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EDITORIAL

Patients Getting More Engaged in Care

Patients are getting more involved in their care. Health plans are recognizing that patients who are emotionally and intellectually involved in their care are likely to be more loyal than other patients. In other words, engaged patients are worth the investment needed to educate them.

Patients invested in their care are helping to propel consumer-driven care by visiting such Web sites as Mayoclinic.com, WebMD.com, and Revolutionhealth.com. They also are interested in viewing educational videos online on surgical procedures and diseases. In some cases, medical Web sites allow patients to watch surgery being performed live. For many patients, it is easier to learn by viewing than it is by other means.

"The engaged patient is more than an informed patient," says Michelle Sobel, chief creative officer for Emmi Solutions, LLC, a company in Chicago (at www.emmisolutions.com) that produces interactive patient education communication tools. "The engaged patient is activated. She understands information critical to her health, communicates effectively and confidently with her clinical team, complies with instructions related to treatment, and is positively transformed by her experience with care."

In addition, engaged patients help improve operational efficiencies. John Bachman, MD, a professor of primary care at the Mayo Clinic in Rochester, Minn., has written that computer interviewing saves 4 to 8 minutes per patient, creates a record justifying higher codes, and generates claims less likely to be rejected.

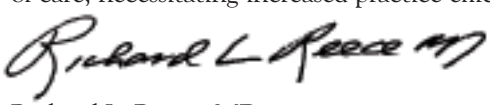
Other experts have found that engaged patients follow directions closely. Cancellations of procedures when patients don't comply with pre-op instructions cost an average of $2,188, research shows.

Aware of the potential safety hazards inherent in hospitals and particularly after surgery, these patients are three times more likely to recognize complications, such as hospital-acquired infections, researchers say.

Increased understanding among patients also helps to reduce risk. Most nuisance lawsuits result not from negligence but from misunderstandings.

Consumer directed health plans have the effect of providing a financial incentive for patients to be involved in their care. Being involved requires that patients get informed, and that means patients in these plans are likely to have more questions for their physicians than other patients will have.

For practicing physicians, the message in this trend is clear. Patients today want to work more closely with their care providers than patients in the past. These patients may be more willing to comply with orders, which is an advantage, but they will also require more time and more of your expertise at the point of care, necessitating increased practice efficiency.



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Biomarker Predicts Future Complications

A new study indicates that a blood test measuring natriuretic peptide levels could help predict the risk of cardiovascular events or mortality in patients with existing coronary heart disease.

The study, which was published in JAMA Jan. 10, examined the predictive value of the amino terminal fragment of the prohormone brain-type natriuretic peptide (NT-proBNP), a physiologic marker of increased pressure and volume in the heart. The authors concluded that plasma NT-proBNP level adds new information that clinicians can use in conjunction with other prognostic indicators to risk stratify heart disease patients. The prognostic indicators include traditional clinical risk factors, left ventricular ejection fraction, diastolic dysfunction, left ventricular hypertrophy, and measures of ischemia.

Managing Health Risks

"Risk stratification for cardiovascular events is important because it guides appropriate use of both primary and secondary preventive therapies, thereby enhancing quality of care," says Kirsten Bibbins-Domingo, PhD, MD, a general internist and an assistant professor of medicine and of epidemiology and biostatistics at the University of California San Francisco School of Medicine. She was also the lead author of the study. "Cardiologists have many life-saving therapies at their disposal," she adds. "Nevertheless, all therapies are associated with some level of risk. Risk stratification enables physicians to target their therapies to the patients who are most likely to benefit, while patients who are unlikely to benefit from a particular therapy will not be unnecessarily exposed to side effects. At the same time, risk stratification helps reduce costs and utilization by helping clinicians to avoid pursuing unnecessary tests, procedures, and follow-up care for patients who are not appropriate candidates for therapy."

Many risk stratification strategies exist to identify members of the general population who are at risk for developing cardiovascular disease, notes Bibbins-Domingo. "However, among patients who already have coronary disease, it has been relatively difficult to determine who is at highest risk of developing a complication," she says.

"Coronary heart disease is a condition that is very common among older people," Bibbins-Domingo continues. "We were interested in determining which patients among those with known disease are at the highest risk for developing a complication. This high-risk group typically undergoes a lot of cardiac testing to help us predict who will have a subsequent myocardial infarction or who will develop heart failure in the future. However, the ability of these tests to help physicians make these important clinical predictions has not been well studied."

The researchers evaluated not just whether NT-proBNP level would predict subsequent cardiovascular events and mortality, but also whether this blood test added value to the common tests that cardiologists and general internists routinely use among heart disease patients.

Value Added

"We found not only that NT-proBNP level was predictive, but that it added value by providing information that would be useful to physicians above and beyond the tests that are routinely ordered for coronary heart disease patients, like echocardiograms and treadmill tests," observes Bibbins-Domingo. "Because NT-proBNP is a physiologic marker of increased pressure and volume in the heart, it makes sense that this test would be particularly valuable in determining the likelihood of complications in patients who already have known heart disease. Other markers also have potential, but we have limited information on those that have predictive value in patients who already have coronary heart disease."

Bibbins-Domingo emphasizes that it is important for any new marker to demonstrate usefulness above and beyond other tests that physicians routinely perform.

"We do not advocate that NT-proBNP would replace other tests," Bibbins-Domingo states. "Certainly, an echocardiogram provides an extraordinary amount of useful information to clinicians. But we did find that the results of this blood test add information to the echocardiogram and other common tests used in this population of patients. In fact, a

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"We were interested in determining which patients among those with known disease are at the highest risk for developing a complication."

–Kirsten Bibbins-Domingo, PhD, MD, University of California San Francisco

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subset of the population we studied actually had normal echocardiograms, but was still at risk for developing complications of heart disease. We were able to detect that risk when we observed elevated NT-proBNP levels in those patients."

Tracking Health Data

The study included nearly 1,000 ambulatory patients with known, stable coronary heart disease who were referred to the study from 12 medical centers and public health clinics in the San Francisco area. At baseline, subjects had blood tests that measured their NT-proBNP levels. All subjects also underwent resting and stress echocardiograms, treadmill testing, and testing for other blood markers including C-reactive protein and cardiac troponin T. Study subjects were followed for as long as five years (mean duration: 3.7 years) to track mortality from any cause and or hospitalization due to myocardial infarction, heart failure, or stroke.

NT-proBNP levels were divided into four quartiles as follows:

1. 8.06 to 73.95 pg/mL (picograms/milliliter)
2. 74 to 174.5 pg/mL
3. 175.1 to 459 pg/mL
4. Greater than or equal to 460 pg/mL.

To determine whether NT-proBNP level was an independent predictor of cardiovascular outcomes, the researchers adjusted for other prognostic measures including systolic and diastolic dysfunction, left ventricular mass index, inducible ischemia, exercise capacity, C-reactive protein, cardiac troponin T, and New York Heart Association classification. After adjustment, the researchers found that each increasing quartile of NT-proBNP level was associated with a higher risk of cardiovascular events.

"We found that NT-proBNP levels measured at the beginning of the study were able to predict who would develop one of these complications over the study period," says Bibbins-Domingo. The annual rate of cardiovascular events or death was 2.6% in the lowest quartile, 4.0% in the second quartile, 7.4% in the third quartile, and 19.6% in the fourth quartile. "The subjects with the highest level of NT-proBNP had an eight-fold greater risk of events than those in the lowest quartile," Bibbins-Domingo notes.

The marker was a strong predictor of each of the cardiovascular events studied, and risk increased in a linear fashion. "For each incremental increase in NT-proBNP, there was an incremental increase in risk," Bibbins-Domingo points out. The annual rate of coronary heart disease death was about 0.2% in the first quartile, compared with 2.6% in the fourth quartile. The annual rate of myocardial infarction was 1.1% in the first quartile, compared with 5.3% in the fourth quartile. The annual rate of stroke was 0.4% in the first quartile, compared with 2% in the fourth quartile.

Biomarkers Enable More Accurate Risk Stratification

In recent years, researchers have identified a number of biomarkers that have confirmed value or shown promise in cardiovascular risk stratification. These biomarkers include C-reactive protein (CRP), lipoprotein (a), cystatin C, NT-proBNP and BNP, apolipoprotein B, microalbuminuria, and other inflammatory markers such as fibrinogen, IL-6, and TNF-alpha.

Elevated levels of C-reactive protein signal acute inflammation, for example. A high-sensitivity C-reactive protein (hs-CRP) assay is available to determine risk of heart disease in the general population. Research has suggested that a high CRP level is a positive risk factor for cardiovascular disease. Researchers are working to determine whether a high CRP level is merely a sign of existing disease or whether it is a cause of disease.

Lipoprotein (a) is another marker of cardiovascular disease. Patients tested for lipoprotein (a) typically include those who have a family history of either elevated lipoprotein (a) levels or coronary artery disease. Just as with CRP, the actual role lipoprotein (a) plays in heart disease remains unknown. Research suggests an association between high lipoprotein (a) levels and risk of heart disease or stroke.

A recently developed blood test for renal dysfunction, cystatin C, has been shown in clinical trials to be a strong predictor of mortality from cardiovascular causes. A National Heart, Lung, and Blood Institute-funded study published in NEJM May 19, 2005, showed that the cystatin C test could be used to distinguish elderly patients at low, medium, and high cardiovascular risk. Additional research is needed to confirm cystatin C as a prognostic tool.

Research showing that inflammation contributes to the development of atherosclerosis has led to studies of whether the presence of various inflammatory markers can help predict cardiovascular risk. Studies of fibrinogen have confirmed its status as a risk factor of cardiovascular events. IL-6, a central regulator of inflammation, is associated with risk of atherosclerosis, although it remains uncertain whether it is a cause of or just a marker of disease. TNF-alpha is also being studied to determine the nature of its association with cardiovascular disease.

—DJN

"Before the NT-proBNP test is incorporated into practice guidelines and adopted on a widespread basis, we would need results that proved that use of the test to guide therapies actually improves patient outcomes," says Kirsten Bibbins-Domingo, PhD, MD.

NT-proBNP was most predictive for the occurrence of heart failure, which occurred at an annual rate of 0.3% in the first quartile compared with 11.2% in the fourth quartile, and also strongly predicted new heart failure in individuals without a prior history of heart failure. The annual rate of all-cause mortality was 1.3% in the first quartile, compared with 10.7% in the fourth quartile.

Foreseeing Complications

An NT-proBNP value of less than 100 pg/mL proved to be a good cutoff point for defining a low-risk patient, Bibbins-Domingo says. "At levels less than 100 pg/mL, subjects were at very low risk of developing complications," she adds. This fact was especially true for older patients. Subjects aged 70 years or older with NT-proBNP levels greater than 100 pg/mL exhibited a rate of adverse events that was more than three times that of older individuals with NT-proBNP levels under 100 pg/mL.

Furthermore, NT-proBNP level was predictive of adverse events regardless of the results of the other cardiac tests conducted, and the addition of NT-proBNP level to other test results improved predictive capability. "NT-proBNP was particularly good at predicting subsequent complications among subjects whose echocardiogram was normal or only showed diastolic dysfunction, which suggests that the NT-proBNP test could be used in conjunction with echocardiograms to identify high-risk patients," Bibbins-Domingo continues.

Subjects in the highest NT-proBNP quartile were older, and were more likely to have clinical risk factors for cardiovascular events, such as a history of hypertension, myocardial infarction, or revascularization, higher systolic blood pressure, and lower creatinine clearance. All of the other prognostic markers were also associated with increasing NT-proBNP level. Despite the observation that levels of NT-proBNP are highly correlated with other clinical risk factors and other prognostic factors, the ability of NT-proBNP to predict future complications of coronary disease was independent of these factors.

The researchers also found that coronary heart disease patients who were not taking two commonly prescribed preventive therapies (ACE inhibitors and beta blockers) were at particularly high risk of developing complications, and that NT-proBNP levels reflected that elevated risk. "It is not surprising that NT-proBNP levels would be high in these patients. We know that these therapies can save lives," says Bibbins-Domingo.

Practice Implications

The findings suggest that clinicians may be able to use NT-proBNP results in combination with the other test results and clinical judgment to determine optimal therapies.

But this study is just a first step, adds Bibbins-Domingo. "Eventually, researchers may be able to show whether using NT-proBNP to identify high-risk patients and then targeting therapy accordingly will lead to an overall improvement in outcomes that both maximizes benefit and minimizes risk for all patients," she says. Such study is warranted given the current findings. "Before the NT-proBNP test is incorporated into practice guidelines and adopted on a widespread basis, we would need results that proved that use of the test to guide therapies actually improves patient outcomes," she comments

Since NT-proBNP is measured by blood tests performed on emergency room and hospitalized patients, it is important for clinicians to know that test results may provide additional useful information about a patient's prognosis. "Exactly what we do with that information requires further study," Bibbins-Domingo says. "But it makes sense that patients at high risk might benefit from higher doses of preventive medications that we know to be life-saving, such as ACE inhibitors and beta blockers, and more aggressive modification of other associated risk factors. Patients at high risk are also most likely to benefit from surgical options and revascularization via stent placement or bypass surgery. Potential enhancements to care could occur if future studies confirm that NT-proBNP is not only predictive of future events, but also actually can be used to improve patient outcomes by guiding interventions."

Another potential area of study involves examining how NT-proBNP can be used in conjunction with echocardiography. "Again, NT-proBNP testing will not replace other cardiac tests, but perhaps it could inform clinical decision-making such that clinicians do not perform unnecessary testing for a certain subset of patients," the researcher says.

—Reported and written by Deborah J. Neveleff, in North Potomac, Md. More information on physician practice strategies is available on our Web site (see page 8).

Key Solutions to Design Problems

By Jill K. Arena, FACMPE

Given that many specialists are likely to be intensely interested in the clinical or business aspects of practice, it may be easy to overlook some of the more mundane issues related to office space. This situation raises a question: how can one acquire functional office space that is inviting for patients and useful for physicians and staff? All physicians should consider several design elements before any building starts.

One of the first questions to answer involves whether you'll rent, buy, or build. Check with the real estate experts in your area before you begin your search. If you consider renting space or buying a building, you may find the latter makes more sense depending on your situation. These are issues to address with your tax professional and financial planner. Once you decide to proceed with construction in the office, here are some of the more difficult questions you will face.

If you consider renting space or buying a building, you may find the latter makes more sense depending on your situation. These are issues to address with your tax professional and financial planner.

Form Follows Function

First, what activities will happen in the office versus in the hospital? Is the office space mainly for in-office consults and pre-op appointments, or is it a space primarily for dictating notes and completing paperwork? If the emphasis is on in-office consults, exam room size and placement are paramount. If your patients usually come for visits alone, a smaller exam space may be best. If your average patient visit includes the patient and one or more family members or caregivers, consider exam rooms measuring at least 10 feet by 10 feet. If you use anything larger than a conventional exam table, consider adding a few more feet to one dimension as well.

If your office is largely a place for dictation and paperwork, be sure to include an area that is quiet where you can dictate notes with few interruptions. If you need space for consults with patients and family members, be sure to incorporate adequate seating and think carefully about the composition of the room. Do you wish to sit across a desk from your patients? Doing so is clearly a position of power, and reinforces a specific role. Many physicians eschew that layout in favor of a friendlier furniture arrangement that gathers people together as a group with no seating or power disparities. Making this decision requires some soul-searching about how you prefer to interact with patients, and what role you will assume: dictator or advisor.

Other questions to raise include: Who will spend time in the office, and what is their function? Will you have a scheduler, receptionist, and biller? How do they interact with one another? One should consider if and how the workers will be required to do each other's jobs, which may call for co-located or line of sight work spaces. How much sound insulation does the scheduler need from the front desk if the majority of her work is done by phone? If it is done largely by computer, does that change the office dynamic?

Given that the design and décor of one's office communicates many factors to patients, physicians should pay attention to the details of how it is furnished. Old furniture and dusty fake plants may make your patients question your clinical competence. They may also question your ability to be current with clinical issues if your waiting room suggests a bygone era. Walk through the front door of your office with a naïve set of eyes or ask a friend to do so and give you his or her first impression. What messages are you sending to patients? What messages do you want to send them?

If the carpeting is plush, the furniture luxurious, and the artwork expensive, your patients may begin to wonder how much you are billing them (or more likely, their insurance company) for the services you provide. One should strive to have clean, attractive, and current furnishings of good quality without going overboard.

Location, Location

Oddly, the location of the office and proximity to the hospital also can speak volumes about your practice. In general, if the hospital in your community enjoys a good reputation, a suite on campus or close to it allows institutional transference, which will

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allow you to bask in a bit of the facility's glory simply by stating to patients, "We're located on the St. Mary's campus." The opposite is also true. If the hospital has a poor reputation, any co-located practice may be painted with that brush as well. What is the reputation of your admitting facility? Is it time to move closer or farther away? Once established in a community, most physicians give little thought to this issue. While challenging at first, a move to another hospital can frequently make or break a practice over time.

Technology is an oft forgotten element that is gaining importance in office design as electronic medical records (EMR) become more prevalent. How do you use technology? How would you like to integrate it into your new space? If you are using an EMR, or plan to install one soon, consider putting PCs in each room. If you will use laptops, tablets, or other portable devices, you'll have more space and more design options. After years of study, many physicians have found that a wall-mounted articulating arm is best for integrating a PC into an exam room, and they can be used in nursing or dictating stations as well. Consider screens that sit below the desktop with glass panels for minimal desktop clutter and maximum security of patient information in public areas.

Integrating technology likely will have a tremendous effect on workflow and should have a bearing on your floor plan. If you have not yet implemented an EMR, but plan to, consider these issues before construction starts.

A Sense of Space

Whether it is feng shui or karma each office and room has a certain "feel." It could be cold or warm; inviting, or not. We don't often consider it, but this element is palpable in most places. How do patients and visitors remark about how your space feels? In general, would they say the space is calming or frenetic? It is important to consider the feel of the space, which includes such important elements as natural light, live plants, artwork, and other features.

Consider all five senses, not just sight. What do you want your patients to hear when they come in? Soothing music (such as one would hear in a spa) or a ringing telephone or blaring television? What do your patients smell when they enter the office? A medicinal or musty order can be off-putting. Fresh coffee may be inviting. Or perhaps no odor is best. What textures can instill the feeling you want? In general, health care professionals can agree on the elements of the office and their need to promote a sense of calm and healing. Does your space do this? If not, what should you change?

Interior designers can help in creating the look and the feel of the office you want. Hire an independent designer or consider using the in-house designer from your architectural firm or furniture vendor. Ask if the designer's fee is included in the project budget or added separately. Also ask if its equipment vendor will provide design services (called computer-aided design or CAD or computer-aided manufacturing or CAM) for its equipment and built-ins. Many do so, and this step can reduce your design costs. Also consider what existing furniture and equipment you can reuse in the new space, and if you do, how to incorporate these elements into the design. A significant consideration for design is any specialized diagnostic equipment that requires special building accommodations such as reinforcements in the walls or ceiling.

Square Footage Costs

Finally, one should consider financial implications of space, beginning with how much space is needed for the practice, which will drive ongoing rent costs, property tax, and other factors. A general rule of thumb is 1,000 square feet per physician, although this can be increased or decreased dramatically depending on the practice and the use of the space. Office space varies in cost, and can range from $10 per square foot for Class C space or space in a down real estate market to more than $50 per square foot for Class A space in a high demand area.

Lastly, if you go into an undeveloped space (shell or vanilla shell) your build out costs (usually called tenant improvements) can range from $75 to $200 per square foot depending on your design and finishes.

Most physicians will rent or build new office space once or twice in a career, and the decisions to be made are numerous and have far reaching effects for the practice and its viability.

—More information on physician practice strategies is available on our Web site (see page 8).

Consider the financial implications of how much space the practice needs. The amount of space will drive other ongoing costs, such as rent and property taxes. A general rule of thumb is 1,000 square feet per physician, although this can be increased or decreased dramatically depending on the practice and the use of the space.

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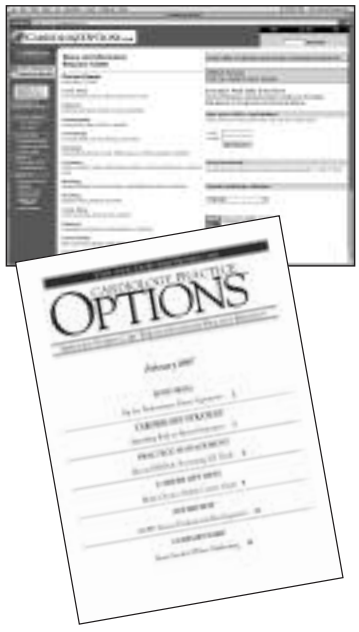

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