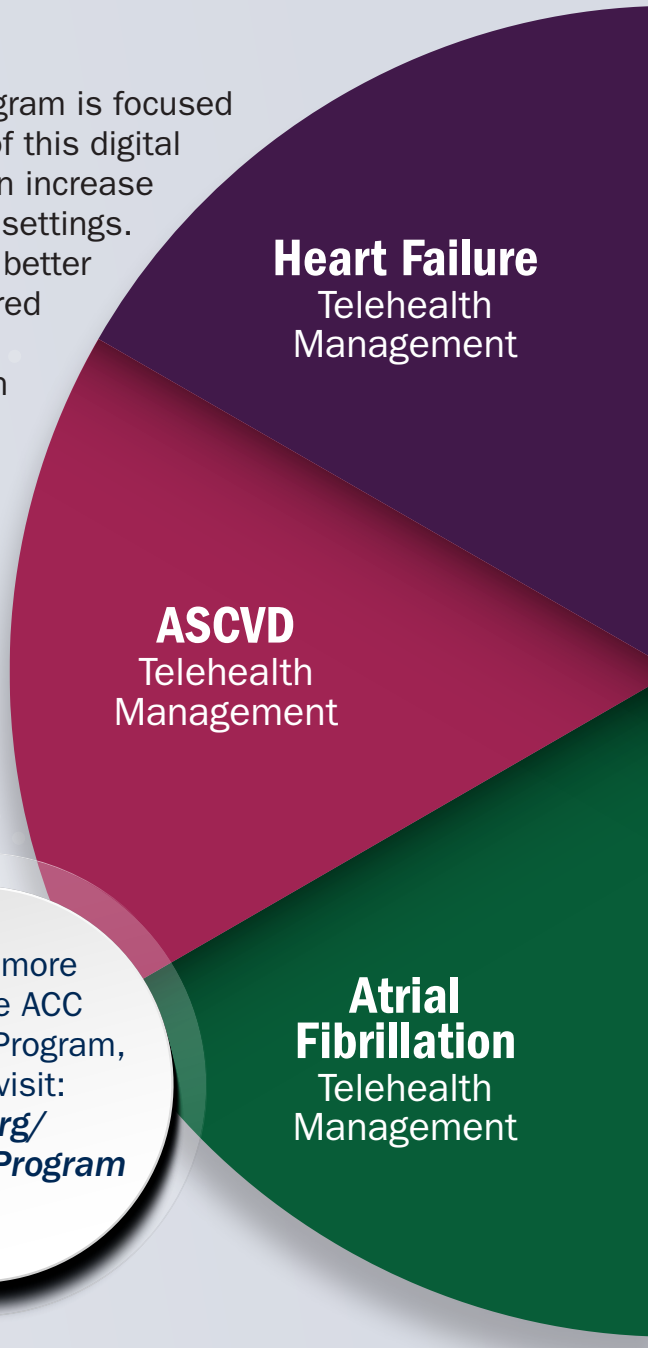
Telehealth Workbook

The **American College of Cardiology**'s (ACC) Innovation Program is focused on the digital transformation of care delivery. One aspect of this digital transformation is the move to virtual care, which reflects an increase in care taking place outside of traditional hospital or clinic settings. In 2020, the ACC held a Heart House Roundtable, to gain a better understanding of the challenges, needs, and actions required to effectively manage cardiovascular patients remotely. Additionally, the ACC held its first Applied Health Innovation Consortium (AHIC) Summit focused on the optimization of virtual care. This telehealth workbook was developed as a response to clinician and patient needs identified from these two meetings.

The goal of this workbook is to provide guidance on conducting telehealth visits to effectively manage cardiovascular care, including what should happen prior to, during, and post-visit. The workbook includes sections on the management of ***heart failure, atherosclerotic cardiovascular disease,*** and ***atrial fibrillation***. Additionally, it also includes resources to existing ACC tools that may complement your telehealth visits.



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Telehealth Workbook

Digital health is increasingly becoming an important mechanism of chronic disease care, especially in cardiology. The COVID-19 pandemic has caused a rapid increase in the proportion of cardiology care delivered virtually. As many practices will continue to use a blend of virtual and in-person visits as a cornerstone of their cardiovascular practice, we have developed this resource guide to help with establishing and performing telehealth visits for the general cardiac patient. We have used three common cardiac diagnoses as examples for telehealth clinical care pathways to illustrate potential mechanisms to provide this care. The clinical aspects of the telehealth visit are pre-specified and condition-specific. Guideline-directed medical therapy and indications for intervention as needed will not change with telehealth, but we hope this guidance helps create high quality telehealth visits with a great patient and clinician experience.

We define telehealth broadly as electronic information and the use of technology to communicate with patients (and caregivers as appropriate) to perform clinical services virtually. The use of telehealth (during COVID-19 and beyond) provides an opportunity to enhance the level of satisfaction for both patient and clinician experience if implemented well. Telehealth has the added conveniences of eliminating commuting distance for the patient, reducing time off work or arranging for childcare. However, certain barriers may increase gaps in healthcare access for vulnerable populations such as older adults, rural populations and racial and ethnic minorities. Furthermore, people with limited health and technology literacy, limited proficiency with the English language, or limited access to broadband internet and necessary technologies may also increase healthcare disparities.[1] Furthermore, the uncertainty regarding the reimbursement for telehealth after the emergency period ends is a barrier to planning for cardiology practices. Specifically, uncertainty remains about whether the facility fee will be included for ambulatory telehealth services and uncertainty remains about the level of reimbursement for telephone-only services.

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[1] Nouri S, Khoong EC, Lyles CR, Karliner L. "*Addressing Equity in Telemedicine for Chronic Disease Management During the Covid-19 Pandemic*". NEJM Catalyst Innovations in Care Delivery. May 4 2020. DOI: 10.1056/CAT.20.0123

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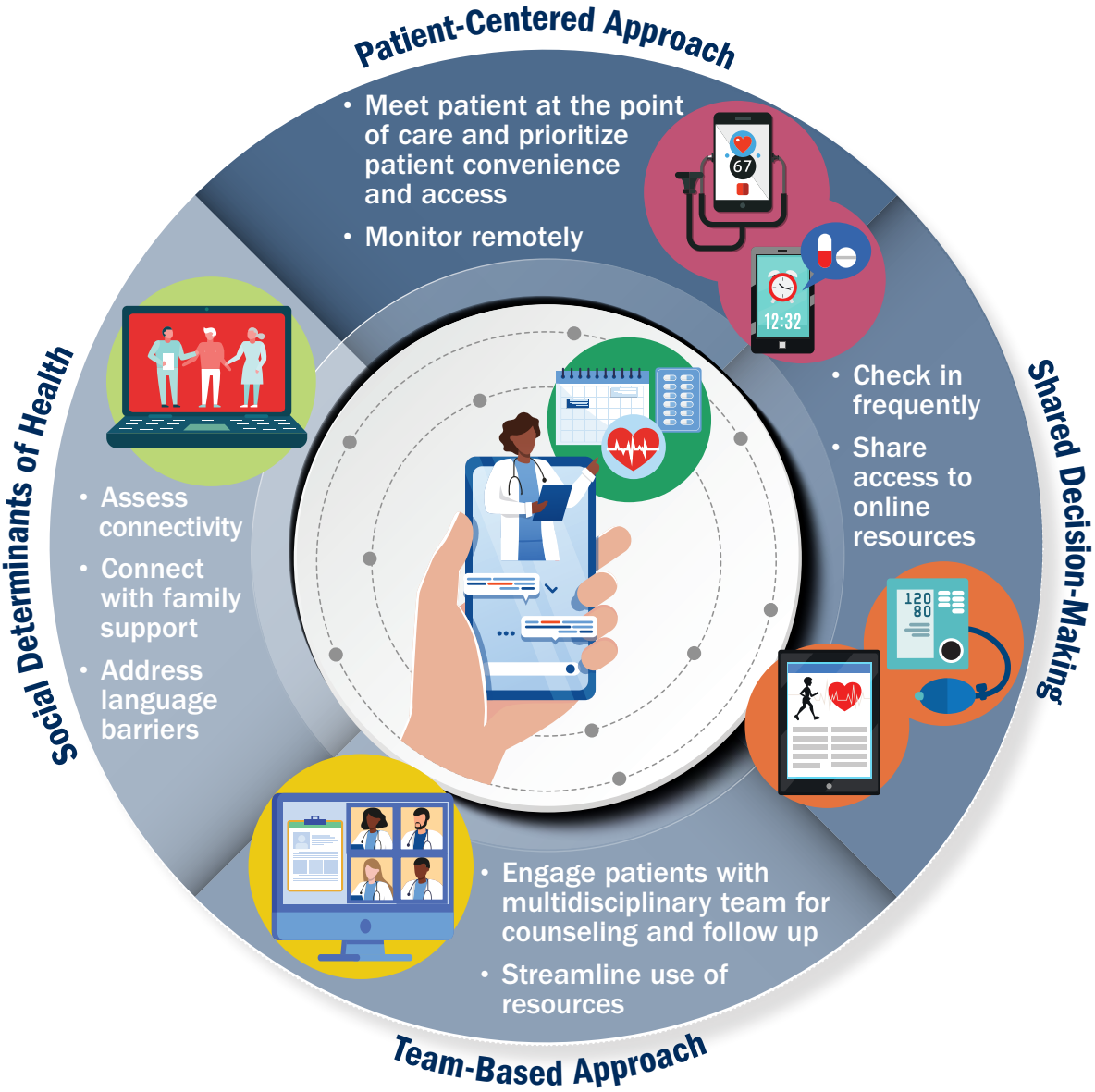
Figure 1

Transition to Telehealth



A **patient-centered approach** for blended virtual and in-person care includes addressing social determinants of health, relying on a full team of healthcare providers for a holistic approach to education and management, shared decision making for patient empowerment and a treatment plan that allows agile transition from stable interval surveillance to active disease management. Most importantly, it allows us to meet patients where they are, whether home or in the community, creating a concept of health as part of the fabric of their everyday lives rather than episodic responses to illness. Conceptually, telehealth may facilitate easier patient self-monitoring and healthy behavior at home. Telehealth and digital health require support for health and digital literacy to ensure patient understanding and engagement with their care plan.

Establishing a balance of when an in-person visit or a virtual telehealth visit is more appropriate will change depending on provider, patient, the acuity, and patient diagnosis. There remain substantial gaps in knowledge about the optimal pattern of integration of traditional in-person care and virtual care. In fact, optimal patterns may vary substantially with medical comorbidities, patient preferences, and social circumstances.

Figure 2

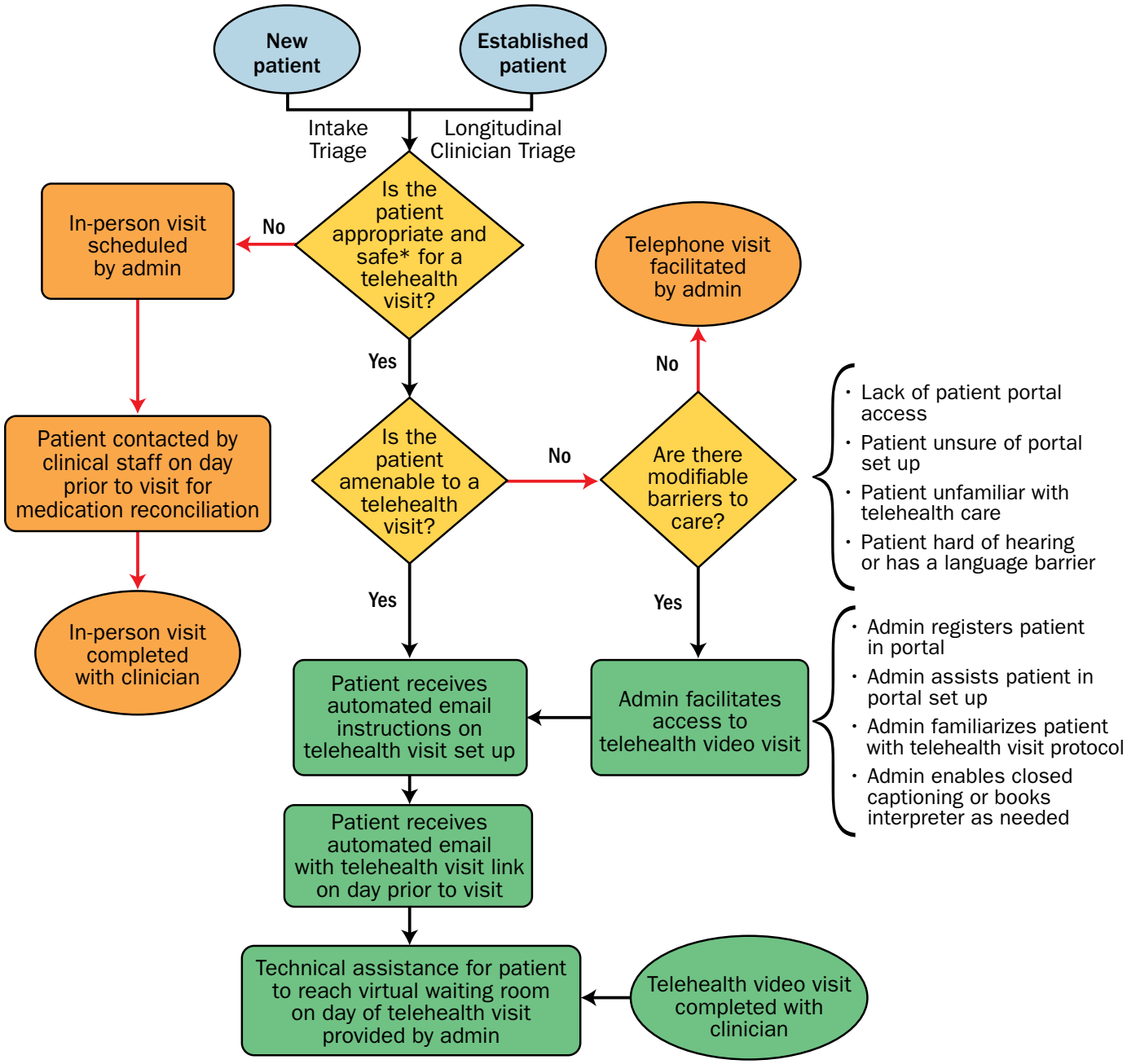
Advantages of In-person vs. Telehealth Visits

- Physical examination to correlate with symptoms or chronic disease management
- 12 lead ECG and in-office testing capability
- Decreased need to reconfigure existing clinical workflow
- Greater access to patient at the point of care
- Improved access to specialty care
- Increased flexibility and convenience for patients, family members and caregivers
- Potential to create new care pathway programs (e.g., group visits, chronic disease management.)
- Decreased cost and travel time and missed work time
- Quick and efficient for the patient
- Less resources needed

Figure 3

Workflow For Telehealth Visit

Pre-visit: In preparing for a typical virtual visit with face-to-face synchronous care, there are several pre-visit clinical and administrative workflows which can help optimize the visit experience. Administrative and clinical workflows will vary across practices depending on personnel.



Adapted with Permission from *Massachusetts General Hospital, Division of Cardiology.*

*Heart Failure, ASCVD, and Atrial Fibrillation have unique criteria for what is deemed safe and appropriate. Please refer to sections on the disease specific states for guidance on what is appropriate.

Pre-visit:
(Continued)

Administrative pre-visit tasks include, for example:

- Appointment reminder
- Addressing patient concerns about participating in a virtual visit (especially those new to virtual care)
- Technology onboarding (offering a "practice visit" prior to the day of the telehealth visit to address digital literacy)
- Providing accommodations for patients and caregivers (to address visual, auditory, and language needs for example).

Some patients may opt out of onboarding if they have experience with telehealth platforms. Asking a patient to log on 15 minutes prior to a visit similar to in clinic arrival will also assist in last minute troubleshooting. In addition, arranging for technical support during the telehealth visit is also essential to plan for in advance. In addition, institutional compliance and clinical documentation templates suitable for telehealth visits should be addressed with the local practice director and/or compliance officer about the preferred telehealth platform for use.

Patient-Generated Health Data

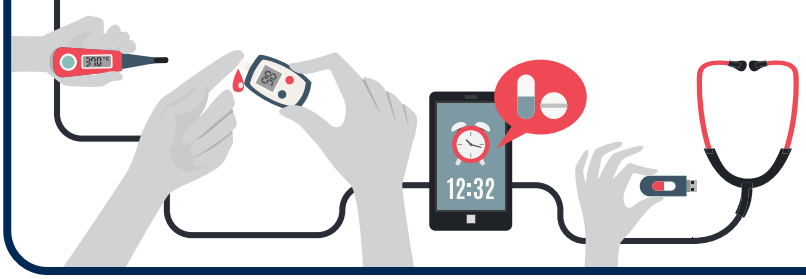
Relevant to the clinical workflow of virtual care and depending on the diagnoses, patient-generated health data (PGHD) is an essential component to help direct the conversation for the visit. Vital signs, including daily weights, blood pressure (BP), heart rate (HR), oxygen saturation (if available), and physical activity monitors, if possible, can be obtained either using monitors in the home, at a local primary care or cardiology office, prior to the visit, or through Bluetooth enabled technology connected to the electronic health record (EHR).

Medication Reconciliation

Similar to in person visits, pre-visit medication reconciliation can be performed directly through a patient portal or in conversation with the nursing staff or medical assistants.

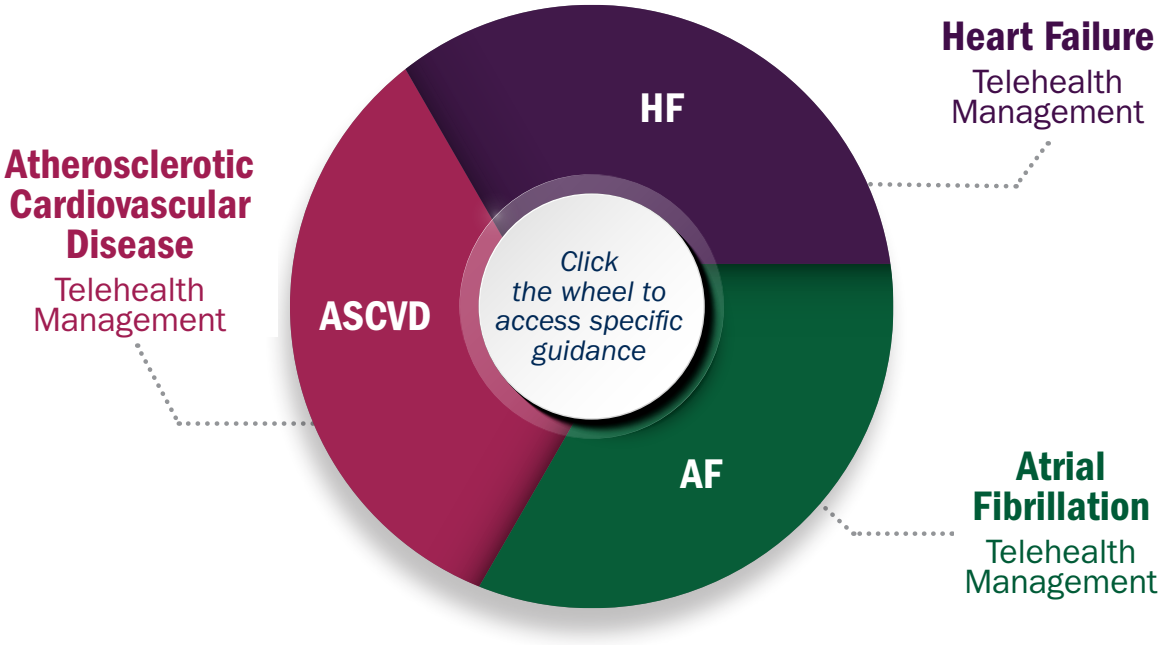
Medical History

Interval medical history including any imaging or testing results, recent hospitalization or emergency department (ED) visits, and communication with other specialists or primary care providers should be either uploaded in the EHR or be readily available or to discuss during the virtual visit.



During Visit:

Below you will find links to guide the workflow during a telehealth visit for disease specific conditions including, the management of **heart failure** ***(HF)***, the management of **atherosclerotic cardiovascular disease** ***(ASCVD)***, and the management of **atrial fibrillation** ***(AF)***. These specific toolkits also discuss further details for pre-visit and post-visit activities for each disease state. Links are provided, as appropriate for resources available through the American College of Cardiology.



Post-visit:

Post-visit telehealth care can be done anytime following the telehealth visit. This would include activities such as: review pending results of diagnostic testing, obtain a status update especially if changes were made in the treatment plan, confirm the patient (and caregiver) understood the plan of care, answer any remaining questions, and confirm the next appointment (telehealth or in person).

In addition, standardized surveys may be used to assess quality and satisfaction with telehealth and identify potential gaps in utilization and care, especially in populations with inadequate telehealth access. Suggestions for survey questions include patient perception of ease of access, convenience, comfort with communication, and likelihood to use telehealth services again. Answers to these types of questions may guide the healthcare team in determining the effectiveness of telehealth visits.

Pre-visit Prep:

The table below provides guidance on the workflow during the telehealth visit which is organized into pre-visit, during visit, and post-visit activities. We have differentiated between administrative aspects (listed first and shaded in the tables below) and clinical aspects of the telehealth visit since personnel, timing, and workflow may differ. It is important for each organization to determine in advance who is responsible for each task and that the visit is provided in a safe environment (i.e. not while operating a car).

Task	What Specific Activities	Helpful links
Appointment reminder	Reminder to patient (and caregiver as appropriate)	
Address patient concerns re. telehealth platform	• Tech anxiety[1] • Privacy concerns from patients • Lack of trust	◊ *See Table 2, Barriers and Proposed Solutions to Widespread Digital Health Use in Older Adults*[1] ◊ What to expect during the visit (especially if 1st visit for an established patient). *My Action Plan for HF* ◊ Goals of care/patient preferences *My Action Plan for HF*
Technology onboarding/ check in	• Instruct patient re. connecting to telehealth platform (as needed) • Practice session as appropriate	Possible solutions related to socioeconomic, health literacy, and financial barriers reference ◊ *See Table 2, Barriers and Proposed Solutions to Widespread Digital Health Use in Older Adults*[1]
Accommodations for patient/caregiver*	• Visual/auditory acuity • Motor skills, hand-eye coordination • Time to complete physical/mental tasks • Need for interpreter	Possible solutions related to accommodations ◊ *See Table 2, Barriers and Proposed Solutions to Widespread Digital Health Use in Older Adults*[1]
Institutional compliance for telehealth visits; connecting EHR with 3rd party	• Privacy issues	

Table will continue in the next page

EHR = electronic health record; HF = heart failure

[1] Krishnaswami A, Beavers C, Dorsch MP, et al.; Innovations, cardiovascular team and the geriatric cardiology councils, American College of Cardiology. Gerotechnology for older adults with cardiovascular diseases: JACC State-of-the-Art Review. J Am Coll Cardiol. 2020 Dec 1;76(22):2650-2670. doi: 10.1016/j.jacc.2020.09.606

Pre-visit Prep
(Continued)

Task	What Specific Activities	Helpful links
Patient-generated data	Self-measured (as applicable) • Home BP readings • Heart rate • Daily weights • Oxygen saturation • Physical activity monitor • Dietary log • Blood sugar log • Other standardized forms as applicable (Kansas City Cardiomyopathy Questionnaire, PHQ) to screen for depression, Dyspnea Scale	Resource for patients to track HF symptoms and how symptoms limit activities to share pre-visit. ◊ *Making the Most of My Follow Up Visits* Worksheet for patients to track daily weights and share pre-visit ◊ *My Daily Weight Tracker* link to one page worksheet with blank calendar with daily boxes for recording daily weight
	Remote monitoring data • Data entry into Electronic Health Record (EHR) • Download remote monitoring data (e.g., CardioMEMS, HeartLogic, OptiVol, etc.)	
Medication reconciliation	• Pre-visit versus synchronously	Resource for patients to list current meds, including non-HF meds, to share at the previsit. ◊ *My Action Plan For HF*
Global status update since last visit	• Change of symptoms/any new complaints • NYHA Class • Pre-visit or synchronously	
	Updates since last visit (interim) • Recent hospitalizations/ED visits and if summaries/discharge notes are needed • Outstanding tests (labs, imaging) • Visits to other specialists/PCP notes	For workflow, suggest predesignating who will pull those materials.

BP = blood pressure; ED = emergency department; EHR = electronic health record; HF = heart failure; PCP = primary care provider; PHQ = patient health questionnaire

During Visit:

In this section we acknowledge the possible overlap between what is included in the pre-visit and during visit activities. Some practice settings may combine the pre- and during visit activities (potentially having one team member see the patient before the physician, nurse practitioner, or physician assistant); others with more infrastructure (or contracted pre-visit staff) may keep as distinct activities. Some of the activities may differ depending on whether the patient is relatively new to the practice versus an established patient and whether the patient presents with "acute", "acute on chronic", or "chronic" symptoms. Notably, although the rows may imply a specific order of activities, some activities may occur simultaneously (e.g., when asking questions, education may occur). Although the list is rather exhaustive – it is intended to be used as a checklist of what is potentially applicable at a practice (e.g., some may screen for depression at each pre- or during visit; others may not have a systematic process for depression screening).

Task	What Specific Activities	Helpful links or references as Needed
Other parties joining visit	• Caregiver present for visit; • Other team members may join visit (another subspecialist; CV team members, etc.)	
Review results of patient-generated data • **Prespecified** • **Condition specific** • **Specific for duration (same day, full week, changes, etc.)**	Self-measured (as applicable) • Home BP readings • Daily weights • Heart rate • Oxygen saturation • Physical activity monitor • Other standardized forms as applicable (Kansas City Cardiomyopathy Questionnaire, PHQ) to screen for depression, Dyspnea Scale)	See links above as applicable (if not used in pre-visit)
	Remote monitoring data • Data entry into EHR • Download remote monitoring data • e.g. CardioMEMS, HeartLogic, OptiVol, etc.	
Medication reconciliation	• Confirm if on guideline directed medical therapy (GDMT) including current doses	Resource for clinicians to confirm that patient is on GDMT ◊ *TreatHF App*
Global status update since last visit	• Change of symptoms/any new complaints • Conducted synchronously	
	Updates since last visit (interim) • Recent hospitalizations/ED visits (need summaries/discharge notes) • Pending tests (labs, imaging) • Visits to other specialists/PCP notes	For workflow, suggest predesignating who will pull those materials.

Table will continue in the next page

BP = blood pressure; CV = cardiovascular; ED = emergency department; EHR = electronic health record; GDMT = guideline-directed medical therapy; HF = heart failure; PCP = primary care provider; PHQ = patient health questionnaire

During Visit:
(Continued)

Task	What Specific Activities	Helpful links or references as Needed
Focused ROS, including lifestyle	• Standard ROS questions for HF • Current diet, fluid intake, substance use	Resource for patients and caregivers to use as a checklist ◊ *HF Hospitalization Pathway Toolkit* (Refer to Figure 10)
Modified physical exam for telehealth visit	Note: for workflow need ability to turn camera on patient including preparing the patient for this request • Stand on scales during visit (weight) • Take BP during visit (observe technique) • Neck veins; Use of accessory muscles or dyspnea during conversation with clinician • Extremities (color and edema) • Walk any distance while on camera (6 minute walk down hallway; modified if camera is portable) • Confirm when the last in person physical exam was done	
Patient education	• Visual images of heart etc. to teach (especially for visual learners or those with low literacy) • Virtual tour of pantry (must be preannounced) • Key take away messages for patient and caregiver • Goals of care and tasks for next visit • All questions addressed (making notes of what was deferred to discuss at future visits)	Checklist of what education to include ◊ *HF Hospitalization Pathway Toolkit* (Refer to Figure 10) Visual images of heart for clinicians to refer to during education session ◊ *CardioSmart Heart Explorer App* Infographs for patient education ◊ *Turning Heart Failure Into Heart Success* ◊ *What is Heart Failure?* To use for helping patients/ caregivers identify goals of care and preferences ◊ *My Action Plan for HF*

Table will continue in the next page

BP = blood pressure; HF = heart failure; ROS = review of symptoms

During Visit:
(Continued)

Task	What Specific Activities	Helpful links or references as Needed
Shared decision-making	• ACE-I, ARB, ARNI • SGLT2i • ICD/CRT • LVAD/transplant • Palliative care/hospice	Shared decision-making tools ◊ *For ICDs* ◊ *For LVADs* ◊ *For ACE/ARB vs ARNI*
Final assessment and treatment plan	• Current NYHA Class; Last LVEF • Confirm if on GDMT and if at target doses (if not, why not?) • Changes to treatment plan (meds, devices, lifestyle) • Labs/imaging/tests • Referrals to other clinicians/CV team members (including social worker or patient assistance programs) • Timing interval for next visit (i.e. telephone, virtual, in-person)	Resource for clinicians to confirm GDMT and checklist for follow-up care needed ◊ *HF Hospitalization Pathway Toolkit* (Refer to Figure 11) Resource for patient/caregiver for when to call the CV care team: ◊ *HF Stoplight – When to Call*

ACE-I = Angiotensin-converting enzyme inhibitors; ARB = angiotensin II receptor blockers; ARNI = angiotensin receptor–neprilysin inhibitors; CRT = Cardiac resynchronization therapy; CV = cardiovascular; GDMT = guideline-directed medical therapy; HF = heart failure; ICD = Implantable Cardioverter Defibrillator; LVAD = left ventricular assist device; LVEF = left ventricular ejection fraction; NYHA = New York Heart Association; SGLT-2 = Sodium-glucose co-transporter-2

Post-visit (24-72 hours after visit):

Some of the post-visit activities in the table below may not differ than in person post-visits. However, there is an opportunity with telehealth to improve care. Some of the activities may be done synchronously (by phone call) or asynchronously (by electronic communication through email or other electronic health record (EHR) portal).

Task	What Specific Activities	Helpful links or references as Needed
Status update	• Resolution or improvement of symptoms based on changes made • Patient-generated health data (see during visit section)	Checklist for post-visit: ◊ *HF Hospitalization Pathway Toolkit* (Refer to Figure 13)
Confirmation of instructions/resolution of barriers identified (teach/reteach)	• Prescriptions filled? • Changes made to treatment plan (meds, lifestyle)? • Follow-up from patient assistance programs (co-pays for new meds)	
Review pending results	• Lab/imaging/testing results	
Outstanding questions (from patient or caregiver)	• Address additional questions and reinforce teaching since last visit	
Planning for next visit	• Goals and tasks for next visit • Next visit in person or telehealth? • Date/time of next visit • Date/time of other appointments (for testing or other specialists)	
Quality and satisfaction of visit	• Standardized tools: standardized survey, telehealth usability questionnaire	

HF = heart failure

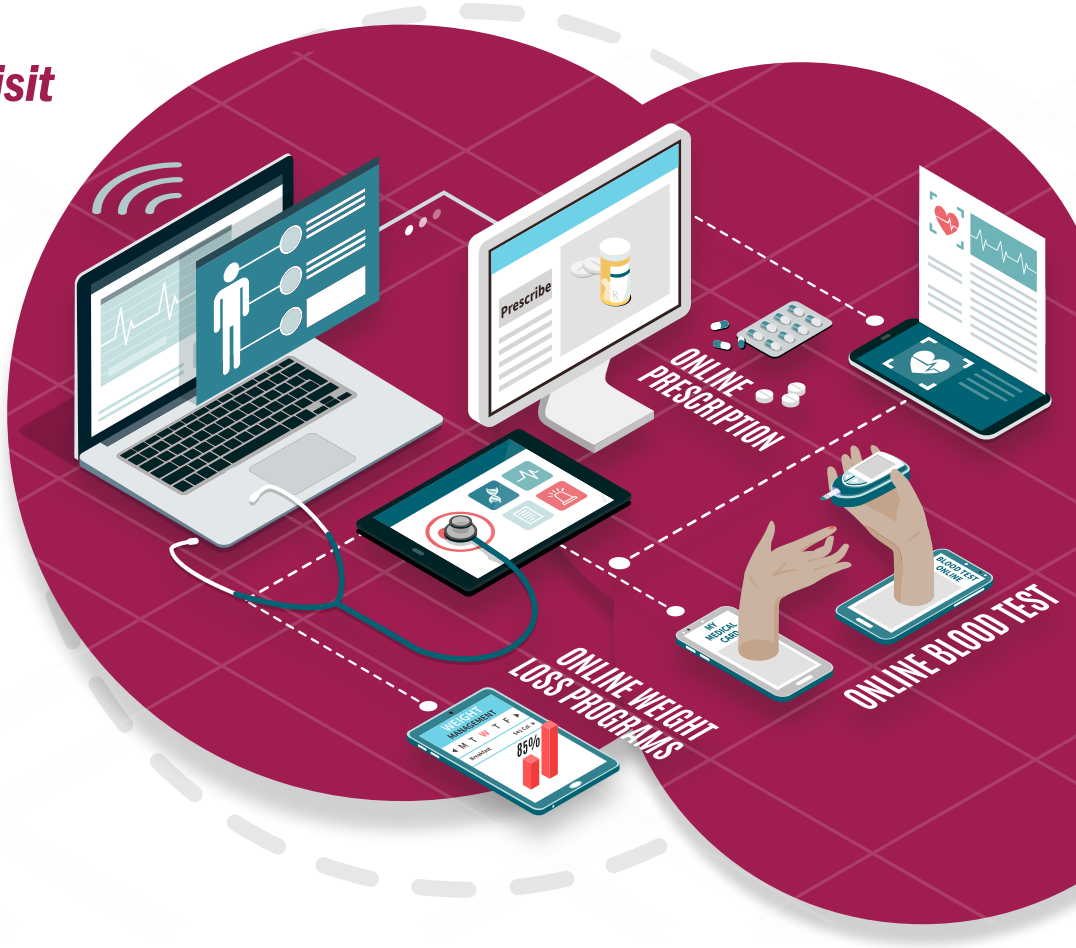
Background

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

The ASCVD Patient

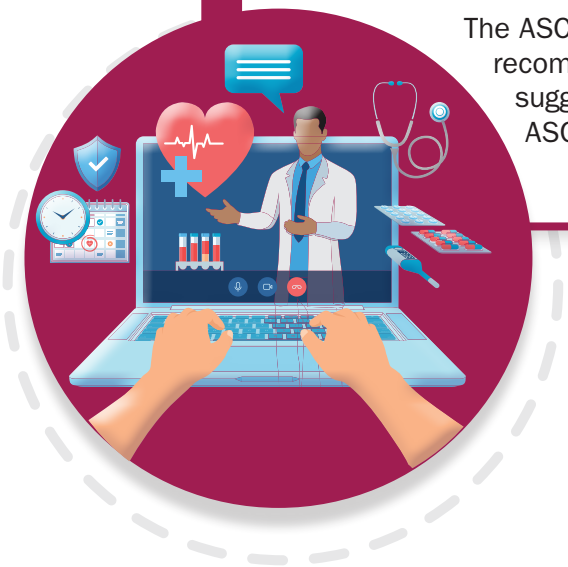
The ASCVD patient care can be categorized into ***primary*** and ***secondary*** prevention, and further defined by recent acute event management and chronic disease management. Many clinical scenarios can be adequately addressed utilizing telehealth interactions in lieu of, or in addition to, the in-office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

	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

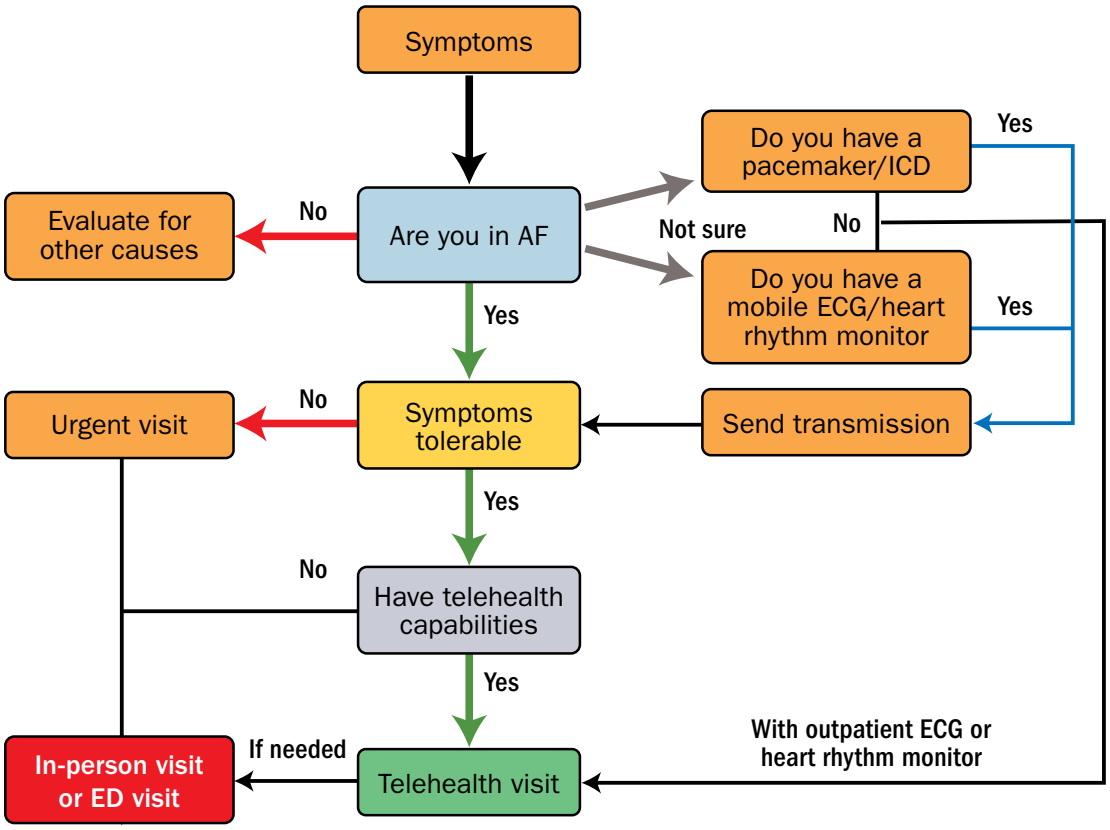
*Smoking cessation, aggressive lipid lowering, control of hypertension and diabetes, and prophylactic use of aspirin, beta-blockers, and ACE inhibitors are key components of secondary prevention that have a demonstrated benefit.

Pre-visit: Defining the Patient

An atrial fibrillation (AF) visit can be an urgent care telehealth visit (sudden onset of AF in patients who were in sinus rhythm or for uncontrolled AF in someone who with previously well controlled rates or developed worsening symptoms) or can be a routine follow-up visit. The reason for the visit needs to be established prior to the encounter whenever possible. Careful triage of patient's eligibility for a telehealth visit versus in-person visit needs to be performed.

Figure 1

Algorithm for Triaging Patients for a Telehealth Visit



AF = atrial fibrillation; ECG = electrocardiogram; ED = emergency department; ICD = Implantable Cardioverter Defibrillator

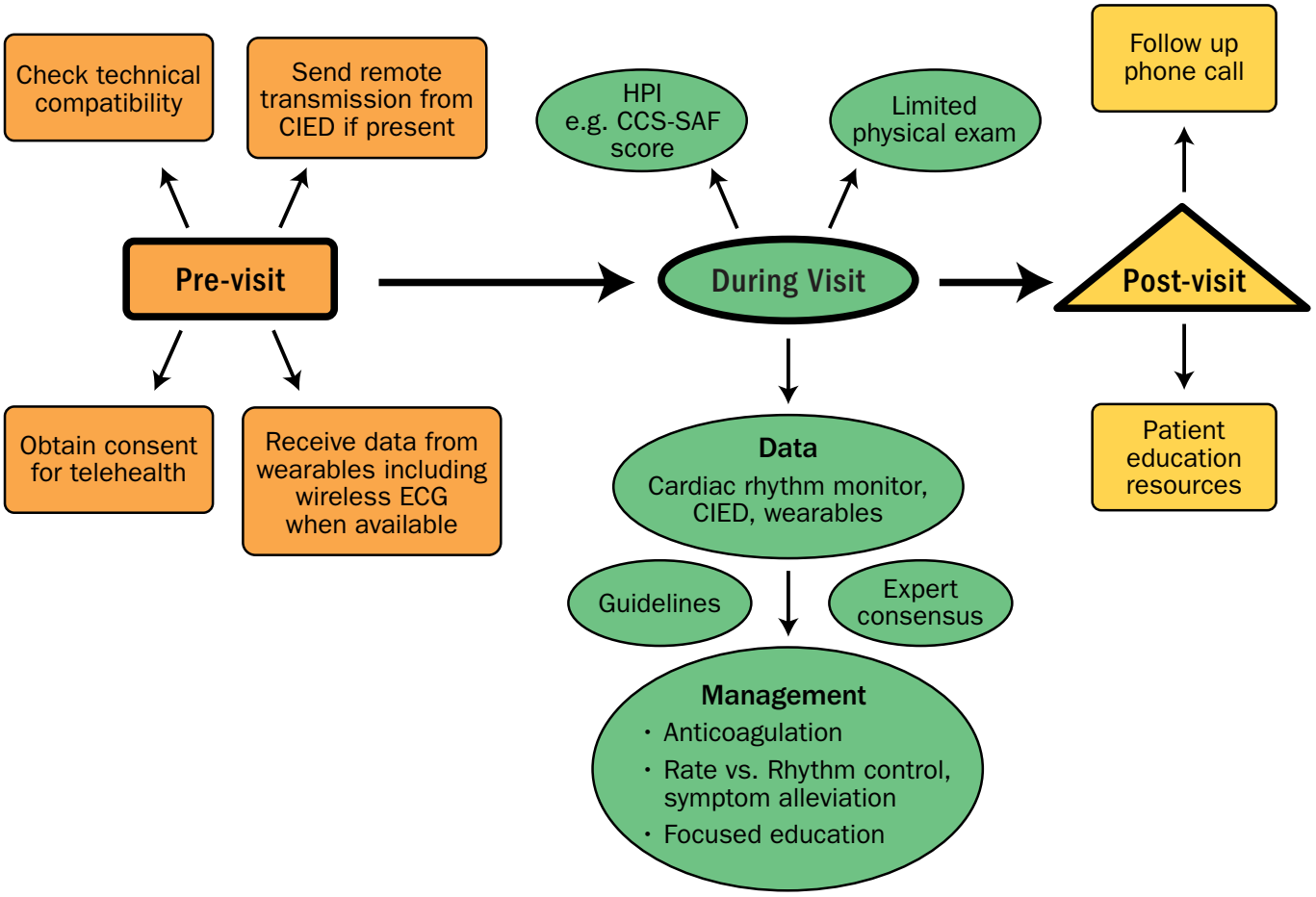
A review of resources available (Internet, smartphone/laptop/tablet, access to HIPAA compliant communication platform, wearable technology, blood pressure (BP) cuff, pulse oximetry, wireless single or multiple lead electrocardiogram (ECG) devices) is recommended prior to the visit.

- **Transmit remote monitoring for cardiovascular implantable electronic devices (CIEDs) prior to the visit**
- **Send ECG strips from wearable or consumer devices prior to the visit**

It may be optimal to ensure compatibility to various telehealth platforms including mobile apps, online web-based platforms etc. prior to the visit, so alternate arrangements can be made ahead of the visit when necessary.

Figure 2

A Detailed Flow Chart Outlining the Steps for Telehealth Visit in Management of Atrial Fibrillation



AF = atrial fibrillation; CCS-SAF score = Canadian Cardiovascular-Society Severity of Atrial Fibrillation Score; CIED = cardiovascular implantable electronic devices; ECG = electrocardiogram; HPI = history of present illness

*Patients on antiarrhythmic therapy may need 12-lead ECG to measure intervals

During Visit *(preferably video visit):*

The goal of the telehealth visit is to:

1) Assess symptom burden from AF and its management
and
2) Assess need for in-person assessment or procedures like cardioversion and/or ablation when necessary.

- A detailed history including recent events should be obtained. It is important to ascertain if patient thinks or knows if they are now in AF. Symptom assessment scales like ***Canadian Cardiovascular-Society Severity of Atrial Fibrillation Score*** (CCS-SAF) scale can be used to quantify patient's symptoms accurately.[1] History should also include any recent bleeding events or any interruption in oral anticoagulation if the patient is on anticoagulation.
- Assessment of symptom severity should be made to identify patients who would benefit from in-person assessment and/or possible cardioversion.
- Review of available digital health data (wearable HR monitor trends, single lead wireless ECG rhythm strips, BP, pulse oximetry readings, any signs of irregular pulse on monitors, photoplethysmography devices) and any home labs (such as home INR monitoring) that were sent prior to the visit
- Review of BP, pulse, weight data, medications list supplied by patient
- Physical examination via telehealth is limited to observation findings. Examples include signs of heart failure like jugular venous distention, presence of pedal edema, cyanosis, increased respiratory rate, and signs of labored breathing, such as use of accessory muscles of respiration, irregular pulsations when prominent carotid pulsations are seen and examining of CIED site

1. Dorian P, Guerra PG, Kerr CR, et al. Validation of a New Simple Scale to Measure Symptoms in Atrial Fibrillation. Circulation: Arrhythmia and Electrophysiology. 2009;2:218-24.

During Visit:
(Continued)

Management of AF via telehealth:

- After careful triage of patients who are eligible for telehealth visit, management of AF involves management of symptoms from AF, control of ventricular rates, and also addressing risk of thromboembolism.
- Outpatient initiation of antiarrhythmic medications like flecainide, propafenone, dronedarone and amiodarone can be considered in select symptomatic patients with documented AF on home-based rhythm monitoring with a recent ECG and appropriate duration of uninterrupted anticoagulation.
- Addressing potential need for some patients to obtain 12-lead ECG (e.g., for monitoring on QT prolonging drugs).
- Addressing anticoagulation involves assessment of risk of thromboembolism and also the risk of bleeding. Traditional risk scoring systems like CHA2DS2-VASc and HAS-BLED can be utilized to assess the risk-benefit of anticoagulation A detailed discussion with patients on the risk versus benefit of oral anticoagulation is warranted in all AF patients.

Anticoagulation resources:

- *Stroke and Bleeding Risk Calculator*
- *DOAC Dosing*
- *Perioperative Management of Anticoagulation*
- *Manage Anticoagulation Toolkit*
- *Choosing Blood Thinners or Left Atrial Appendage (LAA) Closure*

Guidelines for management:

- *2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients with Atrial Fibrillation*
- *2020 ACC Expert Consensus Decision Pathway for Anticoagulant and Antiplatelet Therapy in Patients with Atrial Fibrillation or Venous Thromboembolism Undergoing Percutaneous Coronary Intervention or With Atherosclerotic Cardiovascular Disease*
- *2020 ACC Expert Consensus Decision Pathway on Management of Bleeding in Patients on Oral Anticoagulants*
- *2017 ACC Expert Consensus Decision Pathway for Periprocedural Management of Anticoagulation in Patients with Nonvalvular Atrial Fibrillation*
- *2020 Update to the 2016 ACC/AHA Clinical Performance and Quality Measures for Adults With Atrial Fibrillation or Atrial Flutter: A Report of the American College of Cardiology/American Heart Association Task Force on Performance Measures.*

Post-visit:

- Follow-up phone call from clinic staff where possible is recommended. Additional patient educational resources can be sent to the patient.
- Cardiac event monitor or continuous ambulatory monitoring can be performed if post-visit rhythm monitoring is required, with simple single lead patch-based systems which can be applied by patients on their own. Where possible, smartphone device-based single or multiple lead ECG systems can also be utilized to document heart rhythm during symptomatic episodes.
- If indicated, in-person visit can be arranged for better assessment and/or plan for cardioversion where necessary.

Patient education resources:

- *Atrial Fibrillation (also known as Afib)*
- *What is Atrial Fibrillation?*
- *Atrial Fibrillation, Stroke & Blood Thinners*