

Protocol Title: Chest Pain	
Effective Date: 8/26/2015	Version: 1.0 (Revised 6/29/2015) Version 1.1 (Revised 8/26/2015)
Approval By: CCC Clinical Delivery Steering Group	Planned Review Date: 8/2016

1 Purpose & Objective

This protocol provides evidence-based care recommendations in the screening and treatment of adult patients with chest pain in the primary care setting. The chest pain protocol seeks to improve the effectiveness of evaluation of adult patients with the chief complaint of chest pain. The chest pain protocol should provide primary care physicians and cardiologists with a guide that is cost effective and evidenced based.

2 Scope of Protocol

2.1 Target Population

This protocol was derived from clinical guidelines for individuals in the CCC population diagnosed with chest pain syndrome **18 years of age or older**.

2.2 Target Users

This protocol is developed for use in primary care settings. Family physicians, internists, primary care physician assistants and nurse practitioners as well as cardiologists should use this protocol.

2.3 Excluded Topics

This protocol does not address the clinical management of adult patients with suspected life threatening conditions such as acute coronary syndrome, myocardial infarction (STEMI and non STEMI), pulmonary embolism and aortic dissection, and major blunt or penetrating trauma to the chest.

2.4 Related Guidelines

Agency for Healthcare Research and Quality, National Guideline Clearinghouse. (2010).

Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin (Guideline Summary NGC-7890). Retrieved from <http://www.guideline.gov/content.aspx?id=16392&search=chest+pain+of+recent+onset>

American College of Cardiology Foundation/American Heart Association Task Force on

Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventative Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. (2012). 2012

ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. *Journal of the American College of Cardiology*, 60(24), e44-e164. doi:10.1016/j.jacc.2012.07.013

American College of Cardiology Foundation Appropriate Use Criteria Task Force,

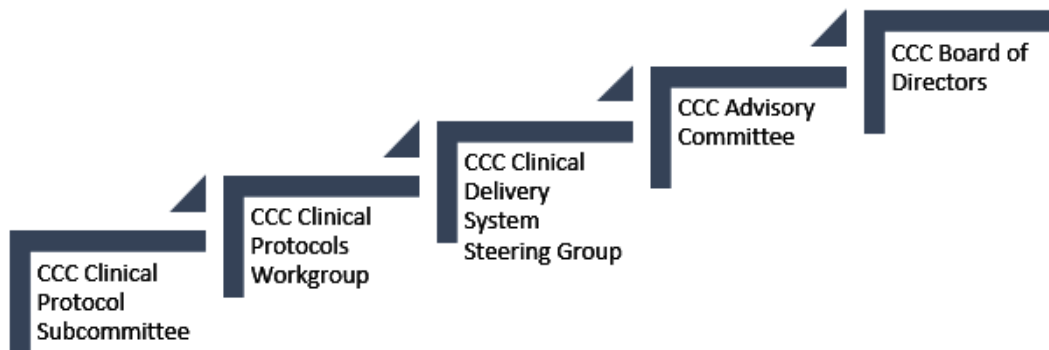
American Heart Association, American Society of Echocardiography, American

Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic Surgeons. (2014).

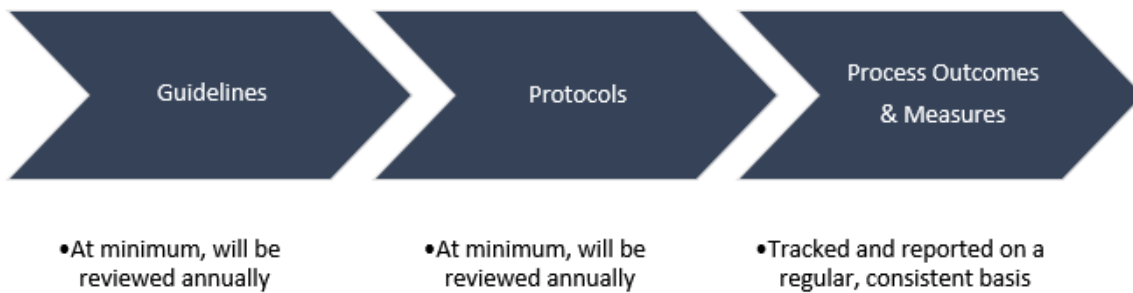
ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate criteria for the detection and risk assessment of stable ischemic heart disease. *Journal of the American College of Cardiology*, 63(4), 380-406. doi:10.1016/j.jacc.2013.11.009

3 Protocol Development & Approval Process

Approval Process



Review Process



This protocol was adapted from the National Institute for Health and Clinical Excellence Chest Pain Pathway. Led by a cardiologist specializing in Chest Pain, a group of clinical staff met and converged on the items in this document via a Rapid Design Session. In this session, a group extracted evidence-based elements to adequately care for the CCC population impacted by Chest Pain. The above depiction describes the approval and subsequent review process for this protocol.

Group Name	Approval Date
CCC Chest Pain Protocol Subcommittee	6/29/2015
CCC Clinical Protocols Workgroup	6/29/2015
CCC Clinical Delivery System Steering Group	8/26/2015
CCC Advisory Committee	
CCC Board of Directors	

4 Screening Criteria & Risk Factors

4.1 Assessing Risk:

The Duke Chest Pain Score. The Zunis Foundation/Zunis Web Site Map is located at: <http://www.zunis.org>. Once on this Web Site Page:

1. Click **The Cardiology Library** link at the bottom of the list
2. Under The Cardiology Library @ Zunis page, under the alphabetical list, look under *The Cardiology Calculators* and click the link for **Duke Chest Pain –CAD Risk Calculator (the Duke Treadmill Test –CAD Predictor is the next following link)**. This will take you directly to the calculator.

Another alternative is the Chest Pain Syndrome Admission app (accessible via the app store). An ECG will be performed. History will be obtained that describes the characteristics of the chest pain (location, duration and provocation). Traditional risk factors for coronary artery disease will be assessed: diabetes mellitus, hypertension, cigarette smoking and dyslipidemia.

5 Screening Tests:

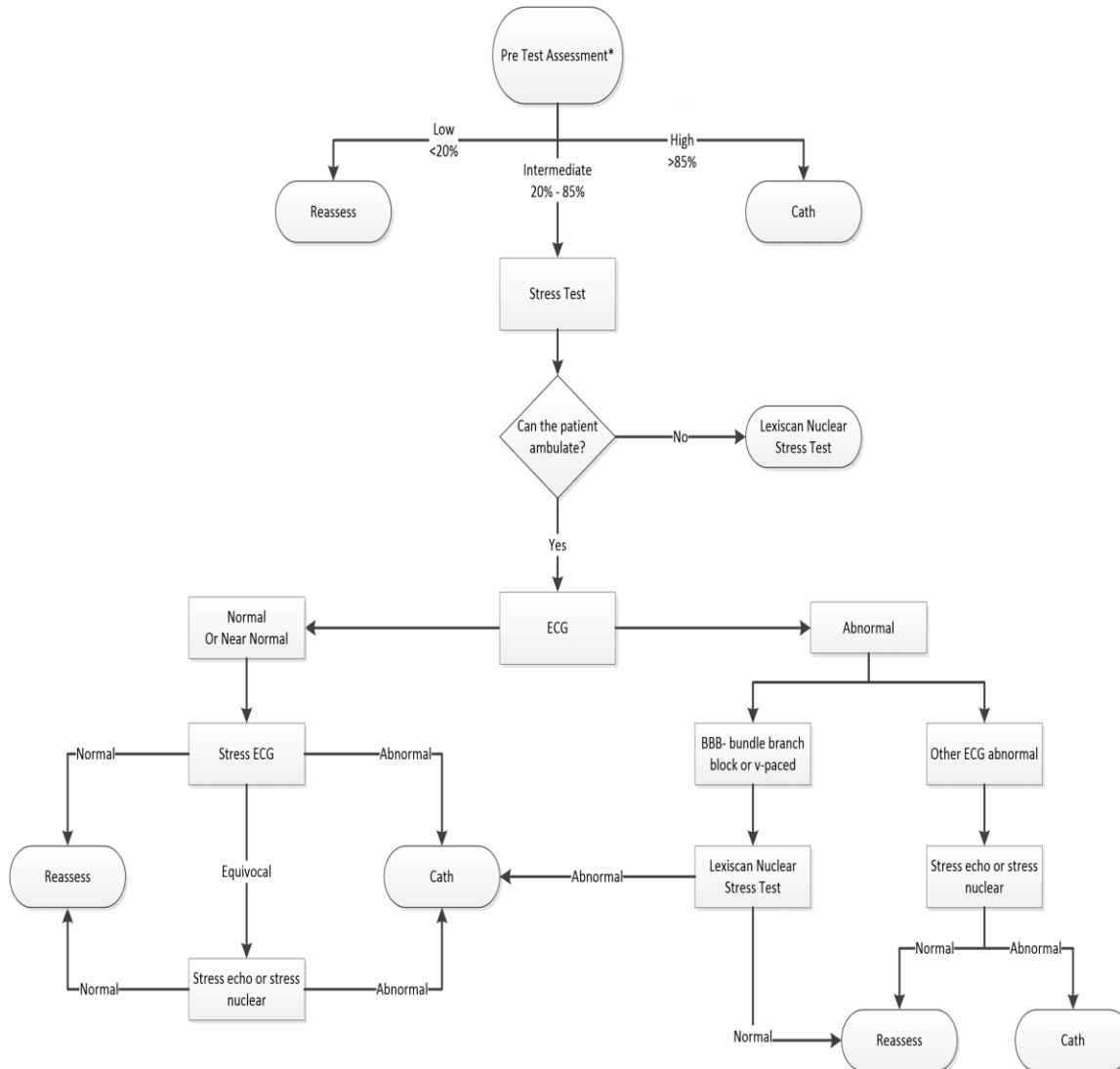
- a. Duke chest pain score
- b. Duke Treadmill Score
- c. Stress ECG (treadmill test)
- d. Stress echo
- e. Lexiscan nuclear

6 Criteria for Diagnosis of chest pain

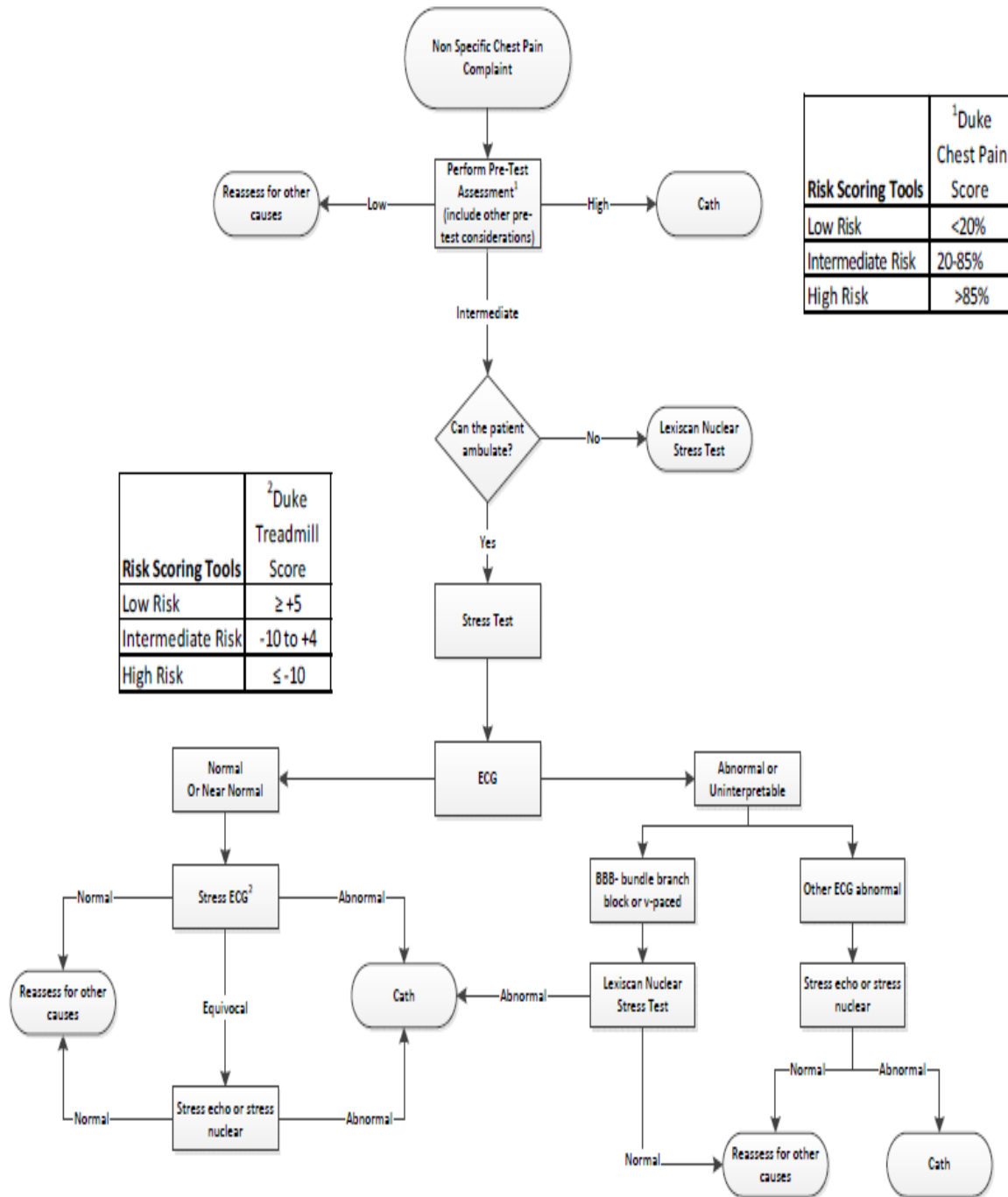
- a. History
- b. Duke chest pain score
- c. Duke Treadmill score
- d. Stress test results
See appendix

7 Medication Treatment, Management & Referrals

CHEST PAIN CARE PATHWAY



CHEST PAIN IN LOW-RISK PATIENTS CARE PATHWAY



8 Protocol Development Team

Name	Affiliation
Mark Hernandez MD *Chief Medical Officer	Community Care Collaborative CCC & Seton Healthcare Family of Hospitals
George Rodgers MD *Clinical Champion	Seton
Richard Peavey MD	People's Community Clinic
Tracy Angelocci MD	Lone Star Circle of Care
Lisa Doggett MD	El Buen Samaritano
Curk McFall, MSN, RN	Community Care Collaborative
Veronica Buitron-Camacho MSN, RN	Community Care Collaborative

9 Chest Pain Protocol Metrics

Metric	Measure Description
1. Appropriate use of Chest Pain Protocol	Process Metric
2. Appropriate use of Duke Chest Pain Nomogram (Duke Clinical Score) (Appropriate referral for Exercise Stress Testing)	Process Metric
3. Appropriate use of Duke Treadmill Score Nomogram (Appropriate referral for Angiography)	Process Metric
4. Time to resolution of complain and/or diagnosis	Outcome Metric
5. Subsequent emergency department visits (unscheduled emergency visits)	Outcome Metric
6. Patient Satisfaction	Outcome Metric
7. Subsequent admission for STEMI or NSTEMI	Outcome Metric
8. Reduction in Lexiscan Nuclear Exam	Outcome Metric
9. Reduction in Emergency department visits	Outcome Metric
10. Primary care clinic referral to cardiologist	Outcome Metric
11. Percent of negative Caths	Outcome Metric

10 References

Agency for Healthcare Research and Quality, National Guideline Clearinghouse. (2010). Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin (Guideline Summary NGC-7890). Retrieved from <http://www.guideline.gov/content.aspx?id=16392&search=chest+pain+of+recent+onset>

American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventative Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. (2012). 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. *Journal of the American College of Cardiology*, 60(24), e44-e164. doi:10.1016/j.jacc.2012.07.013

American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic Surgeons. (2014). ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate criteria for the detection and risk assessment of stable ischemic heart disease. *Journal of the American College of Cardiology*, 63(4), 380-406. doi:10.1016/j.jacc.2013.11.009

Abbreviation

Term

ACS	Acute coronary syndrome
STEMI	ST elevation myocardial infarction
NSTEMI	Non ST elevation myocardial infarction
CATH	Cardiac Catheterization
ECG	Electrocardiogram
V-PACED	Ventricular Paced
MI	Myocardial Infarction
CHD	Coronary Heart Disease
LMS	Left Main Stem Coronary Artery

11 Glossary of Abbreviations

Duke Treadmill Score: Prediction of Coronary Heart Disease In A Patient with Chest Pain Undergoing A Treadmill Stress Test

Duke Clinical Score: Prediction of Coronary Heart Disease in a Patient with Chest Pain

NOTE: This score is not applicable if patient is known to have CHD

NOTE: This score is not applicable if patient is known to have CHD

Patient Details:	Enter Age & Gender
Age	55
Sex	Male
Classification of Chest Pain	Enter Chest Pain Features
Precipitated by exercise	No
Brief duration (2-15 min)	No
Relieved promptly by rest or NTG	No
Retrosternal	No
Radiating to jaw, neck or left arm	No
Absence of other cause	No
Chest Pain Categorized as:	None/Non-Anginal
Probability of significant CHD (ACCAHA Guidelines):	20%
Risk Factors:	Enter Chest Pain Features
Smoking (within past 5 years)	No
Total Cholesterol	193
Diabetes	No
Previous MI	No
ECG: Q Waves	No
ECG: ST changes at rest	No
Probability of significant CHD (Duke):	23%
(>75% stenosis of at least 1 major coronary artery)	
Exercise Test usually not indicated	

12 Appendix

- Duke Treadmill & Chest Pain Nomograms

Exercise Test Variables		
Exercise Time – In Minutes – Standard Bruce Protocol	6	Min
Maximum ST deviation – In mm – at 80 msec after the J-Point	0	mm (always a positive figure, no matter if positive or negative deviation)
Angina Score During Exercise	None	
Duke Treadmill Score	6	
Probability of Significant CHD	25%	Probability of >75% in at least one coronary artery
Probability of Severe CHD	20%	Probability of 3 vessel CHD or >75% LMS
5 year Mortality	17%	
Overall Risk Subcategory	Low Risk	
Angiography usually not indicated		

Designed by Dr. John Bayliss (1999-2002) v11

References:

- (1) Mark DB et al NEJM 1991;325:849-53 and Ann Intern Med 1987;106:793-800
 Study dataset n=2842 (ExECG within 6 weeks of Cor Angio)
 70% Male, median age 49yr (10-90% centiles 37-60)
 Training sample n=1422, Validation sample n=1420

- (2) Shaw LJ et al Circulation 1998;98:1622-30
 Study dataset n=2758 (ExECG within 6 weeks of Cor Angio)
 70% Male, median age 49yr, 30% prior MI, 47% typical angina, 61% had significant CHD at Angio
 Training sample n=2758, Validation sample n=467

ROC for predicting significant CHD = 0.76 for DTS, 0.91 for post-test DTS + Clinical score