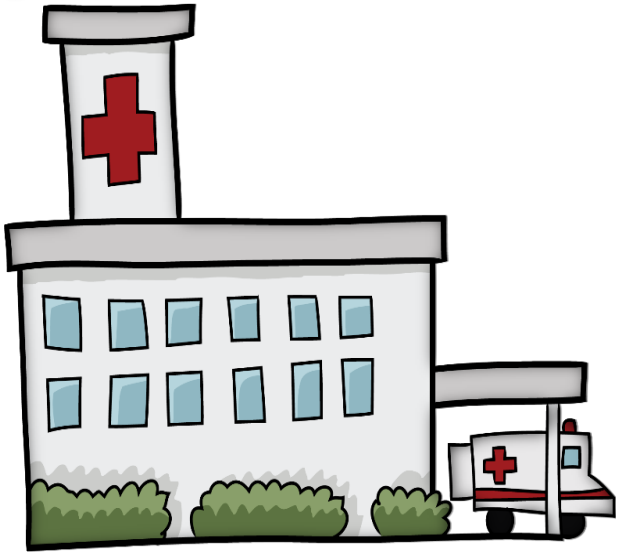
- POC and NPT and Central Lab



Understanding the Differences

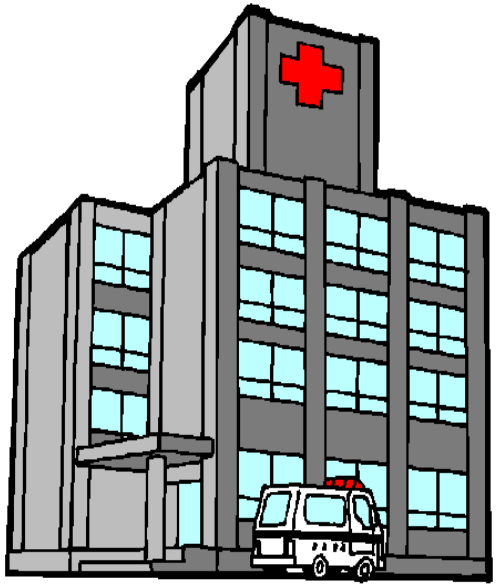
Troponin results from one facility to the next are not interchangeable.

Troponin
Type X*



Transfer Facility

Troponin
Type Y*



Receiving Facility

* Unless pre-determined to be the same assay and analyzer – typically within a system

Understanding the Differences

Troponin results within the facility require comparison studies and protocols

POC/NPT

Central Lab

IFCC Example

The International Federation of Clinical Chemistry (IFCC)

Supporting documentation on all assays specifications

Last update: Nov 2014

Website:
http://www.ifcc.org

Commercially available assays - Company/ platform(s)/ assay	LoB [a] (µg/L)	LoD [b] (µg/L)	99th % (µg/L)	%CV at 99th %	10 % CV (µg/L)
Abbott AxSYM ADV	0.02		0.04	14.0	0.16
Abbott Architect	<0.01		0.028	14.0	0.032
Abbott Architect *STAT* hs-cTnI [e]	0.0007 - 0.0013	0.0011 - 0.0019	0.0262 M: 0.0342 F: 0.0156	4.0 M: 3.5 F: 5.3	0.0047
Abbott i-STAT	0.02		0.08	16.5	0.10
Alere Triage SOB	0.05		NAD	NA	NA
Alere Triage Cardio 3	0.002	0.01	0.02	17.0	0.04
Beckman Coulter Access Accu	0.01		0.04	14.0	0.06
bioMerieux Vidas Ultra	<0.01	<0.01	0.01	27.7	0.11
Mitsubishi PATHFAST cTnI [e]		0.001	0.020	5.2	0.0031
Mitsubishi PATHFAST cTnI-II [f]	0.002	0.008	0.029	5.0	0.014
Ortho VITROS Troponin I ES	0.007	0.012	0.034	10.0	0.034
Radiometer AQT90 FLEX TnI		0.0095	0.023	17.7	0.039
Radiometer AQT90 FLEX TnT		0.0080	0.017	15.2	0.026
Response Biomedical RAMP	0.03		0.1	20.0	0.21
Roche Cardiac Reader cTnT	0.03		NAD	NA	NA
Roche cobas h 232 TnT	0.05		NAD	NA	NA
Roche E 2010 /cobas e 411 / E 170 / cobas e 601 / 602 TnT (4th gen)	0.01		NAD	NA	0.03
Roche E 2010/cobas e 411 / E 170 / cobas e 601 / 602 hs-TnT		0.005	0.014	10.0	0.013
Roche E 2010/cobas e 411 / Roche E 170/cobas e 601 / 602 cTnI		0.16	0.16 [c]	NA	0.3
Siemens ADVIA Centaur® TnI-Ultra™	0.006		0.04	8.8	0.03
Siemens Dimension® EXL™ TNI	0.010	0.017	0.056	10.0	0.05
Siemens Dimension® RxL CTNI	0.04 [d]		0.07	15 - 22	0.14
Siemens Dimension VISTA® CTNI	0.015		0.045	10.0	0.04
Siemens IMMULITE® 1000 Turbo [e]	0.15		0.30	14	0.59
Siemens IMMULITE® 1000 [e]	0.1		0.19	11	0.22
Siemens IMMULITE® 2000 XPi [e]	0.2		0.29	10.3	0.32
Siemens IMMULITE® 1000 Turbo [f]	0.15		NA	NA	0.64
Siemens Stratus® CS cTnI	0.03 [d]		0.07	10.0	0.06
Tosoh ST AIA-PACK	0.06		0.06 [c]	8.5	NA

"Next Generation" Troponin: First in USA

March 2017:

The Food and Drug Administration (FDA) granted 510 (k) clearance to Roche for its Elecsys Troponin T (TnT) Gen 5 Stat:

- FDA term to be used: *Next Generation vs. high-sensitivity*
- Test characteristics: <10% CV at the 99th%-ile
- Serial testing is still required however TAT will be faster

Clinical Lab News, March 2017, page 22

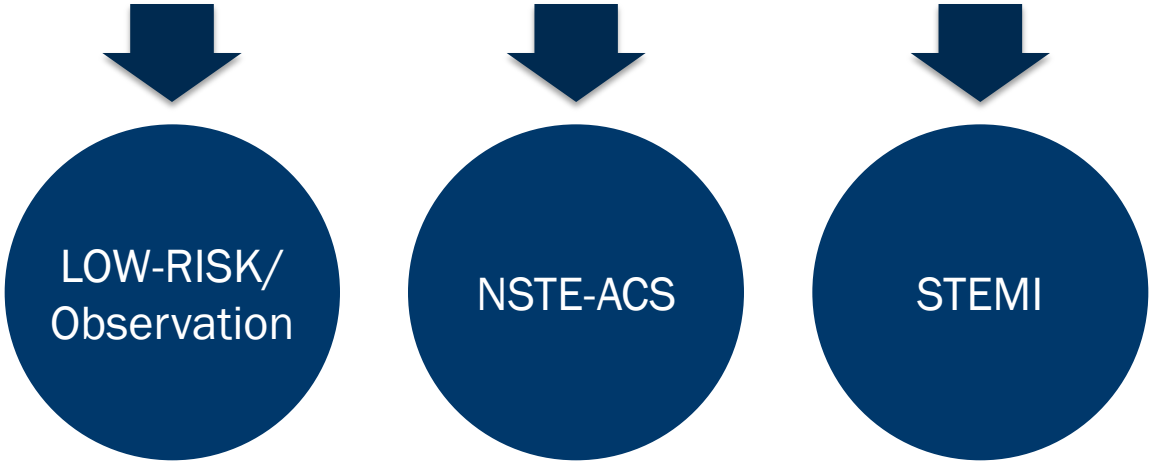
CPC: Patient Population Focus

Dual Challenge with Managing Chest Pain Patient Populations

Vague Symptomology

Combining 'Rule Out' Process with 'Diagnosis' Process
(treat as ACS until proven otherwise)

RISK STRATIFICATION IS THE KEY



CPC: Risk Stratification Model

Emergent Risk Assessment Must Include:

1. Symptomology Evaluation
2. ECG Completed and Read within 10 Minutes
3. Troponin: Turn Around Time (TAT)*
4. Risk Scoring Mechanism: ex. TIMI, GRACE, or other form founded in science

1. Facility Defined Evidence-Based Risk Stratification Model
2. Consistently Utilized and Documented by Facility's Providers
   (order-set, flowcharts, patient's chart)

*Turn-around time requirements are explained in the appropriate accreditation tools

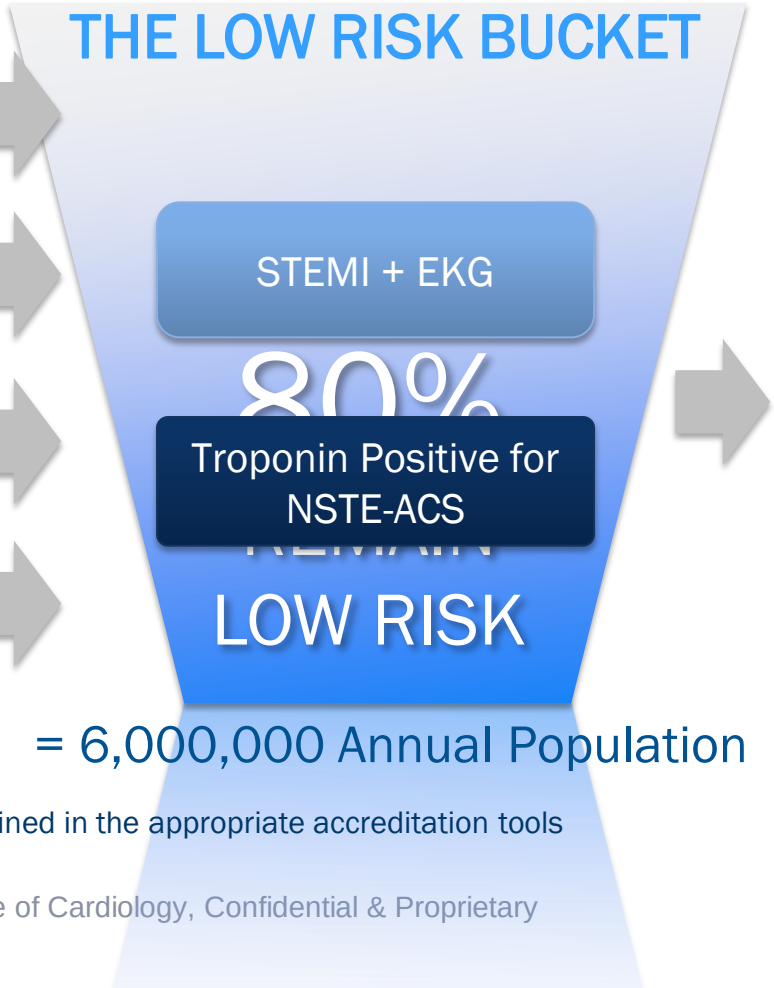
Risk Stratification: LOW-RISK

Emergent Risk Assessment Must Include:

Entry into the Bucket

- Chief Complaint Suggestive of ACS
- EKG Read in <10 Minutes
- Troponin Resulted* in <1 hour
- Facility Defined Risk Score

THE BUCKET

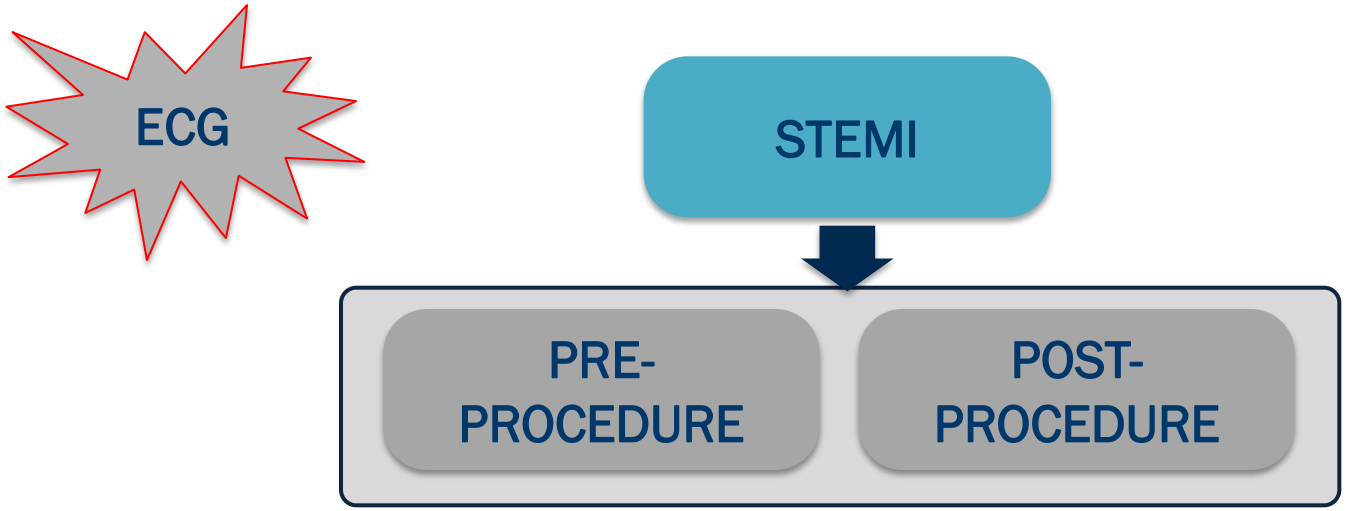


= 6,000,000 Annual Population

Removal from the Bucket

*Turn-around time requirements are explained in the appropriate accreditation tools

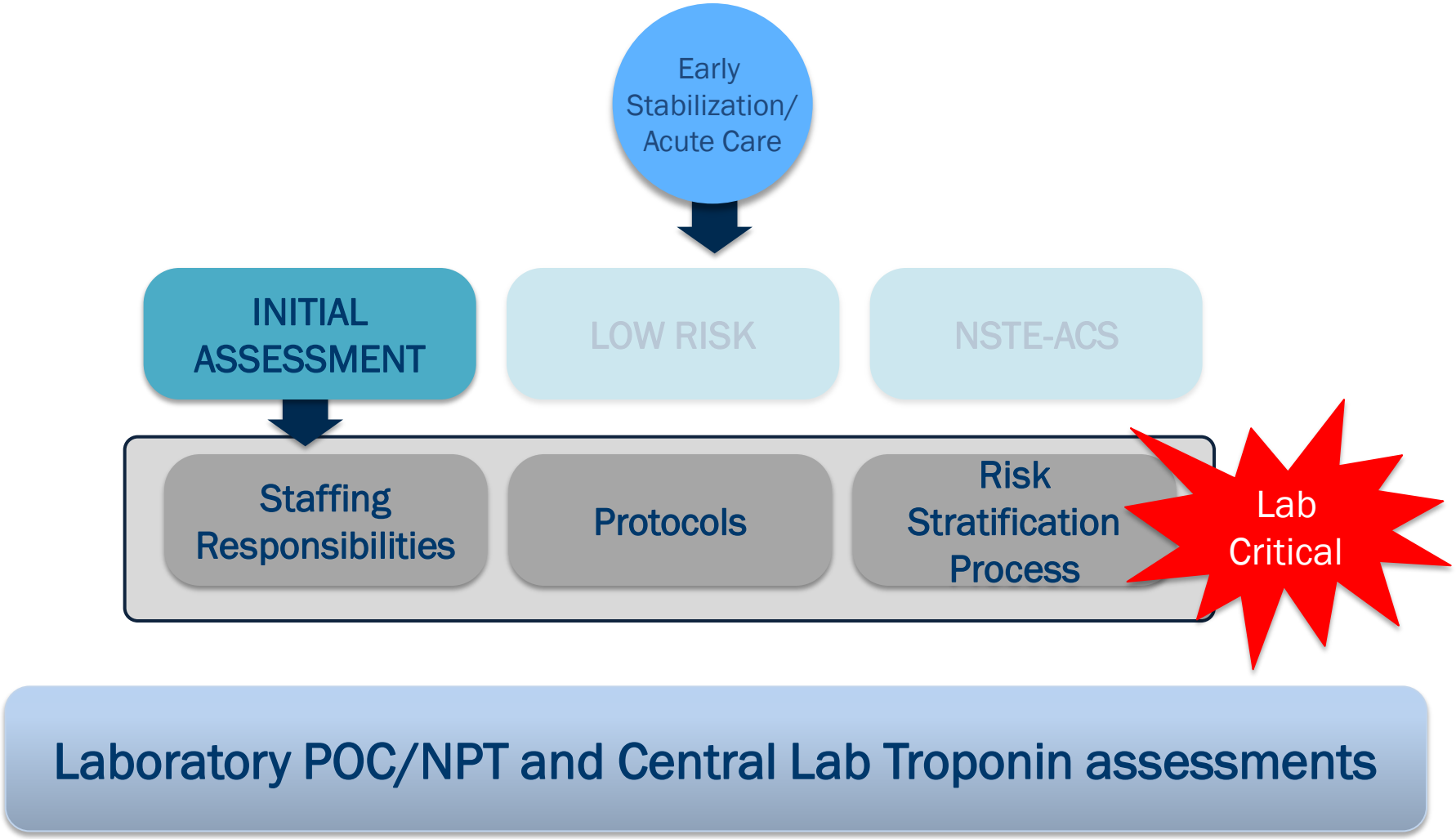
Facility Considerations



ED ECG for STEMI determination

Troponin determinations for the in-patient utilizing Central Lab, per facility protocols and assay type

CPC Framework



MI and Serial Strategy

Clinical Lab News, May 2014:

Implementation practices by facility addressing updated 2012 MI definition and the use of the 99th percentile and serial strategies

"....serial cTn ordering is a critical component of acute MI diagnosis readily understood in terms of timing, frequency and duration of cTn measurements..."

Cardiac Troponin Serial Ordering Recommendations: For Today and Tomorrow Sara Love, PhD and Fred Apple, PhD *Clinical Lab News, May 2014, vol 40, no. 5*

Understanding the Differences

Troponin assay protocols:

Protocols must be implemented for serial strategy assessments if using POC in ED and/or Dedicated Observation area versus Central Lab for in-patient

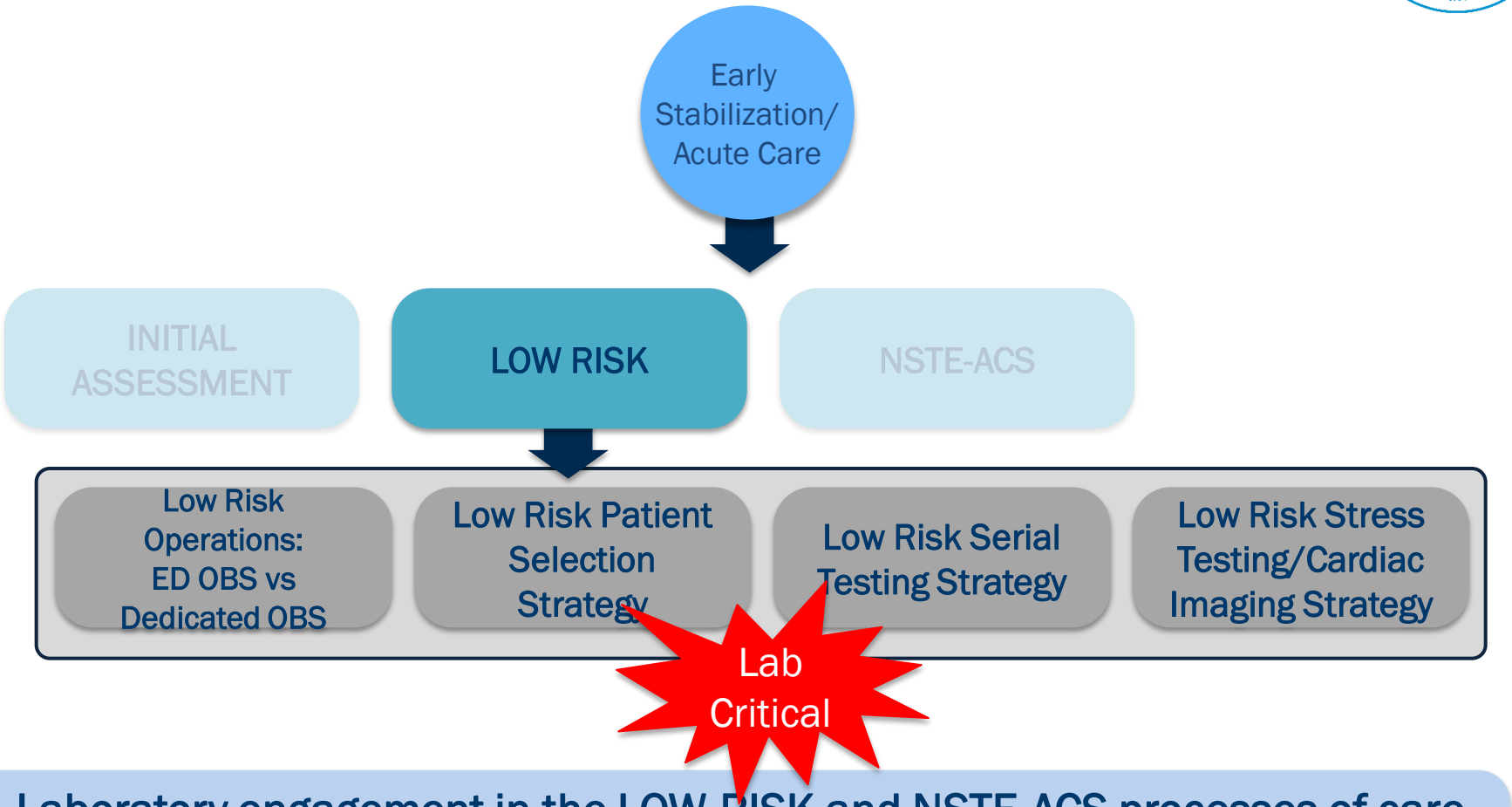
For Example:

A policy directive to hold blood from the patient's original blood-draw in the main/central lab:

- For re-base-lining
- To be comparable to subsequent determinations, once the patient is admitted to the hospital

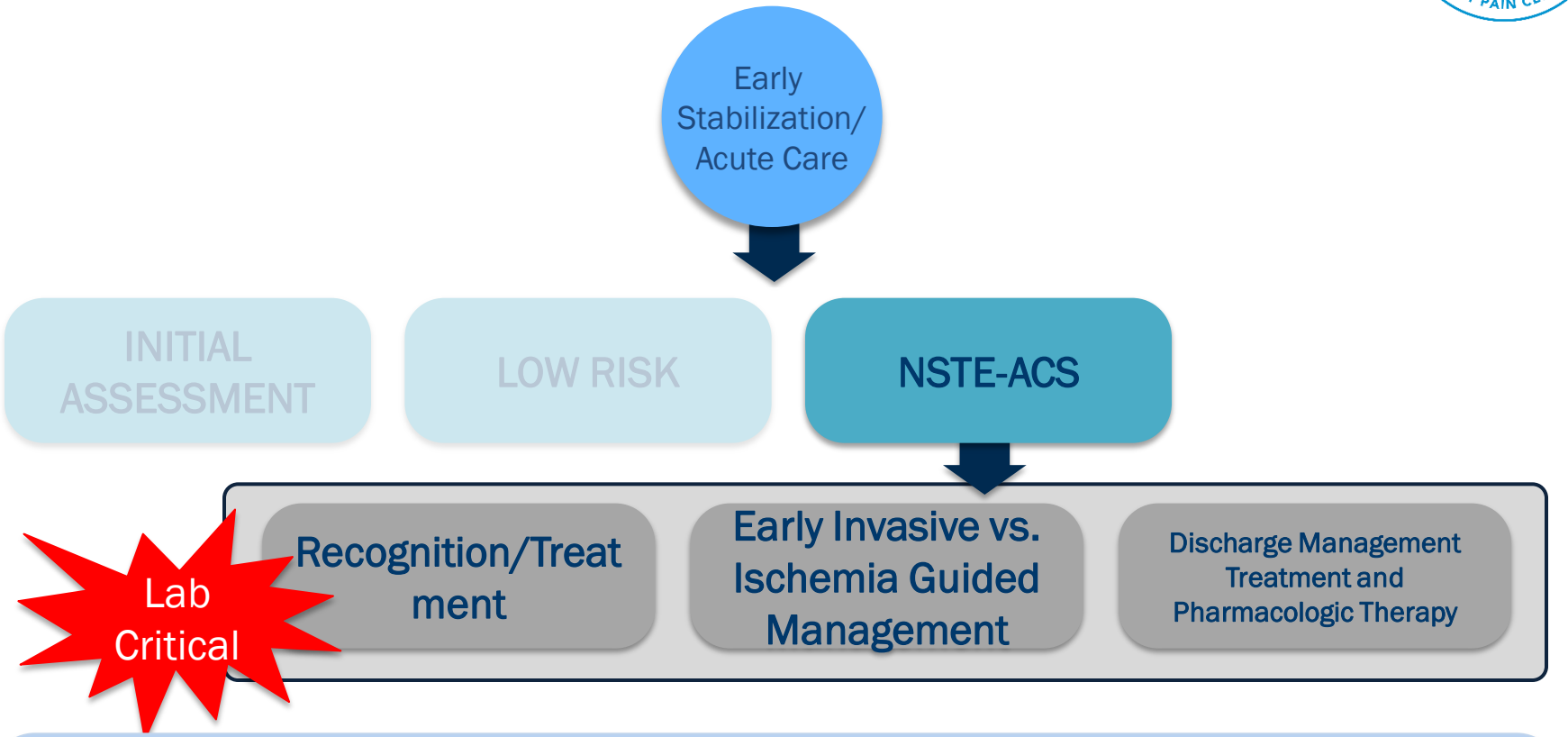
Adapted from: Lexington Medical Center Laboratory Bulletin and ACC Accreditation Troponin Brochure

CPC Framework



Laboratory engagement in the LOW-RISK and NSTE-ACS processes of care for serial Troponin strategies is vital in multiple areas to include the entire ACS continuum for ED, Observation and In-Patient

CPC Framework



Laboratory engagement in Risk Stratification strategies will be assessed to include adherence to the guidelines for standardization in timing, use of 99th%ile; eliminating outdated markers and "*grey-zone*"; providing interpretive results

Accelerated Diagnostic Protocols

Per Amsterdam et al in a Circulation 2010 article:

"Testing of Low Risk Patients Presenting to the ED with Chest Pain"

"...current studies have confirmed that contemporary troponin assays can identify the majority of MI's within 3 hours of ED arrival..."

Serial Strategy Assessment

Key Term:
"Standardized throughout the facility…"
transitioning process between ED and inpatient

Facilities may use a 0-6-12 strategy however it will most likely be listed as an "*opportunity*" for review and consideration to accelerate the diagnostic protocol, per the updated guideline recommendations, and impact on length-of-stay (LOS)

EC4.M1d7	Policies, protocols or orders for Troponin testing demonstrating the facility serial strategy. Facilities cannot use a serial strategy that is q8x3 as this is no longer the recommendation in the guidelines. The serial strategy must be standardized as demonstrated on the order-sets and flowcharts. Also refer to EC4M4a2.
	Timing between serial troponins are standardized throughout the facility *(Examples of timing strategy may include: 0, 2, 6 - 0, 3, 6 - 0, 3, etc. Duration of serial strategy may also be as short as three 3 hours using sensitive troponins, or troponin deltas if provocative cardiac testing or imaging takes place)*

CPC Troponin Assessments

For both CENTRAL LAB and POC/NPT Troponin

- Manufacturer
- Analyzer
- 99th Percentile
- CV at 99th%
- Review use of outdated assays
- Troponin Turn-Around-Time (TAT) % Door-to-Result – 60 minutes

- Reviewing the ***Interpretive Comments test results*** **print out**
  - Assess guideline adherence
- **IFCC**
- ***Instructions for Use (IFU)***
  - Ensuring facilities are no longer using or referencing outdated WHO criteria from IFU

The infamous "Grey Zone" of Troponin Testing

AMERICAN COLLEGE of CARDIOLOGY

Troponin History

- Early = CKMB
- **1999:** Troponin – poor assay precision created 2+ cut-points

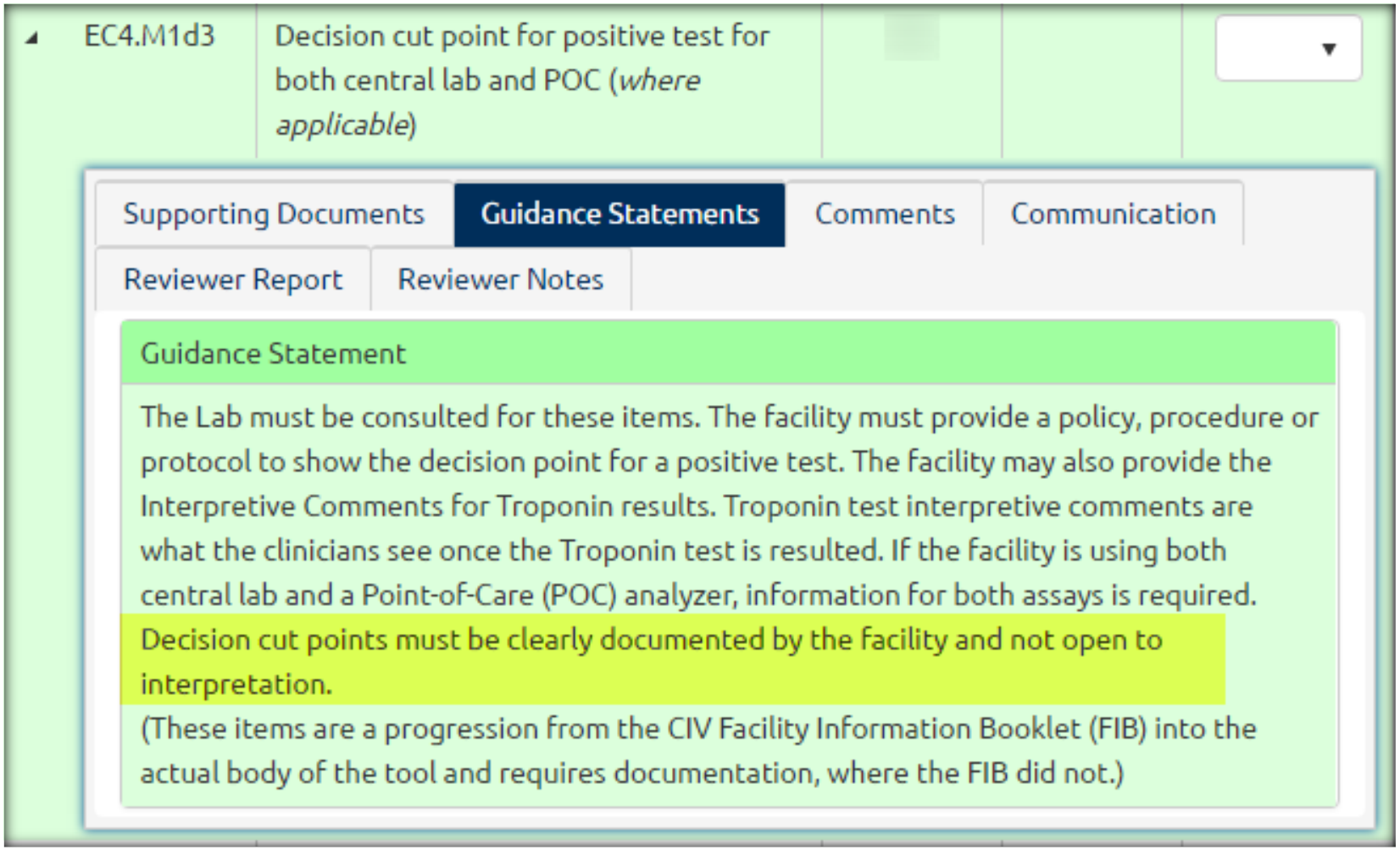
The history of the grey zone was born!

"That set the stage for using whatever cutoff you want, and the field has never recovered from it." Jaffee et. Al. Clinical Chemistry 2008

- **2005:** Intro to 99%ile and CV </= 10%
- **2007:** Lab guidelines first attempt - cTn standardized
- **2012:** 3rd Universal Definition of MI

Excerpt from internet presentation n.d. "Cardiac Markers: Why all the Confusion?" by R. Heitsman, Radiometer, National Accounts Manager

CPC Guidance Language



Interpretive Comments Assessment

- **TROPONIN T (TnT) 0.01 – 0.05** mg/L

  Indicates minimal myocardial damage which with the appropriate clinical and ECG findings may be of prognostic significance in patients with ACS. However levels within this range may also be due to non-ACS causes *e.g. pulmonary embolus, heart failure, CRF, severe sepsis etc.*

  In ACS TnT starts to rise at 3-4h and reaches maximum sensitivity at 12-18h post symptoms and can remain elevated for up to 7-8 days. For exclusion of ACS levels should not be taken before 12h post symptoms.

- **TnT >0.05** mg/L would support a diagnosis of AMI

Using the 99th% ile for decision point? Need more information
(see IFCC or other document)

Using a "Grey Zone"? No, there is a negative and a positive

Interpretive Comments Assessment

TROPONIN I

- <0.04 No evidence of myocardial damage provided sample is at least 12h post symptoms (event).
- 0.04 – 0.48 Suggest minor myocardial damage provided at least 12h post event
- >0.49 Indicates major myocardial damage

- Using the 99th% ile for decision point? Need more information (see IFCC or other document)
- Using a "Grey Zone"? YES

Interpretive Comments Assessment

TROPONIN I

- <0.04 : Troponin appears normal or minor myocardial damage or other cause
- >0.04 : Consistent with Myocardial Infarction

This information is based on the recommendations of the **2012 Third Universal Definition of Myocardial Infarction** for Troponin to be at least one value above the 99th percentile upper reference limit.

- Using the 99th% ile for decision point? Probably (see IFCC or other document) – also cite the source (may see website links or PDF links)
- Using a "Grey Zone"? No, there is a negative and a positive

Changing Perspectives of Turn-Around-Time (TAT) Tracking: Accreditation requirements

Cardiac Biomarker Requirements

- Measuring TAT is and has been a guideline driven recommendation for many years
- No previous TAT requirements from any organization until…
  - 2012: CMS OP 16 requiring compliance for “Door-to-Result in 60 minutes”
    - initiated and then revoked
    - not reinstated to date
- ACC Accreditation Services (formerly SCPC) requirement started in 2012 and will continue
    - CPC track and demonstrate improvements

Accreditation: Process Requirements

"To the extent that laboratory test TAT is only one factor impacting

ED length of stay and patient outcomes,

it is unlikely that POCT alone, in the absence of an interdepartmental approach to ED operations,

will produce measurable improvements in outcomes."

Lewandrowski, E. et al. Cardiac Marker Testing As Part Of An Emergency Department Point-of-Care Satellite Laboratory In A Large Academic Medical Center. Practical Issues Concerning Implementation. Point of Care. The Journal of Near Patient testing & Technology. 08/2002 Vol. 1, No.3, pp. 145-154.

Turn-around-Time (TAT) Defined?

- Physicians “brain to brain”
- Laboratorians “receipt to result”
- Nurses “door or draw to result”
- Phlebotomist “collect to receipt in lab”

TAT Tracking: Healthcare Implications

July 2014 Clinical Laboratory News: Volume 40, Number 7

What Does Turnaround Time Say About Your Lab?

Key Quotes:

- " Every laboratorian knows that their colleagues in medicine see TAT as something almost as important as the quality of test results themselves."

- " In fact, surveys have found that 80% of labs get complaints about TAT."

TAT Tracking: Healthcare Implications

Studies and research support the following:

- Assessing the “whole process” (i.e.: arrival)
- Standardizing the definitions of turn-around-time (TAT)
- Assessing TAT with patient outcomes and length of stay

TAT Tracking: Healthcare Implications

Study by Ervasti et al, *Clin Chem Lab Med 2008*

Proposed new concepts for TAT in the diagnostic process:

As a "Patient-oriented" view or the "whole process"

- **Diagnostic TAT** – arrival to reporting of results
  - outcomes median 122 min
- **Clinical TAT** – arrival to order
- **Laboratory TAT** – order to report/resulted

TAT Tracking: Healthcare Implications

In *Academic Emergency Medicine, 2010:17,* Hwang et al noted:

"Guidelines do not exist delineating times frames for when a troponin test should optimally be resulted in association with improved patient outcomes."

" Prolonged laboratory TAT may delay recognition of conditions in the acutely ill , potentially affecting clinician decision-making and the initiation of timely treatment."

- Outcomes median 107 minutes; "ordered to resulted"

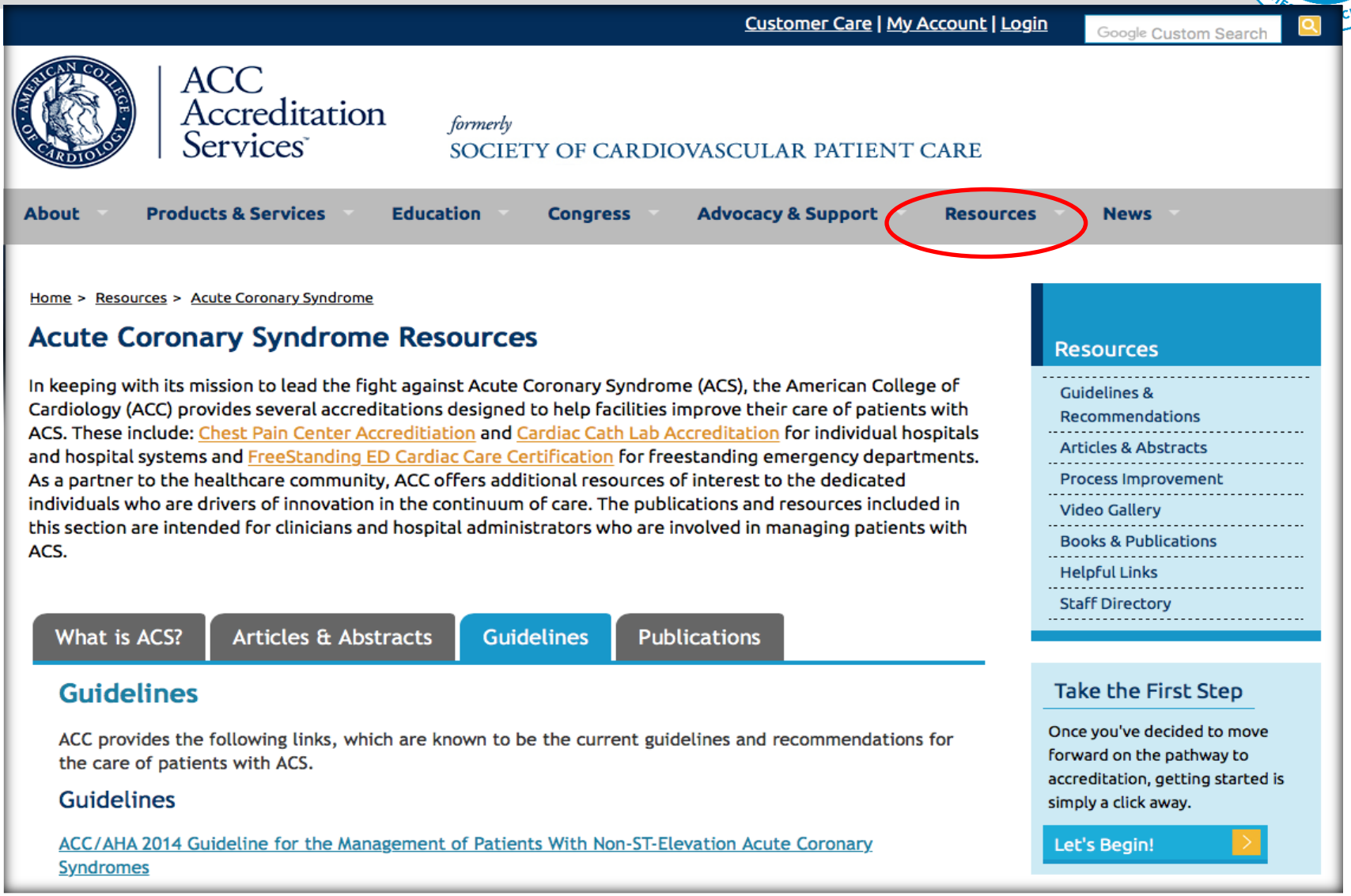
TAT Assessed

- **Know the starting point:**
  - Door vs. Order
- **Know the goal time for each phase:**
  - Door to Result = 60 minutes *(Accreditation Requirement)*
  - Order to Result = 60 minutes
  - Received to Result = 30 minutes (or less)
- **Know the compliance goal :**
  - Door to Result = 60 minutes (Accreditation Requirement) **/ 75%**
  - Order to Result = 60 minutes **/ 90%**

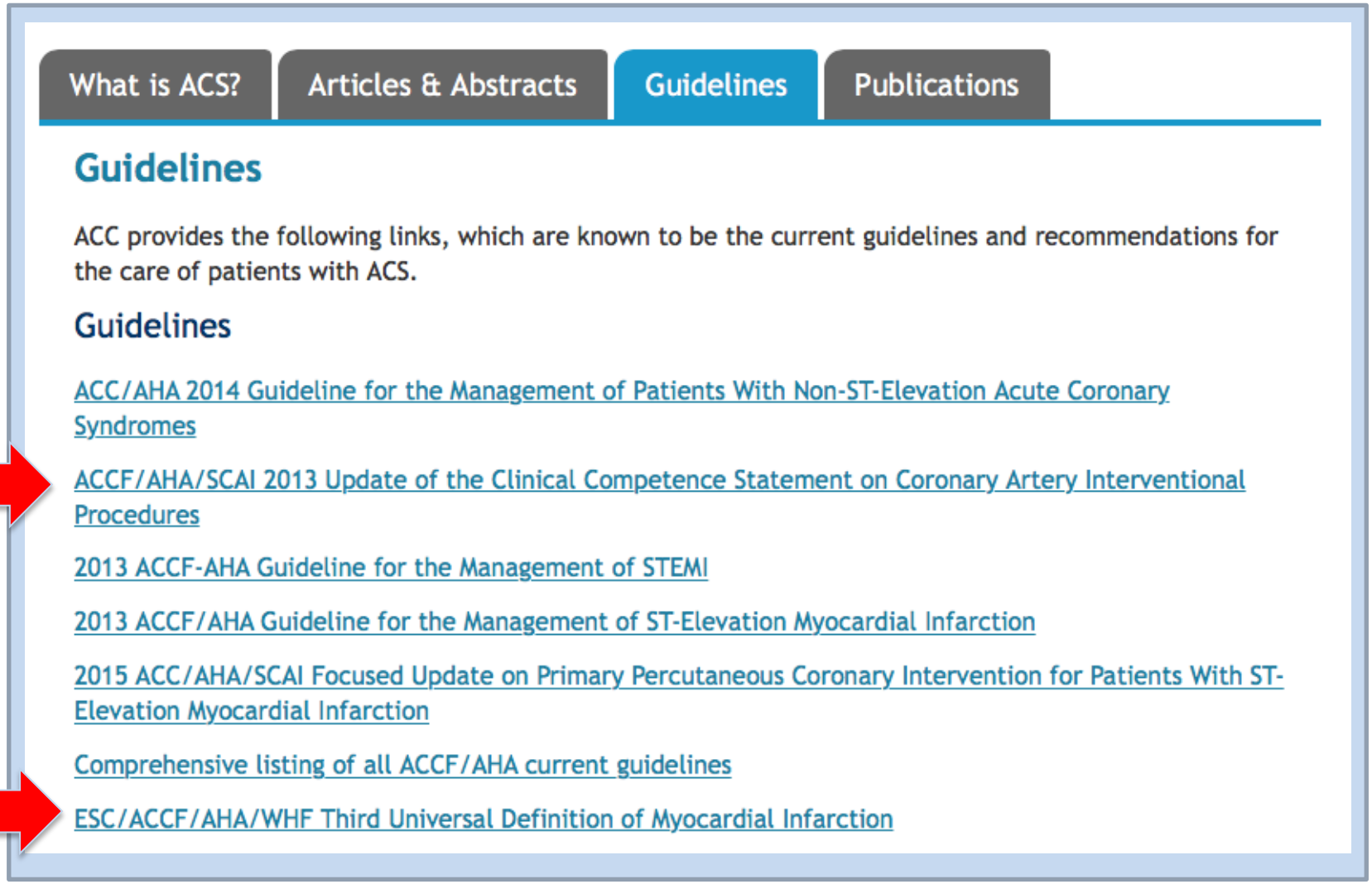
Time is muscle – think HEART!

OLD	NEW
Door to ECG = 10 minutes	Door to ECG READ within 10 minutes
Door to Reperfusion = 90 minutes	Door to Reperfusion "*as soon as possible*"
	First Medical Contact (FMC) to Reperfusion Less than 90 minutes
TRANSFER: Door in - Door out = 30 minutes	Door in - Door Ready = 25 minutes
Door to Thrombolytics = 30 minutes	*Same consideration; low utilization*
Lab received to results = 60 minutes	Door to Troponin Results in 60 minutes F*acility sets % compliance – recommend setting at 75%*
Order/Collect to results = 60 minutes	Order/Collect to results: % compliance = 90%
<u>NEW CONCEPTS: GOLDEN HOUR for the HEART</u>	
STEMI is a heart trauma: think 60 minutes from "door"	
NEW GOAL: Door to Reperfusion in 60 minutes (60%)	
Troponin decision: think 60 minutes from "door"	

Resources: accreditation.acc.org



Resources



What is ACS? | Articles & Abstracts | Guidelines | Publications

Guidelines

ACC provides the following links, which are known to be the current guidelines and recommendations for the care of patients with ACS.

Guidelines

ACC/AHA 2014 Guideline for the Management of Patients With Non-ST-Elevation Acute Coronary Syndromes

ACCF/AHA/SCAI 2013 Update of the Clinical Competence Statement on Coronary Artery Interventional Procedures

2013 ACCF-AHA Guideline for the Management of STEMI

2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction

2015 ACC/AHA/SCAI Focused Update on Primary Percutaneous Coronary Intervention for Patients With ST-Elevation Myocardial Infarction

Comprehensive listing of all ACCF/AHA current guidelines

ESC/ACCF/AHA/WHF Third Universal Definition of Myocardial Infarction

Resources: www.acc.org

Science tells us what we can do
Guidelines tell us what we should do

Accreditation is the roadmap to implement the "should do"

Registries measure performance on the "should do"

Quality Initiatives & Education are the levers to improvement

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Thank you!

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