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February 16, 2023

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Eric J. Rubin, MD, PhD



Supporting Physician Wellness: Health Care Organizations Seeking — and Piloting — Programs to Help Physicians Manage Their Work-Life Stressors

By Bonnie Darves

Just when organizations were formally recognizing that many of their physicians were seriously struggling with burnout and had started to seek remedies to address the endemic problem, the pandemic hit. The timing could not have been worse, many experts on physician burnout agree, and yet, for the most part, the physician workforce navigated the added stressors of COVID-19 both admirably and competently. Physicians worked in highly functioning teams to save lives, mitigate the virus' impact on patients, and offer the highest standard of care possible under the circumstances. Many physicians also helped their organizations chart a “survival path” to navigate the operational crises the pandemic unleashed.

Organizations that employ physicians, having witnessed the steep toll that the pandemic on top of burnout took, are understandably concerned about the state of their workforce. Many organizations are actively seeking, developing, and trying out wellbeing improvement programs to help bolster physicians and other clinicians. Health care leaders are recognizing, too, that physicians are hardly exempt from “the great resignation” our country is experiencing among workers.

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Numerous approaches are being piloted or implemented, with varying degrees of success. These range from informal offerings such as hospital “wellness wagons” delivering a combination of snacks and cheering-up support and wellbeing days off for residents and fellows, to more structured programs. Examples of formal offerings include buddy systems mimicking military-type “battle buddy” practices, mental-health check-in offerings, and physician coaching resources.

The latter, when provided with anonymity guaranteed, appear to be somewhat effective for those who access them, according to Eileen Barrett, MD, MPH, a hospitalist and educator who formerly directed graduate wellness initiatives at the University of New Mexico (UNM). “Many physicians who have received coaching have benefited, and some organizations have been able to demonstrate real outcomes,” said Dr. Barrett, who now practices with the Indian Health Service and has published on advocated for national clinician wellbeing improvement strategies. She said that UNM’s mental health check-ins, a “renewable” offering, were also relatively well received — 78 of the 109 physicians who booked appointments when the program launched kept those appointments.

Some organizations, such as Intermountain Healthcare in Salt Lake City, Utah, are trying several approaches simultaneously — developing a physician and advanced practice provider (APP) wellbeing center and dedicated portal and scheduling wellness-focused grand rounds and separate leadership rounds to celebrate successes and learn what clinicians are struggling with in their work. Intermountain also provides a range of peer-support forums and options for connecting caregivers, aimed at offering a confidential forum for sharing emotions.

“My task is to develop resources and learn from others around the country — and at Intermountain, we’re all working on this together to determine what works and what’s not helpful,” said Anne Pendo, MD, an internist who is senior medical director of Provider Experience and Wellbeing at Intermountain. “What we all recognize, I think, is that we as a profession weren’t well before the pandemic,” she said, and that the pandemic further eroded physician resiliency. “Now we have an opportunity to try to discover ways to improve wellbeing and then implement them.”

Peer-support programs taking hold

At Intermountain, of the initiatives piloted to date, the peer-support offerings have been among the most successful in terms of uptake. Peer supporters

have trained nearly 100 physicians to serve in the role and approximately 300 physicians and clinicians have participated. “I think it’s important to position this as ‘I can be a helper’ if you want physicians to get involved, and to ensure you offer a safe space for sharing feelings — something physicians have historically struggled with,” she said, because of fear they’ll be perceived as weak.

Researchers and physicians involved in developing wellness-support programs and resources are finding that although it’s challenging to figure out exactly what physicians do need in support, there’s growing consensus on what physicians don’t want: Tips and recommendations for improving their personal resilience. In other words, Dr. Barrett said, “Physicians don’t want to hear about another yoga class or meditation practice.”

Heather Farley, MD, chief wellness officer at ChristianaCare in Delaware, which rolled out the “wellbeing wagon” described earlier and created a Center for Worklife Wellbeing, concurred with Dr. Barrett. “What doesn’t work is focusing too much on the personal minutiae, such as sleep hygiene. Whatever you offer has to support physicians “in their work environment,” said Dr. Farley, an emergency medicine physician. Like Intermountain, ChristianaCare has seen a gradual but steady utilization uptake of peer-support offerings. “We’re shifting away from the culture of ‘shame and blame’ to one that says, ‘It’s OK not to be OK,’ and to reach out if you need help,” she said.

At the University of Minnesota, which created the buddy system a few months into the pandemic and rolled out the program in a matter of weeks, the model was predicated on the recognition that Dr. Farley cites: everyone needs help sometimes and it’s important to know that someone has your back and is willing to help. In the university’s program, modeled in part on both the military-battlefield scenario and observations an anesthesiologist made in the operating room during the early weeks of the pandemic, when staff members were becoming more nervous, buddies are “paired” somewhat strategically. Ideally, they’re close in age and career length and experience, so that they can both recognize and understand the stressors their buddy is experiencing — and identify when that buddy needs some extra support.

“We decided that the battle-buddy system was a brilliant idea and decided to give it a decent trial,” said Cristina Sophia Albott, MD, who heads the university’s division of adult mental health. “We wrote the protocol in one week, started the program in two weeks, and rolled it out across the

entire medical school.” By July 2020, more than 3,000 health care personal, primarily physicians and nurses, had adopted and established the model.

Around the same time, the University of Minnesota implemented “listening groups” and established mental-health consultation services in each clinical department. The latter offering, however, despite the appointments being structured a confidential, wasn’t as well received as the buddy program. “Unfortunately, few physicians availed themselves of that offers,” she said.

On a positive note, even though the worst of the pandemic crises appear to have largely receded at the university, some departments have decided to continue with the buddy program, Dr. Albott reported. Although there’s been considerable variation in how individual departments set up or later retooled their buddy programs, the initiative’s early and ongoing success is a clear indicator of the offering’s value, she added.

Desperately seeking on-the-ground support and remedies

What physicians do want in the way of support from their organizations, Dr. Barrett and others interviewed for this article agreed, is operational load-lightening, however that can be achieved and institutionalized. Offerings such as onsite childcare and schedule flexibility to address family needs rank high on the wish list for many physicians, and there’s a growing consensus that the electronic health record (EHR) persists as a chief source of physician frustration and stress, despite years of organizations’ attempts to ameliorate the problem.

“What does appear to work is providing physicians protected time for EHR training or having dedicated information technology (IT) support for dealing with EHR-related issues,” Dr. Barrett said, or adding scribes to offload the bulk of EHR-data entry processes. In similar fashion, physicians would appreciate their institutions removing the burden of treatment prior-authorization management. And she noted that the incredibly complex and inordinately inefficient processes related to physician credentialing are ripe for fixing, as they’re unnecessarily burdensome for physicians. “If credentialing were centralized, at least for Medicare, that would go a long way in reducing the burden. Most people think that the system, as it stands, doesn’t really make anyone safer,” Dr. Barrett said.

Health care organizations, concerned about both their physicians’ wellbeing and their facilities’ ability to maintain adequate staffing levels in a time when many physicians are deciding to leave jobs where they don’t feel well

enough supported, are taking note. They’re actively trying to figure out what physicians want and need to care for patients with fewer frustrations.

Physician professional organizations are also stepping in to identify what’s needed now in institutional supports to help physicians mitigate burnout and regain resiliency. The American College of Physicians’ Patients Before Paperwork initiative, for example, has identified the most burdensome tasks and regulatory requirements that internists face and offered policy recommendations for reducing associated workload. The American Medical Association has also developed a multifaceted initiative to provide guidance and targeted solutions to health care organizations for many of the problems that threaten physician wellbeing.

In an article published in the *Annals of Internal Medicine* in September 2021, Dr. Barrett and her co-authors proposed a series of steps that organizations might take to reduce clinician burnout, keep physicians in the workforce as the health system continues to navigate COVID-19, and simply make physicians’ practice lives more tolerable. In addition to the COVID-related recommendations for improving physician safety and providing practical support as needed to address system-capacity constraints, the authors urged organizations to do the following:¹

- Help ensure more flexible scheduling for physicians who are parents or care for aging parents.
- Reduce, eradicate, or reassign administrative tasks and meetings that aren’t mission critical and haven’t delivered improved patient outcomes.
- Provide no-cost and truly confidential mental-health support services — and also truly encourage physicians to use their available vacation and professional development time to nurture a healthier workplace. At the same time, organizations should update credentialing and employment applications to remove unnecessary questions related to mental and physical health diagnoses, to reduce the associated stigma.


Dr. Barrett offers another recommendation to employer organizations. “If you offer resources that might support or improve physician wellbeing, make sure your physicians know about them. Physicians are so stretched and busy that they might not know what’s available,” she said.

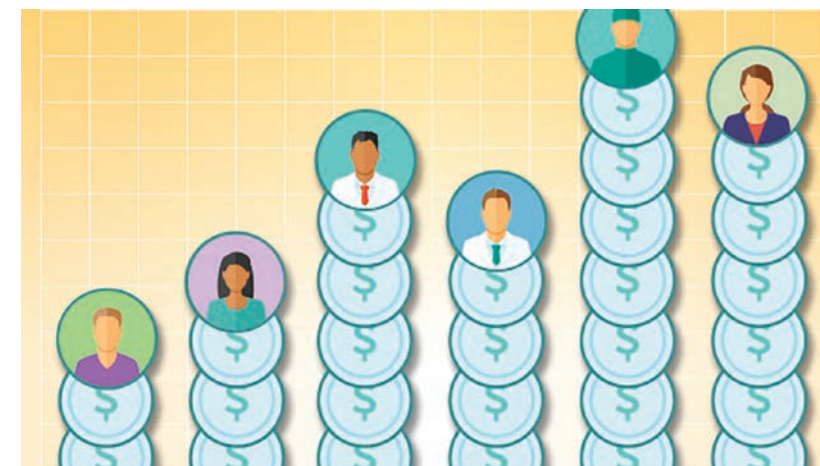
Tips for structuring physician-wellness support offerings

All sources who participated in this article offered guidance for organizations trying to provide resources that might help improve physician well-being. Here are a few:

- Understand that each environment is different, which means that the problems and needs might vary widely from one health care organization to another. To develop appropriate solutions and resources, ensure that physicians are directly involved in creating them.
- Avoid focusing resources on individual-physician resilience and instead focus on system approaches that might have the added benefit of helping physicians support one another and reduce unnecessary workload. Keep in mind that some physicians have an innate distrust of “corporate-sponsored” initiatives that appear to be focused on the bottom line.
- Provide a safe forum for physicians to recommend institutional approaches that mitigate the burdens that contribute to burnout and also make their overall work lives more realistically manageable.
- If you try a wellness initiative and it doesn’t produce results that are valuable to physicians, be ready and willing to abandon it. Then be prepared pilot something else — quickly.

¹Barrett E, Hingle ST, Smith CD, Moyer DV. Getting Through COVID-19: Keeping Clinicians in the Workforce. *Ann Intern Med.* 2021 Nov;174(11):1614–1615. doi: 10.7326/M21-3381. Epub 2021 Sep 28. PMID: 34570597; PMCID: PMC8500335.

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Knowing Your Worth in the Physician Job Market

By Nisha Mehta, MD, a physician leader whose work focuses on physician empowerment, community building, and career longevity in medicine

One thing physicians seldom do in the training setting is talk about money. Between daily clinical responsibilities and call, a never-ending amount of information to learn, and doing your best to keep up with the other aspects of your life, most of us would agree we’re in survival mode for most of our residency and fellowship. Learning the business and financial aspects of a life in medicine doesn’t usually make it to the priority list.

Consequently, as the end of training approaches, most physicians find themselves overwhelmed with the prospect of finding a job, and underprepared for negotiations. Many just feel grateful to have come to the conclusion of a long journey. After years of being paid a very low hourly rate and (on average) holding substantial six-figure debt, it’s tempting to just be happy with the positive cash flow.

Not doing the requisite research before talking about numbers will almost always work against you. I routinely find myself encouraging physicians to know their worth — not just because I think physicians have the expertise to warrant earnings that reflect it, but because career longevity and job satisfaction are closely intertwined with feeling valued. When I counsel

early-career physicians who are dissatisfied, this is often the reason they end up seeking other opportunities within the first five years out of practice.

As salary transparency is not commonplace in medicine, trainees (and their older counterparts as well, for that matter) often don't know how to evaluate offers or know what reasonable expectations are. This is a significant disadvantage at the negotiating table, and why physicians must put the research into figuring out their market value.

Many mistakenly assume that knowing your worth means simply looking at widely cited compensation databases such as Medical Group Management Association (MGMA) and Association of American Medical Colleges (AAMC). These are available for purchase or may be available from your hospital libraries or your contract attorney. Although a great place to start, it's important to take this data into context. Compare not only the salary numbers, but the actual compensation per RVU. Know that this can range widely even within the same region of the United States depending on exact location, type of practice, stage of practice, how competitive the job market is, and a host of other factors. You should dig deeper. If the job is at an institution where compensation data is published, such as state and government organizations, look up the salaries of other physicians there. Ask your medical school classmates, mentors, training program alumni, and other physicians in your network who may have knowledge of or connections within the pertinent market.


Importantly, realize there is a lot of work that you do that may not be reflected in RVUs. This may take the form of call responsibilities, teaching or research expectations, or administrative duties. These are all things that contribute to your worth to an employer, and should be factored in when calculating your market value.

Next, it's important to do your research on the employer. Do you have a particular skill they are in need of? Some skills that may strengthen your bargaining position include fluency in a foreign language, procedural skills, the potential to attract certain patient populations, or the ability to develop a niche that the practice does not currently offer.

Finally, utilize a contract attorney, ideally one that is experienced with physician contracts. Many trainees are hesitant to spend the money, but having the objective feedback on how your deal compares to others is well worth it. Oftentimes, they will be able to point out areas where

you should ask for more, give feedback on things like partnership and bonus structures, and protect you from expensive mistakes. After all that you've spent to get to this point, it's a worthwhile investment to make sure your contract is fair and in your best interest.

In every negotiation, both sides will understandably try their hardest to get the best deal for themselves. This is a business transaction, and should be approached as such. There will be give and take on both sides, but having a solid understanding of your worth will empower you to advocate for it. And remember...if you don't ask, you won't get.

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CLINICAL PRACTICE

Caren G. Solomon, M.D., M.P.H., *Editor*

Pulmonary Embolism

Susan R. Kahn, M.D., and Kerstin de Wit, M.B., Ch.B., M.D.

This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the authors' clinical recommendations.

A 41-year-old man presents to the emergency department with a 3-week history of breathlessness. He recently completed a course of antibiotic medication for presumed pneumonia. On the day of presentation, he awoke with dull pain on the right side of the back. His medical history is otherwise unremarkable. His heart rate is 88 beats per minute, blood pressure 149/86 mm Hg, respiratory rate 18 breaths per minute, temperature 37°C, and oxygen saturation 95% while he is breathing ambient air. Auscultation of his chest reveals normal breath sounds and normal heart sounds. An examination of the legs is normal. His creatinine and troponin levels are within normal limits, and a radiograph of the chest is normal. The physician's implicit assessment is that the likelihood of pulmonary embolism is greater than 15%. The patient's Wells score is 0 (on a scale of 0 to 12.5, with higher scores indicating a higher probability of pulmonary embolism), and the D-dimer level is 2560 ng per milliliter. How would you evaluate this patient for pulmonary embolism, and how would you manage this case?

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THE CLINICAL PROBLEM

PULMONARY EMBOLISM OCCURS WHEN EMBOLIC VENOUS THROMBI ARE caught within the branching lung vasculature. These thrombi often develop within the leg or pelvic veins, and approximately half of all deep-vein thrombi embolize to the lungs.¹ The annual incidence of pulmonary embolism worldwide is approximately 1 in 1000 persons.^{2,3} Although almost 20% of patients who are treated for pulmonary embolism dies within 90 days,² pulmonary embolism is not commonly the cause of death because it frequently coexists with other serious conditions, such as cancer, sepsis, or illness leading to hospitalization, or with other events, such as surgeries. The true mortality associated with undiagnosed pulmonary embolism is estimated to be less than 5%,⁴ but recovery from pulmonary embolism is associated with complications such as bleeding due to anticoagulant treatment,⁵ recurrent venous thromboembolism, chronic thromboembolic pulmonary hypertension,⁶ and long-term psychological distress.⁷ Approximately half the patients who receive a diagnosis of pulmonary embolism have functional and exercise limitations 1 year later (known as post-pulmonary-embolism syndrome),⁸ and the health-related quality of life for patients with a history of pulmonary embolism is diminished as compared with that of matched controls.⁹ Therefore, the timely diagnosis and expert management of pulmonary embolism are important.

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KEY CLINICAL POINTS

PULMONARY EMBOLISM

- Pulmonary embolism is a common diagnosis and can be associated with recurrent venous thromboembolism, bleeding due to anticoagulant therapy, chronic thromboembolic pulmonary hypertension, and long-term psychological distress.
- A minority of patients who are evaluated for possible pulmonary embolism benefit from chest imaging (e.g., computed tomography).
- Initial treatment is guided by classification of the pulmonary embolism as high-risk, intermediate-risk, or low-risk. Most patients have low-risk pulmonary embolism, and their care can be managed at home with a direct oral anticoagulant.
- Patients with acute pulmonary embolism should receive anticoagulant therapy for at least 3 months. The decision to continue treatment indefinitely depends on whether the associated reduction in the risk of recurrent venous thromboembolism outweighs the increased risk of bleeding and should take into account patient preferences.
- Patients should be followed longitudinally after an acute pulmonary embolism to assess for dyspnea or functional limitation, which may indicate the development of post-pulmonary-embolism syndrome or chronic thromboembolic pulmonary hypertension.

STRATEGIES AND EVIDENCE

DIAGNOSTIC TESTING FOR PULMONARY EMBOLISM

Perhaps the most challenging aspect of testing for pulmonary embolism is knowing when to test.¹⁰ Common symptoms of pulmonary embolism are fatigue, breathlessness, chest pain, dizziness, cough, diaphoresis, fever, and hemoptysis.¹¹ A meta-analysis of cohort studies showed that a history of dyspnea, immobilization, recent surgery, active cancer, hemoptysis, previous venous thromboembolism, or syncope was associated with an increased likelihood of pulmonary embolism.¹² Testing for pulmonary embolism should also be considered if a patient appears not to have had a response to treatment for another diagnosed respiratory condition, because initial misdiagnosis is common.

In North America, pulmonary embolism is diagnosed in only 1 patient for every 20 who are tested for the presence of pulmonary embolism when they present to the emergency department.¹³ This prevalence has remained stable for two decades and is four times lower than the prevalence reported among patients in Europe.¹³ Established guidelines do not stipulate which patients should undergo testing for the presence of pulmonary embolism. Qualitative research suggests that physician norms and local culture are major drivers in the decision to test for pulmonary embolism.¹⁰ Noninvasive tests to rule out the diagnosis that are based on the assessed clinical probability of pulmonary embolism are extremely effective in safely reducing the use of computed tomography

(CT),¹⁴ resulting in only 30 to 40% of patients with suspected pulmonary embolism subsequently undergoing diagnostic imaging.¹³

In cases in which physicians have an implicit sense that their patient is very unlikely to have pulmonary embolism (estimated likelihood, <15%), large cohort studies have shown that the Pulmonary Embolism Rule-out Criteria (PERC) rule can safely rule out pulmonary embolism without further diagnostic imaging.¹⁵ In practice, however, implicit estimation typically overestimates the probability of pulmonary embolism, which can limit the use of the PERC rule.¹⁰ Physicians should be familiar with a validated decision rule to guide the use of D-dimer testing. Among patients with a low structured clinical probability score — a Wells score of 4.0 or less (found in 80% of patients tested in North America¹⁶), a revised Geneva score of 10 or less (on a scale ranging from 0 to 22, with higher scores indicating a greater probability of pulmonary embolism), and a simplified Geneva score of 4 or less (on a scale ranging from 0 to 9, with higher scores indicating greater probability of pulmonary embolism) — pulmonary embolism can be safely ruled out on the basis of D-dimer levels when manufacturer-recommended cutoffs were used (sensitivity, 98 to 99%; specificity, 37 to 40%).¹⁷ Additional details of the scoring systems and their use are provided in Figure 1. Older data from a different D-dimer assay suggested that a D-dimer level of less than 500 ng per milliliter could be used to rule out pulmonary embolism without consideration of clinical risk factors, but

more data are needed to confirm the usefulness of this approach with current assays and relative to currently recommended strategies. The diagnostic accuracy of D-dimer testing in patients with coronavirus disease 2019 (Covid-19) remains unchanged.¹⁸

Newer approaches have adjusted the D-dimer threshold for ruling out pulmonary embolism and are validated for D-dimer assays for which the manufacturer-recommended cutoff is equivalent to 500 ng per milliliter. These strategies include D-dimer levels that are adjusted for age^{19,20} (reported sensitivity for the age-adjusted approach ranges from 97 to 99%, and specificity ranges from 42 to 47%¹⁷) or that are adjusted to the YEARS algorithm for ruling out pulmonary embolism²¹ (sensitivity, 96 to 98%; specificity, 54 to 61%¹⁷) or the Wells score¹⁶ (sensitivity, 93 to 97%; specificity, 61 to 67%¹⁷). Randomized trials that compare various D-dimer strategies in patients with pulmonary embolism are lacking.

Diagnostic imaging is reserved for patients in whom pulmonary embolism cannot be ruled out on the basis of a decision rule, given the potential harms of radiation exposure. CT pulmonary angiography is usually the most timely and accessible imaging technique; however, to minimize lung and breast-tissue irradiation in younger patients, ventilation-perfusion single-photon-emission CT (SPECT) is a low-radiation option. The incidence of false positive results from CT screening vary among providers and may be as high as 5%.²² Within 3 months after having normal results on CT that had been performed because of suspicion of pulmonary embolism, 1.2% of patients receive a diagnosis of venous thrombosis.²³ In contrast, the diagnostic performance of ventilation-perfusion SPECT has not been well established.²⁴

Many patients who have been hospitalized for an unrelated condition are also tested for pulmonary embolism; there is less evidence to guide D-dimer use in these patients. Although D-dimer levels may still be highly sensitive for testing patients who are hospitalized, they are less useful in ruling out pulmonary embolism because levels are often elevated during illness and after surgery.

TREATMENT

Initial Management

Initial treatment of pulmonary embolism is guided by risk stratification of the pulmonary embolism as high, intermediate, or low risk on the basis of the patient's clinical presentation (Fig. 2).²⁵ The nomenclature of “massive” and “submassive” in describing pulmonary embolism is confusing, given that clot size does not dictate therapy.

High Risk

Approximately 5% of patients present with high-risk pulmonary embolism, involving shock, end-organ hypoperfusion, hypotension (systolic blood pressure of <90 mm Hg or a decrease in systolic blood pressure of >40 mm Hg that is not caused by sepsis, arrhythmia, or hypovolemia), or cardiac arrest. Observational data support the evaluation of patients with high-risk pulmonary embolism for immediate reperfusion therapy by ruling out contraindications (e.g., brain metastases, bleeding disorders, and recent surgery). Intravenous systemic thrombolysis is the most readily available option for reperfusion, and protocols include a weight-based dose of tenecteplase,²⁶ alteplase at a dose of 0.6 mg per kilogram of body weight,²⁷ or alteplase at a dose of 100 mg administered over a period of 1 to 2 hours.²⁵ There is insufficient evidence to support one of these agents over the other; however, tenecteplase can be administered as a bolus in an emergency, and weight-based dosing may be preferable in elderly patients or patients with low body weight.²⁶ Alternative reperfusion approaches include surgical thrombectomy and catheter-directed thrombolysis (with or without thrombectomy). Additional supportive measures include the administration of inotropes and the use of extracorporeal life support.

Intermediate Risk

Patients with echocardiographic or CT evidence of right heart strain, elevated cardiac biomarkers (such as troponin or brain natriuretic peptide), or both are considered to have intermediate-risk pulmonary embolism.²⁵ Systemic thrombolysis is not typically recommended for these patients; in a randomized, controlled trial that assessed the addition of tenecteplase to heparin, treatment with tenecteplase resulted in an absolute reduction in the risk of hemodynamic decompensation of 3 percentage points, at the expense of a 9-percentage-point increase in the risk of major bleeding (and a 2-percentage-point increase in the risk of hemorrhagic stroke).²⁶ Rather, patients with intermediate-risk pulmonary embolism should receive anticoagulant therapy and be close-

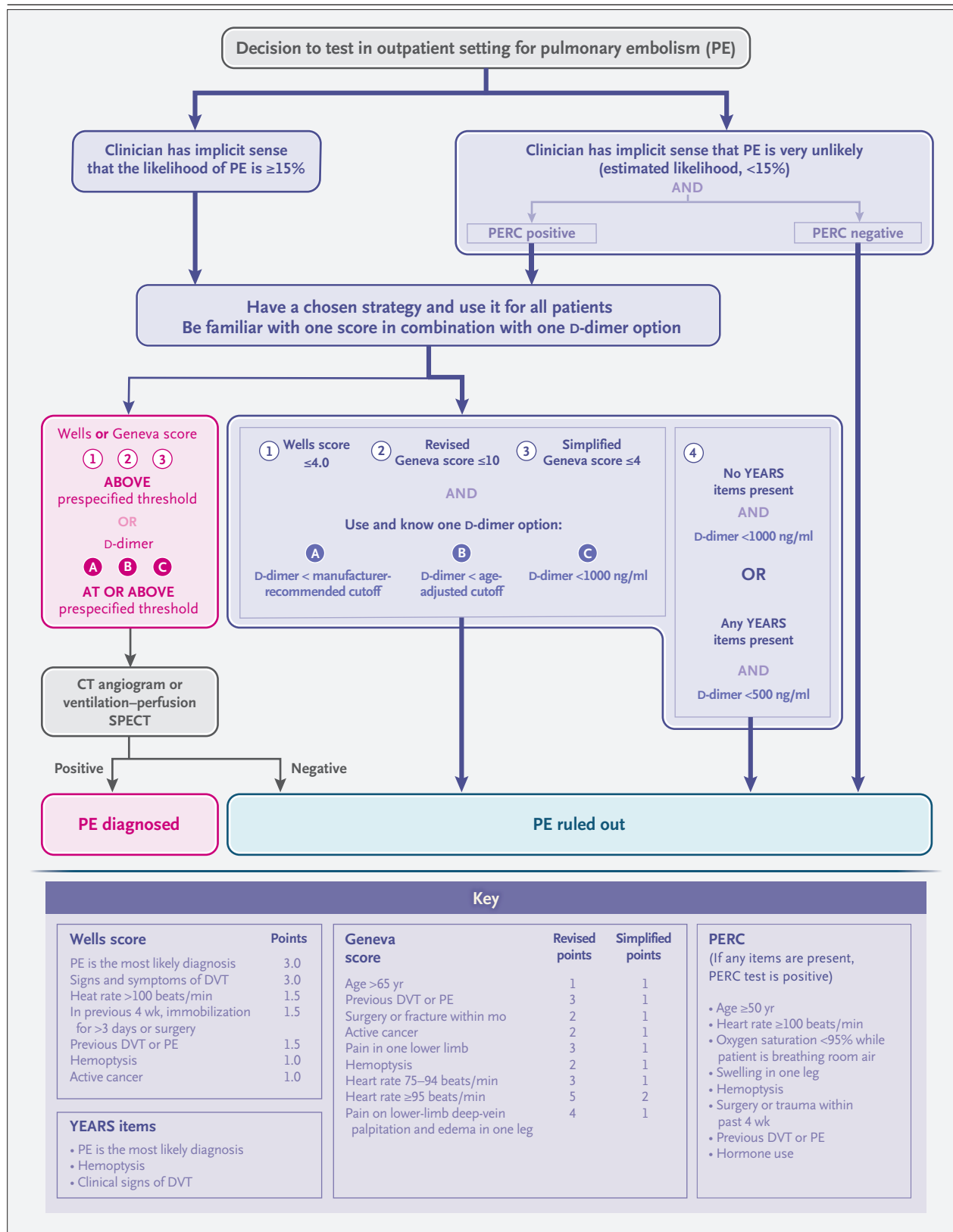


Figure 1 (facing page). Overview of Testing for Pulmonary Embolism in Outpatients or Patients in the Emergency Department.

Physicians may use Pulmonary Embolism Rule-out Criteria (PERC) to rule out pulmonary embolism if their implicit sense suggests there is less than 15% probability that the patient has pulmonary embolism. Otherwise, physicians should use a D-dimer assay to rule out pulmonary embolism in patients who have a low structured clinical probability score (a Wells score of ≤ 4.0 on a scale of 0 to 12.5, a revised Geneva score of ≤ 10 on a scale ranging from 0 to 22, or a simplified Geneva score of ≤ 4 on a scale of 0 to 9; on all three scales, higher scores indicate a greater probability of pulmonary embolism) or should use the YEARS algorithm. Each circled number refers to a different clinical decision rule, and each circled letter to a distinct D-dimer strategy. Imaging can be avoided in patients with clinical probability scores at or below the given cutoff and D-dimer level below the given cutoff. Computed tomography (CT) and ventilation-perfusion single-photon-emission computed tomography (SPECT) are reserved for patients with a clinical probability score above the preset cutoff for the chosen score or a D-dimer at or above the preset cutoff for the chosen D-dimer option. The adjusted D-dimer thresholds have been validated for assays with a manufacturer-recommended cutoff of 500 ng per milliliter. DVT denotes deep-vein thrombosis.

Low Risk

Patients with pulmonary embolism whose conditions are hemodynamically stable and who have no right ventricular strain and normal cardiac biomarkers are considered to have low-risk pulmonary embolism. Most of these patients can be treated with a direct oral anticoagulant (on the basis of high-quality trial data²⁹) and assessed for outpatient treatment. The decision for a patient to be treated at home can be guided by the score on the simplified Pulmonary Embolism Severity Index (PESI)^{25,30} or the Hestia score (Fig. 2). In contrast to the Hestia score (a checklist of criteria that preclude treatment at home), the score on the simplified PESI predicts the risk of death rather than nonfatal complications and does not account for important variables such as the availability of support for the patient at home. Results of a randomized, controlled trial showed a low risk of adverse events among patients with no Hestia criteria or with a score of 0 on the simplified PESI who received treatment as outpatients.³¹

Subsequent Management

Direct oral anticoagulants are the first-line treatment for most patients. Randomized trials have shown that direct oral anticoagulants, which do not necessitate monitoring, are as effective at reducing the risk of recurrent venous thromboembolism as vitamin K antagonists and result in a lower risk of major bleeding.²⁹ Because comparisons of direct oral anticoagulants are lacking, the choice of agent is guided by pharmacologic properties and patient characteristics and preferences (e.g., concomitant interacting medications and patient preference for once-daily or twice-daily medication).³² In patients with cancer, trials support the safety and efficacy of the direct oral anticoagulants apixaban, edoxaban, and rivaroxaban as alternatives to treatment with low-molecular-weight heparin.^{33,34}

Vitamin K antagonists are preferred over direct oral anticoagulants in patients with advanced kidney or liver disease and in patients with antiphospholipid syndrome who are triple-positive (i.e., positive for lupus anticoagulant, anticardiolipin, and anti- β_2 -glycoprotein I antibodies), have very high antibody titers, or have a history of arterial thrombosis.^{35,36} Low-molecular-weight heparin should be used to treat pregnant women

ly monitored to identify the 1 patient in 20 in whom shock may subsequently develop²⁶ (at which point reperfusion therapy may be administered). There are no guidelines for door-to-needle time for the treatment of pulmonary embolism like those that exist for the treatment of myocardial infarction and stroke.

On the basis of expert opinion, low-molecular-weight heparin is the preferred immediate anticoagulant for patients with intermediate-risk pulmonary embolism. The therapeutic effects of immediate treatment with direct oral anticoagulants rivaroxaban and apixaban as compared with low-molecular-weight heparin have not been studied in patients at intermediate risk for pulmonary embolism, and unfractionated heparin causes excess bleeding.²⁸ When available, catheter-directed thrombolysis remains an option for patients at intermediate risk who have proximal, central pulmonary embolism; however, there is insufficient evidence to support catheter-directed thrombolysis over low-molecular-weight heparin in these patients.

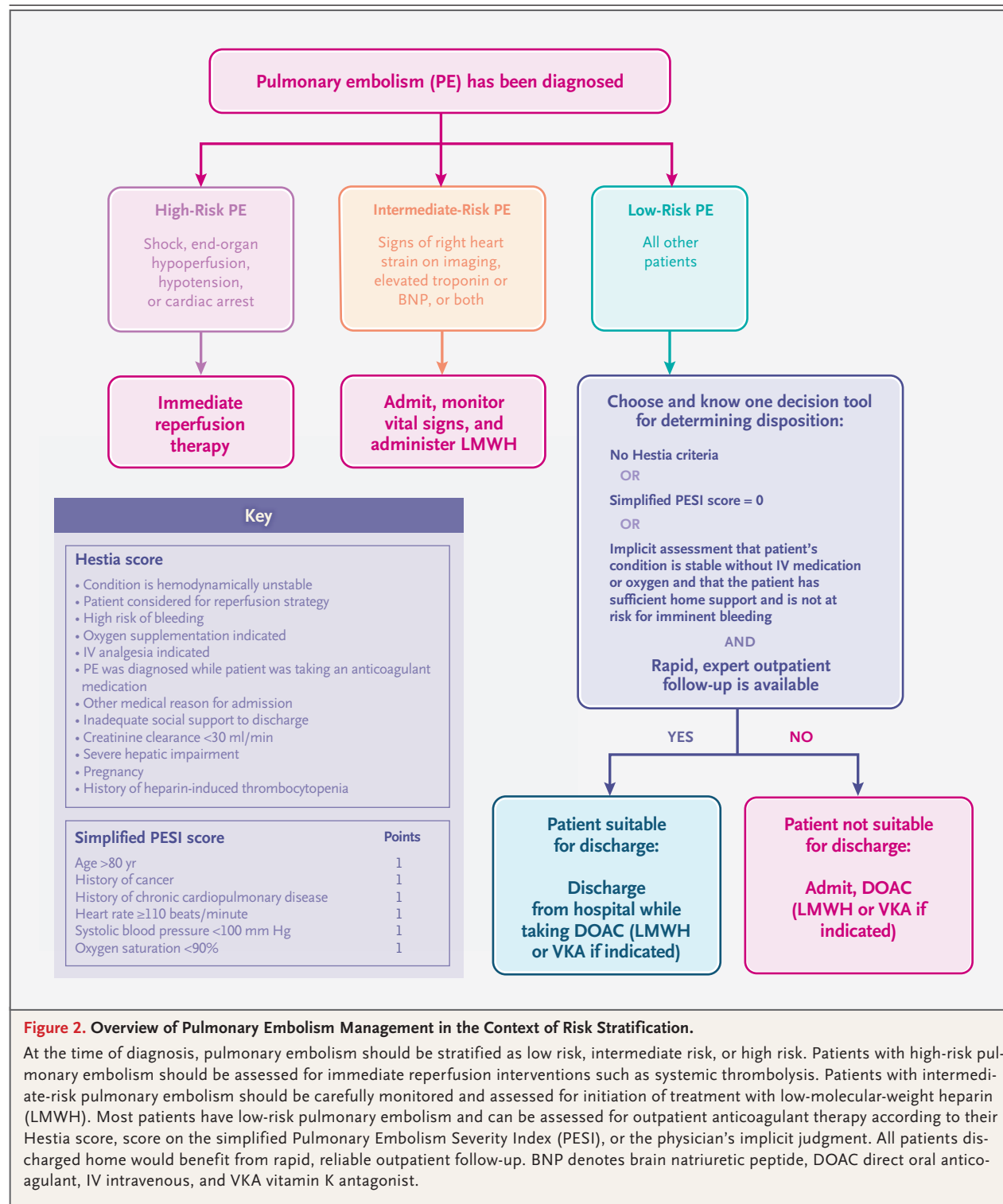


Table 1. Anticoagulant Treatment Regimens for Pulmonary Embolism.*

Initial Phase of Anticoagulation	Short-Term Phase of Anticoagulation (3–6 mo)	Indefinite Phase of Anticoagulation (after 3–6 mo)
Apixaban, administered orally, 10 mg twice a day for 7 days	Apixaban, administered orally, 5 mg twice a day	Apixaban, administered orally, 5 mg twice a day or 2.5 mg twice a day†
Rivaroxaban, administered orally, 15 mg twice a day for 21 days	Rivaroxaban, administered orally, 20 mg once a day	Rivaroxaban, administered orally, 20 mg once a day or 10 mg once a day†
Low-molecular-weight heparin‡		
Administered subcutaneously for a minimum of 5 days§	Dabigatran, administered orally, 150 mg twice a day	Dabigatran, administered orally, 150 mg twice a day
Administered subcutaneously for a minimum of 5 days§	Edoxaban, administered orally, 60 mg once a day¶	Edoxaban, administered orally, 60 mg once a day¶
Administered subcutaneously for a minimum of 5 days,§ plus vitamin K antagonist, administered orally, with INR ≥2 for 2 days	Vitamin K antagonist, administered orally, with target INR of 2 to 3	Vitamin K antagonist, administered orally, with target INR of 2 to 3

* Direct oral anticoagulants and low-molecular-weight heparin are contraindicated in patients with severe renal impairment. Dosing of these medications in patients with renal impairment differs with the specific agent and among jurisdictions. With regard to use of direct oral anticoagulants in patients with obesity, post hoc analyses of phase 3 trials, observational data, and pharmacokinetic and pharmacodynamic data suggest that direct oral anticoagulants and vitamin K antagonists have similar effectiveness and safety in patients with body weight up to 120 kg or a body-mass index (BMI; the weight in kilograms divided by the square of the height in meters) of up to 40. For patients who weigh more than 120 kg or have a BMI higher than 40, standard doses of rivaroxaban or apixaban are among appropriate anticoagulant options; fewer supportive data exist for apixaban than for rivaroxaban. Other options include vitamin K antagonists, weight-based low-molecular-weight heparin (administered according to manufacturer recommendations), and fondaparinux.⁵² INR denotes international normalized ratio.

† A reduction in dose may be considered after 3 to 6 months of therapy.

‡ Low-molecular-weight heparin may be administered subcutaneously throughout initial, short-term, and indefinite phases of treatment, with dosage according to body weight.

§ Low-molecular-weight heparin should be administered for 5 to 10 days before the initiation of dabigatran or edoxaban and concurrent to initiating vitamin K antagonists.

¶ Edoxaban should be administered at a dose of 30 mg daily if the creatinine clearance is 15 to 50 ml per minute, if the patient's body weight is less than 60 kg, or if potent P-glycoprotein inhibitors are being used.

with pulmonary embolism, since vitamin K antagonists and direct oral anticoagulants cross the placenta and are associated with adverse pregnancy outcomes.^{25,37}

Duration of Therapy

Patients with acute pulmonary embolism should receive anticoagulant therapy for at least 3 months to reduce the risks of further embolization, thrombus extension, early recurrence of venous thromboembolism, and death (Table 1).³⁸ Whether treatment is stopped at 3 months or continued indefinitely depends on whether the reduced risk of recurrent venous thromboembolism with continued anticoagulation therapy outweighs the increased risk of bleeding, and the decision should take patient preferences into account.³⁹

Among patients who have pulmonary embolism that was provoked by a major transient (i.e., reversible) risk factor (e.g., surgery with general anesthesia lasting >30 minutes, confinement to bed in the hospital for ≥3 days due to an acute illness, or major trauma or fracture),⁴⁰ the long-term risk of venous thromboembolism recurrence is low and anticoagulation therapy can be stopped after 3 months. If the pulmonary embolism was very large or was associated with moderate dysfunction of the right ventricle or if the patient has persistent residual symptoms, some experts recommend that treatment extend to 6 months.³⁹ In patients with persistent provoking factors such as active cancer or antiphospholipid syndrome or who have had previous episodes of unprovoked venous thromboembo-

Table 2. Summary of Key Guideline Recommendations for the Treatment of Pulmonary Embolism.*

Scenario	American College of Chest Physicians†	American Society of Hematology‡	European Society of Cardiology§
Home vs. hospital treatment for low-risk PE	Recommend outpatient treatment if access to medications, care, and home circumstances adequate	Suggest home treatment	Consider early discharge and home treatment if proper outpatient care and anticoagulation can be provided
Subsegmental PE	In low-risk PE, suggest clinical surveillance and ultrasonography of both legs In high-risk PE (patient is hospitalized, immobile, has cancer, is pregnant, or has unprovoked PE), suggest anticoagulation	In patients with cancer, suggest short-term anticoagulation instead of observation	Not addressed
Choice of anticoagulant	Recommend direct oral anticoagulant instead of vitamin K antagonist In antiphospholipid syndrome, recommend vitamin K antagonist instead of direct oral anticoagulant	Suggest direct oral anticoagulant instead of vitamin K antagonist unless renal impairment, liver disease, or antiphospholipid syndrome is present	Recommend direct oral anticoagulant instead of vitamin K antagonist unless severe renal insufficiency, pregnancy or lactation, or antiphospholipid syndrome is present
Choice of anticoagulant for cancer-associated PE	Recommend direct oral anticoagulant instead of low-molecular-weight heparin for most patients	Suggest direct oral anticoagulant instead of low-molecular-weight heparin for first 3 to 6 mo of treatment	Consider weight-adjusted subcutaneous low-molecular-weight heparin for first 6 mo instead of vitamin K antagonists Consider edoxaban or rivaroxaban as alternative to low-molecular-weight heparin in patients without gastrointestinal cancer
Treatment of incidentally found asymptomatic PE	Suggest same initial and long-term anticoagulation as in patients with similar symptomatic PE	Short-term anticoagulation rather than observation suggested in patients with cancer	In patients with cancer, consider same management as in patients with symptomatic PE
Thrombolysis of PE	If no hypotension, recommend against systemic thrombolysis If patient has hypotension, suggest systemic thrombolysis if bleeding risk is not high If deterioration occurs after starting anticoagulation but there is no hypotension or increased bleeding risk, suggest systemic thrombolysis instead of no thrombolysis When thrombolysis is used, suggest systemic thrombolysis instead of catheter-directed thrombolysis If hypotension and high bleeding risk, failed thrombolysis, or imminent shock is present, suggest catheter-directed thrombus removal	If hemodynamic compromise is present, recommend thrombolysis followed by anticoagulation instead of anticoagulation alone If no hemodynamic compromise is present but evidence exists of right ventricular dysfunction (according to echocardiogram and biomarkers), suggest anticoagulation alone instead of routine use of thrombolysis plus anticoagulation If thrombolysis is used, suggest systemic thrombolysis instead of catheter-directed thrombolysis	In high-risk PE, recommend rapid initiation of unfractionated heparin administered intravenously and systemic thrombolysis In presence of contraindications to or failed systemic thrombolysis, recommend surgical pulmonary embolectomy and consider percutaneous catheter-directed treatment Recommend rescue thrombolysis if hemodynamic deterioration occurs with anticoagulation; as alternative, consider surgical embolectomy or percutaneous catheter-directed treatment In intermediate-risk or low-risk PE, routine use of primary systemic thrombolysis is not recommended.

Use of inferior vena cava filter	Recommend against inferior vena cava filter in patients who can receive anticoagulation	Suggest that inferior vena cava filter not be used in patients who can receive anticoagulation	Recommend against inferior vena cava filters; consider if absolute contraindications to anticoagulation or PE recurrence despite therapeutic anticoagulation are present
Duration of anticoagulant treatment, including cancer-associated PE	Recommend 3 mo anticoagulation for primary treatment In PE provoked by major transient risk factor, recommend stopping anticoagulation at 3 mo In unprovoked PE or PE provoked by persistent risk factor, recommend extended-phase anticoagulation with direct oral anticoagulant; suggest reduced-dose instead of full-dose apixaban or rivaroxaban If patient cannot receive direct oral anticoagulant, suggest extended-phase anticoagulation with vitamin K antagonist If patient has active cancer without high bleeding risk, recommend extended anticoagulation instead of stopping anticoagulation at 3 mo; if high bleeding risk, suggest extended anticoagulation instead of stopping at 3 mo	Suggest 3 to 6 mo of anticoagulation instead of 6 to 12 mo for primary treatment Suggest indefinite anticoagulation if PE is unprovoked, provoked by chronic risk factor, or patient had previous episodes of unprovoked VTE, if bleeding risk not high and patient prefers to stay on anticoagulation For indefinite direct oral anticoagulant treatment, suggest standard-dose or lower dose direct oral anticoagulant If patient has active cancer, suggest long-term anticoagulation with direct oral anticoagulant or low-molecular-weight heparin rather than short-term anticoagulation	For first PE provoked by major transient or reversible risk factor, recommend stopping anticoagulation after 3 mo For recurrent VTE (≥1 previous episode of PE or deep-vein thrombosis) unrelated to major transient or reversible risk factor, recommend indefinite duration oral anticoagulation For antiphospholipid syndrome, recommend treatment of indefinite duration with vitamin K antagonist For first episode of PE without identifiable risk factor, or persistent risk factor other than antiphospholipid syndrome, or minor transient or reversible risk factor, consider treatment of indefinite duration with oral anticoagulation If patient does not have cancer and is receiving extended oral anticoagulation, consider low-dose direct oral anticoagulant (apixaban or rivaroxaban) after 6 mo of therapeutic anticoagulation If patient has cancer, consider extended anticoagulation for indefinite period or until cancer is cured If patient is receiving extended anticoagulation, regularly assess side effects, adherence, hepatic and renal function, and bleeding risk

* These guidelines do not include management of pulmonary embolism (PE) and venous thromboembolism (VTE) risk during pregnancy planning, pregnancy, and post partum; these specialized topics have been addressed in other guidelines.^{25,37,54}
 † Recommendations are based on a Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach; the strength of the recommendations are categorized as strong (phrased in the American College of Chest Physicians guidelines as “we recommend”) or weak (phrased as “we suggest”).³⁰
 ‡ Recommendations are based on a GRADE approach; recommendations are labeled as strong (phrased in the American Society of Hematology guidelines as “the guideline panel recommends”) or conditional (“the guideline panel suggests”).^{51,55}
 § The level of evidence and the strength of the recommendations were weighed and graded according to predefined scales. Recommendations are expressed as: class I, in which the evidence or general agreement (or both) is that a given treatment or procedure is beneficial, useful, and effective (phrased in the European Society of Cardiology guidelines as “is recommended”); class II, in which there is conflicting evidence or divergence of opinion (or both) about the usefulness or efficacy of a given treatment or procedure; class IIa, in which the weight of the evidence or opinion is in favor of the usefulness or efficacy of a given treatment or procedure (“should be considered”); class IIb, in which the usefulness or efficacy is less well established by the evidence or opinion (“may be considered”); and class III, in which there is evidence or general agreement that a given treatment or procedure is not useful or effective and in some cases may be harmful (“is not recommended”).²⁵

lism, the long-term risk of recurrence is high and indefinite anticoagulation therapy is recommended.^{25,30,41}

Decision making is more nuanced in patients with a first pulmonary embolism that was unprovoked or weakly provoked (i.e., associated with a minor transient risk factor, such as estrogen therapy, pregnancy, minor surgery, or minor leg injury).⁴⁰ Among these patients, the risks of recurrent venous thromboembolism and fatal pulmonary embolism after stopping anticoagulation therapy are 10% and 0.4%, respectively, at 1 year, and 36% and 1.5% at 10 years; the risks are higher among men than among women.⁴² Trials have shown that extended anticoagulation therapy, as compared with shorter durations of anticoagulation, is highly effective for the prevention of recurrent venous thromboembolism.³⁹ However, in a meta-analysis (involving 14 randomized, controlled trials and 13 cohort studies), extended anticoagulation with direct oral anticoagulants was associated with a risk of 1.12 major bleeding events per 100 person-years (case fatality, 9.7%), and extended anticoagulation with vitamin K antagonists was associated with a risk of 1.74 major bleeding events per 100 person-years (case fatality, 8.3%).⁴³ The risk of bleeding was higher among older patients and among patients who had a creatinine clearance of less than 50 ml per minute, a history of bleeding, had received antiplatelet therapy, or had a hemoglobin level of less than 10 g per deciliter.⁴³

Although indefinite treatment with anticoagulation is typically recommended after a first unprovoked or weakly provoked venous thromboembolism event, particularly in patients who are not at high risk for bleeding,³⁹ time-limited treatment may be appropriate in some patients, including those among whom the estimated risk of recurrent venous thromboembolism is less than 5% within the first year after anticoagulation therapy is stopped.⁴⁴ Decision making with regard to the treatment of venous thromboembolism in women may be guided by the HERDOO2 rule, a prospectively validated prediction score that identifies some women with a first unprovoked or weakly provoked venous thromboembolism event who can safely discontinue anticoagulation therapy (Table S1 in the Supplementary Appendix, available with the full text of this article at NEJM.org).⁴⁵ No validated score is currently available for use in men who have had a first un-

provoked or weakly provoked pulmonary embolism, and many experts recommend continuing anticoagulation therapy indefinitely in these patients.

In patients who continue to receive anticoagulants indefinitely, data from randomized trials indicate that low-dose direct oral anticoagulant regimens (i.e., rivaroxaban or apixaban) after the initial 6 months of full-dose anticoagulation have effectiveness and safety similar to those of full-dose regimens^{46,47} and greater effectiveness than aspirin.⁴⁷ However, low-dose regimens have not been assessed in pulmonary embolism in patients with cancer, in those with anatomically extensive pulmonary embolism, or in those at high risk for recurrent pulmonary embolism. Factors that may influence the choice of indefinite anticoagulant regimen are shown in Table S2.

OTHER TESTING

Occult cancer is detected in 5.2% of patients within 1 year after a diagnosis of unprovoked pulmonary embolism.⁴⁸ An extensive screening strategy may detect more cancers than limited screening, but data are limited as to whether such screening is associated with better patient outcomes.^{48,49} Experts recommend limited cancer screening guided by medical history, physical examination, basic laboratory tests and chest radiographs, and age-specific and sex-specific cancer screening.⁴⁹

Patients should be evaluated 3 to 6 months after acute pulmonary embolism is diagnosed to assess for dyspnea or functional limitation, which may indicate the development of post-pulmonary-embolism syndrome or chronic thromboembolic pulmonary hypertension.^{25,50} If a decision to continue anticoagulation indefinitely was made at the time of diagnosis of pulmonary embolism, this decision should be reassessed annually or more often; anticoagulation may need to be discontinued if the risk of bleeding increases, a major bleeding event occurs, or the patient prefers to stop treatment.

GUIDELINES

Current guidelines for pulmonary embolism management include those issued by the American College of Chest Physicians (ACCP),³⁰ the American Society of Hematology (ASH),^{41,51} and the European Society of Cardiology (ESC).²⁵ A summary

of the key recommendations in these guidelines is provided in Table 2. Our recommendations align with these guidelines, which are largely concordant but differ in the strength of their recommendations for some topics. ACCP and ASH guidelines recommend anticoagulation be stopped at 3 months in the case of a first pulmonary embolism provoked by a weak transient risk factor, a recommendation that diverges from ESC guidelines, which suggest that indefinite anticoagulation be considered in such patients. Our approach to this situation generally aligns with the ACCP and ASH guidelines while taking into account factors that influence the risk of recurrence (e.g., male sex or older age) and patient preference.

AREAS OF UNCERTAINTY

Appropriate management of subsegmental pulmonary embolism (a single isolated subsegmental pulmonary embolus or multiple emboli, without the presence of pulmonary embolism in segmental or more proximal pulmonary vessels and without deep-vein thrombosis in the legs) is uncertain. Although some guidelines suggest clinical surveillance instead of anticoagulation in patients with low-risk subsegmental pulmonary embolism, a recent prospective cohort study involving such patients who were treated without anticoagulation therapy showed a higher-than-expected incidence of recurrent venous thromboembolism during 90-day follow-up.⁵³ A randomized, placebo-controlled trial of clinical surveillance as compared with anticoagulation in this patient population is ongoing (ClinicalTrials.gov number, NCT04263038).

Whether a particular direct oral anticoagulant is preferable for the treatment of pulmonary embolism is not known. Ongoing randomized trials are assessing apixaban as compared with rivaroxaban for the initial treatment in patients with venous thromboembolism (NCT03266783) and various doses of these drugs for extended treatment of such patients (NCT03285438). A mul-

tinational, randomized, controlled trial is under way to assess the efficacy and safety of a therapy involving a reduced dose of thrombolytic medication in patients with intermediate-risk acute pulmonary embolism (NCT04430569). High-quality data are needed to inform the benefits and risks of intravascular thrombolysis and clot-retrieval approaches in the treatment of patients with pulmonary embolism.

CONCLUSIONS AND RECOMMENDATIONS

The patient with breathlessness described in the vignette was estimated to have greater than a 15% likelihood of pulmonary embolism. In the context of the patient's low Wells score for pulmonary embolism, D-dimer testing was warranted to guide the need for imaging; CT is indicated, given the D-dimer level of more than 1000 ng per milliliter. Under the presumption that the patient's CT scan confirms pulmonary embolism and shows normal right-ventricle dimensions, he would be classified as having low-risk pulmonary embolism, given his normal troponin level. Treatment with a direct oral anticoagulant should be started promptly, and the patient should be given information about the pulmonary embolism diagnosis. In the absence of contraindications to treatment on an outpatient basis (no Hestia criteria present), the patient can be discharged directly from the emergency department with prompt clinic follow-up. We would recommend that he undergo cancer screening appropriate for his age and personal risk. After the patient receives 3 to 6 months of therapy with a direct oral anticoagulant administered at a treatment-level dose, in the absence of an increased bleeding risk and considering his preferences, we would recommend switching to a low-dose direct oral anticoagulant on a long-term basis for secondary prevention.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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- Learn how to operate and thrive in a value-based care model in a system that is driving population health initiatives and developing best practices that are being adopted nationally
- Gain exposure to the Quadruple Aim framework
- Enhance your practice understanding with learning focused on a wide range of care settings, including ambulatory care settings, hospitals, urgent care, telemedicine and patient-centered medical homes
- Receive mentorship from experienced physicians who are excited to share their knowledge and prepare you to help us shape the future of care
- Program participation does not interfere with the clinical responsibilities of your training program

Prepare for your future at Optum

Our physician-led organization is one of the most dynamic and progressive health care organizations in the world, serving almost 20 million people through more than 74,000 aligned physicians and advanced practice clinicians. You will find our team working in local clinics, surgery centers and urgent care centers within care models focused on managing risk, higher-quality outcomes and driving change through collaboration and innovation.

Optum is a truly remarkable place to train and practice medicine. Our team-based model of care places physicians and patients at the center of care, allowing our providers to do what's best for the health of people we serve. We are one national team working together to influence change, transform care and lead practice innovation. Here, every person is empowered to be leaders in an exciting new world of medicine.

Apply to the Physician Pathways Program today.

[WorkAtOptum.com/provider](https://workatoptum.com/provider)

Search keyword "Pathways" to view current opportunities or scan the QR code below.



Optum

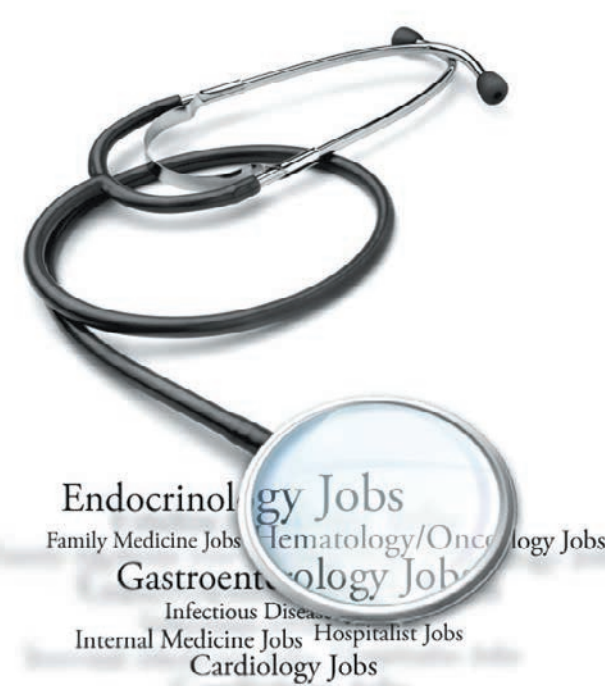




Classified Advertising Section

Sequence of Classifications

Table listing medical specialties and job types such as Addiction Medicine, Allergy & Clinical Immunology, Ambulatory Medicine, etc., and Urology, Chiefs/Directors/Department Heads, etc.



SEARCH AND APPLY FOR JOBS FROM YOUR PHONE.

NEJM CareerCenter, the physician jobs companion website of the New England Journal of Medicine, has a NEW iPhone app. Access our nationwide database to find quality jobs from a source you can trust.

- Search or browse quality physician jobs by specialty and/or location
• Receive notification of new jobs that match your search criteria
• Save jobs with the touch of a button
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• Apply for jobs directly from your phone!



Download or update the FREE iPhone app and start your search today!

NEJMCareerCenter.org



The NEW ENGLAND JOURNAL of MEDICINE

Classified Advertising Rates

We charge \$10.55 per word per insertion. A 2- to 4-time frequency discount rate of \$7.85 per word per insertion is available. A 5-time frequency discount rate of \$7.55 per word per insertion is also available. In order to earn the 2- to 4-time or 5-time discounted word rate, the request for an ad to run in multiple issues must be made upon initial placement. The issues do not need to be consecutive. Web fee: Classified line advertisers may choose to have their ads placed on NEJM CareerCenter for a fee of \$130.00 per issue per advertisement. The web fee must be purchased for all dates of the print schedule. The choice to place your ad online must be made at the same time the print ad is scheduled. Note: The minimum charge for all types of line advertising is equivalent to 30 words per ad. Purchase orders will be accepted subject to credit approval. For orders requiring prepayment, we accept payment via Visa, MasterCard, and American Express for your convenience, or a check. All classified line ads are subject to the consistency guidelines of NEJM.

How to Advertise

All orders, cancellations, and changes must be received in writing. E-mail your advertisement to us at ads@nejmcareercenter.org, or fax it to 1-781-895-1045 or 1-781-893-5003. We will contact you to confirm your order. Our closing date is typically the Friday 20 days prior to publication date; however, please consult the rate card online at nejmcareercenter.org or contact the Classified Advertising Department at 1-800-635-6991. Be sure to tell us the classifica-

tion heading you would like your ad to appear under (see listings above). If no classification is offered, we will determine the most appropriate classification. Cancellations must be made 20 days prior to publication date. Send all advertisements to the address listed below.

Contact Information

Classified Advertising
The New England Journal of Medicine
860 Winter Street, Waltham, MA 02451-1412
E-mail: ads@nejmcareercenter.org
Fax: 1-781-895-1045
Fax: 1-781-893-5003
Phone: 1-800-635-6991
Phone: 1-781-893-3800
Website: nejmcareercenter.org

How to Calculate the Cost of Your Ad

We define a word as one or more letters bound by spaces. Following are some typical examples:

- Bradley S. Smith III, MD..... = 5 words
Send CV = 2 words
December 10, 2007 = 3 words
617-555-1234 = 1 word
Obstetrician/Gynecologist ... = 1 word
A = 1 word
Dalton, MD 01622 = 3 words

As a further example, here is a typical ad and how the pricing for each insertion is calculated:

MEDICAL DIRECTOR — A dynamic, growth-oriented home health care company is looking for a full-time Medical Director in greater New York. Ideal candidate should be board certified in internal

medicine with subspecialties in oncology or gastroenterology. Willing to visit patients at home. Good verbal and written skills required. Attractive salary and benefits. Send CV to: E-mail address.

This advertisement is 56 words. At \$10.55 per word, it equals \$590.80. This ad would be placed under the Chiefs/Directors/ Department Heads classification.

Classified Ads Online

Advertisers may choose to have their classified line and display advertisements placed on NEJM CareerCenter for a fee. The web fee for line ads is \$130.00 per issue per advertisement and \$220.00 per issue per advertisement for display ads. The ads will run online two weeks prior to their appearance in print and one week after. For online-only recruitment advertising, please visit nejmcareercenter.org for more information, or call 1-800-635-6991.

Policy on Recruitment Ads

All advertisements for employment must be non-discriminatory and comply with all applicable laws and regulations. Ads that discriminate against applicants based on sex, age, race, religion, marital status or physical handicap will not be accepted. Although the New England Journal of Medicine believes the classified advertisements published within these pages to be from reputable sources, NEJM does not investigate the offers made and assumes no responsibility concerning them. NEJM strives for complete accuracy when entering classified advertisements; however, NEJM cannot accept responsibility for typographical errors should they occur.

Classified Ad Deadlines

Issue	Closing Date
March 23	March 3
March 30	March 10
April 6	March 17
April 13	March 24

Cardiology

NONINVASIVE CARDIOLOGIST NEEDED — Noninvasive cardiologist to join a large group of 20 cardiologists in northern New Jersey. Excellent salary and benefit package. Please e-mail CV to: terri.urgo@heartandvascularnj.com. We are a well-established multispecialty medical group that is rapidly expanding. www.hvamedicalgroup.com

Gastroenterology

GASTROENTEROLOGIST — Think ahead! Manhattan Gastroenterology group with major academic medical center affiliation and ASC seeks July 2023 Fellowship grad. Competitive salary with partnership track. Send CV and cover letter to: ayakutilova@vanguardgi.com

Check out physician career opportunities and resources at NEJMCareerCenter.org

Hematology-Oncology

A LARGE PRIVATE ONCOLOGY PRACTICE HEADQUARTERED IN LOS ANGELES — With multiple office locations in Los Angeles, Orange, and Riverside Counties seeking highly motivated BE/BC Oncologists. We offer the highest starting salary in the area with excellent bonus and benefit package. Nice work hours (9 to 4) and amazing weekend call schedule. We value quality of life for our doctors. Send CV: socialonc@gmail.com or Text: 909-973-6537.

Internal Medicine (see also FM and Primary Care)

ALABAMA PROVIDENCE HEALTHCARE SERVICES — Is seeking a full-time Physician (Internal Medicine) in Mobile, Alabama, to analyze records, reports, test results, or examination information to diagnose medical condition of adult patients. Treat internal disorders of adult patients; Prescribe or administer medication, therapy, and other specialized medical care; Manage and treat common health problems; Monitor adult patients' conditions and progress and re-evaluate treatments as necessary; and Plan, implement, or administer health programs. Contact: Holly McDavid, Director Physician Practice Operations, 6701 Airport Boulevard, Suite D-241, Mobile, AL 36608; holly.mcdavid@ascension.org

SEE THE FIRST PAGE OF THE CLASSIFIEDS FOR ADVERTISING RATES.

Nephrology

NEPHROLOGYUSA REPRESENTS NEPHROLOGY OPPORTUNITIES NATIONWIDE — With group practices and hospitals. Excellent compensation, benefits with partnership, and joint venture potential. For additional information, call/text: (561)409-0320. E-mail: Brett@nephrologyusa.com; website: www.NephrologyUSA.com

MONTGOMERY KIDNEY SPECIALISTS — Located in Montgomery, AL, seeks a Nephrologist. BC/BE IM/Nephrology only. Send letter of interest and CV to: mksbwilliams@mindspring.com

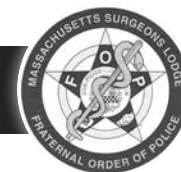
Rheumatology

RHEUMATOLOGIST PHYSICIAN — To join a large multispecialty group in northern New Jersey. Excellent salary and benefits package. Please e-mail CV to: annu.bikkani@hvamedicalgroup.com

Practices For Sale

FOR SALE — Small solo Internal Medicine practice. Central location, Hartford. Three miles to two major hospitals. Accommodating landlord, reasonable terms. Ideal for new MD/someone who wants to change track. ASAP. Call: 860-839-7438.

Find your next *locum tenens* hire at NEJMCareerCenter.org. (800) 635-6991



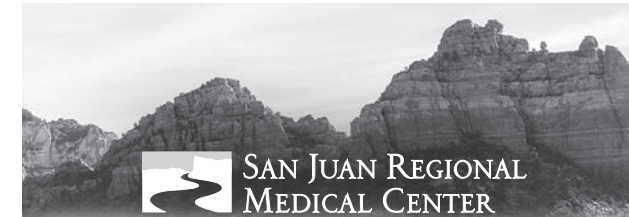
The Fraternal Order of Police is the world's largest organization of sworn law enforcement officers. We are a Massachusetts State FOP Associate Lodge – #1, who support more than 350,000 active F.O.P. members nationally.

The Massachusetts Surgeons & Associated Lodge, are physicians and associates dedicated to philanthropically helping law enforcement officers and their families medically.

Our membership consists of healthcare professionals representing numerous medical specialties and subspecialties.

- Join our community of professionals helping professionals
- Support our FOP Surgeons disaster response team
- Semi-annual meetings featuring local and national decision makers
- Proudly carry the FOP Surgeons Identification

For membership information, please contact:
Nelson K. Stacks, President
Massachusetts FOP Surgeons Lodge
nelsonstacks@gmail.com



Physician Opportunities

- Interventional Cardiology
- Family Medicine OP
- Gastroenterology
- ENT
- Hospitalist
- Neurology
- Physiatry
- Psychiatry
- Radiation Oncology
- Intensivist Pulmonology
- OB/GYN

Advanced Practice Opportunities

- Emergency Medicine
- CRNA
- Hospitalist AGACNP
- PMHNP
- Interventional Spine PA
- Cardiology NP or PA
- Gastroenterology PA
- Neurosurgery PA

San Juan Regional Medical Center is a non-profit and community governed facility. Farmington offers a temperate four-season climate near the Rocky Mountains with world-class snow skiing, fly fishing, golf, hiking, and water sports. Easy access to world renowned Santa Fe Opera, cultural sites, National Parks, and monuments. Farmington's strong sense of community and vibrant Southwest culture make it a great place to live.

Contact Terri Smith at 888.282.6591 or 505.609.6011
 tsmith@sjrmc.net | sanjuanregional.com | sjrmcdocs.com



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Erickson Health Medical Group, dedicated to excellence in Geriatric Medicine, seeks a passionate, expert physician to provide clinical and operational leadership for their physician led network of on-site medical centers at Erickson Senior Living® Communities. Our Model of Care is based upon a deep commitment to the health and well-being of both patient and provider. This culture of caring leads to a better experience and superior outcomes for patients, and a quality of life second to none for providers.

Our Communities, which offer the full continuum of care, offer an ideal opportunity for a motivated physician to make a difference in the lives of thousands of seniors and 100+ providers while enjoying job satisfaction, financial security, and a lifestyle unmatched by traditional practice settings. Salaried employment with annual bonus, incentive bonus, comprehensive benefits, 401K with match, generous time off, and much more!

This career opportunity includes potential for advancement to Chief Medical Officer and requires 5 or more years of primary care experience, preferably with leadership in that setting.

To learn more, please send your CV or inquiries to: Donna Rachuba
 Email: medprovideropps@erickson.com
 Phone: 443-297-3131 | Fax: 410-204-7279



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With everything going on, it's easy to become a faceless cog in the machine of healthcare. If you're looking to reconnect with your passion for medicine, we can help you find the perfect job that's tailored to who you are, not just what you are.

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Pulmonary/Critical Care * Pediatrics**

Physician Affiliate Group of New York, P.C. (PAGNY) is comprised of over 4,000 physicians and healthcare professionals who provide services to NYC Health + Hospitals (H+H), the largest public health system in the U.S. Come explore an environment that fosters both professional and academic growth!

**Gotham Health Centers * Harlem Hospital
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**To learn more, or apply,
please visit:**

<https://www.pagny.org/careers/>

PAGNY

Physician Affiliate Group of New York, PC
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Equal Opportunity Employer M/F/D/V

The VA Northeast Ohio Healthcare System seeks an outstanding full-time (8/8ths) Board Certified/Board Eligible Hematologist/Oncologist interested in joining a thriving collaborative cancer program at a large tertiary healthcare facility.

The successful candidate will have an outpatient clinical practice at the Akron satellite clinic affiliated with the Louis Stokes Cleveland VAMC providing care to patients with a broad range of hematologic and oncologic conditions in both inpatient and outpatient venues. The position is primarily outpatient with occasional weekend inpatient consult coverage at the Louis Stokes Cleveland VAMC. Candidates must have a demonstrated clinical reputation and evidence of excellence in academic activity within Hematology and Oncology.

The position is eligible for a faculty appointment in the Department of Medicine at the Case Western Reserve University School of Medicine commensurate with the candidate's level of experience.

Interested candidates should submit their curriculum vitae to:
HR Specialist, Jason Petrakos
jason.petrakos@va.gov

Applying via USAJobs is highly recommended.

**Vital Roles in a Vibrant Community
Physician Opportunities**

BERKSHIRE HEALTH SYSTEMS IS SEEKING COMPASSIONATE, COMMUNITY-FOCUSED PHYSICIANS IN THE FOLLOWING DISCIPLINES:

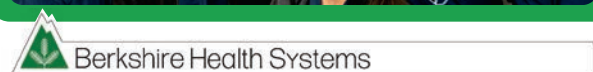
- ANESTHESIOLOGY • CARDIOLOGY
• DERMATOLOGY • ENDOCRINOLOGY
• ENT • FAMILY MEDICINE • GASTROENTEROLOGY
• HEMATOLOGY/ONCOLOGY • NEUROLOGY
• NEPHROLOGY • OB-GYN • PSYCHIATRY
• PRIMARY CARE • RHEUMATOLOGY • UROLOGY**

Berkshire Health Systems (BHS) is the leading provider of comprehensive healthcare services for residents and visitors to Berkshire County, in western Massachusetts. From inpatient surgery and cancer care to provider visits and imaging, BHS offers a continuum of programs and services that help patients to connect to the care they need, no matter where they are located in the rural Berkshire community. As the largest employer in Berkshire County, BHS supports more than 4,000 jobs in the region, and, as a 501(c)(3) nonprofit organization, BHS is committed to partnering with local municipalities and community organizations to help the county thrive. Working at BHS offers a unique opportunity to both practice and teach in a state-of-the-art clinical environment at Berkshire Medical Center, the system's 298-bed community teaching hospital in Pittsfield, which is a major teaching affiliate of the University of Massachusetts Chan Medical School and the University of New England College of Osteopathic Medicine in Maine.

At BHS, we also understand the importance of balancing work with quality of life. The Berkshires, a 4-season resort community, offers world renowned music, art, theater, and museums, as well as year round recreational activities from skiing to kayaking. Excellent public and private schools make this an ideal family location. We are also only a 2½ hours drive from both Boston and New York City.

Contact us to learn more about these exciting opportunities to practice in a beautiful and culturally rich region, as part of a sophisticated, award-winning, patient-centered healthcare team.

Interested candidates are invited to contact:
Michelle Maston or Cody Emond
Provider Recruitment, Berkshire Health Systems
(413) 447-2784 | mmaston@bhs1.org
cemond@bhs1.org
Apply online at: berkshirehealthsystems.org



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In addition to a CA medical license, you must possess an X-waiver (or ability to attain within 14 days of hire).

Submit your CV to CentralizedHiringUnit@cdcr.ca.gov or apply online at www.cchcs.ca.gov.



EOE



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\$302,424 - \$317,556
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* PHYSICIANS
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(Time-Limited Board Certified)

PHYSICIANS
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* PHYSICIANS
\$330,360 - \$346,908
(Lifetime Board Certified)

PHYSICIANS
\$272,184 - \$285,804
(Pre-Board Certified)

* PHYSICIANS
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The US Oncology Network brings the expertise of nearly 1,000 oncologists to fight for approximately 750,000 cancer patients each year. Delivering cutting-edge technology and advanced, evidence-based care to communities across the nation, we believe that together is a better way to fight.

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Is a four-physician Oncology Hematology Group seeking a 5th physician to join our rapidly growing outpatient infusion center. We are located in the heart of Park Slope, Brooklyn, NY. We are recruiting a Physician specializing in Hematology and Oncology.

All qualified applicants must be Hematology & Oncology board certified/eligible to join our well-established group.

We offer an exciting full-time opportunity to join our practice that will allow rapid growth and the amazing prospect of building a private practice in Hematology and Oncology. We offer a competitive salary with a rank commensurate with experience, and a benefits package.

Newly grad fellows are encouraged to apply as this offers a unique opportunity to build a career in a thriving practice. This candidate will have both inpatient and outpatient clinical responsibilities.

Salary range is \$300k-\$450k + Plus Bonus

Applicants can send CV'S to: ssmith@dosikhemonc.com

We look forward to discussing how we can help you succeed in your career!



Seeking Gastroenterologist

- Seeking energetic BC/BE gastroenterologist committed to clinical excellence
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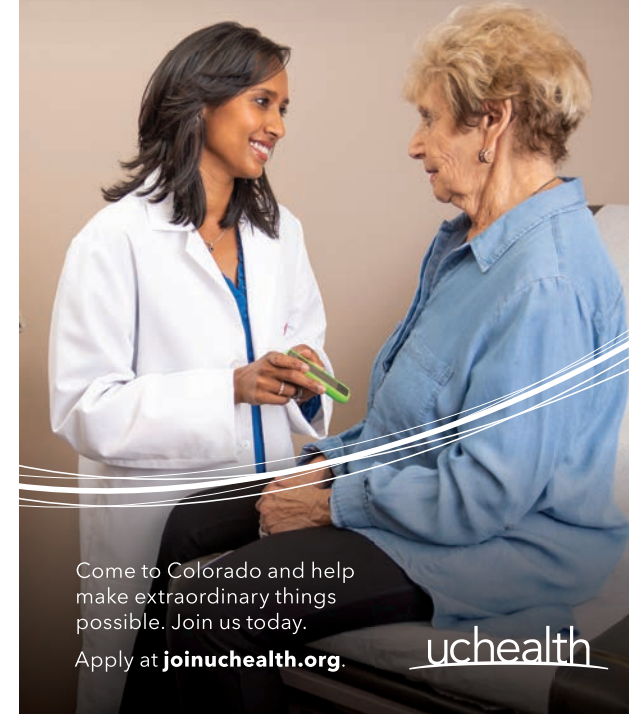
We are dedicated to investing in our staff and committed to providing you with the tools you need to care for our communities. Logan Health Digestive Center has a collection of services and specialists who are committed to excellence in the treatment, care and education of our patients.



logan.org/joinourteam

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Jared Wilson, Physician Recruiter
(406) 751-5318 · jwilson@logan.org

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The Salisbury VA Healthcare system is actively recruiting full time medical specialty physicians. Salisbury VAHCS provides health care services at 4 locations in the Central Piedmont region of North Carolina: our W.G. (Bill) Hefner VA Medical Center in Salisbury and 3 health care center or community-based outpatient clinics in Kernersville, North Charlotte, and South Charlotte.

The VA Salisbury Healthcare System is one of the leading health care systems serving Veterans in the Mid-Atlantic Region. We are academically affiliated with Wake Forest Baptist University located in Winston Salem, NC. We're an innovative care center within the Veterans Integrated Service Network 6 (VISN 6), which includes medical centers in North Carolina (Asheville, Durham, Fayetteville, and Salisbury) and Virginia (Hampton, Richmond, and Salem), and dozens of other health care facilities.

We make health services available to more than 287,000 veterans living in a 21-county area of the Central Piedmont Region of North Carolina, which includes both Charlotte and Winston-Salem. Our medical center has 260 operating beds, which includes a 109-bed community living center, 29 medical beds, 11 surgical beds, 46 psychiatric beds, and a 58-bed domiciliary unit, and 8 beds in our compensated work therapy/transitional residence. The W.G. (Bill) Hefner VA Medical Center is the VISN 6 flagship facility for the implementation of Whole Health initiatives.

Join the best mission in all of healthcare – taking care of Veterans. VA's variety of care environments, research prospects and educational support gives you limitless room to grow and advance in your career. Take a look at all VA can offer you and pursue an opportunity that will push your talent to exciting new heights. As a federal employee, you and your family will have access to a range of benefits that are designed to make your federal career very rewarding. Make it your mission to heal and care for those who've borne the battle with honor.

Candidates must: 1) be a US Citizen or US National, 2) have US medical license any State, 3) be board-prepared/certified in specialty

Incentives: Education Debt Relief Program offers up to \$200,000 over five, years tax free. A Recruitment/Relocation Incentive may be authorized for highly qualified candidates.

To apply, forward a current CV to our VA Physician/Provider Recruiter:
Julio Elmore (Julio.Elmore@va.gov)

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We're committed to providing you with the best locums jobs. Our team of experts will simplify the staffing process and ensure you're prepared for success.

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The Department of Medicine-Section of Nephrology and Hypertension at the University of Missouri-Kansas City School of Medicine, University Health, and University Health Physicians seek a faculty member (non-tenure track Assistant Professor/Associate Professor), MD or Equivalent with Nephrology Fellowship Training, Board Eligible/Board Certified. The nephrologist will join a team of general nephrologists and also serve as faculty for the UMKC School of Medicine. A team of nephrology NPs supports the practice. You will teach and serve as a mentor for internal medicine residents, and UMKC medical students.

The individual should have the clinical, scholarly, educational, and personal skills to contribute to an active academic section, participating in teaching medical students/residents. Activities include outpatient clinics, inpatient consultation service, and inpatient/outpatient dialysis.

The Department of Medicine is proud of its diverse composition and is an equal opportunity employer. H1 visa applicants are welcome to apply, we are not able to consider J1 visa candidates for 2023 hire dates.

We offer competitive salary and benefit package with potential for annual salary raise and to earn incentive pay.

Kansas City, Missouri is recognized as one of America's Most Liveable cities. Kansas City offers an abundant lifestyle including a low cost of living, a flourishing arts and music district along with a plethora of professional and college sporting events. It hosts two major universities, three medical schools, a law school, a conservatory of music and one of the nation's leading art colleges. Spring 2023 a new single terminal at Kansas City International Airport will make travel to other destinations easy and affordable.

For additional assistance:

Miguel.Meneses@uhkc.org
Phone: (816) 404-2576
Fax: (816) 404-8421

EOE - M/F/D/V



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Location, Location, Location



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Boston

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Emerson Hospital has several opportunities for board-certified or board-eligible physicians to join several practices in the Emerson Hospital service area. Emerson has employed as well as private practice opportunities with both new and existing practices.

Emerson Hospital Opportunities

- Gastroenterology
- Hospitalist, Inpatient – Psychiatry, Orthopedics, OB/GYN
- Primary Care
- Urgent Care

If you would like more information please contact:

Diane Forte Willis
dfortewillis@emersonhosp.org
phone: 978-287-3002
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About Concord, MA and Emerson Hospital



Located in Concord, Massachusetts Emerson is a

179-bed community hospital with satellite facilities in Westford, Groton and Sudbury. The hospital provides advanced medical services to over 300,000 individuals in over 25 towns.

Emerson has strategic alliances with Massachusetts General Hospital, Brigham and Women's and Tufts Medical Center.

Concord area is rich in history, recreation, education and the arts and is located 20 miles west of downtown Boston.



Emerson Health

emersonhospital.org

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