

Chest Pain (CP) / Coronary Artery Disease (CAD) Order Set KNART

Order Set: L2 Conceptual Structure

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Preface

Table 1. Revision History

Date	Life Cycle Event
August 29, 2017	Pre-published

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
Bruce Bray, MD	Author	Professor, Cardiovascular Medicine, University of Utah School of Medicine; Staff Cardiologist, Salt Lake City VA Medical Center (VAMC)
Scott Wall, MD	Author	Assistant Professor, Cardiovascular Medicine, University of Utah; School of Medicine Staff Cardiologist, Electrophysiology, Salt Lake City VAMC
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Artifact Applicability

Table 3. Applicability Foci, Description and Codes

Focus	Description	Code System Name	Code System	Code	Code System Version	Value Set	Value Set Version
Clinical Focus	<p>The Cardiology chest pain (CP) and coronary artery disease (CAD) group of KNARTs are intended to assist primary care providers in the management of adult patients with stable chest pain (with or without known CAD); aid in determining when a cardiology consultation is appropriate; provide guidance for initial noninvasive diagnostic orders (stress testing) and provide a structured documentation template for the process. Stable patients with cardiac chest pain require risk stratification, office-based workup, initiation of disease-specific medications, and subspecialty referral to a cardiologist. This context excludes emergent patients (new/ongoing/unstable pattern CP). Included are those patients with stable CP with or without known CAD, to be considered for evaluation by cardiology.</p>	TBD	TBD	TBD			

Models

Table 4. Model References

Referenced Model	Description
urn:solor.io:anf-model:1.0	VA Analysis Normal Form Model

Chapter 1. Consults and Referrals

Section Prompt: Cardiology consult order

☐ Consider other consult modalities which might be available (e.g., e-consult or other rapidly iterative consult method. A simple consult is included here as the overarching clinical intent

☐ Order sentence: referral to cardiology to evaluate chest pain (routine) Order Detail: Priority = {routine}, Reason = {typical angina, atypical chest pain, progressive angina symptoms in a stable patient with known CAD, other}, Goal = { inputText } *Note: "othe"r will be addressed in the L3 form, where we will need to model a text input if the previous widget (Reason = "othe"r) then this text field is relevent Note (deferred to L3): The KAS standard does not provide a rule mechanism to do rule expressions involving reference models without some enhancement to the KNART spec. This would require a facility for inserting something like a conditional expression, as a parameter, into the referenced model Note: "goa"l will need to be prompted, but is a new order detail (free form).*

Chapter 2. Imaging and ECG

Electrocardiogram/Chest X-ray

<input type="checkbox"/> Section Prompt: Consider ordering prior to the cardiology consultation. Resting 12-lead electrocardiogram is required if it has not been obtained within the past two months.
<input type="checkbox"/> Order sentence: resting 12-lead electrocardiogram to evaluate chest pain (routine)
<input type="checkbox"/> Order sentence: x-ray chest to evaluate chest pain (routine)

Coronary CTA

<input type="checkbox"/> Section Prompt: Consider ordering prior to the cardiology consultation.
<input type="checkbox"/> Coronary Computed Tomography Angiogram (cCTA) chest to evaluate chest pain (routine)

Echocardiogram

<input type="checkbox"/> Section Prompt: Consider for patients with suspected pericarditis, myocarditis, hypertrophic cardiomyopathy, or pulmonary hypertension.
<input type="checkbox"/> Resting echocardiogram to evaluate chest pain (routine)

Chapter 3. Laboratory Tests

Section Prompt: Consider the following tests to be completed prior to the cardiology consultation.

<input type="checkbox"/> basic metabolic profile (routine)
<input type="checkbox"/> complete blood count (routine)
<input type="checkbox"/> fasting lipid profile (routine)
<input type="checkbox"/> thyroid function testing (routine)
<input type="checkbox"/> brain natriuretic peptide (routine)

Chapter 4. Cardiac Risk Stratification

Section Prompt: For stable patients, these orders may assist in cardiac risk stratification.

A link to the ACC/AHA clinical practice guideline for stress testing ([Gibbons et al., 2002]) should be made available to ordering providers: <http://circ.ahajournals.org/content/106/14/1883.long>.

Exercise Stress Testing

Section Prompt: Consider for patients with no known or prior coronary artery disease, low probability for coronary artery disease, ability to exercise, normal electrocardiogram, and heart rate > 60 beats per minute.

☐ exercise ECG (routine)

Stress Testing with Echocardiography

Section Prompt: Consider for patients with no known or prior coronary artery disease, low to intermediate probability for coronary artery disease, ability to exercise, and no evidence of significant regional wall motion abnormalities or conduction abnormalities (IVCD/bundle branch block or pacing) of 12-lead electrocardiogram.

☐ exercise echocardiography (routine)

Dobutamine Stress Testing with Myocardial Perfusion Imaging (MPI)

Section Prompt: Consider for patients with no known or prior coronary artery disease, intermediate probability for coronary artery disease, inability to exercise, and normal electrocardiogram.

☐ dobutamine stress myocardial perfusion imaging (routine)

Exercise Stress Testing with MPI

Section Prompt: Consider for patients with known or prior CAD, ability to exercise, and normal ST-T.

☐ exercise stress myocardial perfusion imaging (routine)

Vasodilator Stress Testing with MPI

Section Prompt: Consider for patients with known or prior CAD and abnormal electrocardiogram/PPM. This subsection should also be made available to the provider for patients with known or prior CAD, abnormal electrocardiogram, and history of prior myocardial infarction or regional wall motion abnormalities.

☐ regadenoson (Lexiscan) stress myocardial perfusion imaging (routine)

☐ adenosine stress testing myocardial perfusion imaging (routine)

☐ dipyridamole stress testing myocardial perfusion imaging (routine)

Dobutamine Stress Testing with Echocardiography or MPI

Section Prompt: Consider for patients with known or prior CAD, inability to exercise, normal electrocardiogram, and no prior myocardial infarction. Only one should be selected.

☐ dobutamine stress testing echocardiography (routine)

☐ dobutamine stress testing myocardial perfusion imaging (routine)

Coronary CT Angiogram

Section Prompt: Consider for patients without known coronary artery disease, low or intermediate probability for coronary artery disease, especially in presence of a history of prior inconclusive or discrepant diagnostic testing, recurrent symptoms or significant family history of CAD/multiple risk factors in young patients. Additional postprocessing (CT-FFR) or CTA stress perfusion may be ordered where available.

☐ coronary CT angiogram (routine)

Chapter 5. Medications

Section Prompt: Based upon clinical judgement, consider initiating a new order for one or more of the following medications prior to the cardiology consultation, if not otherwise contraindicated.

Antianginal Therapy

<input type="radio"/> metoprolol tartrate 25 mg tablet oral twice daily (routine)

<input type="radio"/> metoprolol tartrate 50 mg tablet oral twice daily (routine)

<input type="radio"/> amlodipine 5 mg tablet oral daily (routine)

Nitroglycerin

<input type="radio"/> nitroglycerin 0.4 mg tablet sub-lingual every 5 minutes as needed for chest pain; maximum 3 tablets (routine)

Antiplatelet Therapy

<input type="radio"/> aspirin 81 mg enteric coated tablet oral daily (routine)
--

Risk Factor Reduction

<input type="radio"/> atorvastatin 20 mg tablet oral daily (routine)
--

<input type="radio"/> atorvastatin 40 mg tablet oral daily (routine)
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<input type="radio"/> simvastatin 20 mg tablet oral daily (routine)

<input type="radio"/> simvastatin 40 mg tablet oral daily (routine)

<input type="radio"/> rosuvastatin 5 mg tablet oral daily (routine)

<input type="radio"/> rosuvastatin 10 mg tablet oral daily (routine)
--

<input type="radio"/> rosuvastatin 20 mg tablet oral daily (routine)
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Appendix A. References

This appendix contains the list of related resources and supporting documents used in creating this KNART.

List of References

Related Resources

[CCWP] *Cardiology: Chest Pain (CP) / Coronary Artery Disease (CAD) Clinical Content White Paper* (link [internal])

Supporting Evidence

[Framingham Heart Study] *Cardiovascular disease (10-year risk) [Internet].: Framingham Heart Study; cited 2017]. Available from: <https://www.framinghamheartstudy.org/risk-functions/cardiovascular-disease/10-year-risk.php>. (link [<https://www.framinghamheartstudy.org/risk-functions/cardiovascular-disease/10-year-risk.php>])*

[D'Agostino RB et al., 2008] *D'Agostino RB S, Vasan RS, Pencina MJ, Wolf PA, Cobain M, Massaro JM, et al. General cardiovascular risk profile for use in primary care: The framingham heart study. Circulation. 2008 February 12;117(6):743-53 (link [<http://circ.ahajournals.org/content/117/6/743.long>])*

[Fihn et al., 2015] *Fihn SD, Blankenship JC, Alexander KP, Bittl JA, Byrne JG, Fletcher BJ, et al. 2014 ACC/AHA/AATS/PCNA/SCAI/STS focused update of the guideline for the diagnosis and management of patients with stable ischemic heart disease: A report of the american college of cardiology/american heart association task force on practice guidelines, and the american association for thoracic surgery, preventive cardiovascular nurses association, society for cardiovascular angiography and interventions, and society of thoracic surgeons. J Thorac Cardiovasc Surg. 2015 March 01;149(3):5*

[Gibbons et al., 2002] *Gibbons RJ, Balady GJ, Bricker JT, Chaitman BR, Fletcher GF, Froelicher VF, et al. ACC/AHA 2002 guideline update for exercise testing: Summary article: A report of the american college of cardiology/american heart association task force on practice guidelines (committee to update the 1997 exercise testing guidelines). Circulation. 2002 October 01;106(14):1883-92.*

[NLM 2017a] *Label: ASPIRIN 81 MG- aspirin tablet, coated [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b4064039-2345-4227-b83d-54dc13a838d3>. (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b4064039-2345-4227-b83d-54dc13a838d3>])*

[NLM 2017b] *LABEL: CLOPIDOGREL- clopidogrel bisulfate tablet, film coated [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=edae8df1-caf9-ff72-1304-5ae8b355f8e7>. (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=edae8df1-caf9-ff72-1304-5ae8b355f8e7>])*

[NLM 2017c] *LABEL: LIPITOR- atorvastatin calcium tablet, film coated [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7fe85155-bc00-406b-b097-e8aece187a8a>. (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7fe85155-bc00-406b-b097-e8aece187a8a>])*

[NLM 2017d] *LABEL: METOPROLOL SUCCINATE EXTENDED-RELEASE - metoprolol succinate tablet, film coated, extended release [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/>*

- drugInfo.cfm?setid=2d948600-35d8-4490-983b-918bdce488c8*. (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=2d948600-35d8-4490-983b-918bdce488c8])
- [NLM 2017e] LABEL: NITROGLYCERIN- nitroglycerin tablet [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=67bf2a15-b115-47ac-ae28-ce2dafd6b5c9>. (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=67bf2a15-b115-47ac-ae28-ce2dafd6b5c9])
- [NLM 2017f] LABEL: NORVASC- amlodipine besylate tablet [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=abd6a2ca-40c2-485c-bc53-db1c652505ed>. (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=abd6a2ca-40c2-485c-bc53-db1c652505ed])
- [NLM 2017g] LABEL: SIMVASTATIN - simvastatin tablet [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5c1c694c-4b08-469e-b538-08e69df06146>. (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5c1c694c-4b08-469e-b538-08e69df06146])
- [Skinner et al., 2010] Skinner JS, Smeeth L, Kendall JM, Adams PC, Timmis A, Chest Pain Guideline Development Group. NICE guidance. chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin. *Heart*. 2010 June 01;96(12):974-8. (link [http://heart.bmj.com/content/96/12/974.long])