This resource is intended to help guide discussions with patients about peripheral artery disease (PAD) and help optimize outcomes. The need for a practice-based discussion guide arose from the American College of Cardiology’s “Antithrombotic Therapy for the Management of PAD and CAD Forum,” which brought together some of the nation’s leading cardiologists, vascular specialists, primary care practitioners and patients.

These practical tools have been vetted by experts and can be used at the point of care to help encourage renewed attention to PAD detection and treatment and educate patients about the disease and its associated cardiovascular risks and available treatments.
Peripheral artery disease (PAD) remains woefully underdiagnosed. Yet, we know patients with PAD have a higher risk of subclinical coronary artery disease and are at heightened risk of cardiovascular events. In addition, many patients with coronary artery disease also have undetected PAD.

There is an urgent need to increase awareness of PAD and to talk to patients about the associated risks.

Use this resource to help improve PAD detection and treatment, and to boost awareness and dialogue.

### Change in nomenclature: From PVD to PAD

- **PAD** is the newer, more specific term and is used in current guidelines
- **PVD** can relate to any vessel in the body, venous or arterial
WHAT YOU NEED TO KNOW FOR BETTER PAD DETECTION, TREATMENT AND PATIENT EDUCATION

The following present salient challenges and opportunities to raise awareness about peripheral artery disease (PAD) and optimize its diagnosis and treatment. These points may also serve as reminders for your practice.

1. While a majority of adult patients have heard of a heart attack or stroke, most are unaware of PAD or how it relates to cardiovascular health.

There are a number of reasons why:

- **PAD remains underdiagnosed.** This is due, in part, to a lack of screening, especially in high-risk asymptomatic patients, as well as limited patient education – patients simply don’t know to ask their clinician about it.
- **PAD is very rarely self-diagnosed.** Up to half of patients are asymptomatic. When PAD symptoms are present, they often mimic those of other conditions, further complicating timely diagnoses. For example, many older people who experience leg pain while walking – a hallmark sign of PAD – will chalk it up to slowing down or getting older.
- **Even when a PAD diagnosis is made, patients may not be informed of the associated and very serious cardiovascular risks.** If a patient has atherosclerosis in their peripheral arteries, it’s very likely that it’s evident in the coronary arteries too. As clinicians, we need to help connect the dots between PAD and coronary artery and cerebrovascular disease.

PAD may be the first warning sign of a serious health problem. Be proactive in talking with patients 65 years of age or older about PAD, especially if they have a history of smoking, diabetes or other co-existing atherosclerotic risk factors or cardiovascular disease. Prompt diagnosis can reduce patients’ risk.

2. Screening, early diagnosis and treatment of PAD can vastly improve patients’ quality of life, reduce atherosclerotic complications, and save lives. But there is still much room for improvement. Most patients with PAD have atypical intermittent claudication or are asymptomatic. It’s important that clinicians and patients alike not wait for symptoms to show. Doing so will invariably result in missed opportunities for earlier treatment that can:

- Improve function and activity levels
- Reduce associated cardiovascular risks, including heart attack, stroke and related death
- Help spare tissue loss or prevent amputation
3. **Screening for PAD is simple and essential.** Otherwise, we leave patients vulnerable to preventable limb loss, heart attack, stroke, and death related to coronary heart disease and other thrombotic systemic events.

### Know the risk factors
- 65 or older
- Other risk factors for atherosclerosis (e.g., diabetes, any smoking history, hyperlipidemia, hypertension)
- Family history of PAD
- Established coronary or carotid atherosclerosis, renal atherosclerosis, abdominal aortic aneurysms
- Low socioeconomic status and race/ethnicity play a role too

### Know the physical signs
- Decreased pulses
- Low ankle-brachial index
- Claudication upon walking that resolves with rest (claudication can also present in the buttock, hip, thigh, or calf. Not all patients report leg pain.)
- Loss of hair on the feet or lower leg
- Thickening or other changes in toenails
- Cool or discolored skin
- Ulcerations on the legs/feet
- Walking slowly or using a cane/walker

### Simple steps for PAD screening
Do this at every visit:
- Examine legs and feet with shoes and socks removed.
- Check pulses in the leg or groin.
- Assess ankle-brachial index (ABI) in anyone with risk factors or symptoms. ABI is an independent predictor of ischemic events and is relatively quick to perform.
- Ask questions to assess leg pain and other more subtle signs. But remember that PAD often occurs without symptoms.
  - Have you changed the way you walk around and do your daily activities?
  - Are you walking less than you used to?
  - Have you ever had pain in your leg? If so, what were you doing at the time?

Current or previous tobacco use is a risk factor for heart disease, but it’s an even stronger risk factor and red flag to check for PAD. Diabetes is also a concern – 1 out of 3 adults over age 50 who have diabetes also have PAD.
ASSESSING LEG PAIN – MORE THAN MEETS THE EYE

The hallmark symptom of PAD is pain in the legs with physical activity, such as walking, that gets better after rest. But many patients either have atypical leg symptoms that don't fit the classic definition of intermittent claudication or they are asymptomatic. In fact, studies show up to 4 in 10 people with PAD have no leg pain.

Still other patients may adapt their lifestyle to avoid leg pain without realizing they are doing it. Dig deeper to find out if PAD might be behind these common statements from patients:

“I'm slowing down and can't keep up with the grandkids as much. I guess I'm just getting older.”

“Lately, I prefer to use a scooter at the grocery store.”

“I used to have calf pain, but it's not as bad as it used to be.”

“I often feel like resting after taking a walk.”

“I find it harder to walk as far as I used to, but I'm getting older.”

The differential diagnosis for claudication is broad and can include peripheral neuropathy, arthritis (hip, ankle, knee), muscle strain, and nerve entrapment. Consider whether ABI testing is appropriate for your patient to evaluate for PAD.

4. There are more therapies than ever before for PAD, making diagnosis and early intervention even more important. Most of these therapies also prevent cardiovascular events or related death and may reduce the risk of amputation. Supervised exercise programs and smoking cessation are both critical components of PAD care plans.
PAD THERAPIES

Medications

Critical to prevent blockages and events:

- Antithrombotic therapy + statin therapy
- Antihypertensive treatment

For symptom improvement:

- Cilostazol to improve claudication symptoms and increase walking distance (note contraindication for heart failure)

Supervised exercise program, if patient qualifies

- Trials show supervised exercise decreases mortality, CV risk factors, and increases exercise capacity and quality of life. Patients often have a hard time understanding how exercise helps when it hurts.
- Check to see if patient is eligible for a cardiac rehabilitation program that includes supervised exercise.

Risk reduction strategies

- Smoking cessation – best practice is behavior therapy combined with medication, nicotine replacement, bupropion and/or varenicline
- Coordinated diabetes management and referral to diabetes health educator, if needed
- Management of other CV risk factors

Adoption of healthy habits

- Exercise
- Healthy eating plan
- Maintain healthy weight

Revascularization or endovascular surgery

- Reserved for patients with advanced disease – those with life-limiting pain when walking, rest pain and ulcers that don’t heal – who do not respond to lifestyle and pharmacologic treatment.
- Emergent arterial reconstruction for people with critical limb ischemia.
- In some cases, amputation may be needed.

It’s important to educate patients about and involve them in risk reduction strategies throughout the course of their disease; for example, healthy lifestyle habits remain essential even after procedures to open blocked arteries.
5. **Treating PAD is a team effort and requires a patient-centric approach that values the individual's goals and preferences.** Quality PAD care entails close coordination and consultation across multiple disciplines, which may include:

- Vascular and endovascular specialists
- Cardiology
- Endocrinology
- Nutrition
- Physical therapy/exercise programs
- Orthopedics
- Podiatric medicine
- Wound care
- Smoking cessation programs

6. **Ongoing risk assessment and care are essential.** Discussions about PAD should not be limited to a single conversation, but should be revisited over time. Per current guidelines, all patients with PAD should be followed periodically to assess:

- Cardiovascular risk factors
- Limb symptoms
- ABI testing

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**SCREENING ASYMPTOMATIC PATIENTS**

Some clinicians ask, “For patients who don't have symptoms, what's the benefit of screening for PAD?” Our experts weigh in:

- While patients may not report leg discomfort, research shows that **most people with PAD – even those without overt symptoms – experience noticeable declines in how fast or far they can walk.** They have often already adapted their lifestyle to become less functional and/or pass it off as part of aging. But if we can improve blood flow, we can get them back to activities that matter – going to the grocery store, playing with grandkids, etc. Earlier intervention also means heading off future complications and deleterious limb and cardiovascular outcomes.

- PAD raises the risk for myocardial infarction and cerebrovascular events. **What's often misunderstood is the fact that patients who have asymptomatic PAD have the same cardiovascular risk as those with symptomatic disease.** In addition, cardiovascular outcomes are worse in patients with PAD compared with those who have coronary artery disease because of polyvascular disease and frequent tobacco use. Most of the guideline-directed medical therapies for PAD are meant to prevent these events and related deaths.

- **PAD puts someone at risk of acute limb ischemia.** As with myocardial infarction, time is muscle; if blood flow is not quickly restored, acute limb ischemia can result in amputation or death.

Remember: It's easy to screen for PAD and vital to do so in appropriate patients.
TALKING WITH PATIENTS ABOUT PAD AND CV RISKS

Make it personal

How you approach the conversation about peripheral artery disease (PAD) will depend on:

- Where the patient is in the course of his or her disease (newly diagnosed, stable, etc.)
- If they have mild, moderate or advanced disease
- Previous treatments tried (if they have exhausted medications and are still progressing or have acute manifestations)
- The presence of other cardiovascular risk factors, including smoking, diabetes, high blood pressure, high cholesterol
- Individual goals, concerns and preferences

When talking to patients about PAD and the related cardiovascular risks, it’s important to adjust the information and education you give to best meet individual patient’s needs. The following concepts can go a long way to build trust.

Deepen your discussions

- **Show empathy** through active listening; living with a chronic condition – especially one that makes you more vulnerable to other health issues – is never easy.
- **Ask about personal goals** and preferences – what matters most to them as it relates to managing their PAD.
- **Keep explanations simple** and ask them to explain, in their own words, what they heard; a person’s health literacy can affect how they seek information and what they recall.
- **Actively involve patients in their care** and treatment decisions, which can lead to better adherence and outcomes.
- **Offer hope** with more treatment options available today than ever before.
- **Anticipate – and make time – for questions** and help by asking “Tell me, how are you feeling?” or “What questions do you have?”
- **Empower each patient to know they have control**.
Most patients are familiar with heart attack and stroke. As such, it might be easiest to explain PAD in the context of coronary artery disease. This may also help to set the stage for more in-depth discussions about the related cardiovascular risks, as well as polyvascular disease.

To explain PAD using heart attack as a starting point, you might consider adapting the following language. Be sure to keep it simple and check in to gauge their understanding.

- **You’ve probably heard of coronary artery disease, even if you don’t know it by name. It’s often what leads to a heart attack.** It happens when the blood vessels of the heart – arteries that carry oxygen-rich blood to the body and heart muscle itself – become stiff or clogged. This is **usually due to a buildup of cholesterol and fatty deposits in the blood that stick to the inner walls of the arteries** (a process called atherosclerosis). Coronary artery disease usually shows itself with chest pain or even a heart attack if blood flow and oxygen to the heart muscle is blocked or severely limited.

- **This same hardening of the arteries doesn’t just happen in the heart.** You also have arteries that carry blood from your heart to your legs, stomach, arms and head.

- When these arteries become clogged, it prevents sufficient oxygen from reaching the tissues and muscles in other parts of the body, most often those in the legs. **Similar to the chest pain that can occur when blood flow to the heart is reduced, pain or cramping in the legs when walking can be a sign that there isn’t enough blood flow to the leg muscles. But not everyone has symptoms.**

- In severe cases of PAD, someone can have acute limb ischemia, which is like a heart attack of the leg when blood flow is blocked.

- PAD is a serious condition and puts you at greater risk for a heart attack or stroke if it’s left untreated. But there are many treatments available.

**Abbreviated explanation:**
Peripheral artery disease, or PAD, occurs when arteries that carry oxygen-rich blood to your limbs, kidneys, stomach and head become narrowed or clogged. This is most often due to extra cholesterol and other fats in the blood that build up along the walls of the arteries. PAD, which most often affects the legs, restricts normal blood flow to the muscles and tissues.

But having plaque in the arteries that supply your legs or arms with oxygen-rich blood means you probably have (or will have) the same in the arteries of your heart and brain, too. This can lead to a heart attack or stroke. But we have more ways to treat PAD than ever before that can also lower the risk of heart disease or stroke.
TALKING POINTS
12 COMMON PATIENT QUESTIONS ANSWERED

Patients share that it is often hard to know where to start when it comes to asking the right questions. There are also many misconceptions about PAD. For example, some patients erroneously think that varicose veins signal PAD or that if they don’t have symptoms they don’t need treatment or that amputation is inevitable.

The following questions and accompanying suggested language can be used to help you provide easy-to-digest information to help educate and engage patients. Feel free to make adjustments and tailor your messages to meet the needs of individual patients.

1. **Does PAD mean I have heart disease too?**

   Not necessarily. But having PAD is a red flag that you may have similar narrowing or blockages in other arteries, including the ones that supply your heart and possibly the brain. PAD, which most often occurs in the arteries of the legs, gives us a “window” into atherosclerosis that may be lurking elsewhere in the body, including the heart.

   Because clogged arteries in the legs means you are at greater risk for heart attack and stroke, your treatment plan should also center on protecting your heart health. Every person is different, but we can accomplish this through:

   - Lifestyle choices – eating a heart-healthy diet, not smoking, staying active. Walking, which may be painful for some, is known to help over the long term
   - Carefully managing other conditions – diabetes, high blood pressure and cholesterol
   - Medications that, often together, can lower the chance that a heart attack or stroke will happen

2. **Are varicose veins the same as PAD? Is deep vein thrombosis (DVT) the same as PAD?**

   No. Your venous system (veins) is different from your arterial system (arteries). PAD affects the arteries deep in your leg that carry oxygen-rich blood from your heart. The veins bring the blood from your legs back up to your heart. Varicose veins are swollen, purple veins in the legs that are visible under the skin. Deep vein thrombosis (DVT) is a blood clot inside the veins of your legs.
3. **What does PAD look and feel like?**

Not everyone has or will report symptoms, which is why PAD is often missed. Depending on the severity, symptoms can range from:

- Leg pain or a heavy feeling when walking that goes away once you stop; the pain may be in the calf, buttock, hip, or thigh (this is called claudication in medical terms)
- Severe pain that continues when you rest or bothers you when sleeping
- Wounds on the feet or leg that won’t heal
- Pale or blue-looking skin color
- Numbness or decreased sensation in your feet

Some people will just notice that they can’t walk as fast or as far as they used to.

4. **I don’t have symptoms, so I don’t have to worry.**

Whether or not you notice symptoms, having PAD can be a red flag for other problems, including heart disease, heart attack or stroke. We will work together to map out a treatment plan that aims to:

- Stop or slow your PAD from getting worse and ease any symptoms to improve what you can do
- Lower your cardiovascular risk – we know that if you have blockages in your legs (or arms), you likely have or will have blockages elsewhere, including within the arteries that supply oxygen to your heart and brain
- Prevent tissue injury or limb loss

Finding and treating PAD early can help minimize its impact on your heart and limbs.
5. **How is PAD diagnosed?**

Screening is easy and painless. It begins with a physical exam. We also look for things like whether:

- Your pulse is not as strong as it should be in your legs/feet (we can feel pulses on the top of your feet, at your ankle, behind your knee or in your groin)
- Your blood pressure at your ankle is lower than in your arm (this is called your ankle-brachial index, or ABI, and can show how well blood is flowing in your limbs)
- You have other medical issues or risk factors that are linked to PAD; for example, diabetes, high blood pressure or smoking
- You are having symptoms such as leg pain or skin problems (for example, any redness, sores or cuts that won’t heal, or skin color changes on your legs or feet)

6. **What can be done? Can PAD be reversed?**

PAD typically develops over many years. You can’t reverse it, but medications, exercise and other heart-healthy habits, including not smoking, can help relieve symptoms and prevent or slow PAD from getting worse.

The goal will also be to lower the likelihood that you will have coronary artery disease (blockages in your heart’s arteries), a heart attack, stroke or lower limb injury – all of which are more likely with PAD.

Controlling other risk factors for stroke and heart disease is also important:

- Staying on top of your diabetes, if you have it, and blood sugar levels
- Getting your cholesterol and blood pressure to a healthy level
7. **If I have PAD, what steps can I take to treat it?**

Your treatment will depend on a number of factors, including how early or advanced your PAD is, as well as your goals for your care. Treatment for PAD usually involves:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>🚶 Getting more exercise</td>
<td>Ask about starting a supervised exercise program at a local clinic or hospital if you have related leg pain as your insurance may cover it</td>
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<tr>
<td>🚭 Quitting smoking</td>
<td>Smokers are up to twice as likely to develop PAD</td>
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<tr>
<td>🍎 Eating heart-healthy foods</td>
<td></td>
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<tr>
<td>🚣 Getting to a healthy weight</td>
<td>If you are overweight or obese</td>
</tr>
<tr>
<td>🕊 Managing other risk factors</td>
<td>Including your blood pressure, cholesterol, and blood sugar levels</td>
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<tr>
<td>💊 Taking medications as prescribed</td>
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<tr>
<td>🕵️ Examining your legs and feet</td>
<td>For sores that won’t heal, any blue or pale-looking skin color, loss of hair growth, etc.</td>
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<tr>
<td>🧘 Easing stress and taking steps to feel more in control</td>
<td>That might mean talking to someone else living with PAD, doing yoga, keeping a journal or finding other ways to reconnect with what matters</td>
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<tr>
<td>📣 Keeping all follow-up visits</td>
<td>And letting your care team know if you have difficulty</td>
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<tr>
<td></td>
<td>1. Getting to your appointments or having lab work done or</td>
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<tr>
<td></td>
<td>2. Following your treatment plan for any reason (for example, cost of medications, side effects, getting to and from appointments, etc.)</td>
</tr>
<tr>
<td>🍏 Surgery to open blocked arteries is an option if medications and lifestyle changes are not enough</td>
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8. **Does having PAD mean I will lose my leg? I have diabetes too. Should I be extra careful about my foot health?**

If untreated, PAD can result in a loss of a leg (called amputation). But this is much more likely in people with advanced disease. Sometimes PAD can cause critical limb ischemia. This is like a heart attack in your leg. It’s when plaque buildup gets so bad that it stops blood from flowing. This can result in tissue loss, amputation or death. People who have PAD and diabetes, which affects circulation in the legs and feet, are also at greater risk of amputation.

You can lower the risk of tissue damage or limb loss by carefully following your treatment plan. As a reminder, it’s good idea to:

- Examine your feet and legs for sores or changes in skin color or temperature
- Wear sensible shoes to protect your feet and avoid injury
- Quit smoking and avoid secondhand smoke
- Keep diabetes under control, if you have it

9. **Walking hurts. Shouldn’t I listen to my body and just rest? How do I know when it’s safe to “work through the pain” and when I should stop and rest?**

If leg pain comes on with walking or other exercise and subsides when you stop, it’s OK. In fact, patients taking part in supervised exercise programs that are specifically designed for PAD are encouraged to walk until they develop moderate to severe pain.

Pain is only dangerous if it occurs when you stop and rest or when you elevate your legs. This is a sign that the artery in your leg may be blocked (think “leg attack” similar to a “heart attack” and time is muscle), in which case you will need a procedure to open up the affected artery and restore blood flow.

10. **How does exercise help PAD?**

Sometimes PAD makes it hurt to walk. This may make it harder to do the activities that matter to you, like shopping independently and enjoying time with friends and family.

But getting exercise and moving your body is one of the best ways to treat PAD. Studies show exercise can be as effective as medicines or surgeries for managing PAD. It can also help improve how far you can walk and has favorable benefits for the heart.

Exercise is thought to help with PAD by:

- Improving blood supply in your limbs
- Helping your blood vessels work better
- Changing the way your muscles use oxygen
11. What is a vascular specialist?

Vascular specialists or vascular surgeons are trained to treat blood vessel diseases and restore blood flow.

They work together with other members of your care team to determine the best course of treatment, which is a combination of healthy habits and medications for most people. They also help care for people with advanced forms of PAD who may need procedures to unblock arteries with stents or balloons or create bypasses around the blocked artery.

12. When should I contact my health care team?

It’s a good idea to let your care team know if you have pain or weakness in your legs at rest, open sores that won’t heal, chest pain, shortness of breath, or tingling or coldness in feet. If the distance you can walk starts to decrease, also let your care team know.
IMPROVING OUTCOMES: 5 TIPS FOR ENGAGING PATIENTS IN THEIR CARE

1. Check in to be sure they understand peripheral artery disease (PAD) and how it affects their overall health and mobility.

   Can they reasonably repeat back what PAD is and how it relates to coronary artery disease, heart attack and stroke, and what to expect? Help to empower them to actively participate in their care.

2. Develop or adapt treatment plans to align with personal goals and preferences.

   One of the best ways to engage patients in their care is to understand their specific goals for care and tailor treatment plans to address them.

   It can be helpful to ask:

   - When it comes to treating PAD, what matters most to you?

   If you need help moving the conversation along, you might ask:

   - Are your main goals to: be able to be more active again, avoid limb loss (amputation), lower the risk of a future heart attack or stroke and live longer?
   - If you had less pain or discomfort in your legs, what would you most want to be able to do or get back to doing?
   - Since your last visit (if applicable), what is most concerning about your PAD diagnosis, treatment or the other health risks that come with it?

   Reinforce how important it is to report new or worsening symptoms in between visits.

   - Have you had new or greater difficulty meeting daily tasks or exercising?
3. **Review each medication and why it is being prescribed.**

Medications coupled with lifestyle changes are the foundation for PAD and cardiovascular risk management. Research shows that when patients understand how they benefit from their medications, they are more apt to adhere to their treatment regimen.

When presenting new drug options, here are some of the questions patients and their caregivers often ask:

- The specific drug name (be sure to spell it out for patients and let them know the generic names as well)
- How does this medicine work for PAD and are there any other benefits? (Studies show that when patients understand how a medication works and why they need it, they are more adherent.)
- How might it help me feel better?
- What side effects should I be aware of?
- How should I take it? (How often? At what time of day? With or without food? What to do if I miss a dose?)
- Does it interact with other medications or food?
- How quickly will it work?
- How much will it cost?

4. **Identify and help patients resolve barriers that may prevent them from adhering to their treatment plan.**

You might ask whether there are aspects of their treatment plan that worry them or that they find difficult. For example, take the time to:

- Find out if the patient is a current or former smoker. Ask about smoking cessation efforts to date, if applicable, and provide additional support. Keep in mind that patients will often fail several times before successfully quitting.
- Ask about any concerns they have about their medications. For example, you might ask:
  - “Are you having trouble getting or paying for your medications?”
  - “Do you think any of your medications make you feel worse, not better?”
- Inquire about how they are coping generally and suggest strategies to help.
- Learn about other challenges or life demands that may play a role, including work, caring for others, difficulty participating in supervised exercise programs, or getting regular physical activity, or not being able to get to appointments.

5. **Provide opportunities to interact with patients in between visits, if possible.**

For example, use telehealth checkups, patient portals, email or text reminders to promote treatment adherence and healthy lifestyle habits. These touch points also give patients additional entry points to share challenges.
HELPFUL RESOURCES FOR YOUR PATIENTS

It is important to encourage open and ongoing dialogue about peripheral artery disease (PAD) and the associated risks for heart disease and stroke. Again, efforts to educate patients about PAD and cardiovascular risk should also be guided by their individual preferences and priorities.

Below are several resources developed by the American College of Cardiology that can be used to help identify patients who warrant PAD screening, answer common questions and dispel myths, and establish individual treatment priorities.

**Understanding PAD**
A general information page about PAD – what it is, key risk factors, common signs and symptoms, what to expect, and steps to manage it.

**Could I Have Artery Disease in My Legs?**
*PAD self-assessment* A patient worksheet on vascular health, including risk factors for PAD to help identify who should be screened for PAD.

**What Comes Next? Managing PAD and Other Risks**
An overview of available options to treat PAD. It also includes a checklist to help patients prioritize their care plan. Patients can write down their goals, immediate action steps and what may help or hinder adherence.

**PAD: Power of Exercise**
Patients often don't understand how exercise, which may be painful for some, can help improve function and mobility. This one-pager explains supervised exercise programs and the benefits of physical activity.

**Common Questions about PAD**
To help answer questions that many patients have and correct misinformation.