

Economic Issues in the Treatment and Prevention of Deep Vein Thrombosis From a Managed Care Perspective

Based on a presentation by Gregory de Lissouoy, PhD

Presentation Summary

Treatment and prevention of deep vein thrombosis (DVT) raise a number of important economic issues. Economic burden of the disease is a primary concern. Enrollment trends indicate that the patient population mix in managed care health plans is changing. Health plans are enrolling a growing number of members who are at higher risk for DVT. Accordingly, managed care health plans will increasingly need to focus attention on the development of high-quality and cost-effective strategies for treatment and prevention of DVT. It is widely agreed that the use of low-molecular-weight heparin (LMWH) is safe and effective, and there is also good evidence that its use is cost effective in selected indications. The shift from inpatient to outpatient treatment that is made possible by substitution of LMWH for conventional unfractionated heparin brings with it a need to restructure healthcare delivery resources. This may have substantial economic impact on both providers and health plan members. Growing recognition of the DVT risk associated with various disease states, as well as the costly long-term sequelae of DVT, is spurring a trend to broader use of LMWH for prophylaxis. The relative cost effectiveness of prevention depends on the tradeoff between an expenditure that is made today and an uncertain future benefit. What is needed now is better evidence as a basis for decisions regarding DVT prophylaxis and clinical studies that track the long-term clinical and economic impact of DVT.

Treatment and prevention of deep vein thrombosis (DVT) raise a number of important economic issues. These involve both the economic burden of the disease and the efficient organiza-

tion and delivery of medical care by managed care organizations (MCOs) facing a changing patient mix.

Although there are about 2 million cases of DVT in the United States each year, with approximately 600,000 cases of pulmonary embolism (PE) and 60,000 PE deaths,¹ there are relatively little data about the economic burden of DVT. Although a literature search on cardiovascular disease or diabetes will yield numerous studies on the annual cost of these diseases to the nation, such a search will not provide much information about DVT. However, available data from various sources give some indication of the annual cost of DVT.

A national hospital discharge database indicates that 122,000 hospital discharges in 1997 had a DVT diagnosis and that billed charges were \$3 billion.² If one adds physician charges, which are typically at least 25% to 40% of the hospital bill,³ the cost of DVT rises to more than \$4 billion. Additional economic burden such as the value of lost productivity is unknown but certainly substantial.

Changing Enrollment Patterns

The impact of treating and preventing DVT on the managed care community in the next 5 years may be considerable. MCOs will have increasingly broad responsibility for healthcare of the entire patient community.

Traditionally, MCOs have enrolled the working sector of the population. Current

trends, however, indicate increased enrollment of Medicaid populations, with 56% of the Medicaid population in the country now enrolled in a managed care plan.⁴ Although there is enormous disparity in Medicaid enrollment among the states, ranging from very low rates in New York and the Southeastern states to virtually 100% in California,⁴ a trend to increase Medicaid enrollment in managed care plans is expected to continue. Increased enrollment of Medicare patients is a high priority for the current administration, although the managed care industry does not presently view senior citizens as an attractive market. Thus, the younger, healthier, working-age population that once typified most managed care plans will, in the next few years, more closely resemble the general population, with a larger proportion of older, sicker, and retired people.

In formulating a treatment and prevention strategy for the care of a diverse population, MCOs should strive to balance the interests of key stakeholders: health plan members; payers (employers and the government); and the MCO corporate entities encompassing physician-owned independent practice associations (IPAs), investor-owned plans, and their professional staff. That balancing of stakeholder interests offers a paradigm to assess the economic impact of DVT treatment and prevention.

The health plan perspective focuses on direct costs, particularly if the health plan is capitated, as well as quality of care and perceived value of its services. For some MCOs, a reputation for quality care sets them apart from competitors and provides a strategic advantage in terms of identity and marketing.

The health plan member perspective centers on out-of-pocket costs, time costs, and caregiver burden. Traditionally, MCOs, particularly health maintenance organizations (HMOs), were associated with freedom from out-of-pocket costs. However, copayments and deductibles have been introduced into managed care and are becoming commonplace. With regard to time costs—the productive time lost because of illness and time spent

obtaining care—surveys have shown that patients are willing to pay for convenience. Caregiver burden is another concern for members. Time spent caring for a chronically ill child or an elderly parent may not be visible to the health plan, but it is very real to the affected member. Although such time spent is usually not considered a cost of care, economists establish its value when calculating burden of disease.

From the payer's perspective, the cost of coverage and lost productivity are major issues, together with a sense of loyalty to the original concept of health insurance as a benefit to enhance employee health and welfare.

New Directions in the Treatment of DVT

A major new direction in the treatment of DVT is the shift from in-hospital treatment with intravenous unfractionated heparin to outpatient treatment with subcutaneous low-molecular-weight heparin (LMWH). Economic issues associated with this shift in site of care include the impact on health plan resource use and costs and the effect on health plan members in terms of out-of-pocket and time costs.

A recent study examining these issues is a retrospective comparison of patients in the Lovelace Health Plan who presented as outpatients with acute DVT between 1996 and 1999.⁵ The study, which compared patients treated in the hospital with unfractionated heparin with patients treated mostly on an outpatient basis with the LMWH enoxaparin, replicated the study design and inclusion/exclusion criteria of a landmark Canadian trial.⁶

From the provider's perspective, there was an average cost savings of well over \$2000 per patient with outpatient LMWH treatment over a typical 90-day episode of inpatient treatment for acute DVT. These findings demonstrate that shifting to an outpatient setting can achieve relatively substantial cost savings in a "real-world" environment.

However, implementing this type of program involves a reallocation of health plan resources. The Lovelace study revealed

that with inpatient treatment of DVT, 99% of costs were attributable to hospital charges. With primarily outpatient treatment of DVT, hospital inpatient charges were still substantial, accounting for 59% of total costs. Of the remainder, 24% went to outpatient visits and procedures, 10% to home healthcare, and 7% to outpatient pharmacy.⁵

One of the unanticipated consequences of a shift from inpatient to outpatient care is the possible increase in out-of-pocket costs to plan members, depending on the plan benefit structure and its schedule of outpatient and pharmacy copayments and deductibles. In addition, time spent on obtaining outpatient care will be substituted for some portion of time that would have been spent in the hospital. The shift to outpatient care may also create new burdens for caregivers that were not present in the hospital setting. Thus, from the perspective of plan members, the transition to outpatient care is not without cost.

Prevention: The MEDENOX Study

A major new direction in the prophylaxis of DVT is exemplified by the results of the Prophylaxis in Medical Patients with Enoxaparin (MEDENOX) study, which evaluated the safety and efficacy of prophylaxis with enoxaparin in acutely ill, hospitalized medical patients. Objectives of the MEDENOX study were to determine the incidence of DVT among acutely ill, hospitalized medical patients with conditions such as acute respiratory failure, acute infection, and congestive heart failure after 6 to 14 days of therapy with subcutaneous enoxaparin or placebo, and to ascertain the impact of enoxaparin as DVT prophylaxis. The rate of DVT at 14 days was considerably higher in placebo patients than in those treated with enoxaparin and adverse events were minimal, demonstrating that prophylaxis safely and effectively reduced the risk of DVT (Table 1).⁷

Understanding the economic implications of DVT prophylaxis involves 2 important issues: the cost of prophylaxis and the cost effectiveness of this intervention. Table 2 lists some of the elements of cost and cost effectiveness

from the health plan's and plan members' perspectives.

Because the MEDENOX study was conducted largely in Europe and Canada, information is not available directly from the trial about the cost for adding DVT prophylaxis with enoxaparin to the treatment regimen. Patients enrolled in the trial received their full course of enoxaparin as inpatients. Because hospital length of stay tends to be shorter in the United States than in Europe, it is likely that part of the course of DVT prophylaxis would be administered postdischarge in a US setting. From an economic perspective, that suggests the cost of DVT prophylaxis will be distributed across the inpatient and outpatient settings. In addition, patients may be responsible for some of the out-of-hospital costs through deductibles and copayments.

Table 2 also lists factors that will determine the cost effectiveness of DVT prophylaxis in the acute medical patient. To perform this assessment, information is needed about the risk of acute events requiring treatment in this population. Although the MEDENOX trial assessed the rate of DVT occurring within 14 days of initiation of prophylaxis, most of the recorded events were detected through radiographic examination. In the MEDENOX trial these patients were treated for DVT, but in a usual care setting, they would have been discharged without treatment. Many clinicians believe the risk for

Table 1. MEDENOX Study Results

	Enoxaparin (40 mg subcutaneously)	Placebo
DVT at day 14	5.5%	14.9%
Major hemorrhage	1.7%	1.4%
Thrombocytopenia (severe)	0.0%	0.8%

DVT = deep vein thrombosis; MEDENOX = Prophylaxis in Medical Patients with Enoxaparin.

Source: Reference 7.

acute DVT remains elevated for an extended period. Patients who experience an acute event are at risk for long-term effects such as the postthrombotic syndrome or even death as a result of PE. Although the cost for providing DVT prophylaxis could be estimated with reasonable accuracy, better long-term follow-up data are needed to fully assess the benefits.

Conclusion

Enrollment trends suggest that managed care health plans are enrolling an increasing number of members who are at higher risk for DVT. Conditions associated with increased risk include trauma, stroke, postmyocardial infarction, renal failure requiring hemodialysis, obesity, and pregnancy. Also at risk are postsurgical and acute medical patients. Accordingly, MCOs will have an incentive to develop effective and high-quality strategies for treatment and prevention of DVT and to implement these strategies efficiently.

Decisions about the treatment and prevention of DVT raise a number of economic issues. Use of LMWH is widely seen as safe and effective. There is also good evidence that the use of LMWH is cost

effective by common definitions of that term in a growing number of indications. The shift from inpatient to outpatient treatment made possible by LMWH can have substantial economic impact on both providers and health plan members. For providers, achieving potential cost savings through reduced inpatient care necessitates a transition process of developing, organizing, and implementing an outpatient program. For the patient, the shift to outpatient care offers a reduction or avoidance of inpatient admissions but may involve out-of-pocket expenses for deductibles and copayments.

In formulating any change of service, the health plan must consider the impact the new treatment strategy will have on members. Awareness of the effect of program changes on out-of-pocket costs, time spent in obtaining care, and caregiver burden is vital to ensuring a high level of patient satisfaction.

Increasing recognition of the DVT risk associated with various diseases and conditions and the costly long-term sequelae of DVT is expanding indications for prophylaxis. The cost effectiveness of prevention involves a tradeoff between a quantifiable expenditure that is made today and an uncertain future benefit. Health plans need better data as a basis for decisions about DVT prophylaxis. Optimum dosing and duration of prophylactic therapy is still a gray area and this, in turn, helps determine the long-term incidence, consequences, and true costs of DVT prophylaxis. Clinical trials involving LMWH that include an economic component coupled with long-term follow-up of patients enrolled in DVT prophylaxis and treatment registries will establish a stronger basis for decisions about this important compound.

... DISCUSSION HIGHLIGHTS ...

Stakeholder Issues

Dr. Wales: You identified 3 stakeholders: the HMOs, the members, and the payers. Isn't the physician or the provider also a stakeholder in this process?

Table 2. Prevention of DVT in the Acutely Ill Hospitalized Medical Patient from the Provider's Perspective and the Patient's Perspective

Provider's Perspective	Patient's Perspective
Cost for DVT prophylaxis	Out-of-pocket costs for continuation of prophylaxis following hospital discharge
Possible out-of-hospital resource use and costs for remaining course of prophylaxis	Possible time costs to receive DVT prophylaxis
Downstream costs avoided	Potential avoidance of future out-of-pocket costs
	Potential avoidance of future disability and time costs

DVT = deep vein thrombosis.

Dr. de Lissovoy: Clearly, the physicians, nurses, and other licensed healthcare providers have a professional interest that is apart from any corporate interest. There's a structural/organizational issue here that involves an internal balancing of interests within the managed care plan. For example, in a physician-owned IPA model plan, the doctors wear 2 hats as equity investors and clinical professionals.

Dr. Wales: What I mean is separate from the provider as the service agent for the payer or the HMO and separate from the IPAs or risk-bearing provider organizations. The provider as the service agent for the HMO really is the stakeholder in the process as well, with clear economic pluses and minuses. As you shift over into the outpatient setting, there are more minuses and pluses in the overall scheme because there's not much reimbursable activity associated with that shift.

Dr. Groce: There is a burden with outpatient DVT treatment, but there might be a way to create a financial opportunity for the physician. It would help allay the fears of primary care physicians in the community setting and show them that they can still benefit patient care and also create financial opportunities for the practice as well.

Through the use of ambulatory payment classification codes in ambulatory and hospital-based settings, we've been able to derive ways and means by which we can still create revenue-generating potential for this patient population. We've suggested that health plans and physicians build and create appropriate models based upon the plans they have that would benefit not only the patient but also the person seeking reimbursement. I think most systems have demonstrated and recognized financial gain from various perspectives for the ability to use LMWH in the outpatient setting.

Dr. Hoffman: I think the hospital is also a stakeholder. We talk about providers as physicians and hospitals. If you are going to use the short-stay unit, hospitals are

going to play a major role in helping get the patient out of the hospital instead of putting them in the hospital, which is what they would like to do if they have the beds.

Dr. de Lissovoy: Medicare reimbursement has decreased substantially for stays at short-term units. There is now incentive to admit a Medicare patient rather than treating in a 23-hour stay unit.

Dr. Hoffman: We have actually negotiated this, particularly to rule out myocardial infarctions. We've got a dollar figure for that. This would be the same thing.

Dr. Wales: If we don't align those incentives appropriately as we make this paradigm shift, there is going to be 1 link in the chain that is not going to function well because its incentive doesn't match anybody else's. You may have the payer, the member, and the HMO, but if a provider or hospital believes there is no incentive for them, then it all comes apart.

Dr. Witter: In the study that we did in regard to a long-term care facility, there were cost savings to the healthcare system as a whole, but then you have to say, "Well, someone's going to have to pick up the cost of the medication." In this situation it would be the long-term care facility, but it may not have a system for getting reimbursed for medication. So the long-term care facility is now going to be picking up an extra cost by treating patients internally instead of sending them to the hospital.

Dr. Perler: That goes back to what Dr. Wales said. If there's 1 stakeholder in the chain who gets hurt, then it's not going to work.

Dr. Wales: It's much harder to make it work for everybody, absolutely.

Dr. Thapar: The main issue regarding the cost effectiveness of using enoxaparin on an outpatient basis versus hospitalization

and management with intravenous heparin boils down to who is at financial risk for hospitalization and who is at financial risk for outpatient administration of enoxaparin.

In the California managed care model, and most likely in models nationwide, the hospitalization cost could be the responsibility of any of the following stakeholders: HMO, HMO plus IPA, IPA, or IPA plus hospital, depending on how the risk contract is written. At the present time, risk for enoxaparin essentially is assigned to either the IPA, IPA plus HMO, or HMO.

We end up in a financial dilemma when the stakeholder for the hospital cost is different from the stakeholder for enoxaparin cost. The stakeholder for the hospital cost would prefer to have patients with DVT managed as outpatients so as not to incur hospitalization charges; however, the stakeholder for enoxaparin would prefer to manage patients in the hospital to avoid payments for enoxaparin, especially if they get no benefit from savings incurred by avoiding hospitalization.

Therefore, in a given situation the IPA and hospital will have to sit down and say, "We will treat DVT on an outpatient basis and in doing so we save 4 days of inpatient charges that amount to \$5500. However, the IPA spends \$2000 for outpatient management of DVT. We need to pool our resources and in this case pay the IPA \$2000 from the \$5500 savings and then share equally from the \$3500 left over."

These types of collaborations will work for nonintegrated managed care models, but first we have to understand which stakeholder benefits and which gets financially hurt. We have to put these parties together and work out a win-win solution.

Dr. Hoffman: A deal is good only if both parties benefit.

Dr. Perler: Can that be done practically in anything but a universal healthcare system? Is this a pipe dream?

Dr. Thapar: We are looking at this.

Dr. Hoffman: I'm not sure. Unilaterally, Medicare almost bankrupted half of the

hospitals. If Medicare makes a decision that isn't a good one, and if there's no recourse, then you've got trouble.

Dr. Perler: I want to raise an ancillary point. The Secretary of Health and Human Services is hoping, or has as a goal, to increase Medicare managed care enrollment by 30%. With all the money that so many MCOs are losing, and at a time when enrollment is decreasing, how is he going to turn that around and maintain acceptable quality of care?

Dr. de Lissovoy: I don't know. That's 1 of the issues. Medicare is readjusting reimbursement rates to hospitals that had been cut back. They are trying to pay providers a little bit better.

Dr. Wales: Interestingly, the hospitals are only 1 of the interested parties in the process. There are also the HMOs, the providers themselves, and the hospitals that are experiencing the consequences of rate reimbursement issues. We've had 2 failures of HMOs in California this year alone because of low reimbursement rates.

Dr. Hoffman: We went through a cost contract a few years ago and got rid of the risk contracts. They keep trying to get us back in a risk contract, but we won't do it. We just lost too much money on too few patients. We're only responsible for the physician component and Medicare takes care of the hospital outpatient.

Dr. Thapar: If one wants to implement these kinds of programs (outpatient treatment of DVT) in a managed care environment, the ideal model in which this can be implemented is the Kaiser model. This model is more integrated than other delivery models, in which there are many more stakeholders at the table and everyone is looking out for his piece of the pie.

For these loosely integrated models the challenge will be to identify opportunities for savings in healthcare delivery. Their next exercise is to analyze the financial impact on different stakeholders. If the net effect is positive to the model after

making up the cost incurred by stakeholders and profits are shared, then such models will create willing participants as their incentives are aligned and everyone shares in the success.

I believe the market forces will create and dictate these kinds of fluid and flexible models where people have the vision and ability to move quickly and create symbiotic relationships.

Dr. Groce: The market must create that scenario, because one thing we know from the Health Care Financing Administration is that the diagnosis-related group (DRG) reimbursement for length of stay is going to go down. And, of course, as length of stay goes down, so does reimbursement.

Dr. Thapar: If one was in a system that received DRG payments for DVT, it would be prudent to evaluate whether outpatient management of DVT was more cost effective for that system. If so, it would make sense to appoint a physician champion to run this program and set up a DVT/anticoagulation clinic.

Dr. Hoffman: I think a lot of hospital profits right now are being made in the outpatient department.

Dr. Wales: We'd love to be able to start doing outpatient prophylaxis, but there are no guidelines and no evidence. It's going to take a generous not-for-profit organization to do a long-term study on benefits of prophylaxis. Who is going to do that?

Dr. Thapar: I believe a pharmaceutical company will do such a study. They will design a study with an adequate number of patients and time to show if there is indeed benefit to prophylaxis with LMWH on an outpatient basis.

However, as Dr. Wales indicated, this study will have to define the at-risk population that would benefit most. Unless these clinical conditions are clearly tested, buy-in from physicians, payers, and regulators will not be forthcoming.

Dr. Tapson: I think Dr. Thapar is exactly right, and I think that is what's going to happen. There is a large upcoming study that will look at extended prophylaxis for medical patients in general. We've also got to look at patients who are already home, and I think that's what will happen too. We have to realize that there are different issues now because if these patients are at risk at home, chances are that many of them will remain sick. They might need 1 or 2 months of prophylaxis instead of 6 to 10 days.

We also have to look at osteoporosis in patients treated with anticoagulants and possibly at increased risk of bleeding in heparin-induced thrombocytopenia for longer periods of time. Those things have to be considered, which is 1 of the reasons the studies really have to be done. We'd like to apply the logic and say, "Well, I have less postphlebotic syndrome and less fatal PE," but we can't really apply the logic without doing the studies.

Screening and Risk Assessment

Dr. de Lissovoy: With the availability of new technology, patients now have more opportunities to be screened for certain conditions and then get treated. It may not be too far-fetched to think that DVT could be 1 of those conditions that could be detected by ultrasound. There's a Swedish study, I believe, of people who were screened for colon cancer at autopsy.

Dr. Thapar: No, that was prostate cancer.

Dr. de Lissovoy: Same principle. I get screened and learn that I am at risk for DVT. I read about LMWH on the Internet and now I want to come in for prophylactic treatment. That's not an extreme scenario.

Dr. Tapson: This has tremendous implications. We don't really screen for probability disorders either right now. It's not really been proven that the presence of factor V Leiden in a patient mandates major changes in how you treat that patient. The impact there has more to do with genetics and family members, so having a complete blood count that's also a thrombophilic panel

would be very helpful. We already have thrombosis panels, but thrombophilic panels are going to happen ultimately. We're going to have a screen that we're going to wish we probably didn't have. We're going to do that in large groups of patients and uncover additional risk factors that will not only help us stratify risk but also create the need to make more decisions about patients who may be asymptomatic.

Dr. Perler: I think it really comes down to rationing. Nobody likes to use the "R" word, but clearly there are conditions that we can screen for. However, it then becomes extraordinarily expensive to screen and to treat. If you look at abdominal aortic aneurysms, for example, two thirds of patients who die of a ruptured aneurysm never knew they had one until it ruptured. There are also models that show you can do an ultrasound on every individual older than 60 years of age and pick up all these aneurysms. If you repair the ones that have indications for surgical repair, you basically bankrupt the system.

So, do we want to tax our limited resources and put it there, or do we want to put it on DVT marker identification? Or do we want to do it for breast cancer, prostate cancer, coronary disease? We're developing the technology faster than the ability and the wealth to pay for what we can do and it really becomes a societal issue.

Dr. Wales: We need a single, total body scan that's really sensitive, specific, and fairly cheap.

Dr. Thapar: The issue with body scans at the present time is that they pick up very small lesions. There are a few imaging companies that offer quick lung scans and we have had patients who present to physicians after the scan shows small nodules 0.2 cm in size.

This raises many issues and concerns for both the physician and patient. These are very small to biopsy and there are no data in the American lung cancer screening studies yet that indicate early detection portends better outcomes. There are no

clear guidelines for which patients it is safe to wait and watch and which patients to aggressively pursue invasive workup. Yet from a risk perspective the physician feels he has a patient who may have cancer and clearly does not know what is best for his patient, and in the meantime the patient is anxious, troubled, and fears the worst.

I believe we would all like to have good data and clear evidence when newer technologies are introduced that they indeed help with patient care. We should also have guidelines regarding appropriate candidates for screening, follow-up, treatment, and management.

Dr. Tapson: I did that just a couple of years ago, when I was moonlighting at a hospital intensive care unit (ICU). I had nothing to do so I went and got a chest X ray. Of course, I had a nodule that turned out to be a bone island. But I sweated it out for a weekend. If it really had been a nodule, it probably would have been benign because I don't smoke, but I probably would have felt compelled to work it up.

Dr. Thapar: None of these studies has shown that you will have better outcomes when you catch these nodules, even if they are malignant. At least the studies that we've seen so far were in smokers who had been screened by chest X rays and then observed. The studies clearly did not show that the patients had better outcomes than when they became symptomatic.

Dr. Tapson: If they do, there's lead-time bias.

Dr. Thapar: That is a possibility and 1 explanation. Despite these new-fangled body scans we may find out that early detection really didn't matter. Let's get facts behind our decisions as much as possible. In the meantime, I am challenged every day by this question, "How do I use these resources and manage my patients' health in an environment of fixed and inadequate premiums in healthcare?"

Let me cite you an example. I was with an organization a few years ago that had assumed risk for pharmacy for our HMO members. We had about 350,000 members and our pharmacy budget was about \$40 million. At that time we had well-established guidelines for treating patients with coronary artery disease with hyperlipidemia, that is, secondary prevention. Soon after we took the pharmacy risk, studies came out to prove that primary prevention of hyperlipidemia in specified populations was helpful. This news was like the Titanic hitting the iceberg. We were already running a deficit in the pharmacy pool of about \$3 million.

Taking a population-based approach, we had statistics to calculate what percentage of our members would meet the criteria for primary prevention. I then calculated that the cost to screen and treat these patients would approximate \$6 million to \$7 million per year. The benefits of cost savings by treating these patients are typically realized a few years down the line. We are constantly challenged in this evolving healthcare environment.

As a society we are relentless in our pursuit of new technologies, newer medications, newer treatments, but how are we as a society going to pay for it? This is a major problem. We have created a socialistic system of healthcare funding without constraining the capitalistic characteristics of healthcare consumers and providers.

Dr. Perler: Well, I think we have to pay for LMWH so that patients don't get DVT and don't end up in my clinic with swollen legs and ulcers. That's the judgment you have to make.

DVT and Future Studies

Dr. Tapson: One of the good things that's happening with DVT is that it's getting some attention. It's a multidisciplinary disease: surgical, medical, orthopedic, general medicine, ICU, and hematology/oncology. It's everywhere, not just an orphan disease that nobody pays any attention to. It's the most common cause of unexpected death in hospitalized patients and it's a preventable disease.

Dr. Michota: It is unfortunate that we are just now giving thrombosis some real attention. It's not as if we knew nothing about it before; we actually have known for some time what puts patients at risk. Theoretically, if we properly identify all patients at risk and apply an effective prevention strategy, we could eliminate this disease.

There are not many opportunities to do this in medicine today, and I find it odd that this area is not being studied more aggressively. When thrombosis costs \$3 billion in hospital charges, perhaps \$4 billion as it relates to 1997 data, I think of thrombosis as a crisis in healthcare. Systematically applying effective DVT prevention would be equivalent to having a thrombosis vaccine. Primary prevention always presents significant challenges, but imagine the impact if we just did a good job in secondary prevention. Patients with 1 prior episode of thrombosis have abnormal endothelium and other risk factors for subsequent DVT, and should be aggressively targeted for prevention, either in the hospital or at home.

However, DVT prophylaxis out-of-hospital is currently unprecedented. Many will argue there is no efficacy or safety data for this approach. The studies needed to address these questions are technically difficult to complete, and will unlikely give us a complete answer. I think our current knowledge base, combined with common sense, supports out-of-hospital prophylaxis today. However, I'm afraid that the medical community won't take this step because it hasn't been "studied enough."

Dr. Tapson: I think we'll make some progress. It's been very exciting to get brand-new drugs and more new diagnostic tests. But you're right. The studies won't be ideal or head-to-head, but we'll make progress, just not as fast.

Dr. Michota: I am concerned that we are moving too slow, and perhaps even more concerned that we will never move forward at all. Some physicians deal better with uncertainty than others. Because it is unlikely to have a definitive study on out-

of-hospital prophylaxis, we will have to extrapolate data to apply to our individual practices. As I said, I am satisfied now that the current data available support out-of-hospital prophylaxis. But my risk manager will not be excited about a “maverick” approach. It will be interesting to see at what point there is enough information available for physicians to feel comfortable with this strategy. My fear is that we may not reach that point.

Dr. Tapson: I would just take the really high-risk patients and initiate prophylactic therapy. If I had a patient at home who was on bed rest and had heart failure and wasn't getting out of bed, I would institute prophylaxis, but that's an extreme setting. Beyond that, it becomes more difficult. There are many patients who are at risk but are in less than extreme settings. We're still in the mode right now where we want evidence-based data to make our decisions.

I think the MEDENOX study and other treatment studies have provided a good deal of valuable information about the benefits of LMWH in the outpatient setting. I think we're making progress. But there is a delay between what we're doing and what we really should be doing. We know a lot about DVT, we know what we'd

like to do, and it does make good sense, but we can't do it in all instances until we get information.

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