Post-Acute Coronary Syndrome (ACS): Secondary Prevention Pathway

Canadian Cardiovascular Society

The CCS Secondary Prevention Pathway presents evidence-based guideline recommendations to support a patient's journey from discharge to outpatient follow-up after ACS. The pathway indicates when care goals should be implemented and the most responsible clinician. Links are provided to helpful resources.

Objective 1. Develop a comprehensive care plan for short- and long-term follow-up and self-management

Standard	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	>1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
1. Cardiac rehabilitation	• Refer to a cardiac rehabilitation program and reinforce the benefits of the program[1]	• Follow-up with PCC or alternative provider at 2 weeks post discharge • Ensure cardiac rehabilitation referral is made and reinforce the importance of attending and completing the program	• Follow-up with PCC or alternative provider at least every 3 months for the first year • Encourage cardiac rehabilitation attendance and completion	✓	✓			
2. Plan early post-discharge follow-up for clinical assessment and medication optimization within 30 days	• Ensure follow-up with PCC or alternative provider within 2 weeks • Refer to outpatient cardiology/ internal medicine for intermediate and long-term follow-up • Arrange further investigations/ interventions as required (i.e. staged revascularization, further invasive or non-invasive testing)	• Ensure referral is made to cardiology/internal medicine for follow-up that is beyond 1 month after discharge	• Ensure patient has long-term cardiology/internal medicine follow-up • Make referral for further investigations/interventions that are required (i.e. staged revascularization, further invasive or non-invasive testing, heart function clinic, electrophysiology)	✓	✓			
3. Discuss with the patient when they should seek medical attention	• Inform the patient when to seek immediate care after discharge, including typical symptoms such as chest pain or shortness of breath, along with atypical symptoms such as nausea, abdominal pain, unexplained fatigue, and syncope			✓	✓	✓		

* Discharging physician, or cardiologist/internist at follow-up (also includes nurse practitioner working with a specialist)
** Primary care clinician (PCC) (family physician or nurse practitioner) or alternative clinician.
For patients without a PCC: Pathway care planning, interventions, and follow-up should be provided by an alternative clinician such as a cardiologist/internist **OR** hospital-based clinic (nurse practitioner, pharmacist or physician-led clinic), **OR** cardiac rehabilitation program. *Regional resources and center-specific practices will determine the approach.*

Objective 2. Conduct necessary medical investigations to identify risk factors and optimize management

Standard	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	>1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
1. Identify risk factors by screening for/optimizing management of: 1.1. Diabetes 1.2. Dyslipidemia 1.3. Hypertension	• Screen for, or assess current management of, diabetes with HbA1c[ii] (Resource A) • Assess/reassess recent LDL-C, HDL-C, triglycerides, non-HDL-C, and total cholesterol[ii] (Resource B) • Assess Lp(a) if not yet done[iii] • Assess blood pressure[iv]	• Ensure discharge standards complete	• If patient has diabetes, follow Diabetes Canada monitoring guidelines (Resource A) • Repeat lipid panel (fasting to assess triglycerides) at 1 month and then (non-fasting) every 1 month if lipid lowering therapy intensification is required to achieve recommended thresholds[iii] (Resource B) • Assess HbA1c at 3 months	✓	✓		✓	
2. Conduct comprehensive blood work	• Assess CBC, creatinine, electrolytes, and troponin levels	• Conduct repeat blood work as indicated (ex: monitoring after initiating ACEI)		✓	✓			
3. Assess LV function	• Assess LV function prior to discharge		• Reassess LV function at 3 months if reduced at discharge	✓				
4. Complete 12-lead ECG	• Assess 12-lead ECG prior to discharge		• Repeat 12-lead ECG	✓				

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Objective 3. Implement all appropriate and tolerated guideline-directed medical therapies

Standard	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	>1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
Guideline-directed initiation of the following medication classes: *Provider should include appropriate classes of tolerated medications (even at a low dose) for early optimization.*								
1. Antiplatelet therapy[v]	• Continue dual antiplatelet therapy using low dose ASA + P2Y12 inhibitor for at least 12 months and up to 3 years o *Note: Interventional cardiologist to decide on limited/extended duration* • Consider 'triple therapy' (ASA + P2Y12 inhibitor + oral anticoagulant) if there is an indication for anticoagulation (e.g., atrial fibrillation) • Consider limited duration of dual antiplatelet therapy if there are contraindications to significant bleeding concerns • Consider PPI therapy in those with high bleeding risk	• Confirm appropriate therapy and adequate duration of prescriptions • Discontinue ASA between 0 and 30 days post PCI if on triple therapy	• Confirm appropriate therapy and adequate duration of prescriptions • Discontinue P2Y12 inhibitor between 1 month and 6 months if there is an indication for anticoagulation	✓	✓		✓	
2. Lipid lowering therapy[iii] (Resource B)	• Start high intensity statin therapy or intensify pre-existing therapy with rosuvastatin 40mg or atorvastatin 80mg • Consider add-on therapy if already receiving maximally tolerated statin: o If LDL-C >1.8-2.2 mmol/L, ApoB >0.7 -0.8 g/L or non-HDL-C 2.4-2.9 consider ezetimibe +/- PCSK9 inhibitor o If LDL-C >2.2 mmol/L, ApoB>0.8 g/L or non-HDL-C >2.9 mmol/L consider PCSK9 inhibitor +/- ezetimibe o If triglygerides >1.5-5.6 mmol/L, consider icosapent ethyl 2000mg BID			✓	✓		✓	

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3. Standard post-ACS therapy a) RAAS inhibition b) Beta blockers if indicated c) Nitrate therapy d) Vaccinations	• Ensure lifelong RAAS inhibition in all patients • Prescribe beta blockers for most patients for at least one year o Recommended for LV dysfunction, stable angina, heart failure or tachyarrhythmia • Prescribe nitrate therapy o Nitroglycerin 0.4mg sublingual spray to be used as needed for angina in all patients o Consider nitroglycerin patch for refractory angina • Recommend vaccinations o All patients should receive the yearly influenza vaccination, COVID-19 vaccination and other immunizations recommended by the National Advisory Committee on Immunization (e.g., shingles, pneumococcal, respiratory syncytial virus, etc.)[vi]		✓	✓		✓	
4. Smoking/vaping cessation	• Suggest nicotine replacement therapy (Resource C)		✓	✓	✓	✓	
5. Medications for other indications if appropriate	• LV dysfunction – Consider initiation of guideline directed medical therapy with ACEI ARB/ARNI, SGLT2 inhibitor, MRA, beta blocker[vii] (Resource D) • Diabetes – Consider SGLT2 inhibitor and GLP1 agonists for cardiovascular/renal protection[ii] (A) • Hypertension – Use additional antihypertensive therapies to target systolic blood pressure <120mmHg[iv] • Colchicine – Consider 0.5-0.6 mg daily in patients with recurrent events or persistent uncontrolled risk factors (caution if eGFR<45 ml/min/1.73m^2)[viii] • Obesity/Overweight – Consider GLP1 agonists for cardiovascular/renal protection[ix]		✓	✓		✓	
6. Identify any drug interactions	• Assess concurrent therapy, including over the counter and supplement medications, to ensure there are no drug interactions, contraindications or duplication of therapy (e.g., ACE inhibitor + ARB) (Resource E)		✓	✓	✓	✓	
7. Conduct medication reconciliation	• Conduct medication reconciliation and document discharge prescriptions		✓	✓	✓	✓	
8. Assess patient's ability to access medications	• Assess patient's ability to pay for medications and identify barriers to patient accessing medications, including nicotine replacement therapy (Resource F) • Refer to social work for assistance as needed		✓	✓	✓	✓	
9. Ensure adequate duration of prescription	• Provide initial prescription of 3 months with repeats for 12 months to ensure continuous access and improve adherence	• Ensure patient has adequate prescription duration	✓	✓		✓	

Objective 4. Provide information to patients and carers about the care plan and recommended interventions

Standard	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	>1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
Provide information and support to patients and carers, answer questions, facilitate understanding, and optimize adherence								
1. Review importance of medication adherence	• Provide clear instructions on the importance of taking medications as prescribed	• Encourage medication adherence		✓	✓	✓	✓	
2. Review prescriptions	• Explain indication, current and goal dosage, timing and potential side effects of each medication	• Review details of prescriptions with patients/families/carers as needed		✓	✓	✓	✓	
3. Discuss risk of medication discontinuation	• Discuss the importance of not discontinuing medications before consulting a healthcare provider			✓	✓	✓	✓	
4. Review blood pressure targets	• Review patient-specific blood pressure targets and review home blood pressure monitoring[iv]			✓	✓	✓	✓	
5. Driving	• Provide patient-specific driving restrictions[xi]	• Re-evaluate and reinforce adherence to restrictions		✓	✓			
6. Exercise	• Recommend a gradual increase in physical activity as tolerated. For example, start with walking at comfortable pace for 5 min and increasing by 2-3 min daily	• Review progress with gradual resumption of physical activity as recommended by cardiac rehab		✓	✓	✓	✓	

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7. Smoking/vaping cessation	• Offer resources and support to stop smoking, including referrals to cessation programs[xii] (Resource C)	• Review and reinforce smoking cessation, offer alternate strategies if indicated (Resource C)	✓	✓	✓	✓	
8. Other substance use	• Review guidelines for alcohol consumption and offer resources and support for alcohol use disorder[xiii] (Resource G) • Offer resources and support for recreational drug use reduction/cessation[xiii] (Resource G)		✓	✓	✓	✓	
9. Healthy eating	• Provide health eating recommendations such as the Mediterranean diet, The Portfolio Diet, Dietary Approaches to Stop Hypertension (DASH), low-gylcemic index/glycemic load, plant-based, and diets high in nuts, legumes, olive oil, fruits and vegetables, total fibre, and whole grains, or refer to a registered dietitian[iii] (Resource H)	• Review healthy eating guidelines and encourage adoption	✓	✓	✓		✓
10. Obstructive sleep apnea	• Screen for obstructive sleep apnea (STOP-BANG) and refer for a sleep study or an ENT or respirologist who specializes in sleep medicine when appropriate[xv] (Resource I)						
11. Social and mental health	• Screen for depression, anxiety, and other psychosocial issues, and refer to mental health services if appropriate (Resource J)		✓	✓	✓		

Objective 5. Ensure clear communication, documentation, as well as patient and carer engagement

Standard	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	>1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
1. Use clear verbal and written communication to provide information and instructions	• Use verbal and written communication for discharge instructions, prescribed medications, follow-up appointments, and indications to return to hospital	• Use verbal and written communication for any new medication, upcoming appointments and indications to return to hospital		✓	✓	✓		
2. Communicate with other providers involved in patient's care	• Ensure discharge summaries are sent to the primary care provider and relevant others			✓	✓	✓		
3. Transmit discharge medication prescriptions to patient's pharmacy	• Send prescription to patient's pharmacy of choice prior to discharge when possible	• Send all medication changes to pharmacy		✓	✓	✓	✓	
4. Evaluate the patient's understanding of their condition and management	• Assess patients understanding of their discharge instructions and their readiness for self-management before discharge (Resource K) • Allow sufficient time for patient and carers to ask questions	• Confirm the patient understands the discharge instructions and care and self-management plan (Resource K)		✓	✓	✓	✓	
5. Engage family members and carers	• Include family members and carers in discharge instruction	• Include family members and carers, when possible, in follow-up appointments		✓	✓	✓	✓	✓

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Abbreviation List

ACEI = angiotensin-converting enzyme inhibitor
ARB = angiotensin receptor blocker
ARNI = angiotensin receptor/neprilysin inhibitor
ASA = acetylsalicylic acid
CBC = complete blood count
eGRF = estimated glomerular filtration rate
ECG = electrocardiogram
HbAIc = hemoglobin A1C
HDL-C = high-density lipoprotein cholesterol
LDL-C = low-density lipoprotein cholesterol
Lp(a) = lipoprotein (a)
LV = left ventricle
MRA = mineralocorticoid receptor antagonist
PCI = percutaneous coronary intervention
PCP = primary care provider
PPI = proton-pump inhibitor
RAAS = renin-angiotensin-aldosterone system

References

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Topic	**Resources**
(A) Diabetes	• Full Diabetes Management Guidelines: https://guidelines.diabetes.ca/cpg • In Hospital Management of Diabetes: https://guidelines.diabetes.ca/cpg/chapter16 • Management of Acute Coronary Syndromes: https://guidelines.diabetes.ca/cpg/chapter27 • Diabetes Canada Health-Care Provider Tools: https://guidelines.diabetes.ca/health-care-provider-tools (Includes tools for self-management, glycemic targets, monitoring, in-hospital management and more) • Diabetes Canada People with Diabetes Tools: https://guidelines.diabetes.ca/financial-support-and-services; https://guidelines.diabetes.ca/patient-resources; https://guidelines.diabetes.ca/patient-videos
(B) Lipid Management	• CCS Dyslipidemia Pocket Guide: https://ccs.ca/wp-content/uploads/2022/07/2022-Lipids-Gui-PG-EN.pdf • CCS Dyslipidemia Guidelines and Resources: https://ccs.ca/guideline/2021-lipids/ (Includes Dyslipidemia guidelines, At-a-glance Summary, patient education tools, webinars for health-care providers)
(C) Smoking Cessation	• Canadian Cardiovascular Society Clinical Practice Update on Contemporary Approaches to Smoking Cessation: in press • CCS Smoking Cessation Resources: in development
(D) Heart Failure	• CCS Heart Failure Guidelines and Resources: https://ccs.ca/guideline/2021-heart-failure-reduced-ef/
(E) Medication Review/Counselling	• Medication Interaction Checker: https://www.drugs.com/drug_interactions.html • Sick Day Medication List: https://guidelines.diabetes.ca/GuideLines/media/Docs/cpg/Appendix-8.pdf and for patients: https://guidelines.diabetes.ca/GuideLines/media/Docs/Patient%20Resources/stay-safe-when-you-have-diabetes-and-sick-or-at-risk-of-dehydration.pdf
(F) Identifying Barriers to Care	• Resource Guide to Ontario Health's Social Determinants of Health Framework: https://www.ontariohealth.ca/sites/ontariohealth/files/Social-Determinants-of-Health%E2%80%93FNIMui-Resource-Guide.pdf • BC College of Family Physicians Social Determinants of Health Screening Tool: https://bccfp.bc.ca/wp-content/uploads/2020/06/SDH-Reference-Sheets.pdf • Multidisciplinary Approach to Facilitating Medication Access and Coverage

(G) Alcohol and Substance Use	• Clinical Practice Guideline: https://www.cmaj.ca/content/cmaj/195/40/E1364/F1.large.jpg • Alcohol Use Disorder Pathway: https://www.cmaj.ca/content/cmaj/195/40/E1364/F2.large.jpg
(H) Healthy Eating	• Portfolio Diet: https://ccs.ca/wp-content/uploads/2023/11/Portfolio-Infographic-EN_7Nov2023.pdf
(I) Sleep Apnea	• STOP-BANG Score: http://www.stopbang.ca/osa/results.php
(J) Mental Health	• CAMH Depression Screening: https://www.camh.ca/en/professionals/treating-conditions-and-disorders/depression/depression---screening-and-assessment
(K) Communication Tools	• A Handy Guide to Motivational Interviewing: https://guidelines.diabetes.ca/GuideLines/media/Docs/Key%20Messages/handy-guide-to-motivational-interviewing.pdf

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