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As a resident nearing completion of your training, I'm sure that finding the right employment opportunity is a top priority for you. The *New England Journal of Medicine* (NEJM) is the leading source of information about job openings, especially practice opportunities, in the country. Because we want to assist you in this important search, a complimentary copy of the 2019 *Career Guide: Residents and Fellows* booklet is enclosed. This special booklet contains current physician job openings across the country. To further aid in your career advancement we've also included a couple of recent selections from our Career Resources section of the NEJM Career Center website, NEJMCareerCenter.org.

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A career in medicine is challenging, and current practice leaves little time for keeping up with changes. With this in mind, we have developed these new features to bring you the best, most relevant information in a practical and clinically useful format each week.

On behalf of the entire *New England Journal of Medicine* staff, please accept my wishes for a rewarding career.

Sincerely,

Eric J. Rubin, MD, PhD

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NEJM GROUP

Physician Mentorship: Why It's Important, and How to Find and Sustain Relationships

Mentorship is a key factor in promoting and maintaining fulfillment in medical practice. Senior colleagues who share your clinical, research, administrative, or community service interests should be approached early in your formal training. An open and honest dialogue can be instrumental in setting your professional goals, defining its trajectory, and learning how to overcome barriers by adopting successful strategies.

— John A. Fromson, MD

By Bonnie Darves

Most physicians who make their way into satisfying practice careers in a specialty they enjoy — and especially those who also end up in leadership roles — are usually quick to point out to their younger colleagues that they received some help, perhaps even a whole lot of assistance, along the way. Almost invariably, these physician success stories usually have a common thread: an important mentor, or possibly more than one key mentor, whose guidance proved invaluable.

In an era when it's easy to network and seek guidance online in pretty much any area of one's life, the notion of the traditional physician mentor-mentee relationship carried out over a series of regularly scheduled formal in-person meetings and the occasional phone conversation might seem almost quaint. It isn't, and such relationships might be more important now than in the past because the in-touch-and-constantly-connected online environment doesn't necessarily foster or sustain the deep, candid exchanges that characterize good mentor-mentee interactions.

Anne Pereira, MD, MPH, assistant dean for curriculum at the University of Minnesota Medical School, thinks that some physicians in training fail to recognize the value of establishing and cultivating relationships with mentors. "Absolutely, in-person mentorship remains fundamentally important in medicine, because a lot of mentorship is about developing a relationship that's close enough that your mentor wants to support you," Dr. Pereira said. "Unfortunately, I think that the value of having mentors is probably underestimated by many trainees."

One reason, she points out, is that many young people today who end up in residency have never worked because they have been on a fast track. They're essentially high-achieving, highly driven professional students who have been "on a fairly regimented pathway," she explains, "and they haven't reached a point where there are multiple pathways they could take."

When physicians do get to that juncture, having an established mentor relationship might make the difference between a good, thoughtfully considered decision and a poor one later regretted, longtime physician mentors say. Ideally, that relationship — regardless of the logistics of how the parties meet and how frequently they connect — is a deep one predicated on two-way trust and defined objectives.

"In mentorship, I think anything that leads to a mutually beneficial relationship and the accomplishment of shared goals is fair game, but it's definitely helpful to meet in person," said Jennifer Best, MD, associate dean for graduate medical education at the University of Washington in Seattle. "Social media and the online universe can present a false sense of depth, and I think that we sometimes present different 'selves' in that environment."

If there is one absolute prerequisite for a successful mentor-mentee relationship, it is a commitment to candor, according to Nathaniel Scott, MD, director of the combined emergency medicine/internal medicine residency program at Hennepin County Medical Center in Minneapolis. "There has to be some degree of personal connection, even in the most formal mentor-mentee relationship, and that both parties must be invested in it and honest if it is going to provide a benefit," he said. "I think what the local relationship offers over a remote or online one is that your mentor will be more aware of the circumstances you're in and the issues you are confronting on a more intimate level."

To look at how young physicians can identify mentors and ultimately thrive in those relationships, NEJM CareerCenter recently spoke with physicians who have served as mentors or benefitted from the guidance that mentors have given them — or both — to obtain their perspectives on key issues.

When should physicians start looking for a mentor, and what's the best way to go about that?

"Ideally, people should start looking for a formal mentorship program when they're looking for a residency program. Especially in a large program, having some help finding a mentor is important because it's difficult to get your feet under you, and get to know the institution and individuals well enough to reach out on your own. I think that mentorship should be an important part of the culture in training programs."

— Anne Pereira, MD, MPH, University of Minnesota Medical School

"The most important thing is to just start connecting with people in your institution, anyone — you can't exist in a vacuum. You can do this without necessarily going out and looking for a mentor, by asking someone you admire for advice on a research project, for example, or guidance on how to publish a paper. Start with a specific request, and often, these exchanges will grow organically into a relationship. It's also helpful to reach out to national physician organizations that provide mentor services on a group or individual level."

— Chemen M. Neal, MD, assistant professor of clinical obstetrics and gynecology, Indiana University School of Medicine; mentor chair, American Medical Women's Association

"All physicians should seek mentors as early as possible, and having a mentor when starting training is especially beneficial for international medical graduates [IMGs], because of the cultural challenges they might face. That initial mentor, ideally, should be a successful physician from the IMG physician's country — whether the mentor is on the program faculty or not. It's important for hospitals and health systems to help IMGs make those connections, but professional societies can also be helpful.

— Thomas Norris, MD, board member, Educational Commission for Foreign Medical Graduates and former chair of the American Board of Medical Specialties; former vice dean for academic affairs, University of Washington

"I think the majority of mentor relationships today are informal. By that I mean that you don't go ask someone, 'Will you be my mentor?' I don't think I've ever said that out loud. Instead, look for someone you admire who is ahead of you in the field, or in a position that you might envision for yourself, and establish a relationship by asking a specific question. Then later, ask if that person will grab some coffee with you sometime."

— Fatima Fahs, MD, dermatology resident, Wayne State University; budding mentor

What qualities or traits should physicians look for in a mentor?

"A good mentor is someone who says, 'How can I help you succeed?' and truly wants you to succeed. A lot of people still think that physician mentorship is hierarchical, but it isn't — and shouldn't be. When physician mentorship is done well, for the right reasons, the mentor-mentee relationship is a partnership."

— Susan Reynolds, MD, PhD, president and CEO, The Institute for Medical Leadership

"It's important to look for mentors who can connect with you on a one-to-one basis and who will inspire you and also give you a pat on the shoulder. It shouldn't be about idolization; you want someone who will celebrate you as an individual, not intimidate you, and someone who will also help you figure out how to overcome roadblocks.

I've always found the best mentors to be people who fill up my tank a bit to give me more energy to meet the next milestone."

— Joseph Vercellone, MD, internal medicine resident in Royal Oak, Michigan, who previously worked in the film and information technology industries

"Start by looking for physicians you admire for their expertise or their skills, who are willing to give you good advice. Also look for people who you see as good people, as models for how you would like to lead your life."

— Janis Orlowski, MD, chief health care officer, Association of American Medical Colleges

"Look for a person who has the time and desire to truly invest in your future. It matters less what their area of expertise is. You want someone who can act like a sponsor for you and connect you with the right people. And you should ensure that person doesn't have selfish motives, like recruiting you."

— Dr. Pereira

How many mentor relationships should young physicians try to establish?

"Most of us benefit from having at least a few mentors — a clinical mentor, a research mentor, and an overall career mentor. They don't all have to be in your field. I think it's helpful to have a personal mentor, too, someone you bond with who'll check in and ask you how you're doing and whether you're getting enough sleep."

— Dominique Cosco, MD, associate internal medicine program director, Emory University, Atlanta

"Physicians absolutely need more than one mentor, maybe not in the beginning but definitely toward the end of residency as they start looking for their first job. There's no perfect single mentor, so I think it's helpful to create a quilt of mentors — a mentor who can help you procedurally, once who can help you with career planning, and another mentor for life planning."

— Dr. Pereira

How should young physicians approach about the issue of expectations in a mentor-mentee relationship, and do they even need to address that formally?

"It's important to make the expectations somewhat explicit from the start. For example, after a first meeting, you might ask the potential mentor if it's OK to meet for coffee every few months. And if the person says, 'sure,' the mentee should reach out to set up the next meeting. After the relationship is established, there should be expectations set about what the mentor and the mentee will do, and by when, and what both are seeking from the meetings."

— Nathaniel Scott, MD, director, combined emergency medicine/internal medicine residency, Hennepin County Medical Center, Minneapolis

"The physician who identifies a potential mentor should be direct, and say, 'I'd like you to be one of my career advisors.' If that person agrees, the two should set expectations about the kind of communication that will occur and how often, and when the mentor will check in to see how things are going. It's important to set out the expectations of the exchange, because if one party has higher expectations than the other, that could be strain the relationship."

— Jennifer Best, MD, associate dean for graduate medical education, University of Washington

"I think that expectations can be fluid at the start, but as the relationship develops, the parties should set goals and establish what the mentee wants to work on and what he or she will bring to the meeting. It's important that there be a timeline for goals or projects."

— Dr. Cosco

What should physicians be sure to do, or avoid doing, when they're seeking a mentor or working with one?

"Frame your request by telling the person the concrete thing(s) you are interested in, and be specific. One of my pet peeves is when I receive an email that reads 'Hello, Dr. Fahs. I am interested in dermatology. What advice do you have?' The right way would be: 'Hello, Dr. Fahs. I am interested in dermatology. Do you have any advice on how I can obtain a research project in medical school when I don't have a lot of clinical experience?'"

— Dr. Fahs

"It's very important to be honest with yourself and with your mentor about the kind of help you're seeking or what you're struggling with. Be willing, once the relationship is established, to ask for feedback on what you could do better, and then try not to be defensive, because that could damage the relationship. That honesty should be on both sides. Mentors should be open in sharing the things they didn't do right in their careers."

— Joshua Corsa, MD, trauma surgeon who trained at Orlando Regional Medical Center and is doing a critical care fellowship at Harborview Medical Center in Seattle

"Do your homework before you approach your mentor with a question, and don't use your mid-career mentors or senior faculty member to obtain information that you can get online. Go to your mentor with those more nuanced questions where their expertise and experience will enable you to understand things in a way that you couldn't by just reading about it."

— Dr. Pereira

"Prepare well for every meeting with your mentor, and remember that every good mentor is looking for a mentee who is passionate, devoted to the field, and diligent. Because unless the relationship is also gratifying to the mentor, that mentor won't want to stay in it. Keep in mind that your mentor is very busy, and he or she needs to have a reason to devote that time to you."

— Nitin Agarwal, MD, neurosurgeon trainee-PGY 4, University of Pittsburgh; American Association of Neurological Surgeons resident advisor

What should physicians do if they're in a mentor relationship that isn't working out?

"During training, you only have so much bandwidth. If the relationship isn't a good fit, let the mentor know that you're thinking about going in a different direction. Thank the person for the guidance so far, and say, 'I hope you're willing to stay in my life in an advisory capacity.' It's important to go out on a positive note."

— Dr. Best

"Most of the time when mentor arrangements aren't working, things tend to fall off naturally. If it's a mismatch of expectations — one person wants to meet more frequently than the other — that should be addressed in a way that allows the two parties to just move on."

— Dr. Scott

"If the chemistry [doesn't] feel right when you start talking or meeting, find someone else. Working with a mentor is a little bit like dating; if you don't connect early on, it's probably a relationship that's not going anywhere."

— Dr. Norris

Did you find this article helpful? What other topics would you like to see covered? Please send us an email to let us know what you thought at resourcecenter@nejm.org.

Outside the Fold: Exploring Nonclinical Work Opportunities for Physicians

By Bonnie Darves

Most physicians go into medicine fully expecting to spend their careers in patient care, and the vast majority do just that for three decades or so. Some physicians, however, might decide that they want to expand or alter their horizons — or even leave clinical practice altogether — by pursuing other types of work. Twenty years ago, it might have been difficult to make a major transition from patient care to nonclinical work. That's not the case anymore. Within the health care realm generally, there are many kinds of nonclinical work available, and much of that work can be done on either a part-time or full-time basis.

Residency-trained physicians, particularly those who have spent at least three to five years in patient care, find many nonclinical avenues where their skills and experience might yield gratifying work. Common areas where such jobs are plentiful include pharmaceutical drug development and consulting, medical technology and informatics, health insurance and utilization management, and within regulatory agencies. Public health, education, and hospital leadership also offer numerous nonclinical opportunities, as do nonprofit organizations. In addition, "side gigs" abound in chart review, expert witness work, and, of late, in biotechnology and the ever-growing health care business and technology startup sectors. Still others find gratifying, if not necessarily highly compensated, work in medical writing.

The reasons that physicians choose to explore nonclinical work are myriad, but the key ones are a desire to seek new challenges or the awakening that full-time patient care isn't the best fit. In some cases, physicians pursue nonclinical work almost by happenstance, when they're exposed to something in the course of their clinical practice or are trying to figure out their own next move.

That's what happened for Heather Fork, MD, a dermatologist turned career coach. Although she liked dermatology, after a decade in the field she decided that she needed to find a different way to help people. That led her to become a master certified coach and, eventually, to focus on physicians. Today, Dr. Fork operates The Doctor's Crossing, a Texas firm that counsels physicians seeking to invigorate their careers or transition to nonclinical pursuits.

Dr. Fork encourages physicians to explore new career options if they're feeling stuck or less than gratified with patient care, but she cautions them to ensure they're not just running away from something. "Before making any changes, I always recommend doing everything you can at your current position to make things better. Part of this process involves gaining clarity on what is and isn't working," she said. For some physicians, she explained, that process leads them to the realization that if they can work fewer hours and have more flexibility, their current job is actually okay. For others, who might be in a toxic environment, the solution might be finding a better practice setting. "A thorough self-assessment might also reveal that medicine was never the right fit to begin with, and that a new path is in order. Taking on new challenges and interests, either in medicine or outside medicine as a sideline or hobby, can help feed the mind and spirit," she said.

Following interests to find nonclinical opportunities

Yasmine S. Ali, MD, a cardiologist at Vanderbilt University in Tennessee, was struggling with her decade-old career when she decided to shake it up by parlaying two of her longtime interests — writing and preventive medicine — into two new ventures. Today, as president of LastSky Writing, LLC, Dr. Ali works with individuals and companies seeking medical consulting and writing services across a broad range of health and wellness areas. She also helps physicians launch their own writing careers, and now operates a preventive medicine practice. "In my cardiology practice, I felt like I was doing a lot of damage control, so I decided to pursue my interest in preventive medicine by starting my own practice and writing about health and wellness," said Dr. Ali.

Today, Dr. Ali serves as chief editor of the atherosclerosis and congenital heart disease sections at Medscape. She also writes for pharmaceutical and nutrition companies, and she writes and speaks frequently on wellness and disease risk prevention. "It took me a long time to realize that I could help patients in other ways," she said. "I've discovered the power of writing to expand my impact, and it's been very gratifying."

Nisha Mehta, MD, a radiologist in Charlotte, North Carolina, like Dr. Ali, turned the concept of exploring nonclinical opportunities into her own

business. She founded and operates a Facebook forum called Physician Side Gigs, a three-year-old venture that now has 38,500 physician members.

"It's a very active forum. It draws physicians who want to learn about business or finance or are looking to shift direction to pursue nonclinical opportunities or something they're passionate about. Some simply want to supplement their income or pay off their loans faster," said Dr. Mehta, by exploring opportunities in real estate or investing, for example. "What our group says, I think, is that it's OK not to want to be a traditional doctor. We try to connect physicians to opportunities, regardless of whether they're related to the physician market." Overall, the forum has evolved as a vibrant networking forum, she adds, that connects physicians from across the specialties.

In Dr. Mehta's case, Physician Side Gigs provides a revenue stream from public speaking and other activities associated with the forum. She practices full time at the VA. "For me personally, I think that my Sides Gigs venture is actually promoting my career longevity. It has enabled me to pursue something fulfilling in a different way," she said.

Straddling clinical and nonclinical realms

Hodon Mohamed, MD, a Michigan obstetrician-gynecologist, also moves between clinical and nonclinical work. She still practices two shifts a week as an OB/GYN hospitalist but has pursued a handful of sidelines in recent years, as a medical director, in utilization management, and as a career coach for physicians. "I enjoy my specialty, but I was definitely feeling the burn from the system," she says. "I wanted to try something new."

Dr. Mohamed has enjoyed all her side gigs but finds the coaching — she focuses on physicians in transition — especially rewarding. "I have found that as physicians, we don't really talk to each other about the issues we experience in our lives. That's why I really enjoy helping physicians find their passions beyond medicine, whether they stay in clinical practice or not," she said.

Some physicians decide to make the transition to nonclinical in a relatively rapid fashion. Ophthalmologist Frances Cosgrove, MD, did that when she moved from clinical practice to the pharmaceutical sector about a year ago. Today, she is a clinical case manager and medical reviewer in the Global Patient Safety division for Eli Lilly and Company in Indiana. As she tells it, she had reached a juncture in her medical career, after nearly a decade in practice, where she wasn't sure she wanted to spend another 20 years doing essentially the same thing. She started out by doing contract work in the pharmaceutical field and found she liked it, then took the job at Eli Lilly.

The focus of her work now is looking at side effects and adverse events that might be associated with drugs that are either in development or already on the market, performing pharmacovigilance. It's been a good move, even if it required substantial adjustment. "It's been a while since I learned a whole new culture — one that's very different than the one I knew. And I've enjoyed it," she said. "I've been very impressed, too, by all the continuous learning opportunities in the industry." She also appreciates the fact that it's a Monday–Friday job. "No more nights and weekends," she said.

Physicians who move into nonclinical work often do so for a combination or professional and personal reasons. Family medicine physician Lisa Ho, MD, was looking for more flexibility in her work life — she has four children — than a breakneck-paced practice would permit, without losing a connection to patients. She found it in a mixed portfolio of part-time jobs, as a Social Security disability consultant, nursing home reviewer, and Medicaid utilization management specialist. "I still get the chance to work as a doctor, but I'm not tied to an 8–5 — or sometimes 8–10! — job, and I get to work from home. The jobs are flexible, and I can choose my hours and the amount of work I do," Dr. Ho said. "What I like best is that what I do is necessary, because I think we all realize that resource utilization is important."

Gauging income potential in nonclinical work

Dr. Ho has also found that nonclinical work does not, as a rule, pay less than clinical work. "I think a lot of physicians think that they'll take a pay cut, but that's not necessarily the case," she said. Other sources interviewed for this article concurred. What physicians will — or potentially can — earn in nonclinical work depends on several factors. These range from their time in practice, to their specialty, to their skills sets and their ability to wax entrepreneurial when the opportunity arises.

Some nonclinical jobs' compensation is on par with a physician's salary, Dr. Fork reported, while other jobs may be lower earning and still others, significantly higher. For example, entry-level jobs in health insurance, utilization management, the pharmaceutical industry, and physician-advising

pay between $160,000 and $300,000, but there can be considerable upside income potential as physicians advance, Dr. Fork and other sources said.

Further, physicians who obtain business, health administration, or clinical informatics degrees are likely to find themselves in high demand and with the potential to command very good salaries. Those in highly compensated specialties such as surgery, however, might need to prepare for a drop in income, Dr. Fork said.

Testing the nonclinical waters, over time

Following personal and professional interests where they lead, in an incremental fashion, is a prudent way to find a new career path, some physicians contend. That's how a long-term journey from patient care-focused practice to clinical informatics evolved for pediatrician Feliciano "Pele" Yu, MD, chief medical information officer at Arkansas Children's Hospital in Little Rock. He began his transition nearly two decades ago, when he became interested in computers, learned to code, and developed a "miniature" electronic medical record (EMR) for his practice. Over the ensuing years, while still practicing pediatrics, he did a fellowship in health services research via a National Institutes of Health award and picked up degrees in public health and health informatics.

Today, Dr. Yu works in a full-time administrative role in which he focuses on the intersection of health informatics, outcomes research, and quality of care. Although he misses direct patient care, in his view he is still involved by extension. "I truly feel that I am still taking care of patients, but in a different way now," he said, "and it's an exciting time for clinical informatics." From an informal sideline that once attracted a handful of "geeky" physicians, clinical informatics is now an American Board of Medical Examiners-designated specialty, and there are 33 ACGME-accredited programs.

For physicians who are interested in informatics but don't want, or aren't ready to leave their practice positions, there are avenues, paid and volunteer, to explore the field part time, Dr. Yu said. Health care organizations of all sizes are seeking physicians who can act as subject-matter experts (SMEs) to help them optimize their existing EMRs and information systems to improve quality and extract useful data. He also recommends attending informatics conferences (or devoted presentations or tracks at specialty conferences). In addition, medical software and information systems vendors are often looking for physicians to act as SMEs or consult on their products.

"There are plenty of opportunities for physicians to pursue their interests or check out the field," Dr. Yu said. He added that physicians working in informatics full time are also happy to connect with young physicians.

Like Dr. Yu, Jeffrey Grice, MD, also took the long road to his nonclinical career. As medical director for member experience and branding for Kaiser Permanente in Washington, the Seattle-based obstetrician-gynecologist has held numerous leadership roles over the years. He helped build a women's cancer department, served as department chair and later chief of medicine, and then, in 2015, took a senior role in corporate human resources and compliance in Kaiser's California headquarters before taking his current position. He reluctantly stepped away from part-time clinical practice because it just wasn't feasible to continue, but Dr. Grice finds that his current work still provides the satisfaction that he is helping patients.

"In a typical week, I'll bounce from working with the marketing and branding team, to analyzing data on our performance, to spending time with a patient who experienced a complication of surgery and didn't feel supported enough," Dr. Grice said. He urges young physicians to try something new every seven to 10 years, to challenge themselves intellectually and keep their professional lives fresh. He also counsels physicians to rejuvenate themselves by looking first for opportunities around them, whether that is working on a committee that interests them, engaging in quality improvement, doing peer review, or taking leadership courses. "It's helpful to start by looking for an unmet need that interests you and taking it from there," he said.

Be prepared for pushback

One issue that physicians contemplating nonclinical work face is concern about what their colleagues — especially their mentors — will think. That's a valid consideration, but it shouldn't deter physicians from seeking another path. The thing to keep in mind, Drs. Ali and Mohamed said, is that being true to yourself is a lot more important than reacting to what others say or think. That response, in most cases, will be fleeting, as most physicians are more focused on their own careers than those of a former residency or clinical colleague.

"At first, there was a reaction of surprise to what I was doing, and then the conversation began to go in a different direction. People started asking questions," Dr. Ali said. "The thing to remember is that when people appear to question what you're doing, it's really more about their perceptions and opinions than it is about you."

"There will be some backlash — but you'll get over it," Dr. Hodon said. "I think that will change, though. The younger generation of physicians is saying 'this is my life, and I should do what I find gratifying.'"

Physicians who enter leadership nonclinical roles, whether early or mid-career, might also face opposition from colleagues, whether that sentiment is uttered or not, Dr. Grice admitted. "Unfortunately, there's still a bit of the us-versus-them mentality, that physicians who go into leadership in nonclinical roles have 'gone to the dark side.' You have to remember that the work you are doing still benefits patients, but in a different way," he said.

Planning the transition

The physicians interviewed for this article offered a range of helpful tips for their colleagues who are considering moving into nonclinical work on a part-time or full-time basis. Here are a few:

Thoroughly explore your options — and your motivations. Dr. Fork recommends that physicians spend considerable time looking at what's out there in the way of nonclinical work, by visiting social media sites (see Resources) and doing research. "It's also very important to talk to someone who doesn't have an agenda to help you sort out your thoughts and feelings," Dr. Fork said. "A trusted colleague or mentor can be helpful. What's not helpful is talking with physicians who are very negative about their situation but are unwilling to do anything about it."

Start networking and keep doing it. Physicians tend to underestimate both the importance and value of networking when they're considering any kind of shift, Dr. Cosgrove said, but it's critically important. "I think many physicians are concerned about saying out loud that they want to make a change, but every time I reached out and heard someone's story or sought their counsel, it made me feel a bit better about what I was considering," she said.

Don't quit your day job — yet — and don't expect greener pastures. Physicians considering leaving clinical medicine altogether should plan on a minimum two-year transition timeframe, according to Dr. Hodon. They should also be prepared to invest in themselves by gaining skills during that period and finding people in the envisioned pursuit to guide them. Dr. Fork adds that physicians should really ensure that they're not running away. "Doing an honest self-assessment about what you truly want [from a] job and what would be a good match for your personality, skills, and interests is a key part of avoiding career-change mistakes. You don't want to end up in a remote nonclinical job that doesn't interest you and where you're tied to a computer," she said.

Resources

Nonclinical careers podcast: https://vitalpe.net/pnc-podcast

Physician Side Gigs: www.facebook.com/groups/PhysicianSideGigs

The Doctor's Crossing: https://doctorscrossing.com

Nonclinical Job Hunters: www.facebook.com/groups/NonclinicalJobHunters

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CLINICAL PRACTICE

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

Immune Thrombocytopenia

Nichola Cooper, M.D., M.B., B.S., and Waleed Ghanima, M.B., Ch.B., Ph.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 72-year-old woman who is receiving apixaban for atrial fibrillation but otherwise does not have a clinically significant medical history presents to the hospital with lower gastrointestinal bleeding. On admission, her hemoglobin level is 8.5 g per deciliter, platelet count 2000 per cubic millimeter, and white-cell count 5300 per cubic millimeter. She receives a transfusion of packed red cells and platelets that results in an increase in the hemoglobin level and a decrease in bleeding, but only a transient increase in the platelet count. The examination is unremarkable. A peripheral-blood smear shows no abnormalities other than thrombocytopenia; these findings are consistent with a diagnosis of immune thrombocytopenia. How should this case be managed?

THE CLINICAL PROBLEM

Immune thrombocytopenia (ITP) is an autoimmune disease characterized by isolated thrombocytopenia. Patients may be asymptomatic at presentation or they may present with mild mucocutaneous to life-threatening bleeding. Although only 5% of patients with ITP present with severe bleeding,[1] bleeding leading to hospital admission within 5 years after diagnosis develops in approximately 15%.[2] Irrespective of bleeding problems, patients with ITP often report fatigue and impaired health-related quality of life.[3] The risk of venous thromboembolism is twice as high among patients with ITP as among persons in the general population; the management of venous thromboembolism may be especially problematic given the concomitant risk of bleeding.[4]

ITP may be a primary condition or it may be caused by other diseases. The differential diagnosis of thrombocytopenia and the potential secondary causes of ITP are outlined in Table 1. Overall, the incidence of ITP ranges from 2 to 4 cases per 100,000 person-years, with two peaks: one between 20 and 30 years of age with a slight female predominance and a larger one after 60 years of age with equal sex distribution.[5,6] Although some patients have one episode of ITP followed by an immediate remission, chronic ITP develops in up to 70% of adults with this condition. Both spontaneous and treatment-induced remission can occur many years after diagnosis.

The pathophysiology of ITP is complex and remains incompletely understood (Fig. 1). The traditional concept is that antibody-coated platelets are prematurely destroyed in the spleen, liver, or both through interaction with Fcγ receptors.[7] Autoantibodies can also induce complement-mediated or desialylation-induced

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KEY CLINICAL POINTS

IMMUNE THROMBOCYTOPENIA

- Immune thrombocytopenia (ITP) is diagnosed in patients with a platelet count below 100,000 per cubic millimeter in whom other causes of thrombocytopenia have been ruled out.
- Patients with ITP who present with serious bleeding typically receive platelet transfusions, glucocorticoids, and intravenous immune globulin.
- In patients with no bleeding or nonserious bleeding, treatment decisions are guided by the patient's platelet count, age, coexisting conditions, and preference.
- Glucocorticoids are used as first-line treatment, but prolonged use should be avoided owing to adverse effects.
- For patients in whom ITP does not remit or relapses soon after glucocorticoid treatment, other medications for which there are high-quality data include thrombopoietin-receptor agonists and rituximab.
- Splenectomy is not recommended during the first year after diagnosis of ITP unless medical treatment is not available; otherwise, it is reserved for patients with ITP that is refractory to medical treatment.

destruction of platelets,[8,9] as well as inhibit megakaryocyte function.[10] However, antiplatelet antibodies are not detected in up to 50% of patients; this raises the possibility of alternative mechanisms of platelet destruction. Abnormalities in T cells have been described, including skewing of T helper (Th) cells toward a type 1 helper T (Th1) and type 17 helper T (Th17) phenotype[11] and a reduction in the numbers and function of regulatory T cells,[8,12] which could drive the autoimmune process. Limited studies suggest that CD8 cells are also involved.[13]

STRATEGIES AND EVIDENCE

DIAGNOSIS

ITP is defined as a platelet count below 100,000 per cubic millimeter in patients in whom other causes of thrombocytopenia have been ruled out.[14] A clinical history, including assessment of the use of drugs, physical examination, and complete blood count, is important to rule out other causes of thrombocytopenia and to evaluate for secondary causes of ITP (Table 1). Examination of the peripheral-blood smear in a patient with ITP shows reduced numbers of platelets with no other abnormalities (e.g., schistocytes and dysplastic changes); although some patients have large platelets, this is not a pathognomonic feature (Fig. 2). There is no diagnostic test for ITP; antiplatelet antibodies are detected in only 50 to 60% of patients with ITP and measurement of such antibodies is not recommended in the diagnostic workup.[15,16] Bone marrow examination is not diagnostic in patients with ITP and is performed only in those with other hematologic abnormalities and in those who do not have an adequate response to treatment.

TREATMENT

Treatment of Active Bleeding

The current goals of treatment are to stop active bleeding and reduce the risk of future bleeding.[15,16] If the patient has active serious bleeding, urgent treatment is indicated. Specific measures, where appropriate, include the withdrawal of anticoagulant and antiplatelet agents and treatment with platelet transfusions, glucocorticoids, intravenous immune globulin (IVIG), or all of these measures; data from randomized trials are lacking, and the use of these treatments is supported generally by small observational studies.

Platelet transfusions can help to limit bleeding, but they have only transient effects (for a few hours), and therefore the patient may need to undergo transfusions repeatedly. They should not be used alone but rather in combination with IVIG and glucocorticoids.[15]

IVIG raises the platelet count within 1 to 4 days in 80% of patients, but effects last only 1 to 2 weeks.[15] IVIG is indicated in patients with active serious bleeding and in those with very low platelet counts (<10,000 per cubic millimeter), who are at increased risk for serious bleeding.[17] Concomitant use of glucocorticoids with IVIG can be associated with a more sustained response than that with IVIG alone.[16,18]

In life-threatening situations, additional treatments may be required. Antifibrinolytic treatment (tranexamic acid) can help to stop bleed-

Table 1. Differential Diagnosis and Secondary Causes of Immune Thrombocytopenia (ITP).*

Variable	Clinical and Laboratory Findings	Other Tests and Findings to Confirm Diagnosis
Differential diagnosis of ITP		
Pseudothrombocytopenia	No symptoms, in vitro phenomena	Platelet aggregation on peripheral-blood smear, repeat platelet count in citrated blood
Renal or liver disease	Symptoms, signs, and clinical history	Renal function and liver-function tests and imaging of abdomen, including liver and spleen
Myelodysplastic syndrome, acute leukemia	Other cytopenias and abnormal peripheral-blood smear	Peripheral-blood smear, bone marrow aspirate and biopsy, with flow cytometry and cytogenetic testing
Aplastic anemia	Pancytopenia	Bone marrow aspirate and biopsy with cytogenetic testing
Genetic diseases that cause thrombocytopenia (e.g., Bernard–Soulier syndrome and *MYH9*-related disorders)	Young age at presentation, family history of thrombocytopenia, abnormal size and morphologic features of platelets or abnormalities seen in neutrophils on peripheral-blood smear, other clinical abnormalities (e.g., renal disease and deafness in patients with *MYH9*-related disorders)	Peripheral-blood smear, mean platelet volume, genomic testing
Thrombotic thrombocytopenic purpura	Neurologic or cardiac symptoms	Schistocytes on peripheral-blood smear, elevated LDH level, low haptoglobin and ADAMTS13 levels, direct antiglobulin test–negative hemolytic anemia
Heparin-induced thrombocytopenia	Venous thrombosis, previous exposure to heparin	Platelet factor 4–heparin antibody tests, platelet-activation assays
Secondary causes of ITP		
Use of certain drugs	Sudden onset after initiation of new medication (common drugs include quinine or quinidine, acetaminophen, abciximab, carbamazepine, rifampicin, and vancomycin)	Tests to detect drug-dependent antibodies, if available
Lymphoproliferative disorder (e.g., chronic lymphocytic leukemia and Hodgkin's lymphoma)	Weight loss, night sweats, lymphadenopathy or splenomegaly	Complete blood count; peripheral-blood flow cytometry, bone marrow flow cytometry, or both; bone marrow aspirate and biopsy; protein electrophoresis imaging of abdomen, chest, and neck to assess lymphadenopathy and spleen size (as appropriate)
Immunodeficiency syndrome (e.g., common variable immunodeficiency and autoimmune lymphoproliferative syndrome)	Hypogammaglobulinemia, cytopenias, frequent infections (especially chest or sinus infections), colitis, lymphadenopathy, splenomegaly	Immunoglobulin quantification, lymphocyte subset count, genetic testing
Infection (e.g., HIV and AIDS, HBV, HCV, cytomegalovirus, EBV, and *Helicobacter pylori*)	Other suggestive symptoms and signs; at-risk populations	Serologic and PCR tests for HIV, HBV, HCV, cytomegalovirus, and EBV; breath or stool antigen tests for *H. pylori*
Other autoimmune disease (e.g., systemic lupus erythematosus, rheumatoid arthritis and antiphospholipid syndrome)	Arthralgias or arthritis, hair loss, sun sensitivity, mouth ulcers, rash, thromboembolism	Tests for antinuclear antibodies, rheumatoid factor, anti–cyclic citrullinated peptide antibodies, antiphospholipid antibodies
Evans syndrome	Thrombocytopenia and direct antiglobulin test–positive hemolytic anemia	Peripheral-blood smear; measurements of haptoglobin and LDH levels; direct antiglobulin test

* ADAMTS13 denotes a disintegrin and metalloproteinase with a thrombospondin type 1 motif, member 13; AIDS acquired immunodeficiency syndrome; EBV Epstein–Barr virus; HBV hepatitis B virus; HCV hepatitis C virus; HIV human immunodeficiency virus; LDH lactate dehydrogenase; *MYH9* gene encoding nonmuscle myosin heavy chain 9; and PCR polymerase chain reaction.

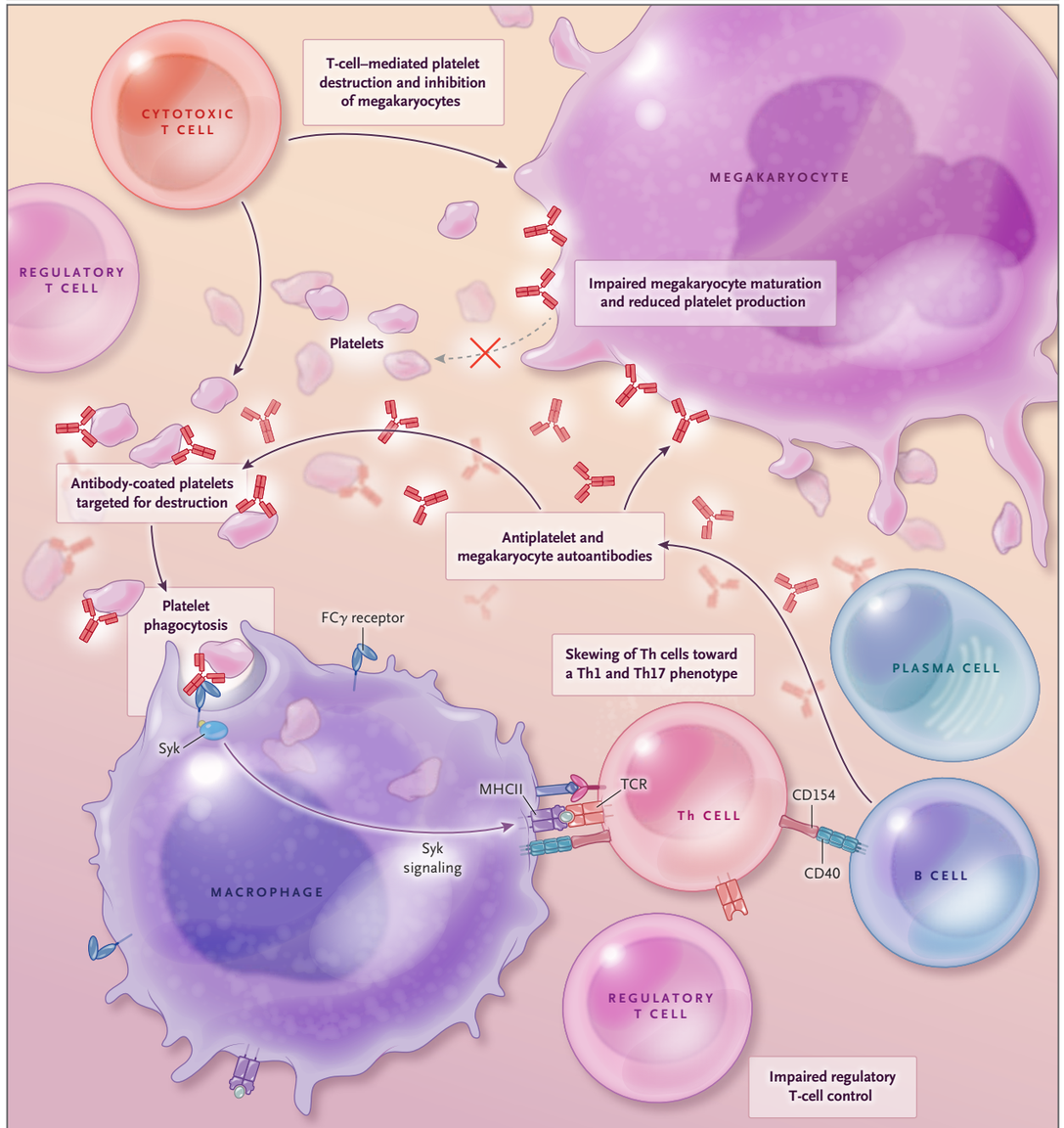

Figure 1. Pathophysiological Features of Immune Thrombocytopenia.

Although the pathophysiology of immune thrombocytopenia (ITP) is incompletely understood, the key event is considered to be the production of antiplatelet autoantibodies. These autoantibodies target platelets for destruction by macrophages in the spleen, liver, or both through activation of Fcγ receptors; this process is controlled by spleen tyrosine kinase (Syk). Autoantibodies may also destroy platelets through other mechanisms and inhibit platelet production by megakaryocytes. Antigens from phagocytosed platelets are thought to be presented by the major histocompatibility complex class II (MHCII) to T-cell receptors (TCRs), stimulating autoreactive T cells. T-cell changes seen in ITP and hypothesized to be pathogenic include skewing of T helper (Th) cells toward a type 1 T helper (Th1) and type 17 T helper (Th17) phenotype, reduction of regulatory T-cell activity, and an increase in cytotoxic T cells. A few studies suggest that cytotoxic T cells can also directly destroy or inhibit the production of platelets.

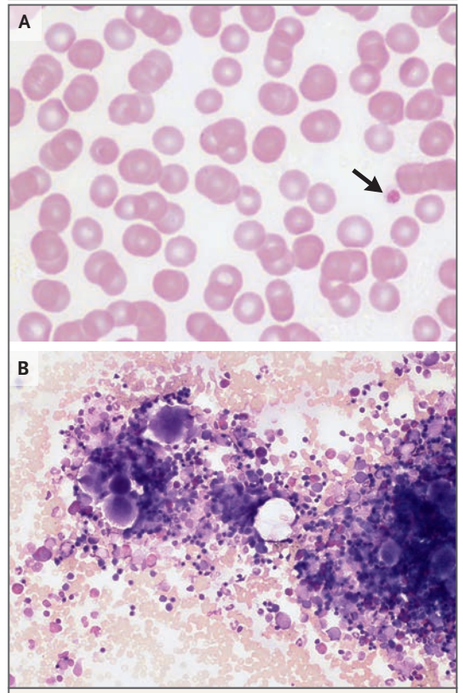

Figure 2. Peripheral-Blood Smear and Bone Marrow Aspirate from a Patient with ITP.

Panel A shows thrombocytopenia (only one platelet [arrow] is observed in the field) and normal erythrocytes in a peripheral-blood smear. Panel B shows bone marrow in a patient with ITP, with good cellularity, normal development of erythroid and myeloid cells, and an increased number of megakaryocytes.

ing, particularly from mucous membranes, and menorrhagia can be treated with hormonal therapy.

Treatment to Prevent Future Bleeding

In patients who are asymptomatic or have only mild mucocutaneous bleeding, the decision to treat should be guided by the risk of future bleeding and patient preferences. However, predicting the risk of future bleeding among patients with ITP is challenging. Several scoring systems have been developed, but their usefulness in clinical practice is limited by their complexity and lack of validation in large studies.[17,19,20]

A platelet count of less than 20,000 to 30,000 per cubic millimeter is frequently used as a criterion for treatment.[16] This criterion is consistent with findings of an increase in the 1-year risk of bleeding requiring hospitalization of 2.5 times among patients with platelet counts between 25,000 and 50,000 and 7 times among those with platelet counts below 25,000 per cubic millimeter.[2] However, treatment decisions should also take into account other risk factors that influence bleeding; these include older age (e.g., >65 years), history of bleeding, concomitant use of anticoagulants and platelet inhibitors, the presence of coexisting conditions such as renal impairment, and the risk of trauma from daily activities.[1,2] It is generally recommended that patients who are receiving anticoagulants or antiplatelet agents should receive treatment to maintain platelet counts above 50,000 per cubic millimeter.

Glucocorticoids

Glucocorticoid treatment is the standard initial therapy for patients with ITP. Two commonly used regimens are pulsed high-dose dexamethasone and a more prolonged course of oral prednisone or prednisolone (Table 2). In a meta-analysis of randomized trials comparing these two regimens, platelet counts were higher at 14 days in patients receiving dexamethasone, but overall responses at 6 months did not differ significantly.[21] Adverse events such as weight gain and cushingoid appearance were more prevalent with prednisone or prednisolone.[21] Other studies have suggested more neuropsychiatric effects with dexamethasone.[15]

Although 60 to 80% of patients with ITP have an initial response to glucocorticoids, only 30 to 50% of adults have a sustained response after glucocorticoids are discontinued.[22,23] In some studies, continued use has been associated with a higher incidence of long-term remission,[24] but prolonged exposure to glucocorticoids is not recommended because of adverse effects.

Other Medical Therapies

Medical therapies for patients with ITP who do not have an initial response to glucocorticoids or who have recurrent decreases in platelet counts after glucocorticoids are discontinued include thrombopoietin-receptor agonists and immunomodulators.[25] In the absence of randomized trials directly comparing these therapies or of biomarkers to guide the choice of medication, treatment

Table 2. Dosages, Efficacy, and Adverse Effects of Various Treatments for ITP.

Agent	Dosage	Onset of Action	Durability of Effect	Side Effects and Cautions
Glucocorticoids				
Prednisone or prednisolone*	1–2 mg per kilogram of body weight orally for 1–2 wk, followed by gradual tapering; rapid tapering if no response	1–2 wk	Response with treatment in 60 to 80% of patients; sustained response after discontinuation in 30–50% of patients	Weight gain, insomnia, acne, mood changes, cushingoid appearance, glucose intolerance, osteoporosis, increased risk of infection (particularly with prolonged use of prednisone or prednisolone), gastrointestinal symptoms, neuropsychiatric symptoms (particularly with dexamethasone)
Dexamethasone*	20–40 mg orally for 4 days every 2–4 wk; maximum of 4 cycles		Response with treatment in 60 to 80% of patients; sustained response after discontinuation in 30–50% of patients	Weight gain, insomnia, acne, mood changes, cushingoid appearance, glucose intolerance, osteoporosis, increased risk of infection (particularly with prolonged use of prednisone or prednisolone), gastrointestinal symptoms, neuropsychiatric symptoms (particularly with dexamethasone)
Immune globulin*	0.4 g per kilogram of body weight intravenously for up to 5 days or 1 g per kilogram for 1–2 days	1–4 days	Transient response lasting 1–4 wk in ≤80% of patients; treatment can be repeated	Headache, aseptic meningitis, renal failure
Thrombopoietin-receptor agonists†				
Romiplostim*	1–10 μg per kilogram, subcutaneously once weekly	1–2 wk	Response achieved and maintained in 40–60% of patients receiving continuing therapy; response maintained after discontinuation in 10–30% of patients	Headache, muscle aches, possible increased risks of thrombosis and myelofibrosis
Eltrombopag*	25–75 mg orally daily	1–2 wk	Response achieved and maintained in 40–60% of patients receiving continuing therapy; response maintained after discontinuation in 10–30% of patients	Gastrointestinal symptoms, transaminitis, cataract, possible increased risks of thrombosis and myelofibrosis; should be taken 4 hr after and 2 hr before food containing cations (e.g., iron, and calcium from milk or other dairy products)
Avatrombopag*	5–40 mg orally daily	1–2 wk	Response achieved in 65% of patients within 8 days after treatment	Headache, arthralgia, possible increased risk of thrombosis
Immunomodulators†				
Rituximab	375 mg per square meter of body-surface area intravenously weekly for 4 wk or 1 g administered twice with 2 wk between doses; lower doses (100–200 mg) weekly for 4 wk have also been shown to be effective	1–8 wk	Sustained response in 60% of patients at 6 mo and 30% at 2 yr; treatment can be repeated	Infusion-related side effects (chills, upper respiratory discomfort, bronchospasm), neutropenia, hypogammaglobulinemia, serum sickness; increased risks of infections and progressive multifocal leukoencephalopathy (very rare); should not be used in patients with evidence of active HBV infection (HBV surface antigen) or previous HBV infection (antibodies against hepatitis B core antigen)
Fostamatinib*	50–150 mg orally twice daily	1–2 wk	Response achieved and maintained in 18–43% of patients receiving continuing therapy	Hypertension, nausea, diarrhea, transaminitis
Azathioprine	1–2 mg per kilogram orally (maximum, 150 mg daily)	6–12 wk	Response in 30–60% of patients	Weakness, sweating, neutropenia, transaminitis, increased risk of cancer
Mycophenolate mofetil	500 mg orally twice daily for 2 wk, with gradual increase to 1 g twice daily	4–8 wk	Response in 30–60% of patients	Headache, gastrointestinal symptoms, fungal skin infections, teratogenic in pregnancy, increased risk of cancer
Danazol	400–800 mg orally daily	3–6 mo	Response in 30–60% of patients	Hirsutism, acne, amenorrhea, transaminitis; this androgenic agent should not be used in patients with prostate cancer
Dapsone	75–100 mg orally daily	3 wk	Response in 30–60% of patients	Gastrointestinal symptoms, methemoglobinuria, rash, hemolytic anemia (in patients with glucose-6-phosphate dehydrogenase deficiency)

* This agent is approved by the Food and Drug Administration for use in patients with ITP.
† These agents are used in patients in whom glucocorticoids have failed.

decisions are based on other factors, including the availability of medications, adverse effects, the required speed of response, and patient or physician preference. Among the available options, thrombopoietin-receptor agonists, rituximab, and fostamatinib have undergone the most rigorous study and are addressed below.

Thrombopoietin-Receptor Agonists

Eltrombopag and romiplostim are thrombopoietin-receptor agonists that are approved by the Food and Drug Administration (FDA) for patients with ITP that is refractory to other treatment and with disease lasting more than 6 months (eltrombopag) or 12 months (romiplostim). In randomized, placebo-controlled trials of each of these agents involving patients with chronic ITP in whom at least one previous therapy has failed, 70 to 95% of patients had an increased platelet count with initial treatment and 40 to 60% had durable responses with ongoing treatment.[26,27] Although these agents have not been compared head to head, the incidence of response appears to be similar. A meta-analysis of 13 randomized trials of either agent showed that, as compared with placebo or standard of care, they were associated with significantly higher rates of platelet response and durable response, and they reduced episodes of bleeding and the use of rescue and concurrent medications.[28]

Eltrombopag is administered as a daily tablet (with dietary restrictions), whereas romiplostim is administered in weekly subcutaneous injections (Table 2). The choice between the two agents is guided by the preferred form of administration and anticipated adherence. Limited observational data suggest that if one agent is ineffective, switching to the other results in a platelet response in up to 50% of patients.[29,30]

An initial response to thrombopoietin-receptor agonists usually occurs within 1 to 2 weeks. Once a response is achieved, ongoing treatment is ordinarily required to maintain effect. However, retrospective and prospective cohort studies have shown that 10 to 30% of patients can discontinue treatment after receiving thrombopoietin-receptor agonists for many months or years, and the disease remains in remission, although late relapses may occur.[31,32]

In early studies, concerns were raised regarding possible adverse effects of these agents on bone marrow. However, these effects have not

been confirmed with more than 10 years of follow-up; moderately increased bone marrow reticulin fibrosis has been observed in fewer than 10% of patients treated with either of these agents and has been reversible on discontinuation.[33] The main safety concern is an increased risk of venous thromboembolism.[4] In extension studies of both agents, thromboembolism developed in 6% of patients during a median follow-up of 2 years.[4,34,35] Thromboembolic events occurred predominantly in patients with other coexisting conditions and risk factors. Although the underlying ITP may partially account for these findings, the incidence of venous thromboembolism in these clinical trials was higher than expected, which raises the possibility that thrombopoietin-receptor agonists may tip the balance to thrombosis in susceptible patients. Other adverse effects of eltrombopag include elevated liver aminotransferase levels (which are reversible when the dose is reduced), and, as shown in animal studies, cataracts (although this finding has not been substantiated in long-term studies involving humans).[34]

Avatrombopag, another oral thrombopoietin-receptor agonist (which, unlike eltrombopag, can be administered without dietary restrictions), was approved by the FDA in June 2019 for the treatment of adults with chronic ITP. This approval was based on results of phase 3 clinical trials showing a longer median number of weeks with platelet counts of 50,000 per cubic millimeter or higher during the first 26 weeks in patients who received avatrombopag than in those who received placebo (12.4 weeks vs. 0 weeks).[36]

Immunomodulators

Rituximab is the most widely used immunomodulator in patients with ITP, although it is not approved by the FDA for this indication. A systematic review of single-group studies showed a response in 60% of patients, with a complete response in 40% of patients.[37] A meta-analysis including five randomized, controlled trials showed a significantly higher incidence of complete response at 6 months with rituximab than with glucocorticoids or placebo.[38] A response to rituximab is typically observed within 1 to 8 weeks (Table 2). In some single-group studies, young women (<50 years of age) with a short duration of disease (<2 years) were reported to have a higher incidence of response and more durable responses than other patients.[39]

The main advantage of rituximab is sustained platelet responses that last more than 2 years in 50% of patients who have a response.[40,41] Although ITP eventually relapses in most patients, most of those in whom the disease relapses have a response to retreatment with rituximab.

An increase in minor infections has been reported with rituximab. However, major complications such as progressive multifocal leukoencephalopathy are exceedingly rare.[41,42]

Fostamatinib, an oral spleen tyrosine kinase (Syk) inhibitor, was approved by the FDA in 2018 for patients with ITP in whom one previous therapy has failed. In pooled randomized trials, a stable response (defined as a platelet count ≥50,000 per cubic millimeter on at least four of six visits twice a week during weeks 14 to 24) was achieved in 18% of patients receiving fostamatinib and in 2% of those receiving placebo. A response (a platelet count ≥50,000 per cubic millimeter within the first 12 weeks of treatment) was achieved in 43% of patients receiving fostamatinib and in 14% of those receiving placebo. The mean time to response was 15 days. Diarrhea, hypertension, transaminitis, and nausea were common adverse effects that occurred in up to 30% of patients.[43]

Other immunomodulatory agents such as mycophenolate mofetil, azathioprine, dapsone, and danazol are also used in patients with ITP (Table 2). Data to support their use are largely limited to retrospective observational studies that suggest that 30 to 60% of patients have a response.[15]

Splenectomy

A systematic review showed that splenectomy, which remains the most effective therapy for ITP, induced long-lasting remissions in 60 to 70% of patients.[44] Nevertheless, owing to the emergence of effective medical therapies, the potential complications of splenectomy, and the inability to predict which patients will have a response,[45] consideration of splenectomy is usually limited to patients who do not have a response to or cannot receive standard medical therapies because of side effects and in whom at least a year has passed since diagnosis (to allow for remission to occur).[46] The frequency of splenectomy has decreased substantially during the past two decades.[47]

Short-term risks of splenectomy include operative and postoperative complications, including venous thromboembolism and sepsis. Laparoscopic splenectomy is associated with lower postoperative mortality and morbidity and a shorter recovery time than open splenectomy.[44,48] Although the immediate risk of venous thromboembolism can be reduced by thromboprophylaxis, epidemiologic studies have shown a persistent doubling or quadrupling of the risk of venous thromboembolism among patients with ITP who have undergone splenectomy as compared with those who have not undergone splenectomy.[49,50]

Patients who have undergone splenectomy have an increased risk of infection with encapsulated bacteria and require repeated vaccinations. A large registry-based study showed a higher risk of both early and late sepsis among patients with ITP who had undergone splenectomy than among those who did not.[51]

A higher incidence of other vascular complications, such as coronary artery disease, stroke, and chronic thromboembolic pulmonary hypertension, has also been reported among patients who have undergone splenectomy, but the data are not consistent among studies.[52] Conversely, one study showed no significant difference in mortality in the first year after splenectomy and a lower risk of death after 1 year among patients with ITP who underwent splenectomy than among those who did not.[53]

Splenectomy is generally not performed in frail elderly patients because of increased surgical complications in this group. It is generally not performed in patients with secondary ITP owing to a lower incidence of response and more adverse events in these cohorts than in others.[44,54]

AREAS OF UNCERTAINTY

The pathogenesis of ITP is not fully understood, and biomarkers are needed to predict responses to specific treatments. Randomized trials are lacking to guide the treatment of patients who present with acute serious bleeding and to compare the efficacy and safety of second-line treatments, including with respect to patient-centered outcomes of treatment such as health-related quality of life. Late-stage clinical trials of inhibitors of Bruton's tyrosine kinase (ClinicalTrials.gov number, NCT03395210) and neonatal Fc receptor (NCT02718716 and NCT03102593) are under way.

GUIDELINES

Guidelines for the treatment of patients with ITP were published by an international consensus group[15] in 2010 and by the American Society of Hematology[16] in 2011, but both sets of guidelines antedated many of the studies discussed here and are currently under revision. The American Society of Hematology guidelines recommend splenectomy for most patients in whom glucocorticoids have failed and recommend thrombopoietin-receptor agonists for those in whom splenectomy is contraindicated. Otherwise, there were weak recommendations for the use of rituximab and thrombopoietin-receptor agonists before splenectomy.

Guidelines from a working group of German, Austrian, and Dutch investigators that were published in 2018 recommend thrombopoietin-receptor agonists in patients in whom glucocorticoids have failed and rituximab or splenectomy in those in whom thrombopoietin-receptor agonists have failed.[46] The recommendations in the present article are generally concordant with these more recent guidelines and with the revised guidelines of the American Society of Hematology.[55]

CONCLUSIONS AND RECOMMENDATIONS

The patient described in the vignette has a low platelet count without other hematologic abnormalities (with the exception of those accounted for by acute bleeding), consistent with ITP. Urgent treatment to stop the bleeding should include discontinuation of anticoagulation, the use of platelet transfusions, and treatment with IVIG and glucocorticoids. Once her condition has stabilized, her diagnosis should be reviewed, with a careful history to rule out other causes of thrombocytopenia and conditions resulting in secondary ITP. Endoscopic examination is recommended to investigate the source of bleeding.

In the absence of a cure for ITP, the aim in this patient would be to achieve a stable platelet count (usually >50,000 per cubic millimeter) permitting safe reintroduction of anticoagulation. If initial treatment with glucocorticoids and IVIG was not successful in inducing remission or if relapse occurred when glucocorticoids were tapered, we would recommend a thrombo-

poietin-receptor agonist, given randomized trials showing a high incidence of sustained elevation in the platelet count with each of these agents. However, thrombopoietin-receptor agonists are currently outside the approved indications for ITP, which are limited to ITP lasting for at least 6 months. Rituximab is an alternative therapeutic strategy, although the incidence of response appears to be lower and responses occur more slowly than with thrombopoietin-receptor agonists. Given the patient's age and coexisting conditions, splenectomy would be contraindicated.

Dr. Cooper reports receiving fees paid to her institution for serving as a principal investigator for clinical trials, advisory board fees, and lecture fees from Amgen and Novartis, fees paid to her institution for serving as a principal investigator and co-investigator for clinical trials and honoraria from Rigel Pharmaceuticals, fees paid to her institution for serving as a principal investigator for clinical trials from Protalex, and fees paid to her institution for serving as a principal investigator for clinical trials and for serving on an advisory board from Principa; and Dr. Ghanima, receiving advisory board fees and lecture fees from Amgen and grant support paid to his institution, advisory board fees, and lecture fees from Novartis. No other potential conflict of interest relevant to this article was reported.

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

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Classified Advertising Section

Sequence of Classifications

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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 classification 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.

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

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This advertisement is 58 words. At $9.50 per word, it equals $551.00. Because a reply box was requested, there is an additional charge of $75.00 for each insertion. The price is then $626.00 for each insertion of the ad. This ad would be placed under the Chiefs/Directors/ Department Heads classification.

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Issue	Closing Date
November 14	October 25
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Memorial Sloan Kettering Cancer Center

Hospitalist or Nocturnist – Hospital Medicine Service/ Department of Medicine

Memorial Sloan Kettering Cancer Center (MSK) has built an outstanding team of hospitalists over the past 15 years, where we have pioneered and led the field of "oncology hospital medicine." The majority of our hospitalists are internal medicine trained/boarded; no specific training in medical oncology is required. We currently have daytime and nocturnist positions available at Memorial Hospital, our main clinical site.

As a Hospitalist, you will be leading an inpatient team that consists of housestaff, medical students, and/or APPs; with no direct care required.

Both positions afford opportunities to participate in teaching, quality improvement, research, and other academic opportunities for the interested individual, in line with his/her strengths and passions; but is not required.

Our ideal candidate will have: outstanding acute clinical skills; ability to work well within a multi-disciplinary team; superior communication skills; and board certification/eligibility in internal medicine. Strong primary palliative medicine skills are a plus (subspecialty training not required). There is excellent growth potential for a candidate who seeks a fulfilling career in academic hospital medicine.

Please send CV and brief statement of interests, to Barbara Egan, MD, Chief of Hospital Medicine Service at eganb@mskcc.org

Memorial Sloan Kettering Cancer Center is an EO M/F/Disability/Vet Employer.

Take the next steps on your journey.
Join a world-class academic medical center that is delivering tomorrow's healthcare today.

Visit **bit.ly/DukeDocJobs**
to explore Duke Health's physician career opportunities.

Explore Primary Care Opportunities with Hartford HealthCare

Hartford HealthCare

At **Hartford HealthCare**, the most comprehensive, integrated health care system in CT, we know what matters most when it comes to building a fulfilling career in primary Care. Our physician led organization demonstrates our deep commitment to primary care by providing all of the resources that primary care physicians need to thrive.

Join more than 500 engaged colleagues who provide primary care and specialty care in more than 30 specialties and enjoy:

- Behavioral Health providers, High Risk Nurse Care Managers and Social Workers in every primary care practice
- A **Mentorship Program** for new physicians and welcoming, experienced colleagues
- EPIC EMR with Dragon, HIPAA compliant texting, patient self-scheduling and patient portal
- Efficient operations, engaged office staff, and 2.5 staff per physician and your own MA
- Very competitive compensation including incentives for quality and panel size; and robust benefits include generous 401K match, CME and paid time off
- **LOAN FORGIVENESS** and **TRAINING BONUSES**!
- Flexible scheduling and rare call for work/life balance
- LEAN Daily Management ensures staff engagement and seamless operations

Internal Medicine and Family Medicine opportunities available in locations throughout Central CT and the CT Shoreline

Schedule a Working Interview and experience the difference for yourself!

Located just two hours from Boston and New York City, we are in the heart of some of New England's most stunning communities offering your family nationally acclaimed school systems, a choice to live at the shore, in vibrant urban areas, near a major university or in a Kiplinger "Top 10 Best City to Raise a Family" and Travel & Leisure's "Coolest Suburb in America".

So you will love heading to work, and heading home!

Interested in learning more?

Please email Pam Lasser at Pamela.lasser@hhchealth.org Or call/text at 860-306-8009.
And for more information and testimonial videos please visit www.hartfordhealthcareers.com/PCP

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HOSPITALIST

The Division of Medical Neuro-oncology at Duke University Hospital seeks internist to manage inpatient brain tumor service. Must be BE/BC in internal medicine. This is a daytime position, Mon – Fri, 8:00 am to 5:00 pm, approximately 10 weekends of call per year. Average daily census 5 or less. No ICU admissions. The position provides opportunity for combination of patient care and teaching. Compensation commensurate with qualifications and experience.

The greater Triangle area of Raleigh, Durham, and Chapel Hill, also known as the Research Triangle Park, is family-friendly yet offers singles many options for an active outdoor and social life. Three major universities surround this globally prominent high-tech research and development center making it a culturally diverse, economically resilient, and a nationally recognized great place to live.

Send letter of interest and CV to:

Christina Cone
Administrative Director
of the Preston Robert Tisch Brain Tumor Center
e-mail: christina.cone@duke.edu

UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

Physician Advisor/Attending Physician (3-309-1014)

The University of Maryland School of Medicine and Medical Center are recruiting a full-time internist for a non-tenure track faculty position. The bulk of the responsibilities for this position will be in an administrative capacity, working as a Physician Advisor for the University of Maryland Medical Center. Duties of this position will be to collaborate with medical staff leadership, clinicians, and care management leaders to develop and implement methods to optimize use of hospital services for all patients, as well as educate and inform medical staff regarding issues of compliance, medical necessity and resource utilization. This individual will be expected to develop solutions for difficult discharges in collaboration with care management staff and community partners, participate in strategic planning and interventions to optimize payment of care delivered in the hospital and will serve as a liaison between utilization management and clinical service lines, as well as between payers and treating physicians. Working with hospital leadership, he/she will ensure medical practices, will achieve quality/patient safety and resource management goals, will act as a clinical consultant providing medical expertise regarding physician practice patterns and will function in accordance with CMS Hospital Conditions of Participation for Utilization Review and other applicable regulatory, compliance, and accrediting requirements. Clinical responsibilities will include inpatient attending coverage on one of our general medical and/or inpatient hospitalist teams for up to 2 months per year.

Ideal candidates must be board certified/eligible in internal medicine and eligible for an unrestricted license in the State of Maryland. This position requires a medical degree from a recognized accredited domestic university (or foreign equivalent), a strong commitment to patient care and teaching, and the ability to work well in a team setting.

Expected faculty rank will be Assistant Professor or higher, however, rank, tenure status and salary will be dependent upon selected candidate's qualifications and experience. We offer an excellent salary and benefits package.

Qualified candidates must submit applications using the following link:
https://umb.taleo.net/careersection/jobdetail.ftl?job=1900019l&lang=en
When applying, please submit a CV and names of three references.

For additional questions after application, please email:
facultypostings@medicine.umaryland.edu

UMB is an equal opportunity/affirmative action employer. All qualified applicants will receive consideration for employment without regard to sex, gender identity, sexual orientation, race, color, religion, national origin, disability, protected Veteran status, age, or any other characteristic protected by law or policy.

The Department of Transfusion Medicine in the Clinical Center, National Institutes of Health is recruiting a physician faculty member to oversee the Infectious Diseases Section, provide medical support for Clinical Center patients and perform subspecialty consultation related to infection transmission through blood, blood components, and cellular therapies. The successful candidate will oversee a section of 14 staff including a CLIA-approved testing laboratory. Additional functions include research related to transfusion-transmitted infections, and teaching in an ACGME-accredited training fellowship in Transfusion Medicine. The Department of Transfusion Medicine is a full-service collector and provider of blood, blood components and cellular therapies. The position requires detailed knowledge of molecular, genetic testing for transfusion-transmitted agents. Candidates must be board certified or eligible in Blood Banking / Transfusion Medicine, Hematology, Infectious Disease, appropriate subspecialty certification(s) must have an M.D. or equivalent degree and must possess an active, current, full, and unrestricted license or registration as a physician from a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory of the United States. Salary commensurate with training and experience.

Please submit your curriculum vitae and a letter describing your skills and experience by Nov. 4, 2019 ***to:***

Lacey Gholson
Administrative Officer
NIH/CC/DTM
10 Center Drive, Building 10/Room 1C711
(MSC 1184)
Bethesda, Maryland 20892-1184

DHHS AND NIH
ARE EQUAL OPPORTUNITY EMPLOYERS

Yale

ASSOCIATE HOSPITAL EPIDEMIOLOGIST,
YALE NEW HAVEN HOSPITAL
ASSISTANT PROFESSOR INFECTIOUS DISEASES,
YALE UNIVERSITY SCHOOL OF MEDICINE

A leadership and ladder-track faculty position is available at the level of **Assistant Professor in the Section of Infectious Diseases** in the Department of Internal Medicine at the Yale University School of Medicine. The successful candidate will serve as Associate Hospital Epidemiologist at Yale New Haven Hospital. Applicants should have an M.D., or M.D./Ph.D., training in infectious diseases, and exceptional potential for a career in hospital epidemiology and academic medicine. Candidates are expected to also participate in the clinical/educational and/or research activities of the section of infectious diseases. Applicants should apply using the following link and upload their curriculum vitae and a brief synopsis of future plans.

Interfolio link:
http://apply.interfolio.com/62388

Review of applications will begin immediately and will continue until the position is filled.

Yale University is an affirmative action, equal opportunity employer. Applications from women, persons with disabilities, protected veterans and minorities are encouraged.

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CHA Cambridge Health Alliance AFFILIATED WITH

Cambridge Health Alliance (CHA) is an award-winning health system based in Cambridge, Somerville, and Boston's metro-north communities. We provide innovative primary, specialty, and emergency care to our diverse patient population throughout an established network of outpatient clinics and two full service hospitals. As a Harvard Medical School and Tufts University School of Medicine affiliate, we offer ample teaching opportunities with medical students and residents. We utilize fully integrated EMR and offer competitive compensation packages and comprehensive benefits for our employees and their families. Ideal Candidates will have a strong commitment to providing high quality care to our multicultural community of underinsured patients.

We are currently recruiting for the following departments and positions:

- **Psychiatry & Psychology**
  - Adult & Child/Adolescent Divisions
  - Inpatient & Outpatient
  - Director, Continuing Medical Education Primary Care Integration
- **Primary Care**
  - Regional Medical Director
  - Internal Medicine
  - Family Medicine
  - Med/Peds
  - Pediatrics
  - Float
- **Hospitalist/Nocturnist**
- **ICU Hospitalist/Nocturnist**
- **Moonlighter & Locum Hospitalists**
- **Optometrist**
- **Otolaryngology & Allergy**
  - Division Chief
  - General ENT
- **Urologist**
- **Vascular Surgeon**
- **General Surgeon**
- **Dermatologist**
- **General Radiologist**
- **Dentistry**
  - Residency Program/Clinical Director
- **Physician Assistant**
  - Primary Care

To apply please visit www.CHAProviders.org. Candidates may submit CV confidentially via email to ProviderRecruitment@challiance.org. CHA Provider Recruitment – Tel: 617-665-3555/Fax: 617-665-3553

We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic protected by law.

Billings Clinic

MAYO CLINIC CARE NETWORK Member

Billings Clinic is nationally recognized for clinical excellence. Billings, Montana, is a friendly college community located near the magnificent Rocky Mountains with great schools, safe neighborhoods and abundant family activities. Exciting outdoor recreation is just minutes from home. 300 days of sunshine every year!

Hospital Review 100 Great Hospitals in America | 2019

Outpatient Internal Medicine/Hospitalists

Seeking BE/BC outpatient internists and hospitalists to join our growing team of physicians and faculty providers in Montana's premier, state-of-the-art medical center, which serves as the region's tertiary referral center.

Stipend & generous loan repayment

- Flexible practice styles
- Consensus-based teamwork
- Option for academic mentoring
- Grant funded for rural care innovations
- Mayo Clinic Care Network provides clinical resources and direct access to Mayo Clinic specialists
- One of the Top 25 Best Places to Live – *Livability.com*

Contact: Rochelle Woods
1-888-554-5922
physicianrecruiter@billingsclinic.org
billingsclinic.com

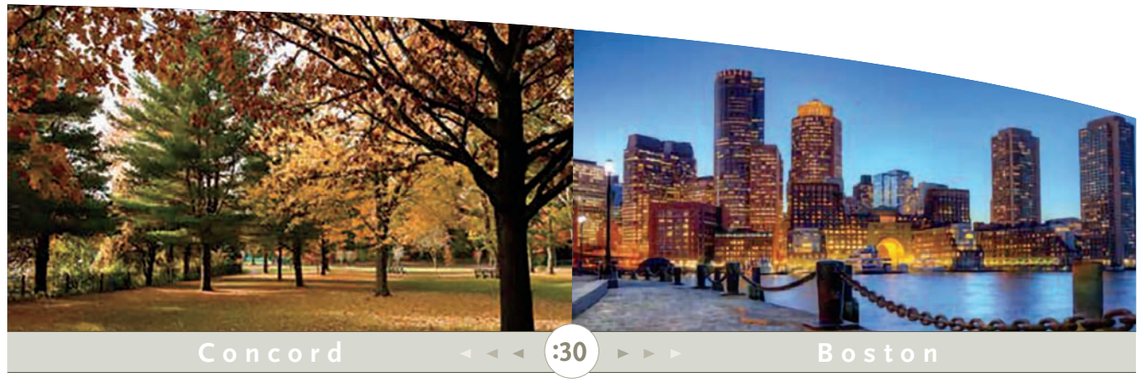
No jobs here.

Just unbiased resources and answers for questions about locum tenens.

locumstory.com

EMERSON HOSPITAL OPPORTUNITIES

Location, Location, Location



WORLD-RENOWNED AFFILIATIONS | 30 MINUTES FROM BOSTON | QUALITY OF LIFE

Find out why so many top physicians are practicing at Emerson Hospital. At Emerson you will find desirable practice locations, strong relationships with academic medical centers, superb quality of life, competitive financial packages, and more...

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

- Family Medicine – Outpatient Practice and Urgent Care
- Gastroenterology
- Internal Medicine – Outpatient Practice
- Orthopedic Surgery – Joint Surgeon
- Plastic and Reconstruction Surgeon
- Urology

If you would like more information please contact:

Diane Forte
dforte@emersonhosp.org
phone: 978-287-3002
fax: 978-287-3600

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 Hospital
Premium Care. Personal Touch.

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YaleNewHavenHealth
Northeast Medical Group

Yale New Haven Health, the largest and most comprehensive healthcare system in Connecticut, is inviting **internal and family medicine-trained physicians** to join established primary care practices in Connecticut.

We are proud to offer:

- Highly competitive compensation and comprehensive benefits
- Generous loan assistance program
- Flexible schedules to ensure work-life balance
- A collegial environment with access to expert specialists of one of the nation's leading health systems
- Volunteer faculty appointment opportunities with Yale School of Medicine
- Supportive practice services so you can focus on patient care
- Epic electronic medical record to share patient information with every clinician in our health system
- Enjoy all four seasons in beautiful New England
- Family-oriented residential communities with some of the best schools in the nation
- Conveniently located between New York City and Boston

To learn more, please contact our In-House Physician Recruiter:

Sophie Kotomski at Sophie.Kotomski@ynhh.org
or Call or Text: 203-502-6537

Website: **www.northeastmedicalgroup.org/careers**

Northwell Health™

Northwell Health has many opportunities available!

Northwell Health is NYS largest health care provider and private employer, with 23 hospitals, nearly 700 outpatient facilities and more than 13,600 affiliated physicians. We are located throughout Long Island, Manhattan, Queens, Brooklyn, Staten Island, and Westchester. We care for over two million people annually in the New York metro area and beyond, thanks to philanthropic support from our communities. Our 68,000 employees – 16,000-plus nurses and 4,000 employed doctors, including members of Northwell Health Physician Partners – are working to change health care for the better.

All candidates will receive **competitive salaries**, a comprehensive **benefits package**, and **eligibility for tuition reimbursement**. Physicians will be employed as members of Northwell Physician Partners, the fifth largest medical group in the country. Academic Appointment to The Zucker School of Medicine at Hofstra/Northwell is commensurate with credentials and experience.

For Further details regarding our opportunities, please contact:

Office of Physician Recruitment
Northwell Health; OPR@northwell.edu

EOE M/F/D/V

Cleveland Clinic

The Sydell and Arnold Miller Family Heart and Vascular Institute, Cleveland Clinic Health System
Non-Invasive, Invasive Cardiologist

An opportunity to join the #1 heart care program in the country and a top ranked hospital nationwide per U.S. News and World Report 2019-2020 Best Hospital Rankings.

The world class cardiovascular medicine program at Cleveland Clinic is seeking candidates for **Non-Invasive, Invasive Cardiologist** to join our established and highly respected health system. Dynamic positions combine outpatient clinical care with inpatient services at our state of the art facilities in the Greater Cleveland area. The Cleveland Clinic Health System includes 11 hospitals and over 180 outpatient facilities in Northeastern Ohio.

The Department of Cardiology has 200 physicians treating patients in all cardiovascular subspecialties in over 20 different locations within the greater Cleveland & Akron areas. In 2018, the practices completed more than 113,000 office visits and over 5,000 procedures.

The Cleveland Clinic Health System are all tertiary referral and teaching centers in close proximity to Cleveland Clinic Main Campus.

Opportunity to develop a rewarding practice while benefiting from these key features:

- New and enhanced facilities with comprehensive cardiac services
- Ability to perform cardiac catherization, echocardiography, stress testing, and TEE
- Cleveland Clinic Heart and Vascular Institute, adult Cardiology and Cardiothoracic Surgery program has been ranked 1st in the nation by *U.S. News & World Report* for more than 20 years
- Development of community expansion and outreach
- Newly remodeled cardiac catherization suite with state-of-the-art imaging and ultrasound technology
- Dedicated Coronary Care and Cardiac Surgery Intensive Care & Observation Units Intersocietal Accreditation Commission for Echocardiography (IAC) certified
- Opportunity to participate in resident training and education

The successful candidate will have a joint appointment with Cleveland Clinic's Heart and Vascular Institute at the main campus. This position reports to the leadership at the Heart and Vascular Institute at the Main Campus. Moreover, our physicians enjoy full access to a distinguished team of caregivers while practicing in neighboring communities.

This dynamic position commands an extremely competitive salary enhanced by an attractive benefits package including medical malpractice coverage and a collegial work environment.

Interested candidates should submit an application in confidence with Cover Letter and current CV online by going to:

www.clevelandclinic.org/physicianrecruitment

Cleveland Clinic is pleased to be an equal employment/affirmative action employer: Women/Minorities/Veterans/Individuals with Disabilities. Smoke/Drug Free Environment

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RWJBarnabas HEALTH

RWJBarnabas Health is seeking an Internist for a Core Faculty and Academic Appointment in Central NJ

RWJBarnabas Health is currently seeking an Internist to join the Internal Medicine core faculty at Monmouth Medical Center in Long Branch, NJ. The position includes clinical supervision of residents and medical students within both inpatient and outpatient clinical settings. Core faculty members participate and mentor residents in research, scholarly activities, and are an integral part of the educational initiative at Monmouth Medical Center. The Internal Medicine Residency at Monmouth Medical Center is fully accredited by the ACGME.

As the largest integrated health care delivery system in New Jersey, RWJBarnabas Health offers competitive compensation and a robust benefits package including health, life, disability, and malpractice insurance, 401k/retirement, plus PTO and added time off for CME.

Successful candidates must be:

- ABIM board certified
- Licensed in NJ or eligible for NJ licensure
- Experienced in teaching with strong enthusiasm for academic environments

More About the Position:

- Outpatient location in close proximity to the hospital
- Robust support staff
- Faculty appointment at Rutgers Robert Wood Johnson Medical School

Located at the very desirable Jersey Shore, this position provides the chance to practice in a highly sought after area near beautiful beaches, top-notch schools, and charming suburban neighborhoods.

About Monmouth Medical Center:
Located in Long Branch, N.J., Monmouth Medical Center, an RWJBarnabas Health facility, along with The Unterberg Children's Hospital at Monmouth Medical Center, is one of New Jersey's largest academic medical centers and is a teaching affiliate of Rutgers Robert Wood Johnson Medical School.

U.S. News & World Report has recognized Monmouth as a regional leader in cancer, geriatrics, gynecology, neurology and neurosurgery. As part of RWJBarnabas Health, Monmouth Medical Center is a leader in designing unparalleled new ways for delivering health care. The medical center provides quality-driven, safe, efficient, cost-effective and responsive health care services that meet the needs and exceed the expectations of our community.

To learn about this and other positions, please feel free to contact **Melissa Granet**, Sourcing Specialist - Physician Recruitment via e-mail at: **melissa.granet@rwjbh.org** or phone: **973-322-4447**. We look forward to hearing from you!

RWJBarnabas Health Seeking Family Medicine Physician for Core Faculty Position in Central New Jersey

RWJBarnabas Health is currently seeking a Family Medicine physician to serve as a core faculty member in the residency program at **Somerset Medical Center in Somerville, NJ.** The position includes clinical supervision of residents within the full spectrum of Family Medicine including inpatient, outpatient, women's health, obstetrics and urgent care settings. This is an ideal opportunity for physicians interested in robust cases of both gyn and obstetrics. The Family Medicine Residency at Somerset Medical Center is fully accredited by the ACGME with 21 categorical residents in the program. Beyond clinical supervision and teaching, Core Faculty Members are also encouraged to participate and mentor residents in scholarship and research.

As the largest integrated health care delivery system in New Jersey, RWJBarnabas Health offers competitive compensation and a robust benefits package including health, life, disability and malpractice insurance, 401k/retirement, plus PTO and added time off for CME. Located in the very desirable Central New Jersey area, this position is near top-notch schools and beautiful suburban neighborhoods.

Applicants must be NJ licensed or eligible for licensure in NJ, and BC/BE in Family Medicine with a strong enthusiasm for teaching. We are open to both experienced physicians and recent graduates.

To learn about this and other positions, please contact **Amal Elmogahzy**, Physician Recruiter at RWJBarnabas Health directly via e-mail: **Amal.Elmogahzy@rwjbh.org** or phone: **862-236-0720**. Thank you!

RWJBarnabas Health is an Equal Opportunity Employer.

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At Geisinger, all moments both big and small teach us how to provide exceptional healthcare. Through communication and collaboration, our physicians and expanded care teams continuously learn new and innovative ways to help members of our communities live longer, healthier lives.

To learn more, visit **geisinger.org/careers** or contact **physiciancareers@geisinger.edu**

Geisinger | *The future of health is in you.*
geisinger.org/careers

AA/EOE: disability/vet