

**Alliance for Aging Research
Sarcopenia Research – Final Report
April 4, 2022**

Introduction

This report highlights insights from research conducted by the Alliance for Aging Research's Aging in Motion (AIM) Coalition from August through December 2021. AIM sought to deepen its understanding of how physicians in general community settings (e.g., outpatient clinics) monitor, diagnose, and treat older patients experiencing sarcopenia, or a significant loss of muscle mass and strength.

For most people, muscle mass and strength start to decline at age 30, and the pace of this decline increases with age. Strength loss and muscle weakness can reduce a person's ability to participate in everyday activities, increase pain and risk of injury, and diminish quality of life overall. Because these symptoms mirror the general symptoms of aging, sarcopenia often goes unrecognized as a distinct condition. It can be debilitating if left undiagnosed and untreated.¹

Sarcopenia is a relatively new term and diagnosis in the general medical community. The Centers for Disease Control and Prevention only officially recognized sarcopenia's diagnostic code in the International Classification of Diseases (ICD) in 2016. This ICD-10 code allows for data collection and reporting to serve public health goals.²

Currently, there is also no approved pharmaceutical treatment for sarcopenia. Standard practice is to prescribe a behavioral intervention, such as changes to a patient's diet or exercise patterns. Protein supplements (e.g., Boost[®] beverage shakes) are also commonly used.

Only a modest amount of quantitative research on sarcopenia has been conducted to date. By researching the perceptions and practices related to sarcopenia among general community physicians, AIM was able to uncover valuable information that can support educational campaigns, partnerships, policymaking advocacy, and other tactics to improve the experience of aging in the United States.

About the Alliance for Aging Research

The Alliance is the leading nonprofit dedicated to accelerating the pace of scientific discoveries and their application to improve the universal human experience of aging and health. Since its founding in 1986, the Alliance has become a valued advocacy organization and a respected, influential voice with policymakers. The Alliance believes that advances in research help people live longer, happier, and more productive lives and reduce long-term healthcare costs. The Alliance strives to generate knowledge and action on age-related issues through activities and initiatives in public policy and through provider and consumer health programs.

¹ To learn more about sarcopenia, see [“What Is Sarcopenia?”](#) on AIM's website.

² To learn more about the ICD-10 code for sarcopenia, see [“AIM Coalition Announces Establishment of ICD-10-CM Code for Sarcopenia by the Centers for Disease Control and Prevention”](#) on AIM's website.

About the Aging in Motion Coalition

An initiative of the Alliance, AIM is a nationwide coalition that brings together a diverse group of patients, caregivers, and organizations seeking to increase research and treatment options for age-related functional decline and to raise awareness about sarcopenia.

Research Activities

This project used qualitative and quantitative research methods in a phased approach, consisting of a set of interviews and an online survey (see Table 1). This approach enabled researchers to use findings from one phase to inform the strategy for the next. AIM worked closely with consultants at Reingold, a social impact communications firm, to develop all research plans and instruments.³ The Alliance supported the project fully through sponsorships for AIM activities.

Reingold managed the survey in coordination with Medscape, the market research arm of the global medical news organization WebMD. Medscape continually recruits and manages an opt-in panel of healthcare professionals for research purposes. Respondents who completed the sarcopenia survey received a one-time payment of \$25–\$35, depending on the difficulty of recruiting respondents for their specialty. Reingold conducted all data analysis and reporting, with ongoing advice from AIM.

Table 1: Research Methodology

Research Phase	Timing	Sample Size	Recruitment Criteria
Physician interviews	Aug – Oct 2021	n = 9	<ul style="list-style-type: none">▪ Full-time practitioner▪ Licensed as a medical doctor▪ Board certified in either internal medicine, geriatrics, family medicine, or physical medicine and rehabilitation▪ At least 51% of patients 65+▪ At least 76% of cases outpatient
Physician survey	Nov – Dec 2021	n = 253	

Reingold conducted phone interviews with nine board-certified physicians working full time in either internal medicine, geriatrics, family medicine, or physical medicine and rehabilitation (PM&R). Reingold recruited participants through a mix of professional contacts and cold calls and offered each interviewee a \$25 cash card for their time. Reingold asked participants questions about their approach to monitoring, diagnosing, and treating age-related muscle decline, as well as their familiarity with the term “sarcopenia” specifically. Interviewers probed more deeply into areas that seemed to particularly interest participants or spark a unique perspective, which helped uncover potential blind spots in the design of future research phases.

Using findings from the interviews, Reingold and AIM developed an online survey for 253 physicians in general community settings. Like the interviews, the survey covered the monitoring, diagnosis, and treatment of sarcopenia. However, it also used quantitative measurements. In addition, the survey explored environmental factors related to diagnosis and

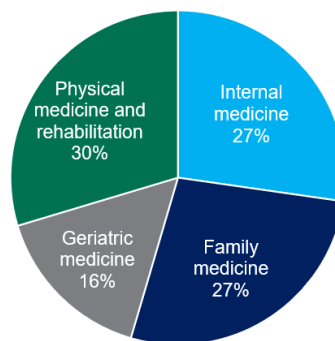
³ For more information, see “Appendix A: Research Methodology Details and Participants Summary”; “Appendix B: Physician Interview Guide”; and “Appendix C: Physician Survey Questionnaire” in this report.

treatment (e.g., the patient’s living situation, access to transportation, health literacy level) and asked demographic questions about providers’ 65-and-older patient populations in general (e.g., rurality, income level).

The survey used quotas to target a well-rounded distribution of medical practice areas that would be likely to encounter older patients with reduced strength and functioning in general community settings. This approach resulted in the following breakdown of respondents: 69 in internal medicine, 69 in family practice, 40 in geriatrics, and 75 in PM&R (see Figure 1). Among the 213 nongeriatrician respondents, only 9% said they had completed advanced training in geriatric medicine.

Figure 1: Respondents by Specialty

Q2: What is your primary area of medical practice?
n = 253



Research Highlights and Key Themes

Researchers distilled data from both project phases to arrive at the set of findings presented in Table 2, which are described in greater detail on the pages that follow.⁴

Table 2: Key Findings

Finding
1. Many physician respondents — especially geriatricians — are familiar with sarcopenia but think the condition is twice as prevalent as the literature suggests. Despite purported familiarity, they don’t regularly use this term in charting or with patients.
2. Most physician respondents are unfamiliar with sarcopenia’s specific definition(s), screening cutoff points, and quantitative diagnostic criteria. They instead base their screening and diagnosis decisions on a generalized, qualitative understanding of the condition.
3. Strength testing is one of the many routine screenings that participating physicians conduct with aging patients. They associate sarcopenia with the aging process and related life events and don’t typically consider sarcopenia a symptom of another disease or condition.

⁴ For more information on findings and data, see “Appendix D: Topline Survey Results” and “Appendix E: Data Limitations” in this report.

4. For physician respondents, there's no substitute for a healthy diet and exercise regimen — usually through the support of physical therapy — to address sarcopenia.
5. Physician respondents said education and external support systems — but not much else — can help patients make progress in addressing sarcopenia.

1. Many physician respondents — especially geriatricians — are familiar with sarcopenia but think the condition is twice as prevalent as the literature suggests. Despite purported familiarity, they don't regularly use this term in charting or with patients.

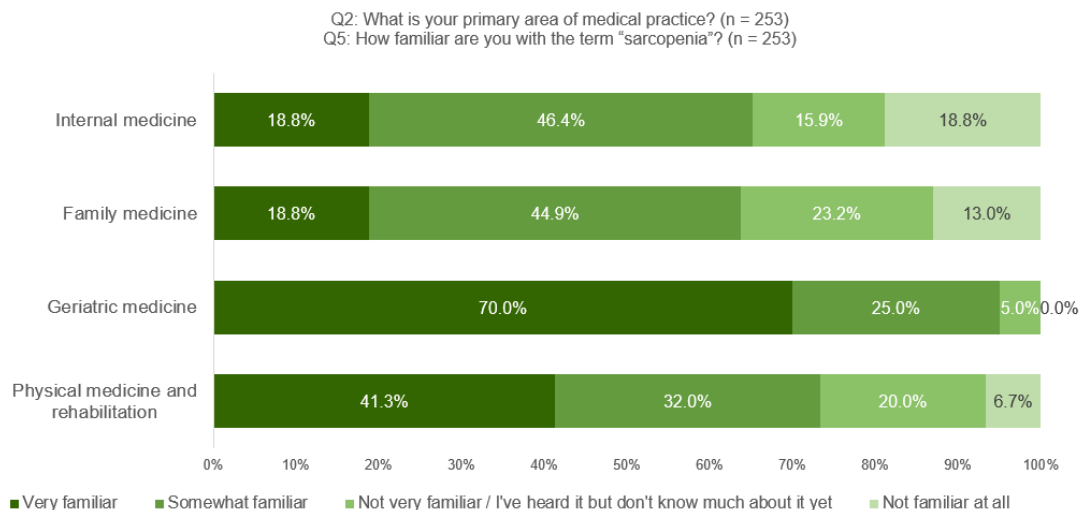
Of the 253 physicians surveyed, 72% said they are either somewhat or very familiar with the term “sarcopenia.” Geriatrician respondents were the most familiar among the medical specialties surveyed, with 70% reporting that they are very familiar with the term (see Figure 2).

“When we're writing papers and teaching, we'll say 'sarcopenia,' but when we're talking in clinical care, we'll say 'frailty.' ”
— *Geriatric Medicine Interviewee*

Recruiting efforts for the interviews, however, suggest that there are still many physicians who are unfamiliar with this term. Agreement to participate in the initial physician interviews increased when the project team framed the research as being related to “muscle decline” instead of “sarcopenia.”⁵ Given this experience,

researchers intentionally used broader language in the survey questions, referring to “the significant loss of muscle mass and strength (sarcopenia).” In this way, respondents could reflect on their experiences regardless of whether they use the term “sarcopenia” in their practice.

Figure 2: Familiarity With the Term “Sarcopenia” by Specialty

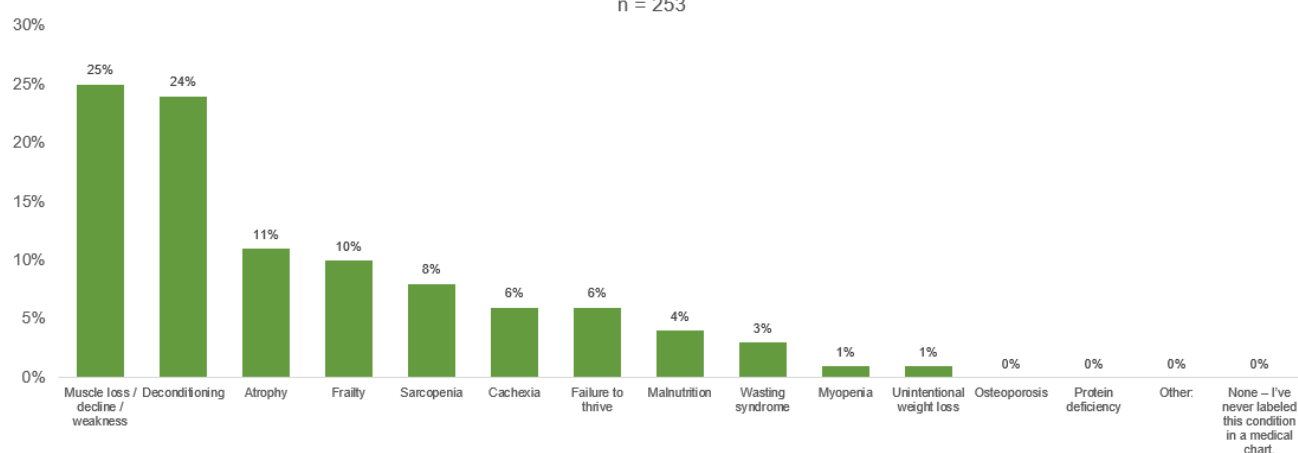


⁵ Some family medicine and internal medicine physicians even declined interview requests because, they alleged, they “don’t have any patients with sarcopenia.” Given the ballooning 65-and-older population in the United States in recent years, this response suggests a lack of familiarity with the term. For more information on population trends, see [“65 and Older Population Grows Rapidly as Baby Boomers Age”](#) on the U.S. Census Bureau’s website.

Despite their self-reported familiarity with sarcopenia, survey respondents and interviewees alike said they use the term “sarcopenia” in patient charting or when using ICD-10 codes⁶ less often than they use other terms and codes, such as those for “weakness,” “frailty,” and “atrophy” (see Figure 3). Interview participants shared that they are more likely to use these other, less medical terms with patients and their families especially. As discussed later in this report, the comparatively infrequent use of sarcopenia as an official diagnosis may be due to a lack of awareness or understanding about the condition’s specific criteria. Physicians may also be uncomfortable using these codes if the medical community isn’t unified in how to apply them in clinical settings.

Figure 3: Charting Practices

Q7: Before today, if an older patient presented with significant loss of muscle mass and strength, which terminology would you most likely have used in their medical chart?
n = 253



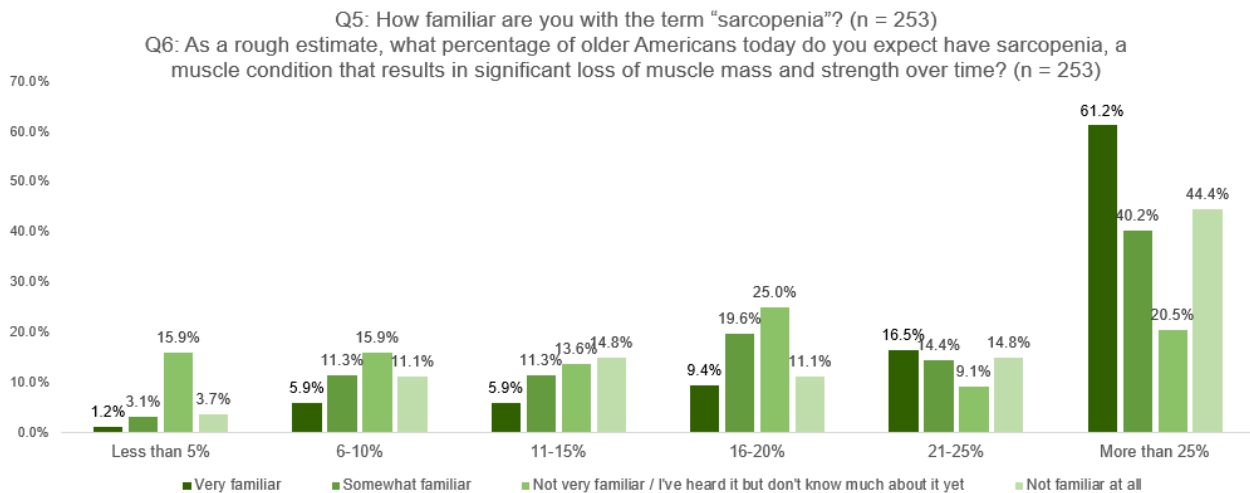
Similarly, Reingold found that many physicians think the condition is very prevalent among older Americans (see Figure 4). While medical literature suggests that approximately 10% of Americans age 65 and older experience sarcopenia,⁷ nearly half of survey respondents across specialties (44%) placed the prevalence at more than twice that rate — saying that sarcopenia affects more than 25% of aging adults today. This response was consistent among all respondent familiarity levels, medical specialties, and advanced geriatric training.

This higher-than-expected rating could reflect a lack of familiarity with the specific diagnostic criteria for sarcopenia or the research that supports it (see the next section). Alternatively, it could point to a need for the medical field to revisit the prevalence of this condition in the United States today. If practicing physicians are truly seeing sarcopenia at higher rates than in representative research populations, then fresh large-scale validation efforts may be warranted. Studies that ensure consistency in their diagnostic approaches will especially help researchers obtain more accurate and usable data.

⁶ For more information about ICD-10 codes, browse the [International Statistical Classification of Diseases and Related Health Problems 10th Revision](#).

⁷ Sousana K. Papadopoulou, Panagiotis Tsintavis, Giota Potsaki, and Dimitrios Papandreou, “Differences in the Prevalence of Sarcopenia in Community-Dwelling, Nursing Home and Hospitalized Individuals. A Systematic Review and Meta-Analysis,” *Journal of Nutrition, Health & Aging* 24, no. 1 (2019): 83–90.

Figure 4: Expected Prevalence by Familiarity With the Term “Sarcopenia”



2. Most physician respondents are unfamiliar with sarcopenia’s specific definition(s), screening cutoff points, and quantitative diagnostic criteria. They instead base their screening and diagnosis decisions on a generalized, qualitative understanding of the condition.

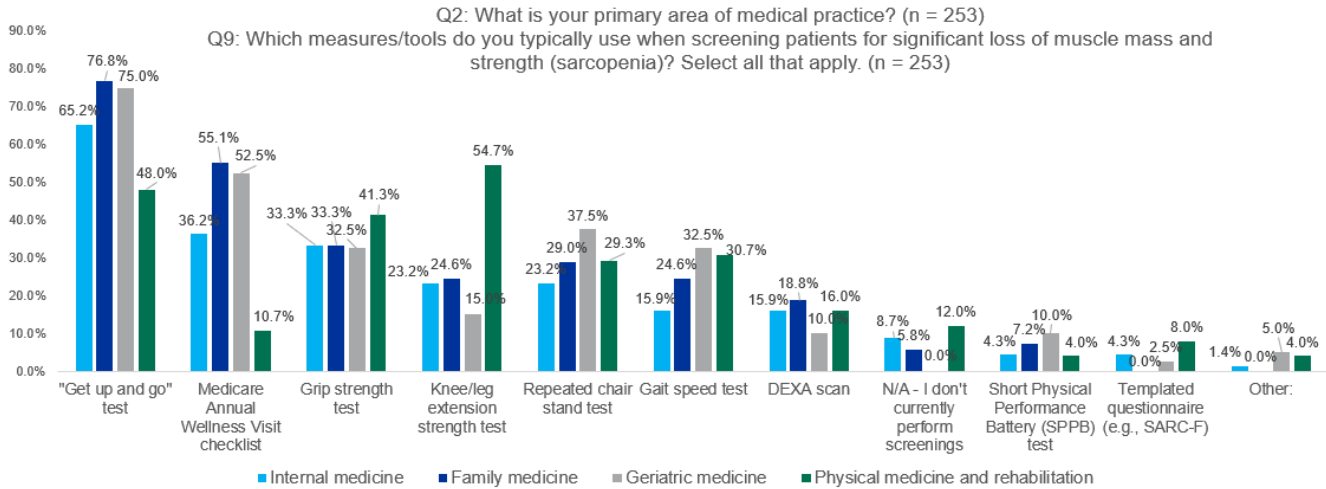
Data from both research phases indicates that participating physicians differ in their understanding of sarcopenia’s risk factors, symptoms, screening and diagnostic tools, and viable treatment options. When asked about their monitoring and screening techniques for sarcopenia, many interview participants described observing the patient while instructing them to stand from a seated position and start walking or to wrap their hands around the physician’s fingers and squeeze tightly. No interviewees mentioned precise units of measure (e.g., timed gait speed, pounds of pressure applied to a device), and only two interviewees used the phrase “get up and go” verbatim when asked about screening or testing practices, possibly referring to the formal get-up-and-go test. A few geriatric medicine and PM&R physicians did refer to official scales and tests without elaboration. However, a full 65% of survey respondents said they use the get-up-and-go test, and 36% said they use the grip strength test — techniques that, in their truest application, would require specific measurements. (See Figure 5 for the breakdown by specialty.)

“How do you measure muscle loss? You know, it’s tough. In this population, I guess you measure it by observation. And depending on what they present with — muscle pain, fatigue, etc.— you go down a different path.”
— **Internal Medicine Interviewee**

“When people come in with what they feel like is new weakness, it’s hard trying to pin down whether it’s more of a gradual thing or all of a sudden because this population is at risk for a lot of things [Sarcopenia] is more like a diagnosis of exclusion.”
— **Internal Medicine Interviewee**

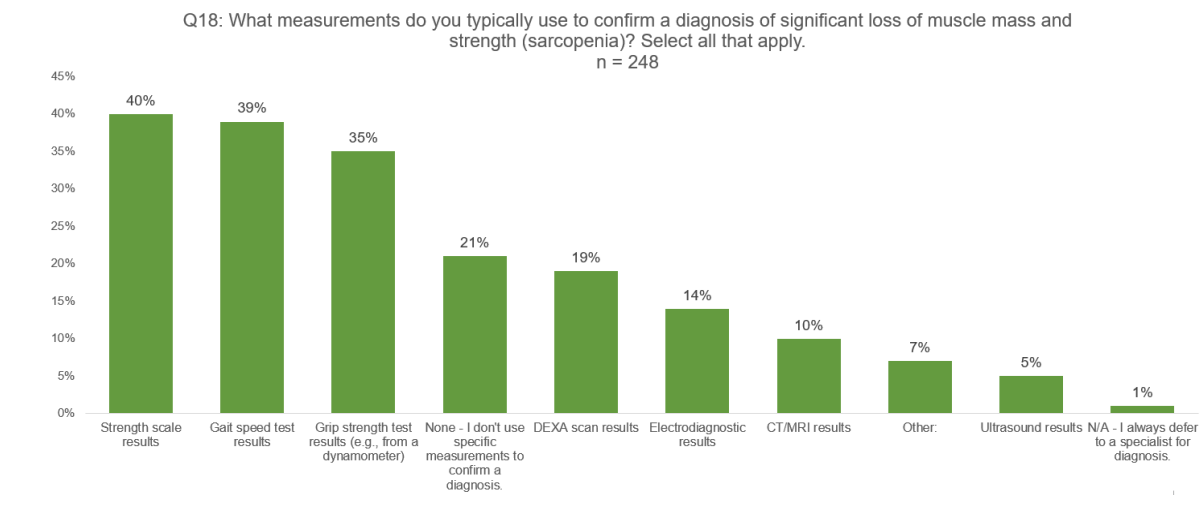
One explanation for these conflicting findings is that many physicians perform these screenings without specifics in mind. Indeed, among the survey respondents who reported using the grip strength test specifically, the vast majority (81%) said they don’t use a device (e.g., a dynamometer) to capture exact data points.

Figure 5: Screening Techniques by Specialty



The same subjectivity seems to continue in survey participants' diagnostic practices for sarcopenia. When asked about the techniques they use to confirm a sarcopenia diagnosis after screening, 21% of respondents said they don't use specific measurements to do so, and only 1% said they always defer to a specialist for diagnosis (see Figure 6). Furthermore, when respondents who *did* report using confirmation testing — such as strength scale, gait speed, or grip strength tests⁸ — were asked which sarcopenia diagnostic criteria or guidelines they typically use among the known variations,⁹ two-thirds (77%) either said they are unsure which specific criteria or guidelines apply to their approach or said they do not use them at all (see Figure 7).

Figure 6: Diagnostic Techniques

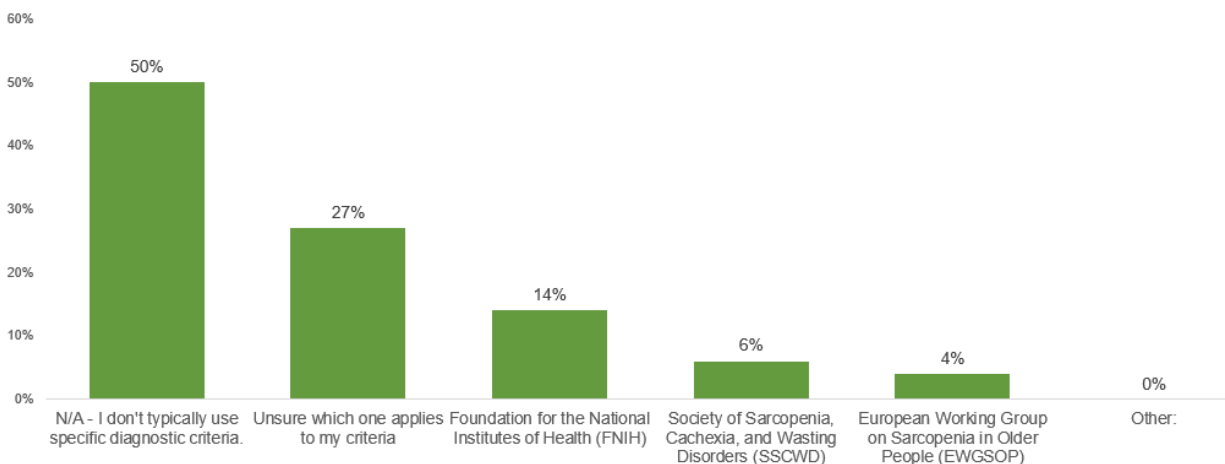


⁸ PM&R respondents were two to three times more likely (55%) than their peers in other specialties (15%–25%) to report using the knee/leg extension test for confirming a diagnosis.

⁹ Three variations were provided from three separate groups: the Foundation for the National Institutes of Health; the Society on Sarcopenia, Cachexia, and Wasting Disorders; and the European Working Group on Sarcopenia in Older People.

Figure 7: Diagnostic Criteria

Q19: What diagnostic criteria or guidelines do you typically use when diagnosing significant loss of muscle mass and strength (sarcopenia)?
n = 246



Perhaps unsurprising, then, is that nearly half (43%) of respondents said later in the survey that clearer clinical practice guidelines would motivate their physician peers to perform more

“My geriatric program at [medical school] was focused on mobility and sarcopenia. I’m much more sensitized to sarcopenia than my colleagues who didn’t have that kind of exposure.”
— Geriatric Medicine Interviewee

screenings. Similarly, another quarter (25%) said that more screenings would occur if more persuasive evidence existed that sarcopenia isn’t just a natural part of aging. This latter finding reiterates the general trend in the study that physicians have varying beliefs about sarcopenia, including whether strength loss can be stopped altogether or just slowed down. These beliefs hinge on factors such as physicians’ training, personal

experiences, and professional interests, which can all ultimately affect whether a patient is treated for sarcopenia and the interventions that physicians prescribe for it. More details on provider motivations for screening are included later in this report.

3. Strength testing is one of the many routine screenings that participating physicians conduct with aging patients. They associate sarcopenia with the aging process and related life events and don’t typically consider sarcopenia a symptom of another disease or condition.

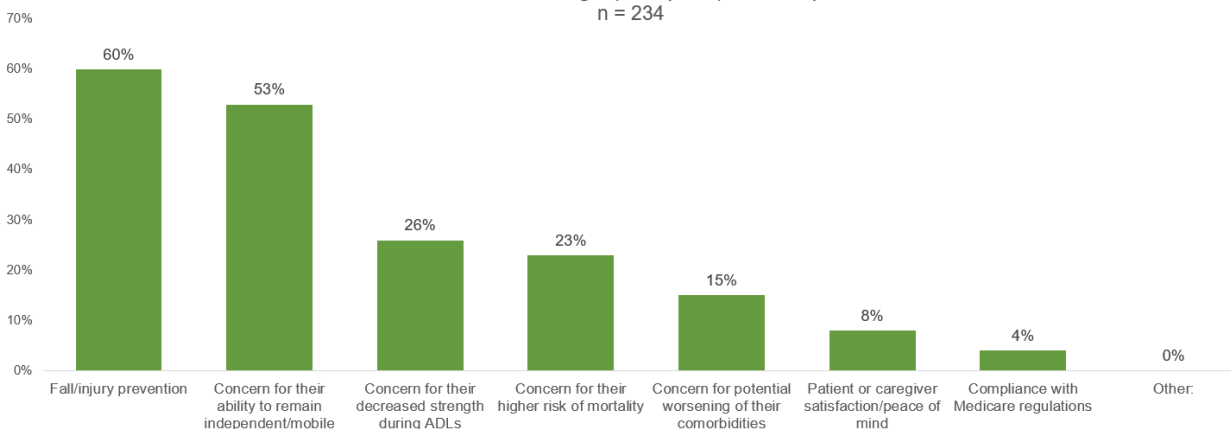
Primary care providers have a lot to cover during their 30- to 45-minute exams with patients in this age group, such as pain management, medication management, chronic illness, post-acute care, neurology, cardiology, and bone health. Screening for strength issues is just one part of this process and is mostly relevant to the extent that these issues limit a patient’s mobility and independence as they age. Physicians often consider maintaining mobility and independence a top priority for patient health and satisfaction. Interviewees in all specialties described the “vicious cycle” and “swift decline” that can happen when an aging patient suffers a fall, requires hospitalization or surgery, and then discontinues the normal activities that once kept them healthy and active.

Survey respondents echoed this sentiment: 60% and 53%, respectively, said that fall and injury prevention and concern for the patient’s ability to remain independent and mobile are their primary motivations for screening for and treating sarcopenia (see Figure 8). Other reasons cited by internal medicine and family practice interviewees included compliance with Medicare regulations, which require primary care physicians to perform a wide range of screenings when a patient turns 65.¹⁰ Given the plethora of screenings performed, participants also mentioned the importance of brevity during an exam. Screenings that don’t require equipment — such as the get-up-and-go and gait speed tests — are considered faster. Regardless of the technique used, however, 62% of survey respondents said a sarcopenia screening takes less than five minutes.

“People don’t feel conditions like this [sarcopenia] — they’re asymptomatic as they age. But it only takes one fall for everything to change.”
— Internal Medicine Interviewee

Figure 8: Provider Reasons for Screening

Q24: What are your primary motivations as a provider to screen and treat your patients for significant loss of muscle mass and strength (sarcopenia)? Select up to two.
 n = 234



In terms of why the patient is seeing a provider to begin with, interviewees reported that patients are more likely to end up in their exam rooms because they fell, were injured, or noticed numbness or pain than because of concerns about their muscle strength. They also said that patients’ family members (especially female children and spouses) were much more likely to request medical attention for their loved ones’ strength-related issues than were the patients themselves — a trend underscored by 60% of survey respondents, who said a patient’s family member typically expresses initial concern about sarcopenia.

“Every time she fell, my mother would call the emergency line instead of me [a physician] to get help. She didn’t want me to know it happened.”
— Internal Medicine Interviewee

themselves — a trend underscored by 60% of survey respondents, who said a patient’s family member typically expresses initial concern about sarcopenia.

To help explain this tendency, physician interviewees said that aging patients often worry about admitting to issues that might compel them to use medical equipment associated with “old people”

¹⁰ For more details on the “Welcome to Medicare” exam, see [“How To Conduct a ‘Welcome to Medicare’ Visit”](#) on the American Academy of Family Physicians Foundation’s website.

(e.g., walkers, canes, braces). Worse, they said some patients worried that their family members would move them into a long-term care facility or force them to give up their driver's license, which would reduce their independence. Multiple physician interviewees expressed a desire to educate patients, their families, and the public about the importance of paying attention to strength and nutrition during the aging process.

Survey respondents did not report a strong association between sarcopenia and another serious comorbidity. Instead, they said they are much more likely to screen for sarcopenia if the patient has received a diagnosis for malnutrition (82%), frailty (77%), limited mobility (76%), or cachexia (74%), which are similarly associated with aging (see Figure 9). Survey respondents also said they focus on life events more than conditions, including 82% who said they would likely screen patients for sarcopenia after a hospitalization or extended bed rest and 75% who said they would do so after a patient experienced an acute fall or injury (see Figure 10).

Figure 9: Screening After a Related Diagnosis

Q13: Which of the following diagnoses would currently prompt you to screen a 65+ patient for significant loss of muscle mass and strength (sarcopenia)? Select all that apply.
n = 234

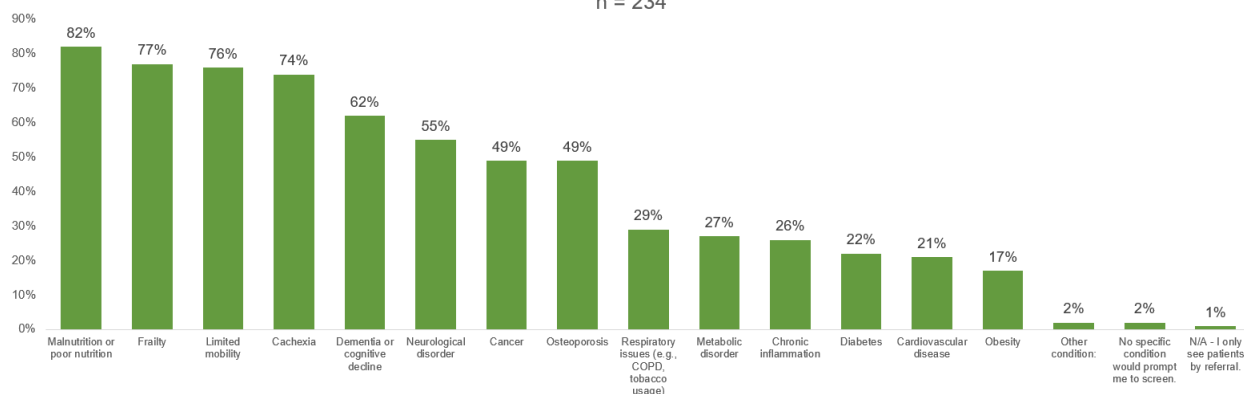
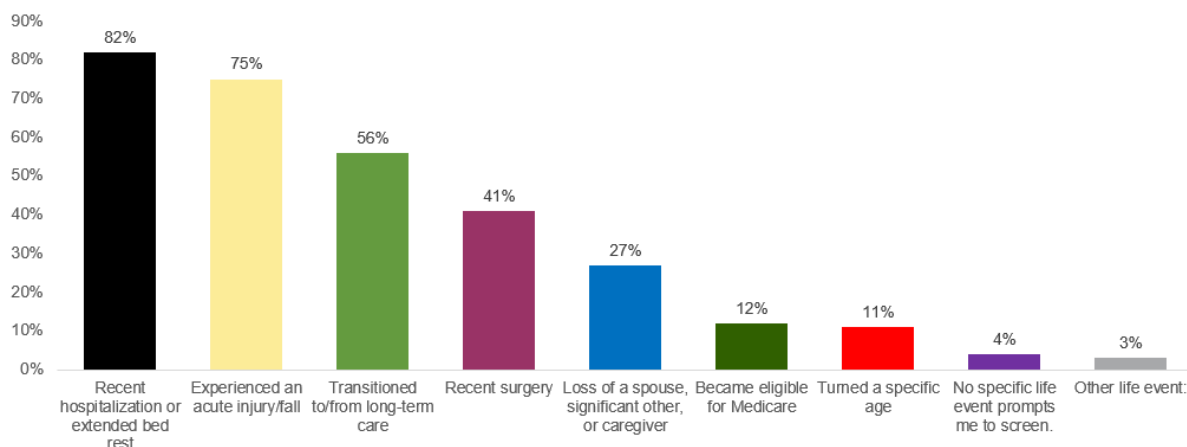


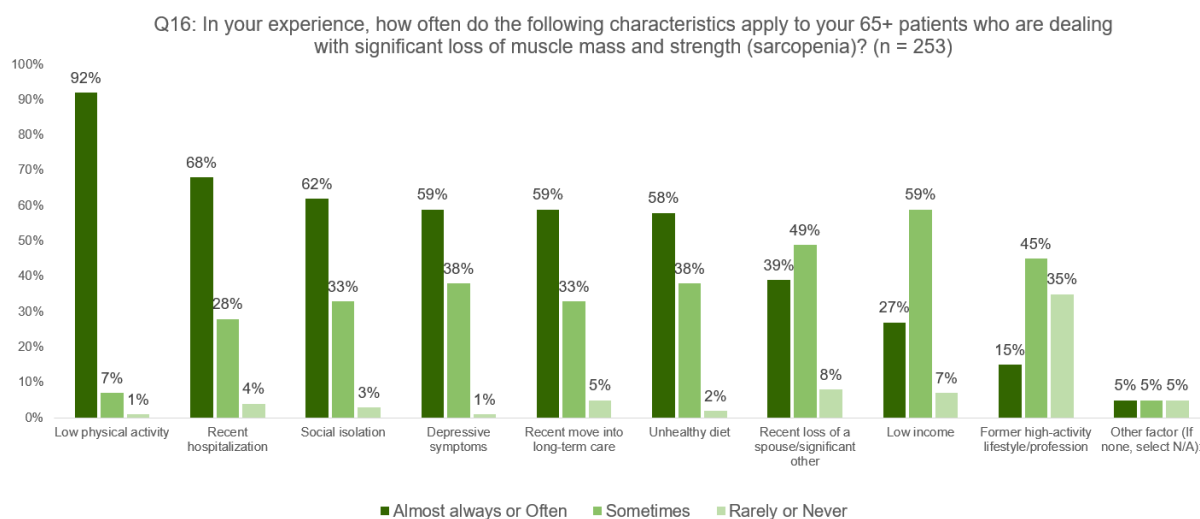
Figure 10: Screening After Patient Life Events

Q11: Which of the following life events would currently prompt you to screen a patient for significant loss of muscle mass and strength (sarcopenia)? Select all that apply.
n = 234



Data varied between the interviews and the survey on how participants perceive associations between sarcopenia and patients' lifestyles and characteristics. While several interviewees mentioned lower incomes, isolated living situations, and limited cognitive functioning or health literacy as contributors to sarcopenia, these factors were less prominent for survey respondents. About a fourth (27%) of respondents said that patients with sarcopenia typically have lower incomes, and slightly more than one-third (39%) said that patients with this condition have often experienced a recent loss of a spouse or significant other (see Figure 11). Survey and interview participants agreed, however, that low physical activity and social isolation are common factors alongside a sarcopenia diagnosis, rated at 92% and 62% by survey respondents, respectively.

Figure 11: Associated Patient Characteristics

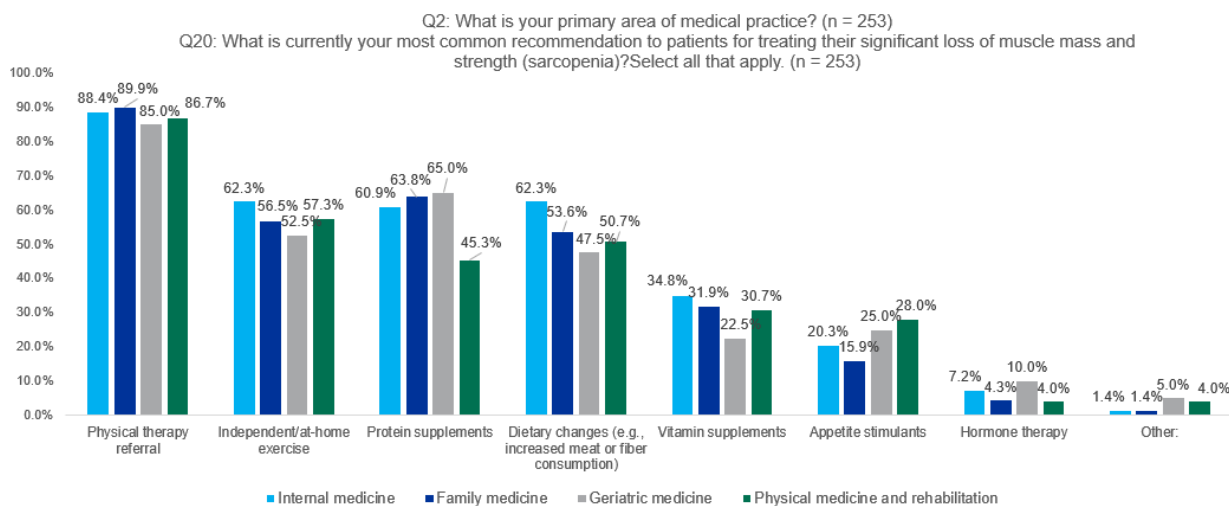


4. For physician respondents, there's no substitute for a healthy diet and exercise regimen — usually through the support of physical therapy — to address sarcopenia.

Physical therapy was selected as the most popular treatment approach among interviewees and survey respondents alike. Selected by 88% of the physicians surveyed, on average, and mentioned by every interviewee, physical therapy was the most common treatment choice, regardless of medical specialty, familiarity with sarcopenia, patient income levels, and average patient age beyond 65. (For a breakdown of survey respondents' treatment approaches by specialty, see Figure 12.) Only a few interviewees mentioned interdisciplinary approaches to treatment, aside from collaborating with physical therapists. An endocrinologist, nutritionist, dietician, psychologist, social worker, and pharmacist were mentioned by just one interviewee each.¹¹ All interviewees referred to a triage model to identify root causes before prescribing a treatment.

¹¹ The survey did not include a specific question about interdisciplinary approaches other than physical therapy referrals. However, nearly all questions offered an "Other" option that allowed respondents to provide their own answers as a free response. None of these write-in answers mentioned collaborating with another provider or specialist.

Figure 12: Treatment Approach by Specialty



One of the second most common treatment approaches among survey respondents was independent or at-home exercise, earning 58% overall. When asked for specific details about the at-home exercises they recommend, the physicians surveyed most often mentioned strength training (split evenly between upper-extremity and lower-extremity exercises), followed by exercises supporting patients’ core strength, range of motion, balance, and flexibility.

Cardiovascular exercises were also popular, with physicians emphasizing simply walking more — across the room, around the block, or up the stairs. This finding echoed comments from interviewees about how engaging in even ordinary, everyday physical activity will help prevent or address sarcopenia and how stressing this low level of effort with their patients can motivate them to act.

“When we say you need to exercise, we’re not talking about signing up for a marathon. We’re talking about walking up and down your hallway at home 10 times a day, three times a week.”
— **Geriatric Medicine Interviewee**

In addition, 58% of survey respondents, on average, selected protein supplements as a treatment approach. Yet some interviewees voiced caution here, saying that protein supplements aren’t typically covered by insurance (physical therapy usually is) and that patients sometimes complain about protein supplements’ side effects or chalky taste. This concern ties into the similar finding that only about half of survey respondents (54%), on average, would recommend dietary changes to address sarcopenia.

While many interviewees acknowledged the role of food intake in good muscle health, their comments and the survey data support the commonsense notion that implementing this type of behavior change can often be difficult for patients, especially without patients’ having external accountability (see more in the next section). Aging patients may also need to overcome environmental barriers to healthier diets, such as post-retirement budgets, reduced access to

“I can screen for it [sarcopenia], detect it, and diagnose it. But if there’s no one to do the actual meal part for them — the groceries, the cooking — then that’s it. As a provider, I can’t help them.”

— Geriatric Medicine Interviewee

transportation, discomfort with dentures or assistive eating tools, or limited freedom of choice when others are shopping for their groceries and cooking their meals.

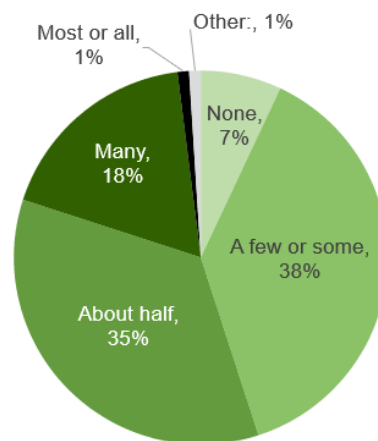
While no pharmaceutical intervention currently exists for sarcopenia, the project team did probe into potential demand for one if it emerges in the coming years. In the interviews, physicians across

specialties expressed major hesitation in prescribing a pill to aging patients, citing the complexities of potential contraindications with other medications, as well as fear of adverse side effects that would be hard to predict without significant longitudinal research. They also reported lower expectations of success if patients do not first address their diet and exercise habits.

One survey question asked specifically about success rates with exclusively diet and exercise as the treatment approach. More than half of respondents (54%) said that these interventions sufficed for about half of their patients (see Figure 13). These findings present a central challenge for treating sarcopenia: If diet and exercise interventions are the preferred approach among providers but patients find these methods tough to adopt or sustain, then there likely remains a need to continue exploring alternative approaches. In addition, future research could explore why some physicians think diet and exercise are sufficient to treat patients’ muscle loss, a question that the researchers did not ask directly.

Figure 13: Patients for Whom Diet and Exercise Suffice

Q22: For roughly how many of your patients do you feel diet and exercise alone are sufficient to address their significant loss of muscle mass and strength (sarcopenia)?
n = 253



5. Physician respondents said education and external support systems — but not much else — can help patients make progress in addressing sarcopenia.

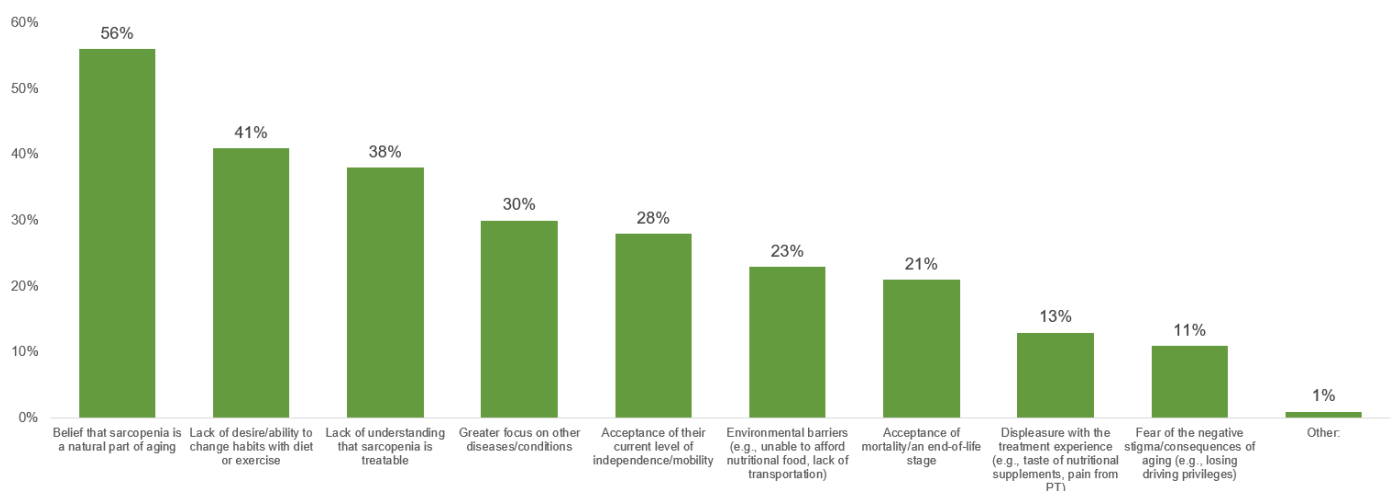
In both the interviews and survey, physicians were asked to identify any tactics that they have found particularly successful in motivating patients to address their sarcopenia. A common theme of the tactics shared was external accountability and support systems. For example, the popularity of physical therapy as a treatment approach, with its scheduled appointments at home or in the clinic, aligns with this theme. Similarly, participants reported that it was helpful to add a social element to behavior change, such as attending group fitness programs for “seniors,” engaging family members in at-home exercise routines, or dining out with friends more often.

“For many older individuals, exercise isn’t something they relish. You have to disguise it in other things to get them to engage. Even getting up and getting out is a form of physical activity.”
— PM&R Interviewee

Another top theme was patient education, including conversations in the exam room to draw attention to the more dire consequences of sarcopenia (e.g., loss of independence, acute injury and hospitalization, even death) or to tap into the patient’s daily living goals (e.g., gardening, playing with grandchildren, cooking at home).¹² Indeed, 56% of survey respondents said that patients are held back from taking action by a belief that sarcopenia is just a natural part of the aging process (see Figure 14), so these tactics allow for greater awareness of the risks, prevention strategies, and treatment options for sarcopenia.¹³

Figure 14: Patient Barriers

Q26: What do you think are the most common reasons that your 65+ patients fail to address their significant loss of muscle mass and strength (sarcopenia)? Select up to three.
n = 253



¹² This goal-focused conversational technique is sometimes known as “motivational interviewing,” so that term was included when totaling open-ended responses.

¹³ Recall from earlier in the report that 25% of survey respondents said physicians would also benefit from more evidence that sarcopenia isn’t just a natural part of the aging process. It’s not unlikely that physicians are projecting some of their own beliefs about this topic onto patients.

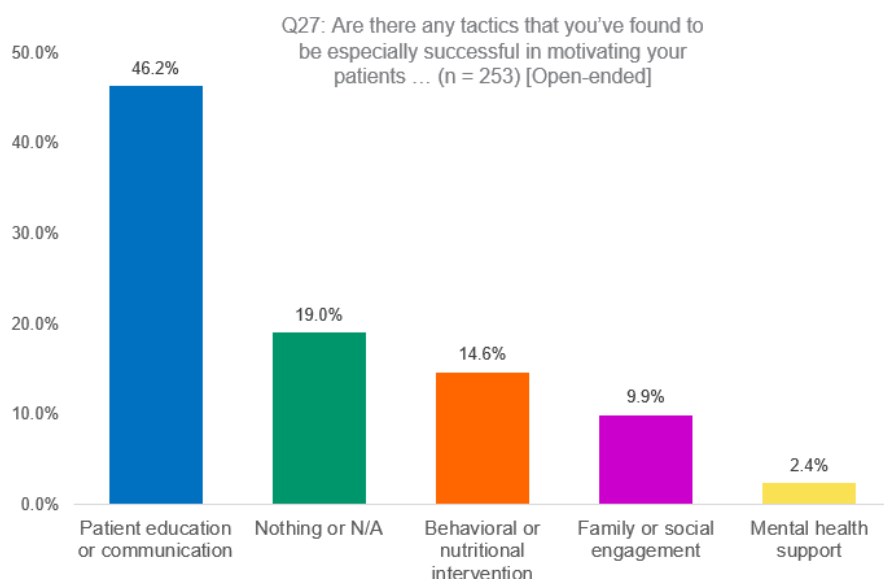
Yet physician interviewees underscored that prevention and intervention will always be a challenge for patients because they can't "feel" when their behavior is having positive or

"Scare tactics don't seem to work for changing lifestyles. Somehow making exercise easier or more accessible would help reverse some of the lack of motivation to exercise consistently."
— *Family Medicine Interviewee*

negative consequences on muscle strength — the pace of change is too slow to observe. Combine this low tangibility with the general acceptance that strength loss is inevitable at their age, and it's no wonder that roughly 1 in 5 survey respondents had no suggestions *at all* for tactics to successfully encourage patients to address their sarcopenia (see Figure 15). Additional and ongoing research will be needed to see if these trends shift over time as younger generations of physicians enter into later

decades of life and bring with them different health priorities, awareness levels, and technology.

Figure 15: Successful Motivational Tips



Conclusion

Whether surveyed or interviewed, participating physicians in general community settings agreed that muscle strength is an important factor in quality of life as patients age. They reported a fairly consistent process in screening, diagnosing, and treating patients for significant loss of muscle mass and strength (sarcopenia). This process includes observational tests of patient strength and mobility, a qualitative clinical diagnosis, and referrals to physical therapy. Despite this consistency, participants varied in their understanding of the specific definitions and diagnostic criteria available for sarcopenia, the effectiveness of alternative treatment options, and the condition's overall reversibility.

Participants also said their peers and their patients aren't quite convinced that sarcopenia isn't just a natural part of aging. Many participants had nothing to offer by way of tactics to motivate

their patients to successfully address their sarcopenia. Others pointed to the external accountability that comes with physical therapy appointments or social interactions, or to increased awareness, as a way to sustain patient behavior change. Patients' families and loved ones are often part of the detection and treatment process, and any educational efforts AIM undertakes should consider tailored messages and materials for these support networks to effectively improve health outcomes for aging adults.¹⁴

¹⁴ For more recommendations, see “Appendix F: Potential Next Steps for AIM” and “Appendix G: Ideas for Future Research” in this report.

Appendix A: Research Methodology Details and Participants Summary

Physician Interviews (Qualitative)

- Nine interviewees recruited by Reingold, using a combination of professional contacts and cold calls.
- Phone conversations held August 17 – October 19, 2021; approximately 30 minutes each.
- Primary work locations (some organizations were regional):
 - Boston, Massachusetts (2 interviewees).
 - Bronx, New York.
 - Charlottesville, Virginia (2 interviewees).
 - Kansas City, Missouri.
 - Pittsburgh, Pennsylvania.
 - Providence, Rhode Island.
 - Washington, D.C.

Physicians Survey (Quantitative)

- 253 respondents recruited via Medscape and its partners:
 - 75 in physical medicine and rehabilitation.
 - 69 in internal medicine.
 - 69 in family medicine.
 - 40 in geriatric medicine.
- Online survey conducted November 29 – December 21, 2021; approximately 15 minutes to complete.

Appendix B: Physician Interview Guide



Sarcopenia Interview
Guide 8.17.21-final.doc

Appendix C: Physician Survey Questionnaire



AIM Sarcopenia
Physicians Survey-FIN

Appendix D: Topline Survey Results



Sarcopenia Clinicians
Survey Topline Data.xl

Appendix E: Data Limitations

- During the interview phase, participants self-selected into the process, so they likely have a stronger familiarity with and passion for this topic than does the general population of physicians.
- Interviewees were more often serving military veteran patients, given Reingold's professional connections with military veteran groups.
- Because of their lower prevalence in outpatient settings, general community geriatricians are a hard-to-reach population for research. Reingold and Medscape had trouble recruiting physicians from this specialty for both the interviews and the survey.
- The research design forewent random sampling and demographic representativeness, meaning that physician respondents may have differed from the general population of physicians in their breakdowns by location, race, age, and gender. The same limitation applies to the patients they serve, and these considerations were excluded from the recruitment methodology.
- Despite a smaller sample size among geriatricians, no weighting was applied to the data during analysis. Researchers exercised caution when comparing data across specialties.
- All findings about patient barriers, motivations, and characteristics are as reported secondhand by their physicians. Additional research would be needed to understand the firsthand perceptions of and experiences with sarcopenia among patients themselves.

Appendix F: Potential Next Steps for AIM

- If one doesn't already exist, create an advisory group of physicians, academicians, researchers, and pharmacists to explore additional treatment options and resource needs for sarcopenia. Physical therapy and protein supplements have mixed success.
- Partner with meal delivery or food pantry nonprofits (e.g., Meals on Wheels America) to increase the protein levels included in their meal offerings.
- Lobby for Medicare to cover the purchase of protein supplements like Boost® and Ensure® or meat and meat alternatives at grocery stores. Explore whether discounts with suppliers are possible.
- Develop materials for patients, their families, *and* providers. Make concrete (avoiding abstraction) the connection between nutrition and mobility. Include details about appropriate intervention strategies (walking vs. marathons) that can help.
- Work toward reaching consensus on the use of screening and diagnostic tools, including who should be screened and with what frequency.

Appendix G: Ideas for Future Research

- Conduct a companion study among adults age 65 and older to gain firsthand perceptions of their experiences with sarcopenia.

- Measure differences between in-person and virtual care environments, where providers are not able to observe patients physically entering or exiting the room.
- Measure differences between patients who vary by generation, diet (e.g., vegetarian, keto), and religion — as patients' values, worldviews, and social pressures may play a role in their decisions about food intake, exercise regimens, and living situations.
- Measure differences in care that might occur at inpatient facilities or as part of home health. For example, physicians — and patients — in long-term or hospice care settings may perceive and treat issues with muscle strength and recovery differently than their counterparts in general community settings.
- Conduct a longitudinal study with patients using remote monitoring and intervention tools (apps, phone check-ins, etc.) to see if this ongoing engagement improves mobility and strength.
- Probe into the connection between sarcopenia and cachexia — the medical term for significant unintentional weight loss — to see if sarcopenia more often leads to cachexia or vice versa. For example, patients experiencing cachexia may be less inclined to exercise and build muscle strength. Or patients experiencing sarcopenia may burn fewer calories on average and therefore have reduced appetites.
- Probe into physician and patients' perceptions of the ability to successfully address or fully recover from sarcopenia. Researchers did not directly ask this question as part of this study.