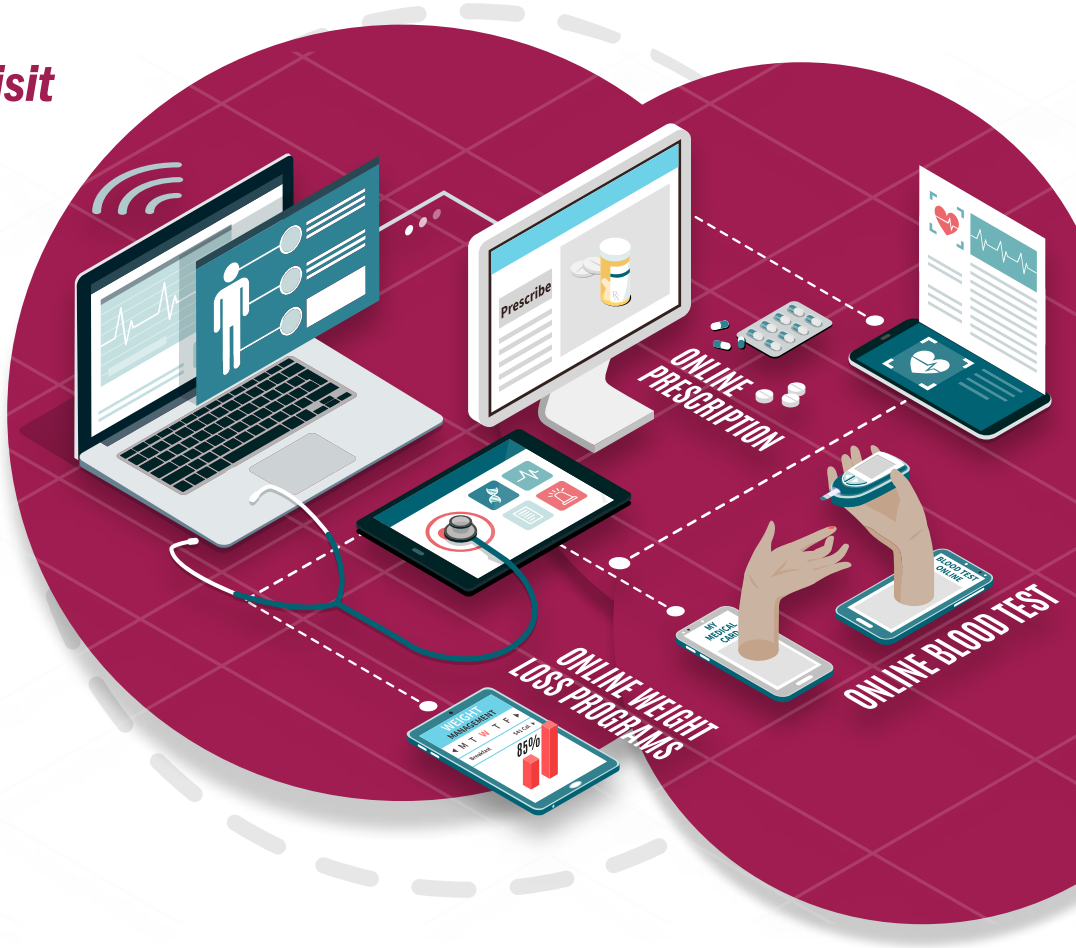
Background

Telehealth provides an additional tool to aggressively reduce the risk of cardiovascular events and mortality for patients at highest risk for primary and secondary clinical atherosclerotic cardiovascular disease (ASCVD). As the core pillars of ASCVD risk reduction rely on the optimization of lifestyle and guideline-directed medical therapy, developing and maintaining a strong patient-clinician relationship to positively affect behavioral change and medication adherence is critically important.

In recent years, comprehensive diabetes management platforms have gained notable attention for creating virtual-based programs that are effective in improving blood glucose readings and clinical outcomes while providing cost-savings[1,2,3]. The vertical integration of telehealth, with virtual-based chronic disease management platforms that gather actionable information acquired and interpreted remotely, including ASCVD and heart failure, have the potential to become a standard of care in the near future.

The Telehealth Visit

A successful telehealth program for ASCVD management and risk reduction requires careful planning for successful implementation. As the primary goal is to prevent future ASCVD events, stakeholder analysis and clinical workflow planning at each stage of the telehealth encounter ***(pre-visit, visit and post-visit)*** is paramount.



1. Su W, Chen F, Dall TM, Iacobucci W, Perreault L. Return on Investment for Digital Behavioral Counseling in Patients With Prediabetes and Cardiovascular Disease. Prev Chronic Dis 2016;13:E13.

2. Sepah SC, Jiang L, Ellis RJ, et alEngagement and outcomes in a digital Diabetes Prevention Program: 3-year update. BMJ Open Diabetes Research and Care 2017;5:e000422. doi: 10.1136/bmjdrc-2017-000422

3. Christopher M. Whaley, Jennifer B. Bollyky, Wei Lu, Stefanie Painter, Jennifer Schneider, Zhenxiang Zhao, Xuanyao He, Jennal Johnson & Eric S. Meadows (2019) Reduced medical spending associated with increased use of a remote diabetes management program and lower mean blood glucose values Journal of Medical Economics, 22:9, 869-877, DOI: 10.1080/13696998.2019.1609483

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The ASCVD Patient

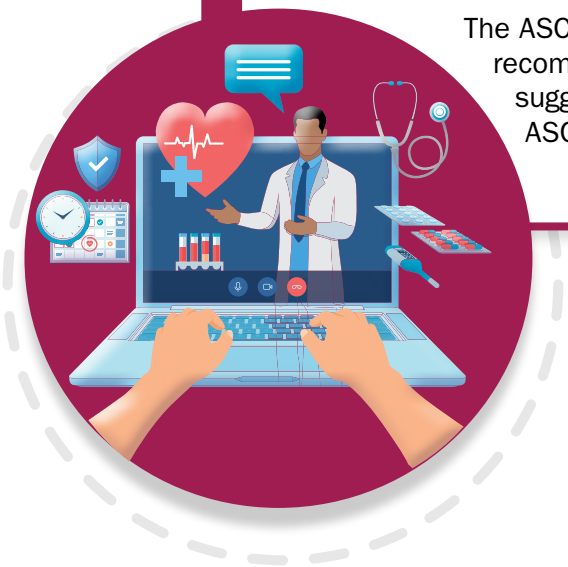
The ASCVD patient care can be categorized into ***primary*** and ***secondary*** prevention, and further defined by recent acute event management and chronic disease management. Many clinical scenarios can be adequately addressed utilizing telehealth interactions in lieu of, or in addition to, the in-office patient encounter.

The primary goals of the ASCVD patient encounter include the assessment and treatment of:

1. **Symptoms**
2. **Future ASCVD event risk**
3. **Optimization of lifestyle and pharmacologic therapies**
4. **Psychosocial determinants of health (family, food, exercise, income, internet access, medication costs)**

Telehealth allows for new opportunities to implement a multidisciplinary approach that targets the goals noted above. Utilizing a blend of traditional patient and clinician encounters alongside innovative methods that engage patients more frequently, a more comprehensive approach for future ASCVD event risk reduction can be achieved. Telehealth encounters may include new additions to clinical workflows such as:

1. **Group counseling (smoking cessation, psychosocial support, nutrition, etc.)**
2. **Symptom "check-in" visits (via synchronous telehealth communication**
3. **Continued asynchronous telemonitoring (remote monitored data via devices and wearables, two-way electronic messaging, etc.)**
4. **Ancillary support staff to address psychosocial determinants of health and medication adherence (case managers, pharmacists, social workers, etc.)**



The ASCVD telehealth visit workflow follows the routine recommendations delineated in the Introduction (link to intro). We do suggest the following considerations that may be specific to the ASCVD patient.

Pre-visit:

In addition to registration, obtaining consent, identifying barriers to access or additional resources required for a successful visit, we recommend the following for the ASCVD patient:

1. Clinical Triage - When determining the appropriateness of telehealth visit versus in-person visit, it is useful to employ usual clinical triage especially if an individual states that there is a worsening in clinical status or new symptoms. This triage already occurs in usual ASCVD care to determine whether it is safest to evaluate a patient in the outpatient setting (whether in-person or via telehealth) rather than an emergency or inpatient setting. Each practice may consider certain diagnostic or symptom-based keywords to guide administrative staff in helping schedule.

2. Records - In asynchronous care of the ASCVD patient, it is important to obtain information including ECGs performed in other settings between visits, lab results, remote monitoring results, hospital records, other testing reports.

3. Patient-generated data - It is important to ask patients to gather any self-monitoring data (such as blood pressure (BP), heart rate (HR), oxygen saturation, height, weight, electrocardiogram (ECG)-monitoring devices) in order to inform decision-making during the telehealth visit.

4. Patient-reported outcomes - Screening for mood should be considered, as well as validated angina assessment tools.

5. Medication reconciliation - Ensure accuracy of current medications to review with clinician during visit and verify the patient is on optimal medical therapy.

During Visit:

The goal of the ASCVD telehealth visit is to assess for active symptoms that may require further testing or more urgent evaluation, counsel the patient on ASCVD risk and burden, and continue with shared-decision making in order to optimize therapies. The telehealth visit can cover much of the same clinical evaluation conducted in-person, with the exception of synchronous 12-lead ECG, and direct palpation or auscultation on physical exam.

1. Assess symptoms: Clinicians may consider routine surveillance of metabolic equivalents (METs) to assess functional status and screen for exertional symptoms. Clinicians often observe mobility and in-office stamina in the course of an in-person visit, however this assessment may be achievable with consistent evaluation of patient activity.

2. Physical Examination: Clinicians may consider asking the patient to measure BP, HR, oxygen saturation and assess dyspnea and edema during the visit. Depending on video quality, jugular venous pressure assessment may be attempted.

3. ASCVD risk assessment: Synthesizing patient history, exam, and review of available data, the clinician can conduct a reasonable ASCVD risk assessment to guide counseling and future strategies. Several tools exist for primary prevention and secondary prevention of ASCVD events.

For the clinician:
ASCVD Risk Estimator Plus

For the patient:
My Plan for Heart Healthy Living
Tech Wearables and Your Heart
How to Take your BP at Home
Healthy Habits to Protect Your Heart
Cardiac Rehabilitation
CardioSmart Cardiac METs Fact Sheet

4. Counseling: One of the advantages of telehealth is convenience of connecting with patients in more comfortable environments, such as their own homes. This facilitates the counseling process by removing certain stressors associated with traditional clinical environments. For the ASCVD patient, counseling and shared-decision making is key to prevention and treatment. Clinicians may share their screen to review data and electronic resources, and further empower patients to review resources such as CardioSmart at *CardioSmart.org*. Further, setting goals may be facilitated by more frequent touchpoints with “check-in” telehealth visits.

Post-visit:

After the encounter, reinforcement of positive change behaviors that optimize lifestyle, diet, exercise and adherence to medical therapy is essential. Telehealth can help coordinate the multidisciplinary effort required to maximally reduce a patient's risk for future ASCVD events.

1. Involve key stakeholders: Ensure referrals to multidisciplinary team members that specialize in ASCVD risk reduction are made to enhance psychosocial support, lifestyle modification and medication adherence. Consider novel telehealth programs, such as group counseling, integration with nutritionists and pharmacists and remotely connected data that can integrate with the electronic health record (i.e Connected Scales, blood pressure cuffs, etc.) to review for future visits.

2. Adjust post-visit workflows: Consider dedicating ancillary staff to help patients set up activity tracking and food tracking applications immediately after the telehealth encounter with the clinician.

3. Assess patient satisfaction: This allows for constructive feedback and changes that can improve the patient and clinician experience. Consider utilizing a validated, standardized survey referenced in this document.

4. Define and track metrics: A telehealth program can measure success by incorporating patient reported outcomes, patient satisfaction, or quality and performance metrics defined by health care and professional organizations. As telehealth matures into a standard option in the care of the ASCVD patient, new quality and performance metrics specific to telehealth may arise.

ASCVD TELEHEALTH MANAGEMENT

	Primary Prevention	Secondary Prevention	
	Asymptomatic	**Chronic Management/ Asymptomatic**	**Acute Care/Symptomatic**
Pre-visit	Registration/Consent Family/caregiver access; assess need for interpreter services Obtain records (outside medical records, Labs, interim ECG, testing) Interim vitals and patient-generated data		
			Hospital course Procedures results Discharge medications
		Interim remote monitoring	Interim remote monitoring
During Visit	History - full history for new patients including FHx, SHx, med Hx. Update history and seek interim events. Assess symptoms, document METS for future comparative purposes (Refer patient to *CardioSmart Cardiac METs Fact Sheet*) Recent vitals (Weight, HR, BP, oxygen saturation) Review home monitor (ie: remote cardiac rhythm monitoring data) Exam: general, JVP, accessory muscle use, legs/ankles for edema Counseling risk reduction lifestyle and shared decision making for medications* Consider sharing screen when calculating risk assessment (ie *ASCVD Risk Estimator Plus*)	Review interim events Symptoms assessment - angina (have patient press on chest during visit to see if reproducible component) Assess symptoms, document symptom-free METS for future comparative purposes (Refer patient to *CardioSmart Cardiac METs Fact Sheet*) Recent vitals (Weight, HR, BP, oxygen saturation) Review home monitor (ie: remote cardiac rhythm monitoring data) Exam: general, JVP, accessory muscle use, legs/ankles for edema, procedural sites (if appropriate) Counseling risk reduction lifestyle and shared decision making for medications*	
Post-visit	After-visit summary/check-list Follow Up for future appointments, testing, and ongoing health counseling and supportive education (for example, cardiosmart.org) Referrals involving multidisciplinary team to enhance psychosocial support, lifestyle modification, medication adherence Measure patient satisfaction and performance/quality metrics Remote monitoring if concern for ischemic arrhythmia (secondary ASCVD only) Cardiac Rehab considerations (secondary ASCVD only)		

ASCVD = atherosclerotic cardiovascular disease; BP = blood pressure; ECG = electrocardiogram; FHx = family history; HR = heart rate; med Hx = medical history; JVP = jugular venous pulse; METs = metabolic equivalents; SHx = surgical history

Acute care/Symptomatic include patients with recent hospitalization, ongoing angina symptoms

*Smoking cessation, aggressive lipid lowering, control of hypertension and diabetes, and prophylactic use of aspirin, beta-blockers, and ACE inhibitors are key components of secondary prevention that have a demonstrated benefit.