

A Faculty Discussion

Faculty members engaged in discussion at the *Healthcare Economics of Effective Anticoagulation: A Roundtable Discussion Among Experts* held April 2, 2004, in San Francisco. Below are the highlights of their conversation.

Moderator Wittkowski: Our discussion will cover (1) the economic consequences of stroke in atrial fibrillation [AF] and deep vein thrombosis [DVT] or pulmonary embolism [PE], (2) the cost consequences of adhering to guidelines versus nonadherence, (3) the primary causes of underuse of anticoagulants, (4) ways to improve adherence to anticoagulation guidelines, and (5) monitoring outcomes in patients who are receiving anticoagulants to find out if there is a cost benefit in providing prophylaxis for venous thromboembolism [VTE] or in providing appropriate stroke prevention in patients with AF.

With those broad topics as a guide, let's put on our economist hats and think about the healthcare system economics associated with patients who develop stroke or DVT or PE as a consequence of inadequate treatment.

The Cost of Stroke

Dr Morrow: I'll start with a case study about the costs of one stroke. A 79-year-old man was diagnosed with AF last year. He was diagnosed on a Monday, given a prescription for warfarin on a Wednesday [that he didn't fill until a day later], and on that Friday he had a stroke. Obviously, he was inadequately anticoagulated. The stroke was not a motor stroke; it was a short-term memory stroke, which took out his ability to drive and to function as a human being. What are the economic consequences? The family will need to sell their home and find a place for him and his wife.

Moderator Wittkowski: What could have prevented that consequence?

Dr Morrow: Several things. He had at least 3 of the high-risk issues. He was over 75; he

had a history of uncontrolled hypertension, with a blood pressure at that time of about 180 to 190 systolic; and he has coronary disease.

Dr Caro: The American Heart Association estimate of \$54 billion for stroke costs includes indirect costs, but only in terms of lost productivity and so on. I don't believe it includes the costs to the family. It was interesting that that was your first reaction to the economics of a stroke. These economics—from the personal point of view—are rarely considered in any of the analyses of stroke.

In terms of actual hospital costs, currently in the United States it costs on average about \$7000 for a stroke admission, but there is an enormous range. A person that comes in and dies very quickly is relatively inexpensive. You'll also see admissions in the million-dollar range. So it's a huge range, but the average is around \$7000.

Dr Morrow: The next largest cost is the subacute cost for rehabilitation. The average rehabilitation is 2 weeks. But depending on the neurological loss it could be several months or longer in rehab or a step-down nursing home. And then you have home care, readmissions for side effects, and the long-term care facilities. These and so many other costs—for meals on wheels, the social services, the transportation services, assisted living, the cost to the family for lost productivity—become practically immeasurable because they're coming from so many different areas.

Moderator Wittkowski: So, who pays for all of this?

Dr Balfour: The government pays for about two thirds of all the healthcare costs now, and

I'm sure the family pays for some, but it depends on the situation. If they're in a nursing home the federal government generally pays for 100 days, and then after that it's either onto Medicaid or to the family. Nursing homes cost anywhere from \$3000 to \$4500 a month now, and that doesn't include other services such as physical therapy.

The Cost of Prevention

Moderator Wittkowski: The next logical question, then, is what is the comparative cost of stroke prevention? What does it cost on an annual basis to prevent stroke? Perhaps one of our pharmacists can comment.

Mr Nelson: A small study in the *Journal of Managed Care Pharmacy* looking at the costs of managing warfarin therapy in an outpatient pharmacy anticoagulation clinic calculated the per-patient per-month costs for the drug, monitoring, and labor to be \$51.¹ So the cost of prevention with warfarin is actually low for just those 3 elements.

Mr Rice: The view of the managed care organization may vary based on the contractual responsibility and the flow of money. In some medical contracts, the hospitalization, the home health, and the rehabilitation may be separate contracts from one another.

Moderator Wittkowski: So whose responsibility is it to pay for stroke prevention?

Mr Rice: From a pharmacy standpoint, we recognize that physicians need to put more patients on the only available product that can be taken orally [warfarin], but we also recognize the complexities associated with the therapy itself. There are titrations required and changes can be handled over the telephone, such as the dose that is changed by the physician verbally to the patient.

Dr Schaecher: From a health plan's perspective, I believe anticoagulation is an issue between the patient and the physician, regardless of the payment mechanism, capitated or not. Managed care's obligation in this arena is to create as few barriers as pos-

sible to allow for adequate anticoagulation, and perhaps even assist them to do what they need to do. In terms of costs, our health plan is a commercial product so we don't have nearly as much AF as you're going to see necessarily in a Medicare product.

Ms Simonson: Our integrated system is quite large and we lose money on our anticoagulation clinic when you look at the cost versus reimbursement for visits. But in the pharmacy-run clinic, patients stay in range 70% of the time.

Dr Menzin: The costs depend partly also on the model of care. We studied anticoagulation services provided by 3 different managed care plans, tracking staff time, laboratory costs, and overhead. If you add in drug costs, it was around \$600 a year for anticoagulation clinic costs.

Dr Go: At Kaiser Permanente of Northern California, which is fairly large, fully integrated, and serves more than 3.2 million lives, there's been a major commitment to anticoagulation. We have 21 pharmacists who run anticoagulation clinics and we've achieved some efficiencies. For us it's all the same bottom line, and so we've taken away some of the financial disincentives that exist in other different healthcare systems.

Barriers to Cost-effective Anticoagulation

Moderator Wittkowski: What are some of the barriers to cost-effective anticoagulation?

Dr Schaecher: Utah is fairly rural. Though a significant proportion of our population is congregated along the 90-mile corridor of the Wasatch Mountains, we have many patients spread out over large geographic areas. Thus, we have some obvious geographic barriers in getting these patients to anticoagulation clinics. In addition, I've observed in our area that clinician providers often don't know the optimal way to treat and are afraid of losing patients. Anticoagulation clinics can help doctors get over these barriers.

Dr Balfour: I had anticipated that physicians would not want to turn their patients

NABOR: The National Anticoagulation Benchmark and Outcomes Report

- Retrospective analysis of antithrombotic use in 38 US hospitals
- Three years of data (2000-2003) on 3778 patients with atrial fibrillation (AF), venous thromboembolism, acute myocardial infarction, or orthopedic surgery (OS)

Key findings:

- 55% of AF patients with high stroke risk received warfarin (21% had no treatment)
- 61% of those without a therapeutic international normalized ratio were discharged on bridge therapy
- 14% of OS patients received no anticoagulation

Source: Shillington A, Tapson V, Hyers T, Becker R, Colgan K. The National Anticoagulation Benchmark and Outcomes Report (NABOR™): Evidence of a significant difference between guidelines and actual practice. *Value in Health*. 2004;7:332.

over, but we've actually had the opposite experience. It was an avalanche. We had to stop patients from entering the anticoagulation clinic. We're in an urban area, and that may account for the lack of physician resistance. Our main barrier has always been cost. It's very frustrating that we treat Medicare patients and they receive all the benefit of the telephonic anticoagulation clinic, but we cannot charge them unless there's a face-to-face visit.

Dr Simonson: It's very frustrating. We telemanage about 120 patients a day with about 1 pharmacist and 2 medical assistants. We try to do face-to-face visits whenever possible (about 30-40 a day). Cost is the only reason these visits are not available for more groups. You really benefit with this model but because of Medicare reimbursement and budget silos, it just doesn't look that way on paper.

Causes of Anticoagulation Underuse

Moderator Wittkowsky: Changing the focus of our discussion to DVT prophylaxis, the NABOR [National Anticoagulation Benchmark and Outcomes Report] program has recently addressed some of the general causes of underuse of DVT prophylaxis in hospital settings.

Dr Colgan: In our research, hip fracture repair patients, who are most probably the frail elderly and at the highest risk of an event, were least likely to receive VTE prophylaxis. We guess that it's the patient frailty and age that causes the fear of a bleeding event, which overrides the aversion to a possible DVT or a pulmonary emboli. The duration of treatment is also problematic. About 3 of 10 of the total knee and total hip replacement patients are receiving only 3 to 4 days of therapy.

Moderator Wittkowsky: What are the key factors that influence underprescribing, underuse, and shorter durations?

Dr Schaecher: From a physician point of view, it all gets down to fear. The fear of the complications of overanticoagulation far outweigh, in the physician's mind, the fear of underanticoagulation.

Dr Mensin: But bleeding risk is probably the major factor regarding who does and does not receive anticoagulation therapy. There are also patient-related factors, education, and health literacy. It's a complicated regimen requiring a lot of communication with the nurses and the pharmacists over the telephone, so that adds to the burden on patients. And of course there are people who are not candidates for warfarin at all, such as those with dementia or alcoholism. It can be hard to identify those patients.

Mr Rice: Patients are also fearful. If the pharmacy and physician do a good job counseling patients, they understand that there's a risk of bleeding. Also, many patients are discharged on the low-molecular-weight heparins that are still not routinely stocked in retail pharmacy stores. They may have problems getting it filled at a pharmacy, and then they may also be surprised by the costs.

Mr Kus: Yes, the retail economics may also play a factor with patients in terms of anticoagulation underuse. We're in the city of Detroit with a very high population of uninsured, so we've made every effort to work with the drug company for a replacement-type program.

Dr Morrow: There are really 2 issues related to anticoagulation underuse. One is not starting a medication, but the other is not continuing or having falloff in the persistency. One of the big problems with continuation is simply getting the tests done.

Focus on DVT and “The Handoff”

Moderator Wittkowsky: Are the issues of underutilization in the prevention groups that relevant to patients who are being treated for acute DVT or PE?

Dr Simonson: Within our setting, we have a much more organized system for treating those patients. We know that we need to treat them and get them out of the hospital quicker. They’re not on anticoagulation long term (longer than 3-6 months), even though there is some data that shows that they probably should be on it longer.

Dr Go: Even 3 to 6 months of treatment is more tolerable than chronic therapy. It’s also symptomatic, unlike something like hypertension where it’s so hard to get folks to take a drug chronically when they feel fine or don’t sense the long-term risks. So when patients are brought into the hospital because of something highly symptomatic like an acute PE and DVT, it’s much easier to treat. We also have a transition system from PE to outpatient, which makes it easier because they get education and they see a light at the end of the tunnel.

Moderator Wittkowsky: What can we do within our healthcare systems to increase the number of patients who receive appropriate DVT prophylaxis when they are admitted to the hospital for surgical procedures or for acute medical illnesses?

Dr Simonson: We’ve helped a number of institutions develop programs to improve DVT/PE prophylaxis. Most people don’t realize the numbers of patients that die from PE. The healthcare providers are shocked when they get that information. So hospital-wide education about screening patients when they come in is the first priority.

Dr Schaecher: If you look at the dynamics of how they go about admitting patients and taking care of patients, they’re in a hurry, they’re running. So prophylaxis is often-times skipped.

Mr Kus: In our institution, inpatient pharmacy directors are now charged by the chief medical officer to take more accountability for anticoagulation. When prescriptions come into the pharmacy with a diagnosis possibly requiring anticoagulation, it’s their responsibility to determine if the patient is a candidate for anticoagulation at discharge.

Dr Colgan: Vanderbilt has presented their program as an example of excellent practice. They have an electronic medical record that prints a list of patients at risk, for example, if a patient has been immobile for 3 days or more. This type of sophisticated system would certainly help in making sure more patients were on prophylaxis therapy.

Dr Balfour: Another problem is that hospitals use different types of electronic medical record systems. We’re not able to talk to each other.

Dr Caro: It’s hard to say anything negative about education, but considering we’ve now had 20 years of experience in trying to improve anticoagulation, at least with AF, I’m wondering if more of the education interventions we’ve been discussing will really change the picture?

Mr Rice: We’ve also got new drugs coming out that should simplify some of these processes. It will require a combination, but I think technology and new drugs are going to significantly positively impact this area.

Mr Wilson: If you consider the day-to-day practice of a physician, and if you look at how little time they have to spend with any given patient, you’ll see that even with electronic medical records, starting anticoagulant therapy and monitoring those folks successfully is more difficult than managing the average patient. So any new therapy that makes the patient easier to deal with pro-

vides a significant step forward in helping to get more patients on therapy.

Dr Colgan: When we looked to practice sites in terms of following guidelines, we found that with the exception of AF the VA [Veterans Administration] was about 14 points better than everybody else, and the academics were about 10 to 15 points better than other practice sites. So there is no question that place of practice and local education has a great effect on how patients are treated.

Impact of New Treatments

Dr Colgan: Dr Morrow and Mr Rice both talked about new drug technology, and I'm curious about how ximelagatran will impact anticoagulation. What will be this drug's effect on nontreatment, duration of treatment, and bridging?

Mr Rice: We won't know until the products are available, but the physicians' and patients' fear of bleed will be reduced enough so that it's prescribed more. We think of older drugs as being simplistic, but a drug like warfarin has to be prescribed and monitored, it's a very complex drug. I'm anxious for us to have other options that are oral. We have injectable options right now, but they have their own complexities. I think the newer nonwarfarin oral products will have an impact.

Dr Morrow: They will have somewhat of an impact because there are fewer side effects and not as much monitoring. But we still will need an automated mechanism of following these patients or evaluating them.

Dr Simonson: I think the new drug, ximelagatran, will make a significant difference for a patient coming out of a hospital. Physicians will probably want to use it right away because it is therapeutic within 4 hours. Within the hospital, that is what's going to happen unless the patient is contraindicated for ximelagatran.

Dr Go: Providers will take their time integrating the new products into practice. In the late 1980s and 1990s, we saw a massive

increase in the use of warfarin only because they had more experience and they had been hounded by guidelines. It takes time because there's a doubt about whether or not trials translate to practice.

Mr Wilson: I think this product will help in terms of the initial prescription, but I think you're going to have falloff as you do with every chronic medication, as with the abysmal persistence rates for medications for chronic diseases like high blood pressure, lipids, or diabetes.

Dr Mensin: Even within a specialized anticoagulation clinic, it's hard to keep people on therapy. So, yes, getting them on therapy is one thing, keeping them on is another.

Dr Colgan: Measurement might also be an important tool in terms of bridging the gap with guidelines.

Concluding Remarks

Moderator Wittkowsky: Based on the discussion that we've had today, what one thing would you like to implement in your system today to improve adherence to guidelines?

Dr Balfour: I think the electronic medical record will give you better adherence to guidelines, protocols, and pathways and lead to better care. I'm sure it can be used to generate patient information, but there are other systems that can do that also.

Dr Colgan: I have to agree that electronic systems and the ability to remind people is the first and foremost step toward improved care.

Dr Caro: The costs of stroke and DVT/PE prevention are complex, and the data may not be readily available. So, from the research perspective I think we need to work on clarifying these cost data.

Dr Go: Combining the emerging information technology with real-time feedback will be helpful. Capturing data from your own health system will be key to changing practice and producing better outcomes. Most

providers care about outcomes rather than the costs per se, and with real-time feedback I think we can make a persuasive argument for increasing anticoagulation use.

Mr Kus: In our system, we are already investing a lot of money in our electronic medical records to get those prompts to remind physicians, nurses, and pharmacists about what they should be doing.

Dr Mensin: How do we know when we've reached a limit to what we can do with current anticoagulation? You can push technologies and so forth, but at some point there are the tough issues of physician-patient interactions, education about the condition, issues of health literacy, and maybe health disparities.

Dr Morrow: Computerized medical records will help but even manual check-off lists would be useful. Public awareness is obviously driving a whole lot of medical care right now. We also need systematic reminders to patients using highly automated mechanisms, perhaps in a disease management approach, which does not cost much using the Net.

Mr Nelson: There is already a recognition of the liabilities of warfarin as an anticoagulant, but unfortunately not a lot is done about it. I agree that we may have reached a point where we have done all we can to improve the situation with existing technology. So I'm hoping there will soon be new technologies and new drugs available, and that I can help my organization understand their potential value and the opportunities for improving the management of these patients.

Mr Rice: I can simplify what I'd like to do into 3 words: value, empowerment, and accountability. As we add technology and other processes, we have more opportunities to be successful, but I still think you need to create

the value proposition so that it will be done. You also need to create the empowerment for people to do it. And then you create accountability, with report cards or other processes.

Dr Schaecher: As medical director for a health plan, I can provide easier access to the anticoagulant medications. And I can provide educational opportunities based on claims for medications to providers to help remind them of what's out there and perhaps feedback on how poorly they're doing. Unfortunately, we're somewhat limited other than providing easy access and trying to reduce barriers. So mainly I can be an agent for change with the control I have with the drugs.

Dr Simonson: We've already implemented a number of things, so our main goal at this point is measuring how we are doing in our integrated system.

Dr Wilson: As a research organization inside a large health plan, the most important thing that we do every day is put information in the hands of the decision makers at the point they're making the decision, and in a format that they understand. We can't forget that there are a lot of different decision makers even in this one disease state. It's a P&T [pharmacy and therapeutics] committee that regulates access to certain products; it's physicians who decide whether or not to prescribe a product; and it's a patient who decides whether or not they're going to continue to take that product. The choice of technologies for delivering information to these diverse audiences is certainly important, but we need to remember to communicate our messages in a language that each audience understands.

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REFERENCES

1. Anderson RJ. Cost analysis of a managed care decentralized pharmacy anticoagulation services. *J Manag Care Pharm.* 2004;10:159-165.