

# Medicine & Health RHODE ISLAND

PUBLICATION OF THE RHODE ISLAND MEDICAL SOCIETY



The Blue Cross & Blue Shield  
of RI and Brown University  
Collaboration

# What's in a Name???

GOOD - authentic, honest, just, kind, pleasant, skillful, valid

NEIGHBOR - friend, near

ALLIANCE - affiliation, association, marriage, relationship

CORPORATION - company, business establishment

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# Medicine & Health RHODE ISLAND

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## Commentaries

### Rejection

**I recently reviewed an article submitted** to a prestigious non-neurological medical journal on a topic which I consider my area of expertise. I know the authors and thought highly of them. One was a junior faculty member at a fine medical school, clearly a rising star. The other was a professional friend, someone I eat dinner with at professional meetings, someone closing in on retirement, but still active and vibrant. It wasn't a bad paper. It was mediocre. It infuriated me.

It was incomplete. It looked like a rush job. Superficial. Maybe the junior person gave a talk and the senior person suggested translating the notes into a publication. It overlooked references. In particular, it ignored an obvious reference, probably because it was written in Spanish (which reminds me of the first time, 25 years ago, when I wrote my first letter to the editor criticizing a review article on cerebral cysticercosis, which claimed that there was no treatment available, ignoring multiple Spanish language papers detailing the use of praziquantel, as if a non-English publication was not worthy of citation.). I don't understand Spanish, but for my publications, I asked a colleague to translate the paper, just as I did for the praziquantel articles.

It failed to consider major problems in the field. It ignored difficulties in nomenclature, in pathology, in comparing treated to untreated populations. But it was, perhaps, a fixable manuscript, although if I was asked to edit it, I would have found it easier to rewrite from scratch than revise it.

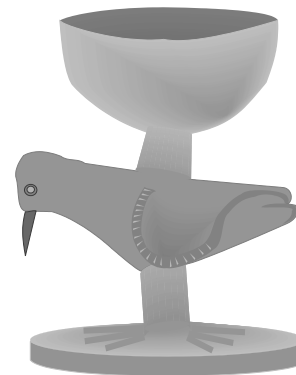
I praised the authors for their good writing, and timely submission, but I rejected it. I wrote as much supportive criticisms as I could, pointing out all the flaws so they could rewrite it and submit a stronger paper elsewhere. That is what a good reviewer should do.

But I am plagued by the guilt of the rejection. I could have accepted it, asked for a major revision, and reviewed the

resubmission. It's not easy rejecting a friend's paper, or the paper of a well-regarded junior investigator. I wonder if I was jealous, having someone poaching on my territory, especially a young person. Maybe it bothered me that he had accomplished so much more than me at a much younger age? Maybe I wanted to "put him in his place?" Maybe I didn't welcome the "competition." But I don't think so. I've admired these people for a few years, and have talked the young one up at many meetings and discussions. I've recommended him for various talks, panels, writing invitations. I'd recruit him if I could.

I can only reflect on the fact that my first reading of the manuscript made me angry. They let me down. I wondered how these people I respect so much could do such a poor job, and in an area so close to my heart. When I wrote about the topic I clearly spent a lot more time on it than they did. It was as if they expected a free ride, getting a "cheap" publication based on a superficial review and fancy credentials. I didn't think they deserved another try at getting the article published in this particular journal. It was as if I had recommended someone for a job and the person didn't try hard and did a poor job. But that wasn't the case at all. I didn't know anything about this article until I was contacted by the editor, and asked to review it. I guess I was expecting to find new insights, and instead found holes where information and hypotheses should have been.

I wonder how I would have reviewed the article if it had been written by people I didn't know. There's at least one journal I occasionally review for that keeps authorship secret, so all reviews are performed in a blinded manner. This has good and bad points. It keeps vendettas down, and also keeps friends from rewarding friends. On the other hand, I am much more likely to accept summary statements and opinions from someone I



know is an authority in the field, or someone I know personally to be beyond reproach. I reviewed one such anonymous paper and had to conclude that none of the authors seemed to have any clinical experience at all, and probably were not physicians. I suggested that for a clinical review article there should be at least one author who had taken care of a patient with the condition. Now, that is an incendiary comment if the authors were, in fact, physicians, but a reasonable one if the authors were pharmacologists or pharmacists, which is what I had deduced.

I don't like reviewing my friends' articles. I haven't refused to do this yet, and my field is too small to allow this to happen, or there wouldn't be any experts reviewing the works of other experts, as we've all gotten to know each other over the past few decades, but it makes me worry, just as I worried over the article I rejected. Am I giving them a free pass because they're my friends? Am I too harsh because I expect more from them? Am I upset that they are publishing more than me? Am I pleased that I can help them?

I take solace in the insight that I care more about the process than I do about my friends (or enemies). I worry about the proper use of my transient power, rather than rejoice in my ability to wield it; but there is no objectivity in this arena.

— JOSEPH H. FRIEDMAN, MD

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# Galen and the Causes of Disease

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**When our ancestors were preliterate nomads eking out a hazardous existence on the African savannahs, disease – as we know it today – probably played only a marginal role in their lives. Paleontologists tell us that our distant forebears rarely lived beyond the second or third decades of life, dying most often from injury or starvation. Nomadic life allowed for little of the caring, nurturing amenities; and so those who were incapable of keeping up with the clan were abandoned to their private destinies. Speculating about non-traumatic disease, and caring for its victims, may have arisen only when a sedentary, agrarian existence replaced a nomadic way of life.**

Injury from a spear, a fall from a tree or from the claws of a savage beast must have been readily understood by our ancestors; but what of an illness that materialized from nowhere? What must an adult have thought when his offspring was taken by a fever, a disfiguring rash or an epileptic seizure? Only the many mysterious forces that ordained the sun to rise, that initiated the nurturing rains and allowed the crops to flourish must be responsible. And so disease entered the domain of the many unexplainable happenings beyond humanity's understanding. To the logical mind of our ancestors, illness must therefore represent a punishment for earthly transgressions, sometimes operative unto the seventh generation.

The belief in heavenly forces initiating disease persisted for centuries. It therefore left the diagnosis, care and prognosis of disease in priestly rather than medical hands. The Biblical pestilences were delivered as special judgments and directed unambiguously to specific victims, such as the illness afflicting Miriam [Numbers 12:10]. The ten plagues which beset Egypt [Exodus 3 – 12], each of increasingly severity, were sent because of Pharaoh's intransigence. There was a specific target in each of the plagues. The fifth plague [the murrain of beasts], for example, with a lethal pestilence befalling the Egyptian cattle, was an explicit judgment condemning cattle-worship.

The cause of disease underwent a notable change in the writings of the Aesculapian brotherhood of physicians [about the Fifth Century BCE], bringing disease-origins from well beyond the clouds to the level of local climate change. In the first treatise of Hippocrates it is written "That disease is caused by a disturbance in the composition of the constituents of the body. This disturbance is connected with atmospheric and climatic conditions."

Thus the perception of disease shifted from "Any abnormality is of divine origin" to "All phenomena are equally divine and equally natural." Many of the collected Hippocratic treatises bear such names as "Airs, Waters, Places" and "On Epidemics," reinforcing the belief that such tangible factors as changes in season, the intensity of the southern winds, the presence or absence of rain contributed collectively to the incidence and severity of human disease. Hippocratic therapies included purgatives, emetics, fomentations, baths, simplified diets fortified with wines, blood letting and above all, a restful, non-stressful environment. These therapies only made sense if the causes of the disease were earthbound.

Galen was born in 130 CE in the great Asia Minor city of Pergamum. He completed his medical education in Alexandria, then the Mediterranean center of medical and scholarly activity. Galen returned to his native city and practiced as a physician-employee of the Roman gladiator school. At age 31 he was summoned to Rome to assume a more demanding medical post. His diagnostic skills brought him to the attention of Rome's leaders; before long he was personal physician to Marcus Aurelius. His extensive writings formed the foundation of Western medicine for the next 16 centuries until they were gradually supplanted by a medical approach based more upon laboratory findings and empiric clinical appraisal.

Galen was persuaded by a Stoic philosophy although not by its astrologic components. He believed that God always worked by law and that Nature therefore makes naught in vain. Galen's beliefs are now unnecessarily derided and overly simplified. He is identified as the author of the humoral theory of disease, which declares that all diseases are the outer representations of imbalance among the body's four fundamental humors [blood, phlegm, yellow bile and black bile.] Thus, if there is an excess of any one humor, the patient will be variously sanguine, phlegmatic, choleric or melancholic. According to this belief, therapy logically consists in correcting these imbalances by purging, vomiting or blood-letting. Galen's principle of disease may also be reinterpreted more generously as a belief that many quasi-independent physiologic forces operate within the human body and that physiologic distress—sometimes called disease—represents a diminished or excessive activity of one or another of the internal organs, a belief not far removed from today's perceptions of human physiology and endocrinology.

Hippocrates carried our thinking a quantum step further when he stated: "When a large number of people all develop the same disease at the same time, the cause must be ascribed to something common to all." He then looked, not to the wrath of gods, but to jointly experienced weather conditions. Four centuries later Galen modified this doctrine of concurrent disease to declare that the disease might also be transmitted directly from one person to the next—the novel concept of contagion. There is a subtle distinction between a common causative ecologic agent and a common contagion; but in making this distinction, Galen opened the door to a rational science of epidemiology and the germ theory of communicable disease.

One of Hippocrates' aphorisms is: "Life is short, the art long, timing is exact, experience treacherous, judgment difficult." He might have added that the road to medical insight is tortuously long.

– STANLEY M. ARONSON, MD

## Disclosure of Financial Interests

Stanley M. Aronson, MD, has no financial interests to disclose.

# Collaboration In Pursuit of the Epidemiology of Health Service Use

Vincent Mor, PhD

**This issue of *Medicine & Health/Rhode Island*** provides an example of the power of collaboration between **Blue Cross and Blue Shield Rhode Island (BCBSRI)** and researchers at the Warren Alpert School of Medicine at Brown University. The papers document the broad range of health care issues tackled as part of this collaboration and the introduction by Drs. Burrill and Miller describes the beginning of this collaboration.

Such collaborations can be effective “win-win” propositions when the researchers truly appreciate the applied nature of the operational and program design issues facing managed care insurers and the providers that they reimburse. At the same time, academic research groups must be able to publish and disseminate the findings of their investigations regardless of the results. In this instance, BCBSRI was interested in the

findings of the studies and felt that they would be helpful to the RI community of providers and the insured population beyond those covered by BCBSRI alone.

Lessons learned from these collaborations were translated into specific recommendations for BCBSRI ranging from communicating with physicians about when they might consider referring their patients to hospice care to suggesting improvements in the disease management program for patients taking anti-hypertensive drugs. In each of the papers in this issue, the investigators not only relate the results observed in Rhode Island to the specific program management changes that are suggested, but also place the results in the context of the broader literature on the issue at hand. In this way, these research efforts contribute very practically to the management needs of BCBSRI as well as to the growing literature on these topics.

This experience places BCBSRI and Brown University in the ranks of other University-insurer collaborations extending back to the original collaborations between Kaiser Permanente and the Oregon Health & Sciences University or between the University of Minnesota and UnitedHealth. Significant advances in the design of disease management programs, pharmacy benefit design and techniques for providing feed-back to physicians have emerged from these types of collaborations. At a time when the inter-relationship between the quality of medical care that is delivered and the structure of the insurance product that influences both provider and consumer behavior is increasingly complicated, it is all the more important that collaborations such as this are sustained. Over the next decade the challenges we face in expanding insurance coverage without overwhelming our ability to pay for it requires that we learn from others’ experience as well as our own. Collaborations between managed care, delivery systems and academic partners are essential to extracting knowledge from these lessons. Hopefully, the papers in this issue are the beginning of a long and fruitful collaboration.

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# Using Data To Inform Future Direction and Meet Community Needs: Through a Unique Research Partnership

James Burrill, MD, CMD, FACP, and Susan C. Miller, PhD

**This issue of *Medicine & Health/Rhode Island*** highlights the outcomes of a partnership between Blue Cross & Blue Shield of Rhode Island (BCBSRI) and the Center for Gerontology and Health Care Research (CGHCR) at the Warren Alpert Medical School of Brown University. Initially, this partnership grew out of BCBSRI's desire to collaborate with Brown's CGHCR to improve the quality of end-of-life care delivered to members. After several meetings and review of a written study proposal, BCBSRI invested in a collaborative study with Brown University. In considering whether to collaborate on and fund the **quality improvement (QI)** physician intervention study, BCBSRI recognized the value of this partnership to improving the quality of care for its members, and it understood the validity that Brown's involvement brought to the study. Since end-of-life care is a sensitive topic, especially for an insurer to address, the partnership with the CGHCR at Brown would help to ensure an objective, well-designed study as well as greater community acceptance of results. Soon after the study's initiation, leaders at both organizations explored the possibility of formalizing the research partnership.

A research partnership with Brown University's CGHCR made sense. BCBSRI wanted to conduct analyses of its databases to improve the care provided to members, but lacked the expertise. On the other hand, the CGHCR faculty are experts in analytic methods, measurement, risk adjustment and healthcare trends, but in lieu of primary data collection, have limited access to healthcare claims data beyond those maintained by Medicare. BCBSRI staff and CGHCR faculty recognized a potential for synergy. Brown faculty could help BCBSRI gain a better understanding of national and regional healthcare trends and of "best practices" in relation to BCBSRI members' healthcare experiences, while at the

same time conducting research aligned with the Center's mission to advance the healthcare of older adults and the field of health services research.

The partnership has resulted in several studies focusing on healthcare utilization and outcome measures. These studies identify both the "best practices" of Rhode Island physicians and the practices needing further improvement. Brown faculty have disseminated findings at national meetings and submitted proposals for external funding to support further research. To date, two studies have been externally funded. The Agency for Health Care Research and Quality (Principal Investigator, Sylvia Kuo, PhD) funded an ongoing study on lower back pain; the VistaCare Foundation funded research to augment the understanding of the findings from the QI physician intervention study (see article by Dr. Shield in this issue).

Insurers do not enter into partnerships lightly; and after much planning, a formal contract outlining the responsibilities of both parties was signed. An Advisory Panel of CGHCR and BCBSRI leaders oversaw the selection of study topics and provided expert advice on methodological and substantive issues. As principal investigator, Dr. Miller provided leadership and oversight; and, as the health services research analyst, Dr. Kuo performed, interpreted and disseminated analyses (with input from Drs. Burrill and Miller and the Advisory Panel). Data security and confidentiality were assured by implementing numerous system protocols, and by obtaining appropriate Brown Institutional Review Board review and approval.

The unanticipated benefits of the Brown-BCBSRI partnership are numerous. For example, through the QI physician intervention study, BCBSRI identified an unmet need for members dealing with serious and potentially life limiting illness; specifically, the gap in care between services offered by home health

care and hospice providers. Hence, BCBSRI designed and implemented a palliative care program for its Medicare members to bridge this gap; this ongoing program is currently under study. Also, as discussed by Dr. Kuo, study results have assisted BCBSRI in the design of its case and disease management programs, including the information system supporting these programs.

We hope you enjoy this issue of *Medicine & Health/Rhode Island*. The CGHCR and BCBSRI collaborators encourage your suggestions.

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## Disclosure of Financial Interests

The authors have no financial interests to disclose.

# Sustainability and Impact of Warfarin Compliance for Atrial Fibrillation

Sylvia Kuo, PhD, and James Burrill, MD, CMD, FACP

An estimated 2.2 million people in the US have an irregularity of the heartbeat known as **atrial fibrillation (AF)**.<sup>1,2</sup> This condition can cause blood clots to form in the atria which can then break free and travel the bloodstream, which can lead to stroke. AF is associated with 16% of all ischemic strokes, or an overall risk of stroke of 4 percent a year.<sup>3</sup> The use of anticoagulants such as warfarin has been associated with a 30-40% reduction in the stroke rate.

The goal of warfarin therapy is to keep **International Normalized Ratio (INR)** levels in the range of 2.0 – 2.6 to reduce stroke risk while minimizing bleeding risk. Because INR levels are not under complete control of physicians or patients and because the aim was to understand how better control of AF could be achieved, this study focused on understanding the factors associated with positive patient behavior in relation to warfarin compliance as well as how compliance is associated with subsequent hospitalization for stroke. Thus, this study supports BCBSRI's desires to improve the quality of care to its members with chronic conditions by targeting areas of potential intervention. For members with AF who initiated warfarin therapy, we assessed: 1) which types of patients were more likely to be compliant with their warfarin regimen; and 2) whether compliance is associated with lower stroke risk than noncompliance.

## METHODS

We used BCBSRI administrative claims for 2004-2005 for our encounter and prescription drug data. Our study cohort was comprised of BCBSRI members living in Rhode Island with AF and taking warfarin in 2004. Included members must have had continuous BCBSRI coverage that included prescription drug benefits during the study period. Members were defined as having AF if they had two physician encounters associated with a diagnosis of atrial fibrillation (ICD-9 code 427.31). We excluded those with a known ca-

rotid endarterectomy in 2004 or the prior year because carotid disease is itself a risk factor for stroke, independent of warfarin use; in practice, the number eliminated was small (N=18). This resulted in a study population of 1,722 BCBSRI members.

We defined a person as being "compliant" if s/he had a warfarin prescription that "covered" that day. Generally, prescriptions lasted 30 days (71%), although a significant proportion were for 15 days (7%) and for 90 days (3%). Thus, beginning with the first warfarin prescription in 2004, for each person, we counted out the days supplied per prescription from the dispensing date, and added on days supplied from any subsequent prescriptions.

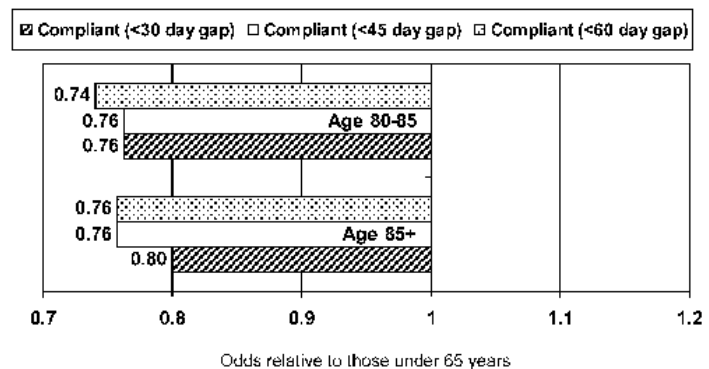
Conceptually, each person in our study began by being compliant with the warfarin regimen, but could switch "treatment groups" into being noncompliant once s/he experienced a gap in therapy (e.g. there was a day not "covered" by the medication). For a typical medication that should be taken continuously, we would assume that the regimen consists of one pill taken each day, so more than a few days gap in medication coverage would represent noncompliance. For warfarin, however, we allowed for gaps of 30, 45 and 60 days because its regimen may be complex (e.g.

2.5 mg and 5 mg on alternate days) as well as require adjustments over time. Thus, persons with AF taking warfarin may have many overlapping prescriptions of different strengths, and could split pills in an existing prescription to adjust dosage appropriately. Consequently, what would appear as a 30 day supply in our data, if split, could actually be used for 60 days, so a person might well be compliant for 30 more days than the data would suggest.

Hospitalization for stroke or **transient ischemic attack (TIA)** was defined as having an inpatient hospital claim with a primary diagnosis of stroke/TIA (e.g. ICD-9 codes 433, 434, 435, and 436), which has been validated in prior literature.<sup>4</sup> We counted a stroke hospitalization if it occurred after warfarin therapy was initiated in 2004 and before July 1, 2005.

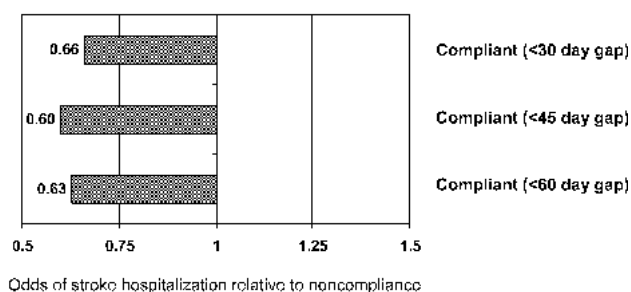
Other factors we included in the analyses were: age (< 65 years; 65 – 70; 70 – 75; 75 – 80; 80 – 85; and > 85 years); gender; and risk factors such as prior stroke/TIA, diabetes, hypertension, coronary artery disease, and congestive heart failure. We excluded insurance coverage type from multivariate analyses because we found that commercial versus Medicare coverage was almost perfectly correlated with age.

Figure 1. Odds of Remaining Compliant by Age Group (Compared to Age Under 65 Years)



Note: All of these results are statistically significant at the 95% level.

Figure 2. Odds of Stroke Hospitalization by Compliance (Compared to Noncompliance)



Note: None of these results are statistically significant at the 95% level.

## ANALYSES

The multivariate analysis used a Cox proportional hazard model which has a number of desirable characteristics. First, like other regression models, it estimates the impact of the variable of interest (e.g. warfarin compliance) on the outcome (e.g. stroke) while taking into account the role of other factors (e.g. age, gender, and risk factors). Second, the Cox model also takes into account the role of time, making it possible for us to examine whether compliance (versus noncompliance) is associated with longer periods of time before hospitalization for stroke.

We performed two sets of analyses. First, we looked at which types of patients (by age, gender, and risk factor) were more likely to remain compliant with their warfarin regimen. Second, we analyzed whether compliance is associated with a lower risk of hospitalization for stroke, taking into account the contribution of individual factors (age, gender, and risk factors).

## RESULT

BCBSRI members who were over 80 years old were about 25% less likely (or 75% as likely) to be compliant with their warfarin therapy as those under 65 years of age. (Figure 1) This finding is statistically significant at the 95% level and of similar magnitude across all three definitions of compliance (ranging from 74 to 80%).

In addition, we observed some negative associations between the presence of comorbidities and the likelihood of compliance. For two definitions of compliance (30 day and 45 day allowable gaps), patients who had congestive heart failure

were 20 percent less likely to be compliant than those who did not ( $p < .05$ ). Further (using the 60 day allowable gap definition), those with prior ischemic stroke were only about half as likely to be compliant as those without this condition ( $p < .05$ ; data not shown).

The risk of being hospitalized for an ischemic stroke is about 60% of the risk when atrial fibrillation patients were compliant with their warfarin therapy versus noncompliant (66, 60, and 63% for 30, 45 and 60 day compliance definitions, respectively). (Figure 2) Equivalently, the *risk reduction* from being compliant among those who initiated warfarin therapy was about 40%. Although the magnitudes are consistent across all definitions of compliance, none were statistically significant. Also, we found the relative risk of being hospitalized for ischemic stroke is about twice as high for females than for comparable males (Figure 3),

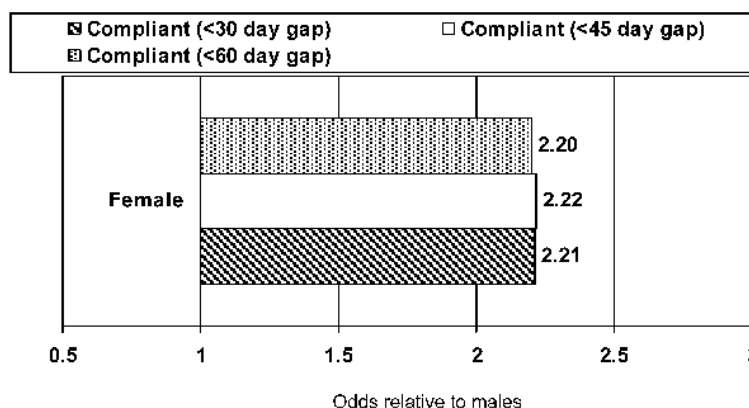
and over 11 times greater for those who had versus did not have an ischemic stroke in the prior year (not shown) (all  $p < .05$ ).

## DISCUSSION

The results suggest that members in the oldest age groups are the least compliant with their warfarin therapy. This finding has wide implications because about one-third of the study population was aged 80 or older and the risk of stroke increases with age. However, the findings suggest that local providers are prescribing warfarin to older patients despite their lower compliance rates, which is encouraging because providers in the past were reluctant to prescribe because of perceived contraindications.<sup>5</sup>

The results for compliance and stroke risk were not statistically significant. This may have been due to the relatively small sample size of BCBSRI members with AF who were also taking warfarin. Nonetheless, we found that patients with AF who stay compliant to warfarin therapy appear to experience an approximate 40% reduction in the risk of being hospitalized for an ischemic stroke compared to those who have intermittent compliance. Although this study looked only among patients who initiated warfarin, these findings appear consistent with the literature. Previous studies have found warfarin therapy to be associated with a 66% reduction in the risk of stroke compared to control groups (with no warfarin use) across five different randomized trials.<sup>3</sup> Our results of a 40% risk reduction, taken with the prior literature,

Figure 3. Odds of Stroke Hospitalization by Gender



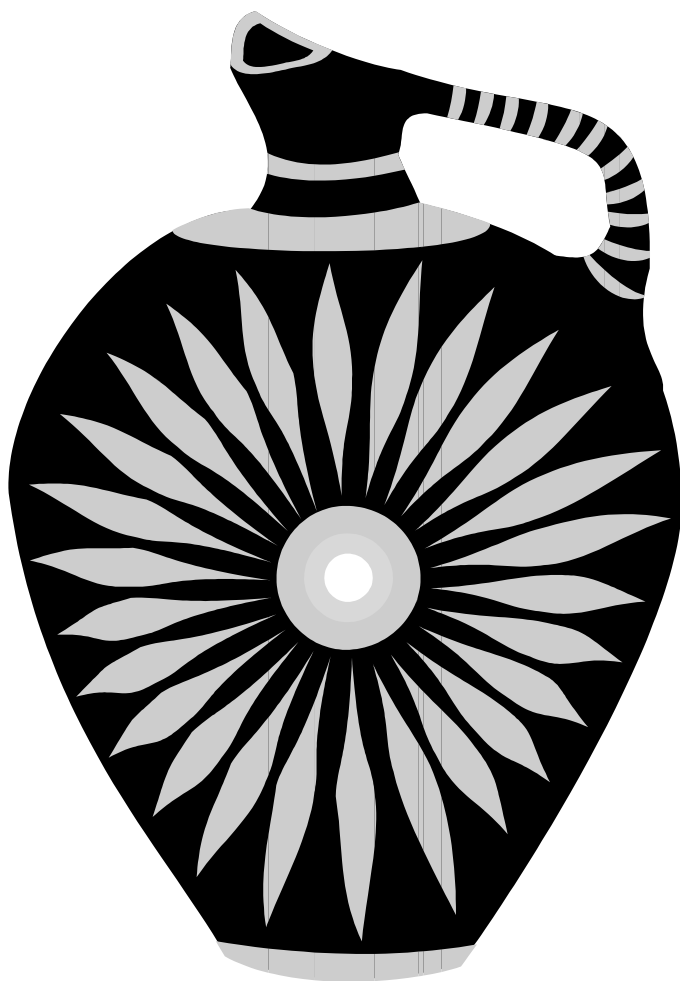
Note: All of these results are statistically significant at the 95% level.

suggest that some use of warfarin (even if not continuously compliant) may be better than no use among patients for whom warfarin is not contraindicated. However, because our results were not statistically significant, they should be confirmed by the addition of further data over time or by increasing the sample size.

Studying medication compliance with warfarin poses many advantages over other medications. Its utilization is well captured in claims data because it is not sampled at physician offices and is only used for a handful of indications. On the other hand, warfarin has a complicated dosing regimen which may not be accurately reflected in directly using days supplied for a prescription.

Given these results, we made the following suggestions to BCBSRI as actionable items:

- 1) Include monitoring of warfarin compliance (i.e., adequate physician visits and refills) within the congestive heart failure (CHF) disease management programs, since members with CHF who have comorbid atrial fibrillation appear to be 20-30% less likely to be compliant than those without CHF.
- 2) To improve BCBSRI's ability to monitor compliance, include pharmacy prescription and refill data in the redesigned disease and case management database, and put procedures in place so inappropriate delays in refills will be detected.
- 3) Encourage local physicians to continue prescribing warfarin for those who are over 80, but also alert physicians that compliance with warfarin therapy for this age group is 20% less than for those under age 65.



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# Differences In Antihypertensive Compliance by BCBSRI Disease and Case Management Intervention Group

Sylvia Kuo, PhD, and James Burrill, MD, CMD, FACP

**Hypertension is the most common primary** diagnosis in the United States and contributes to 40% of cases of **acute myocardial infarction (AMI)**.<sup>1</sup> Despite the availability of effective, inexpensive pharmacotherapy and public recognition of the importance of good blood pressure control, hypertension has been on the rise.<sup>2</sup> Even though one of the Healthy People 2010 goals is for 50% of those with hypertension to attain good control, recent estimates place this number at only 30%.<sup>3</sup> Many believe poor medication compliance is a major contributing factor to poor blood pressure control.

In 2005, **Blue Cross & Blue Shield of Rhode Island (BCBSRI)** had a mail-based hypertension disease management program. Because hypertension is often comorbid with diabetes and cardiac disease, BCBSRI also had hypertension modules within other disease management programs. These hypertension-related programs included three mail-based disease management programs for congestive heart failure, high cholesterol, and diabetes. Furthermore, there were more intensive telephone-based disease management programs for congestive heart failure and coronary artery disease. Finally, for members with complex needs, BCBSRI offered case management services that involved assigning a case manager to work with the member to set health improvement goals, develop a patient-specific care management plan and coordinate resources and benefits to meet those goals. We describe how members enrolled in these programs in the methods section.

The purpose of this study was to examine factors related to antihypertensive compliance among BCBSRI members with hypertension, including whether compliance varied by patient participation in one or more of the BCBSRI disease and case management programs related to hypertension. In particular, did members who enrolled in the hypertension disease management program have better compliance with their antihypertensive regimens than those who did not?

Did those who enrolled in other types of disease management programs show better antihypertensive compliance, which would suggest that learning about the importance of medication compliance about different drugs carried over to use of antihypertensives? Finally, did a “dose-response” relationship exist, that is, was compliance better when the disease management program was more “intensive?”

## METHODS

We used BCBSRI administrative claims for 2004-2006 for our encounter and prescription data. Our study cohort was comprised of BCBSRI members residing in Rhode Island with hypertension from July 1, 2004, to June 30, 2005, who had continuous BCBSRI coverage, including prescription drug benefits, in the period of interest. Members were defined as having hypertension according to the national Health Plan Employer Data and Information Set (HEDIS) standard of at least one physician encounter (defined as CPT codes 99201-99205, 99211-99215, and 99241-99245) associated with a diagnosis of hypertension (ICD-9 code 401). In our analysis, members meeting these criteria had either commercial coverage (e.g. HealthMate or CHIP) or Medicare Advantage through BCBSRI; no person had coverage through RItCare.

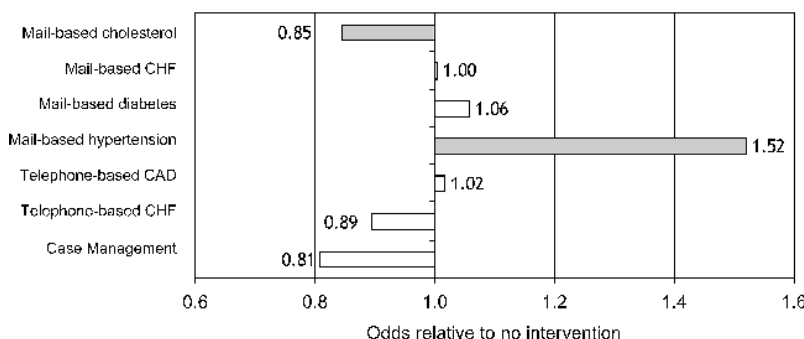
Because we sought to understand the

compliance to antihypertensive regimens among those with hypertension, we restricted our cohort to those who also had an antihypertensive prescription in the first half of 2005. Antihypertensives included **angiotensin converting enzyme (ACE)** inhibitors, beta blockers, calcium channel blockers, diuretics, angiotensin II reception blockers (ARBs), as well as less commonly used agents (alpha blockers, vasodilators, adrenolytics) and any combination drugs. The vast majority of antihypertensive prescriptions (86.02%) were in the first four categories. Based on these criteria, the final study population was 25,513 BCBSRI members.

## Outcome variable

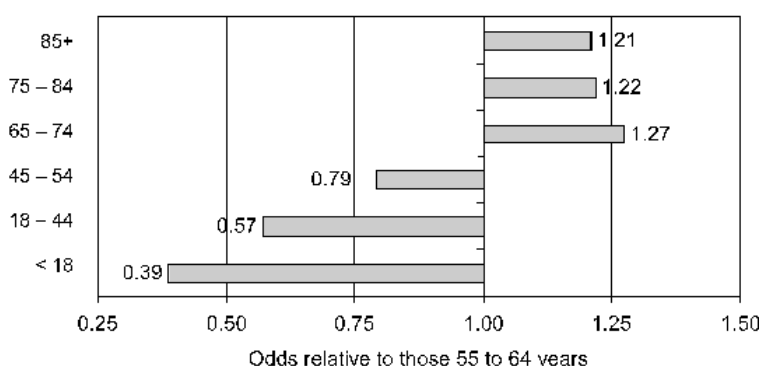
We defined a person as being compliant with their antihypertensive regimen by whether the person had filled an antihypertensive prescription to “cover” the days in the follow-up period. Thus, beginning with the first antihypertensive prescription in 2005, we counted out the days supplied per prescription from the dispensing date, and added on days supplied from any subsequent prescriptions. Generally, members had 30 day prescriptions. Because hypertension is a chronic condition, we presumed that any person given an antihypertensive must be on an antihypertensive regimen continuously, although the actual agents could change over time. Consequently, our outcome

**Figure 1.** Odds of Remaining Compliant to Antihypertensives by BCBSRI Disease and Case Management Programs (Compared to No Intervention)



Note: Results in solid bars (i.e. cholesterol and hypertension) are statistically significant at the 95% level; other results are not statistically significant.

**Figure 2.** Odds of Remaining Compliant to Antihypertensives by Age Categories (Compared to Age 55 to 64 Years).



Note: All results are statistically significant at the 99% level

variable of medication compliance represented a count of the number of days that the beneficiary remained compliant from the start of the first antihypertensive prescription received in 2005 and throughout the next 6 months (barring gaps of 7 days).

#### Independent variables

For each beneficiary, we noted whether he/she participated in one or more of the seven BCBSRI disease or case management programs related to hypertension at any time during 2005.

BCBSRI identifies members eligible for these programs through a number of ways including its claims analysis of specific diagnoses, referral from a member's physician and by member inquiries to its customer service department. For case management, BCBSRI screens for potential participants using hospital discharge planning nurses and predictive models that identify future high-cost health care members. There are also referrals from disease management to case management (and vice versa). In practice, case management participants are members with complex needs such as having multiple chronic conditions. Once identified, members are contacted either through mail or phone for participation, and must actively choose to enroll into these programs. Thus, in our study, those who participated were likely to be more motivated to self-care for their conditions and more likely to be compliant with any medication regimen relative to those who did not enroll in any program, regardless of program content.

Other variables included age (< 18 years, 18-44, 45-54, 55-64, 65-74, 75-84, and 85 or older as of 12/31/04), gender, and insurance type (Healthmate, CHIP commercial, and Medicare Advantage). We also included a variable to reflect whether a person had a "compelling indicator" (i.e., risk factor) as defined by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)<sup>4</sup> such as heart failure, myocardial infarction, coronary artery disease, diabetes, and stroke/TIA.

#### Analyses

Our multivariate analysis used a Cox proportional hazard model where the outcome is the probability that an individual ceases to become compliant with their antihypertensive regimen. This model takes time into account, as medication compliance varies at different points in time. Furthermore, it can take into account the con-

tribution of multiple factors at once, such as the effect of being on Medicare Advantage holding the effect of other factors constant. The key variables of interest in the model are those indicating participation in one of seven various BCBSRI DM/CM programs. Other variables included in the model were age, gender, insurance coverage type, and compelling indications (or risk factors) associated with hypertension.

## RESULTS

The odds of remaining compliant were 52% higher for those enrolled in the hypertension program, 15% lower for those participating in the high cholesterol program and about the same for the more intensive programs (i.e. telephone disease-management and case management). (Figure 1)

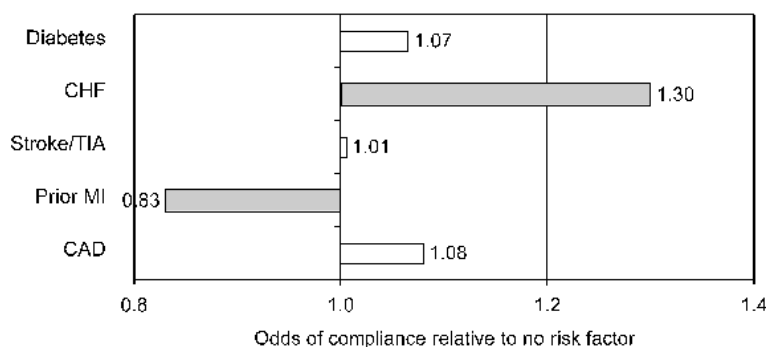
The odds of remaining continuously compliant with antihypertensive medication at any point in time were more than 20% higher for those over 65 compared to those age 55 to 64. (Figure 2). Additionally, the odds of compliance were about 10% lower for those with Medicare Advantage and CHIP commercial coverage compared with Healthmate coverage (data not shown). Compared to those with no risk factors, the odds of staying compliant were 30% higher for patients with CHF and 17% lower for those with prior MI. (Figure 3).

## DISCUSSION

### Summary of results

Our findings suggest that participation in the hypertension disease management program was associated with significantly higher odds of remaining com-

**Figure 3.** Odds of Remaining Compliant to Antihypertensives by Risk Factor (Compared to No Risk Factor)



Note: Results in solid bars (i.e. CHF and prior MI) are statistically significant at the 95% level; other results are not statistically significant.

**Table 4. Recommendations for BCBSRI and BCBSRI Responses**

**SUGGESTED ACTIONS**

**ACTIONS BY BCBSRI**

- 1) For "intensive" interventions (e.g. telephone-based disease management and case management)
  - Include pharmacy and refill data into the redesigned database
  - Put procedures into place to determine when a delay in refills has gone too long and procedures to follow up with patient
- 2) For the new BCBSRI hypertension program
  - Include the essential components of the *In Charge!* program design (such as blood pressure tracker and lifestyle modification mailings) to fully take advantage of study results
  - Use other methods to inform patients about the program such as physicians distributing brochures to their patients with hypertension
- 3) To increase take up of BCBSRI interventions:
  - Develop a one page brochure or flier on the hypertension program which includes a contact number and/or website and that can be distributed by physicians to their patients with hypertension.
  - Set up the [www.BCBSRI.org](http://www.BCBSRI.org) website so that disease and case management services are more prominently highlighted and cross-linked in several places (to assure greater subscriber awareness and to ease accessibility). Also, allow for online enrollment.
- 4) To analyze the CAD disease management program as results suggest patients with cardiovascular disease may have higher risk of noncompliance for antihypertensives (which overlap with first-line CAD drugs, such as beta blockers and calcium channel blockers).
  - Compare CAD program design with *In Charge!* design: are there elements in the *In Charge!* program that are not included in the CAD program?
- 5) Perform a follow up study to evaluate current efforts (e.g. BlueCareOne system improvements and new hypertension program), as this study provides baseline information on compliance.
- 6) Share study results with primary care physicians through mailing highlighting that:
  - a) To encourage hypertensive patients to remain compliant with their antihypertensive regimen, for example, by providing information on BCBSRI's hypertension program (through the brochure).
  - b) To be alert to the fact that younger patients (under 65) with hypertension are at least 20% less likely to remain compliant.
  - c) Although those who are over 65 are more likely to be compliant, to be sensitive to the fact that some may be less financially able to afford to fill all of their medications, and reduce use of antihypertensives over other medications.
  - d) To target patients with cardiovascular disease more aggressively with medication compliance since they may have a higher risk of noncompliance.

- New disease management database system will interface with pharmacy data.
- Consider feasibility of putting procedures in place for re-fill delay and follow up
- Agreed. Head of DM will follow up and make sure that new program incorporates components of the *In Charge!* program
- BCBSRI has found that giving brochures to physicians to distribute from offices is ineffective. Instead, it mails information about DM programs to physicians themselves.
- BCBSRI physician mailing about the study results incorporated a one-page sheet about BCBSRI disease and case management programs with contact information.
- Just about to roll out a website redesign which highlights the DM programs under "Your Health" on the first page and "Find Out About Healthy Lifestyle Programs". These webpages are better organized and not buried.
- Did this relatively quickly and also used as opportunity to remind physicians that DM programs exist (results suggest that they are good) and they can refer patients.

pliant; however, the findings for participation in other programs were mixed and of smaller magnitude.

In particular, patients who participated in BCBSRI's hypertension disease management program (which included monthly informational mailings, a blood pressure tracker, and incentives such as free pedometers to members tracking their blood pressures) were over 50% more likely to remain compliant than those who participated in another or no program. On the other hand, compliance was not substantially better for the more intensive interventions, particularly case management. However, these results do not necessarily mean that the interventions are not effective since a major limitation of this research is that we cannot adequately control for risk selection. Thus, members enrolled in intensive case management may have more complicated illnesses and/or a history of poorer medication compliance.

The results that those with a prior MI are less likely to be compliant with antihypertensives than those without other risk factors is puzzling because many of the medications for treating AMI and hypertension are the same (e.g. ACE inhibitors and beta blockers). One possibility could be that these individuals were in worse health, juggling more medications, or had poor lifestyle choices and/or medication compliance that contributed to their infarction in the first place.

The results suggest that efforts to improve medication compliance may be most successful by using specific rather than general messages about the importance of compliance. Participation in programs other than the hypertension program did not appear to enhance antihypertensive compliance, despite education about the importance of compliance for different drugs. However, targeted information about the importance of antihypertensive compliance was associated with large effects on antihypertensive compliance.

The findings on age and insurance coverage suggest that patients who are over 65 are more likely to be compliant than younger patients. However, some (who are on Medicare Advantage) may choose to reduce use of antihypertensives, perhaps because they are less financially able to fill all of their medications. Further, patients with cardiovascular disease comorbid with their hypertension may need to be targeted more aggressively since they have a higher risk of noncompliance.

Table 4 shows our recommendations presented to BCBSRI, and BCBSRI's consequent actions. The timing of this study provided us with an opportunity to provide feedback to BCBSRI regarding the planned roll-out of a new hypertension disease management program as well as creation of a more sophisticated database to support its disease and case management programs—a database that would include not only case manager notes but claims and pharmacy information for enrollees. We suggested that the new program incorporate the essential elements of the previous hypertension program.

Given the major finding that antihypertensive compliance was higher among hypertension disease management participants than nonparticipants, we provided this information as well as information about BCBSRI disease and case management programs to primary care physicians in BCBSRI's network so they could understand how these BCBSRI programs could potentially complement their efforts to improve medication compliance. In summary, this research allowed us to provide general evidence-based feedback to primary care physicians in BCBSRI's network so as to assist in improving quality of care, and it provided BCBSRI with information to use in its redesign of its disease and case management programs.

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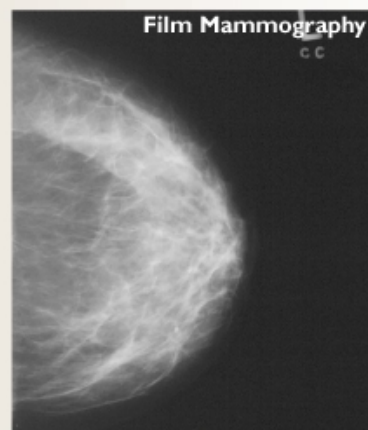
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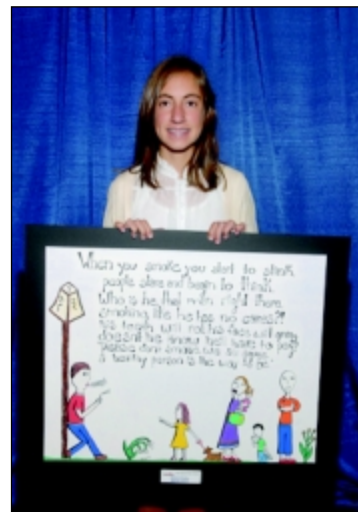
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## Students Across the State Participate in Tar Wars Rhode Island Tobacco-Free Education Program

ON MAY 12, 2007, Helena Castro, from The Wheeler School in Providence, won the **14<sup>th</sup> Annual Statewide Tar Wars Rhode Island** poster contest held at the Thundermist Heath Center in Woonsocket. Helena was among 35 fifth-grade students from elementary schools across the state to compete in this annual event sponsored by the Rhode Island Medical Society, the Rhode Island Academy of Family Physicians, the Rhode Island Chapter of the American Academy of Pediatrics, and the American Legacy Foundation. Tar Wars®, a tobacco-free education program that discourages tobacco use among the country's youth, is coordinated nationally by the American Academy of Family Physicians.

As the first-place winner of the 2007 Tar Wars Rhode Island poster contest, Helena and her family traveled to Washington, DC, in July at RIMS Foundation expense to take part in the National Tar Wars poster contest event. The national competition is a two-day event. Students are provided

an opportunity to voice their opinions about tobacco use to their congressional leaders, participate in tobacco-free workshops, and meet other state winners. Among the 41 posters submitted for the 2007 competition, Helena was awarded 10<sup>th</sup> place Honorable Mention. During this year's award ceremonies, the Rhode Island Medical Society Foundation was awarded the American Academy of Family Physicians' nationally recognized *Tar Wars Star Award* in recognition of its significant contributions to the Tar Wars mission through long-term efforts and unique accomplishments.

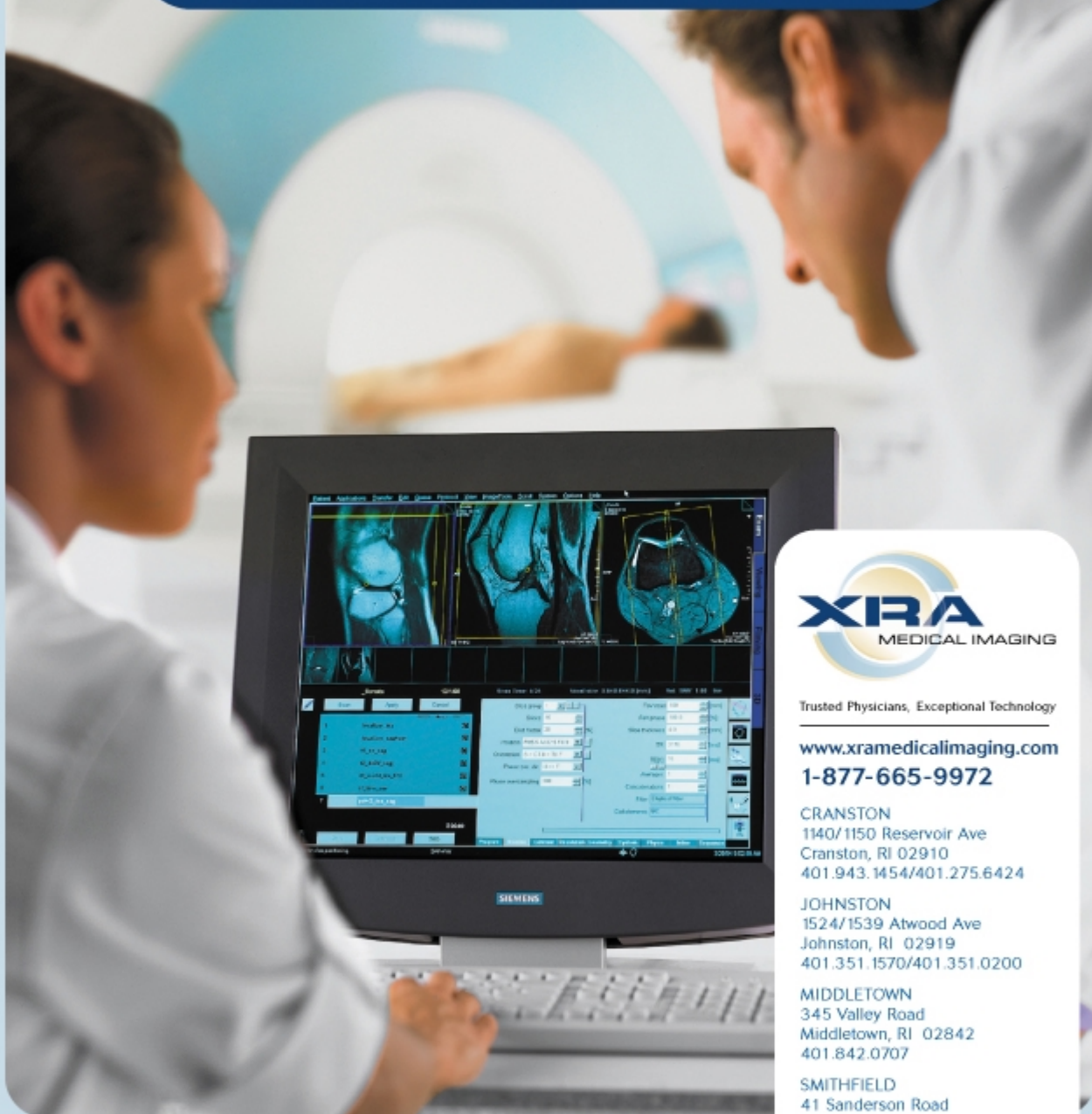


Back row celebrity judges (from left to right): Margaret Sun, MD, Nicholas Tsiongas, MD, Andrew Snyder, MD, Barbara Morse Silva, and David Bourassa, MD

Front row contest winners (left to right): Nancy Hernandez (third place) from Ella Risk Elementary School in Central Falls; Zooney Arnold-Conner (second-place) from International Charter School in Pawtucket; and Helena Castro (first place) from The Wheeler School in Providence.

Tar Wars Rhode Island has been in existence for 14 years. Each year, member-physicians from the Rhode Island Medical Society visit classrooms throughout the state and talk with students about the importance of being tobacco-free and making positive decisions about their health and well-being. As always, RIMS is looking for physician volunteers. If you are interested in becoming a Tar Wars presenter, please contact Catherine Norton at 528-3286 or [cnorton@rimed.org](mailto:cnorton@rimed.org).

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# Improving Access To Hospice: The Physician Feedback and Reminders To Improve Access to Hospice (PFRIAH) Study

Edward W Martin, MD, MPH, Susan C. Miller, PhD, Lisa C. Welch, PhD, and James Burrill, MD, CMD, FACP

Research has shown that hospice care improves the quality of life for terminally ill patients, but many patients are referred late, or not referred at all. Rhode Island has the shortest length of stay in hospice in the country. In 2004 researchers from Brown University, one of whom was a longtime utilization review consultant with Blue Cross Blue Shield of Rhode Island (BCBSRI), began collaboration on a research study with BCBSRI. The purpose of this study was to determine the most effective way to assist physicians in referring terminally ill patients to hospice in a timely way. The study design drew upon the author's familiarity with BCBSRI's efforts to improve patient care by modifying physician behavior. It refocused these efforts on improving access to hospice by adding strategies for changes as documented in the scientific literature. This paper will briefly describe hospice care, the role of the physician in referring to hospice, the literature on changing physician behavior, and the intervention strategies that were tested in the Brown University/BCBSRI study, **Physician Feedback and Reminders to Improve Access to Hospice (PFRIAH)**.

## HOSPICE CARE: MEETING THE NEEDS OF TERMINALLY ILL PATIENTS

Physicians and dying patients often have differing views of needs at the end of life. Although relief of pain is important to patients, patients want to be prepared to die, by knowing what to expect and having funeral arrangements in place.<sup>1</sup> Many terminally ill patients have spiritual needs; e.g., to reach peace with God and to pray.<sup>1</sup> Additionally, patients seek a sense of completion by saying goodbye, and tending to unfinished business.<sup>1</sup> Physicians are unlikely to appreciate the importance of these needs,<sup>1</sup> and tend to focus solely on the physical symptoms.

Hospice, provided by an interdisciplinary team, focuses on the terminally ill patient as well as his/her family (significant others). It includes a comprehensive mix of services designed to address the needs of the patient/family, be-

yond the physical needs;<sup>3, 2</sup> namely, pain and symptom management, social and spiritual care, emotional and psychological support and bereavement counseling. Care can be provided in the home, hospital, nursing home, an inpatient hospice unit, or in other residential care settings.

## THE ROLE OF PHYSICIANS IN HOSPICE REFERRAL

Bereaved family members who believe their loved one was referred to hospice "too late" report a higher rate of unmet needs and lower satisfaction with care than do family members not believing referral was "too late."<sup>4</sup> These same family members also note that physicians were an important barrier to earlier hospice referral.<sup>4</sup> McGorty and Bornstein identified a number of physician factors related to timely hospice referral including lack of knowledge about hospice, negative perceptions of hospice, discomfort communicating poor prognoses, fear of losing control of the patient, and delaying the discussion of hospice until the patient was actively dying.<sup>5</sup> Furthermore, physicians who are more accurate in estimating prognosis refer their patients earlier than physicians who are less accurate.<sup>6</sup> Cancer patients are frequently given chemotherapy in the final three months of life even when the cancer is considered to be unresponsive to chemotherapy.<sup>7</sup> This may explain why general internists and geriatricians are more likely to refer to hospice earlier than oncologists.<sup>6</sup>

Although physicians support increased utilization and earlier referral to hospice,<sup>8</sup> and agree that quality of care at the end of life depends on patients having adequate time in hospice care,<sup>9</sup> many are unaware that their practice patterns contribute to patient's delay in receiving hospice services.<sup>9</sup> Thus, a promising strategy for improving timely access to hospice would be to make physicians more aware of their referral practice patterns while also providing them with information relating to timely hospice referral.

## STRATEGIES TO CHANGE PHYSICIAN BEHAVIOR

To date only a few studies have focused on methods to change physician behavior in the area of end-of-life care. One study showed that a single session of didactic training and role playing did not increase the number of advance directive discussions documented by a group of medicine residents.<sup>10</sup> Another study of nursing home medical directors found a half day interactive educational program that included audit with feedback as well as didactic training and role playing did improve outcomes such as control of pain, dyspnea and other symptoms.<sup>11</sup> This intervention also helped physicians to identify patients who were terminally ill and to document their advanced directives.

The literature on changing physician behavior in other areas of medicine is much more extensive. Didactic Continuing Medical Education is commonly used to modify physician behavior; but this passive approach including lectures and presentations has proven to be of limited success in changing physician behavior.<sup>12, 13</sup> On the other hand, research has shown that interactive sessions that encourage physician activity and provide the opportunity to practice skills (such as role playing, discussion groups, hands-on training, or problem or case solving), when provided alone or in combination with didactic sessions, are more effective in changing physician behavior than didactic sessions alone.<sup>13</sup>

Another method, audit with feedback, combined with interactive educational sessions, has been shown to influence physician behavior, but requires more resources than interactive education alone.<sup>15</sup> In this method, physician performance is audited and the performance data are given to the physician. For example, a physician's patients might be evaluated to determine how many of the patients eligible for the flu shot received one. This information would be communicated to the physician. The effect of audit with feedback appears to be

greatest for physicians who are the worst performers and thus have the greatest room for improvement.<sup>14</sup>

Prompting [the use of reminders that certain care or treatment is recommended at a particular point in time] has been evaluated. For example, a physician might receive a reminder that a patient is due for her mammogram. Prompting has improved preventive care practices; e.g., providing immunizations, performing pap smears and obtaining mammograms.<sup>17</sup> In addition to prompting, computerized advice has been shown to influence and improve physician prescribing behavior.<sup>16</sup>

A systematic review of literature concludes that multi-faceted interventions are the most effective at changing physician behavior.<sup>15</sup> Those interventions typically target the multiple barriers to improving care.<sup>18</sup> The challenge for an organization is to select interventions that include components to address barriers that appear to be preventing optimal care, and to do this in a cost-effective way.

### **THE NEED AND OPPORTUNITY FOR CHANGE IN RHODE ISLAND**

The Last Acts study found Rhode Island to have the shortest median length of stay in the nation for hospice patients, 13.7 days.<sup>19</sup> Half of the patients admitted to hospice in Rhode Island die within 2 weeks of admission.

Managed care organizations are required to have quality improvement programs. We believed that a quality improvement approach would improve end-of-life care, and that RI physicians would be open to efforts to assist them in discussing end-of-life care options with terminally ill patients and in referring them to hospice in a timelier manner. However, the state of the science offers limited guidance on the best method for changing physician behavior in relation to end-of-life care. It was unclear if methods effective in changing a simple behavior, like ordering immunizations, would be as effective in changing complex behaviors such as determining that a patient is terminally ill, eligible for hospice services and then referring that patient for hospice care. Therefore, in 2004 researchers from Brown University collaborated with BCBSRI on PRFIAH. The PRFIAH study sought to compare the effectiveness of four strategies designed to change physician

behavior in order to improve hospice access for terminally ill patients within a managed care organization.

### **STUDY DESIGN**

The Brown University Institutional Review Board approved the study, including the structures and processes in place to ensure patient and physician confidentiality. The randomized control trial began in July 2004 and was completed in May 2005. Data collection continued until December 2005. The study population consisted of physicians participating in BCBSRI's Blue Chip program (its Medicare Managed Care Plan; N=690). Using a BCBSRI listing of PCPs serving Blue Chip members as well as mortality data for 2002, we first ranked physicians by the number of their patients who died in 2002 (to ensure comparable number of deaths in each study group) and then assigned physicians to one of four study groups using a systematic random assignment method. Groups were: a low (control group), moderate, high or very high quality improvement intensity group.

The three intervention strategies were stepped in intensity, and ranked by their cost to the insurer. All groups, including the low intensity (control) group, received educational materials. The moderate intensity group also received audit feedback and success stories; the high intensity group received audit feedback, success stories, and reminders (or prompts) based on hospital chart audits; and the very high intensity group received all of this in addition to feedback from office chart audits.

All intervention components were procedures and techniques used throughout managed care. This was done to in-

sure that strategies that were found to be effective could be readily disseminated and implemented. The intervention components are briefly described below.

### **EDUCATIONAL MATERIALS**

Information about hospice, the guidelines for non-cancer eligibility, the determination of prognosis, suggestions for communicating prognosis to patients, and suggestions for discussing hospice and other end-of-life care options with patients were distributed to physicians in "pocket cards," in articles and in monthly mailings.

### **AUDIT FEEDBACK ON HOSPICE UTILIZATION, AND SUCCESS STORIES**

At quarterly intervals physicians received data on their patient population, specifically on hospice referrals and lengths of stay for their patients who died. They also received "success stories:" articles about four physician-colleagues skilled at discussing hospice and end-of life care issues with patients. The stories described these physicians' strategies for discussing hospice with patients, determining which patients were eligible for hospice, and working with the hospice team to improve care for their terminally ill patients.

### **HOSPITAL RECORD AUDIT FEEDBACK WITH REMINDERS**

Case managers employed by BCBSRI and using the Medicare guidelines for hospice eligibility, reviewed the records of hospitalized patients to determine hospice eligibility. This review was performed along with the routine utilization review. When patients were considered to be potentially eligible for hospice,

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this information was faxed to the discharge planner and primary care physician.

The case managers received four hours of training covering the history and scope of hospice care, the benefits to the patient and the family, and eligibility guidelines, including how to identify patients for hospice and what to review in the medical record to determine whether discussions of prognoses and hospice and other end-of-life care options have been documented. Case manager competency was assessed by examination after the training session. Case managers were required to score 80% or higher in order not to repeat the training.

### OFFICE RECORD AUDIT WITH FEEDBACK

Trained nurse auditors from Quality Partners of Rhode Island used a record abstraction tool (designed and tested for use in this study) to review the physician office records of patients who died during the study period but were not referred to hospice. The abstracting tool first led the auditor through a series of questions to determine if the patient had a condition in which death would have been expected (i.e., per hospice and other criteria). If the answer was "yes," the abstractor reviewed the record for documentation of discussion of prognosis and hospice and end-of-life care options. If the patient had been identified in the hospital audit as a potential candidate for hospice, this was noted as well. Records were also reviewed to determine if the patient completed an advance directive. Audit feedback was provided to physicians.

### STUDY PROGRESS

In-depth statistical analyses are being conducted to determine which parts of the intervention were most effective in modifying physician behavior. Specifically, we are evaluating changes in hospice referrals and length of stay for physicians in each of the intervention groups. Preliminary analyses suggest increases in hospice lengths of stay did not occur, but physicians in the "high" and "very high" intervention groups did appear to have greater increases in hospice referral rates (i.e., increases in rates considering pre/post intervention referrals) than did physician in the "low" (control) group. Additionally, it appears this referral rate in-

crease was greater for family practice compared to internal medicine physicians. After reviewing preliminary findings, Blue Cross Blue Shield of Rhode Island has integrated some of the study strategies into its ongoing programs.

In summary, the QI intervention appears to have had some positive effect on hospice referral rates but not on hospice lengths of stay. Physicians should be aware that inappropriate hospice referrals are uncommon and that "checks" are in place (a hospice nurse assessment and a medical director's certification) to ensure all persons admitted to hospice meet admission criteria. So, given these checks and the documented benefits of hospice care, we suggest the importance of a timely hospice referral should outweigh concerns about a potentially "too early" referral. Also, we remind physicians that persons with non-cancer life-limiting illnesses are appropriate for hospice referral, and guidelines for such referrals are available ([http://www.ahsmedicare.com/files/documents/053107\\_Hospice\\_Determining\\_Terminal\\_Status\\_DL25678.htm](http://www.ahsmedicare.com/files/documents/053107_Hospice_Determining_Terminal_Status_DL25678.htm)). Additionally, physician resources and patient/family brochures (in English and Spanish) on advance directives, caring for someone with a serious illness and palliative/hospice care are available at the "Caring Connection" website of the National Hospice and Palliative Care Organization (<http://www.caringinfo.org/>).

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# Physicians' Perspectives On End-of-Life Care: A Qualitative Inquiry

Renée Shield, PhD

**Enhancing our knowledge of how physicians** perceive and treat individuals at the end of their lives is a necessary step toward improving their care. Physicians and patients indicate reluctance to discuss terminal care and the utilization of hospice.<sup>1,2</sup> The realization that lengths of hospice stay in **Rhode Island (RI)** are the lowest in the nation<sup>3</sup> drove the collaboration between **Blue Cross Blue Shield of Rhode Island (BCBSRI)** and Brown University. As described in this issue of the *Journal*, the purpose of this productive partnership was to design a **quality improvement (QI)** intervention to improve the rates and timing of physician referral to hospice.

This research project complemented the larger QI study. As a cultural anthropologist based in the Gerontology Center of Brown University, I secured modest funding from the VistaCare Foundation to conduct a qualitative research inquiry designed to examine how **primary care physicians (PCPs)** view their terminally ill patients and make treatment decisions with them about their care. Such qualitative inquiry helps reveal attitudes, discover nuances in individual responses and elicit patterns that enhance our understanding of how physicians perceive and treat patients at the end of their lives.

## THE STUDY

This study was designed to explore through qualitative interviews the attitudes and experiences of PCPs' end-of-life care treatment of dying patients and the views of deceased patients' next-of-kin regarding their loved ones' care at the end of life. The goals were to identify factors that facilitate and/or impede physician and family hospice referral; achieve a greater understanding of the impact of physician referral-to-hospice behavior on dying patients and their families; and to assist in interpreting the results of the QI intervention study directed at physician hospice referral behavior.

## Methods

After IRB approval was obtained from Brown University, the study was conducted in two time periods to correspond to interventions in the QI study (see Martin et al article in this issue). The first phase of the qualitative study matched the timing of the QI study's initial interventions (pre-intervention period); the second phase matched the QI study's later interventions (post-intervention period). To launch the qualitative study, a letter was developed through a series of meetings with BCBSRI and Brown study team members. The letter described the study and alerted recipients to the possibility that they would be called for an interview. (The letter provided an "opt-out" number to let people decline participation.)

The letter was sent on Brown University and BCBSRI letterhead to 40 randomly selected BCBSRI-participating PCPs derived from the total PCP list used in the QI study. In the first phase, 20 physicians were randomly chosen from the QI study control group and 20 from the highest intervention group. In the second phase, another 40 letters to a new set of randomly selected PCPs (half controls and half highest intervention) were sent on Brown and BCBSRI letterhead using the process described above. This phase was timed to correspond to the end of the QI study in order to capture potential intervention effects. In addition, 10 letters describing the study and providing an opt-out telephone number were sent to the next-of-kin of BCBSRI members who had died in the prior 12 months.

Interviews conducted in both phases followed essentially the same format. To encourage respondents to speak at length about their treatment and views, the semi-structured interview began with an opening question. For physicians, the question was, "When you believe a patient has a terminal illness or is dying, can you tell me how you talk with him or her about it?" For next of kin, the question was, "Please tell me about the care your

family member received at the end of his/her life." The physician interview added the question, "Is there a case you remember that stands out as particularly disturbing or satisfying that you can tell me about?" Both physician and next-of-kin interviews were open-ended: after the initial question, the interviewer encouraged respondents to describe their views and experiences by asking follow-up questions to clarify responses. Each interview lasted between 30 and 45 minutes. Interviews were conducted, transcribed, and coded by the principal investigator. Additional transcript reading and coding was provided by two physicians, a nurse and a medical sociologist experienced in end-of-life care research.

## PRELIMINARY RESULTS

Of the 20 PCPs receiving letters in the first phase of the study, one person asked not to be contacted. In this phase, 12 interviews were completed, six by phone and six in the physician's office, by PCP preference. In the second phase of the study, one PCP and one next-of-kin asked not to be contacted. Nine PCPs and four next of kin completed interviews. Four PCP interviews were conducted by phone and five were completed in the physician's office. Two next of kin interviews took place by phone and two were conducted in a place of the respondent's choosing.

Interview narratives of physicians and next-of-kin revealed factors that seem to facilitate or hinder referral to hospice. (Table 1) Primary care physicians interviewed varied by age, ethnicity, gender, years of practice, type of practice and experience. Physicians expressed a wide variety of views about how they discussed and treated patients near the end of their lives. Physician responses revealed varying knowledge about hospice; discomfort as well as ease in end-of-life conversations with patients and families; conviction to reserve hospice for the last days or engage hospice earlier in the terminal process; and change in perspective and individual attitudes over time. Next-of-kin respondents

reported a variety of difficulties in not knowing what to expect in their loved one's care. One of the four dying patients in these reports used hospice.

## DISCUSSION AND IMPLICATIONS

Qualitative inquiry focused on thoughtful response to a semi-structured one-on-one interview in a private setting. Like most qualitative studies the number of total interviews in this study was small, limiting the generalizability of results. Nonetheless, results suggest areas for future

research. While some respondents indicated they discussed hospice with their patients, others expressed reservations about hospice, including the belief that hospice sometimes inappropriately shortens life. Though PCP-respondents may have self-selected because they are satisfied about the care they provide dying patients, they also expressed doubts about their ability to adequately care for patients at the end of life.

This paper has described a variety of elements that physicians and next-of-kin noted were important in end-of-life care.

Further analysis of the interview narratives will focus on how individual physicians describe their rationale for treatment decisions and changes in their perceptions over time. Analysis will probe the similarities and differences among the physicians as a group regarding their treatment choices. Finally, findings from the interviews will be compared with results from the intervention study for enhancement of those results.

Since little work has been done to explore physician attitudes about the care of dying patients and hospice referral, the analysis of physicians' reflections of their practices and attitudes regarding hospice contained in these narratives should identify factors to improve care. Linking the qualitative analysis of this study with the results from the QI intervention study will augment understanding of the effects of the intervention. Cautions expressed in some of the interviews about potential misuse of hospice may help explain low rates of hospice referral in RI. Similarly, how physicians discuss ways their attitudes have changed over their practicing lives provides clues to a growing willingness by physicians to talk about and modify their end-of-life care practices and include hospice in the range of services provided. It is hoped that physicians will be better able to identify patients eligible for hospice and be more willing to consider earlier referral to hospice.

**Table 1. Factors Related to Hospice Use  
Qualitative Interviews with PCPs and Next-of-Kin**

### PCPs

#### Factors facilitating hospice referral

Have conversations with patients regarding advance directives and end-of-life preferences when patients are healthy  
Work with other MDs about patient prognoses and coordination of patient care  
Willing to educate patients about hospice  
Understand that non-cancer as well as cancer patients are appropriate for hospice  
Knowledgeable about full range of hospice benefits and eligibility  
Willing to dispel myths about hospice  
Want to include the family in discussion of care decisions  
Consider hospice beneficial in nursing home setting  
Provide full information about disease course with options for care  
Have prior good experience with hospice  
Willing to acknowledge change, adopt new practices

### Next of kin

Good communication with health care providers about prognosis, options  
Information on hospice provided early  
Compassion from health care providers  
PCP stays involved in patient care  
Understands hospice care services and has heard of good experiences  
Patient and family discussion of end-of-life preferences when healthy

#### Factors hindering hospice referral

Express discomfort about discussing end-of-life preferences when patients are healthy  
Lose contact with patient to specialists and/or after hospice referral  
Reluctant to bring up hospice or prognosis for fear of patient losing hope  
Consider hospice mainly for cancer patients  
Have difficulty identifying patients who are eligible for hospice  
Believe hospice, especially inpatient hospice, inappropriately hastens death  
May distrust families about their motives for wanting hospice referral  
Believe nursing home care does not benefit from added hospice services  
May not share doubts about futile treatment with patient and family  
Believe hospice is best reserved for pain control at very end of life  
Inadequate or no reimbursement for counseling patients about end-of-life care options  
Poor or little communication with health care providers about prognosis and options for care  
Information and hospice option provided late or when death imminent  
Lack of empathy about patient and next-of-kin experience  
Patient care reverts to specialists  
Has limited understanding of hospice services and when appropriate to use  
Finances and insurance constraints limit health care choices

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## The Assessment and Management of Hypoactive Delirium

Timothy W. Farrell, MD, and David Dosa, MD, MPH

While serving as the on-call physician for a nursing home, you are contacted by the floor nurse about A.R., a 78-year-old woman who refused her medications and physical therapy. A.R. was transferred to the nursing home one week earlier for skilled rehabilitation after an elective and uneventful bio-prosthetic aortic valve replacement. Her medical history includes mild Alzheimer's dementia, bilateral cataracts, congestive heart failure, hyperlipidemia, hypertension, chronic renal insufficiency, osteoporosis, osteoarthritis, urinary incontinence, and multiple urinary tract infections. She has been widowed for five years, and lives in a house with her daughter. Medications include enteric-coated aspirin 81 mg daily, furosemide 40 mg twice daily, potassium chloride 20 mEq daily, atorvastatin 40 mg daily, lisinopril 2.5 mg daily, metoprolol XL 100 mg daily, alendronate 70 mg weekly, acetaminophen/hydrocodone (500/5) 1-2 tabs every 4-6 hr. as needed, ciprofloxacin 250 mg twice daily, zolpidem 5 mg at bedtime, and donepezil 5 mg at bedtime. Her appetite has been only fair since her arrival at the nursing home, and her last bowel movement was two days prior. A Foley catheter has been in place since her hospitalization. The nurse notes that A.R. is slightly more lethargic, a departure from one day earlier, when she cooperated with physical therapy and was pleasant to nurses. The nurse requests that you evaluate A.R.

Physical examination is unremarkable. A.R. answers all your questions appropriately, and scores a 26/30 on a Folstein Mini-Mental Examination—an identical score to one conducted prior to surgery. You order laboratory tests and consider the differential diagnosis for A.R.'s fatigue and noncompliance with medication.

### IMPACT AND ETIOLOGY

This case illustrates the complexity of geriatrics care. On examination, A.R. appears to be at baseline; however, the floor nurse is adamant that A.R. appeared different earlier in the day. A differential diagnosis for A.R.'s fatigue and noncompliance with medications can be related to multiple possible etiologies, including the first sign of a severe systemic infection, a neurological insult, or merely an act of contrariness secondary to fatigue or depressed mood. As the clinician charged with evaluating A.R., it is imperative that you include in the differential diagnosis hypoactive delirium, a frequently missed subtype of delirium.

Delirium is a potentially life-threatening disorder, characterized by high morbidity and mortality, and is one of the most common reasons for hospital complications and rehospitalization following admission to a nursing home.<sup>1</sup> The **Confusion Assessment Method (CAM)** defines delirium as an acute, fluctuating change in mental status, with inattention plus disorganized thinking or altered levels of consciousness.<sup>2</sup> There are several subtypes,<sup>3</sup> each classified on the basis of psychomotor activity:

1. **Hyperactive delirium**, a condition in which a patient demonstrates heightened arousal, with restlessness, agitation, hallucinations, and inappropriate behavior;
2. **Hypoactive delirium**, a condition in which a patient demonstrates lethargy, reduced motor activity, incoherent speech, and lack of interest; and
3. **Mixed delirium**, a combination of hyperactive and hypoactive signs and symptoms.

**Table 1: Risk Factors for Delirium and Precipitating Insults**

Predisposing Risk Factors	Precipitating Insults
Older age	Drugs: <ul style="list-style-type: none"> <li>• Sedatives</li> <li>• Narcotics</li> <li>• Anticholinergics</li> <li>• Multiple drug use</li> <li>• Alcohol</li> </ul>
Dementia or Cognitive Impairment	Primary Neurological injury: <ul style="list-style-type: none"> <li>• Stroke</li> <li>• Intracranial bleeding</li> <li>• Meningitis</li> </ul>
Visual or Hearing Impairment	Acute illness <ul style="list-style-type: none"> <li>• Infection</li> <li>• Hypoxia</li> <li>• Shock</li> <li>• Dehydration</li> <li>• Fever</li> <li>• Iatrogenic complications</li> </ul>
Functional Impairment/Immobility	Surgery (e.g. orthopedic, cardiac)
History of Delirium	Environmental factors: <ul style="list-style-type: none"> <li>• Physical restraint use</li> <li>• Use of catheters/invasive monitoring</li> <li>• Intensive care unit stay</li> </ul>
Decreased oral intake (e.g. dehydration)	Pain
Polypharmacy	Prolonged sleep deprivation
Coexisting Medical Illness	Drug Withdrawal <ul style="list-style-type: none"> <li>• Benzodiazepines</li> <li>• Alcohol</li> </ul>

Adapted from: Inouye SK. Delirium in older persons. *N Engl J Med*. 2006;354:1157-65.

FEATURE	Delirium	Dementia
Onset	Acute	Usually insidious
Cognition	Fluctuating	Gradual decrement
Attention	Impaired	Often preserved
Consciousness	Altered	Usually intact
Behavioral changes	Present	Often present
Delusions	Common	Common
Hallucinations	Common (usually visual)	Occasional

Delirium is generally considered to be reversible, but recent studies suggest that delirium symptoms can remain for weeks to months following onset and specific treatment for the underlying cause.<sup>4</sup> Delirium has been implicated as a risk for functional and cognitive decline, poor rehabilitation potential, and increased mortality.<sup>5</sup> The prevalence of all forms of delirium in the community is believed to be 1-2%, a figure that increases to 14% for patients over 85.<sup>4</sup> A study of skilled patients admitted to a nursing home following acute hospitalization noted a delirium prevalence of 16%.<sup>6</sup>

Despite its relatively high prevalence, delirium is frequently unrecognized, likely because of the fluctuating nature of symptoms and an overall insufficient appreciation of the significance of delirium by healthcare providers.<sup>7</sup> The diagnosis is primarily clinical, requiring frequent observation by caregivers in cases where symptoms are less overt, such as the episode of hypoactive delirium described above.<sup>8</sup> Elderly patients with hypoactive delirium tend to be difficult to arouse from sleep. Hallucinations (usually visual) may occur in both hypoactive and hyperactive delirium.

The etiology of delirium, including hypoactive delirium, is usually multifactorial. Table 1 highlights a list of predisposing risk factors and precipitating insults commonly implicated in delirium. In general, delirium occurs in the setting of a complex interplay of depressed functional reserve (secondary to predisposing factors) and precipitating insults.<sup>7</sup> These interactions explain why some patients, particularly those with cognitive and functional impairments, become delirious with relatively minor insults, such as a urinary tract infection, while more robust individuals are unaffected. Furthermore, delirium may be the only presenting sign of a major, life-threatening illness, such as myocardial infarction or septicemia, with no other signs or symptoms.<sup>2</sup> The most powerful risk factor for delirium is underlying dementia; conversely, it is thought that delirium might precipitate dementia or permanently worsen preexisting dementia.<sup>7</sup> Table 2 compares the often overlapping features of delirium and dementia.

## ASSESSMENT AND INTERVENTION

The diagnostic approach to identified delirium requires careful utilization of clinical skills rather than specific diagnostic tests. Emphasis should be placed on defining and mitigating risk factors (if possible) and precipitating insults. (Table 2) Much of the diagnostic work-up involves a careful and thor-

ough history. It is helpful to interview family and friends, and to review medications with the pharmacist. Other important considerations include:

- **Previous Cognitive Status:** When delirium is considered as a diagnosis, it is first imperative to establish a baseline of cognitive and functional status prior to the onset of symptoms. Given that many symptoms and signs of delirium overlap with those of dementia, it is important to ascertain whether observed changes in mental status occurred acutely or have been chronically present.
- **Previous Functional Status:** There is an association of delirium with functional impairment, such as the inability to perform ADLs or vision/hearing impairment.
- **Medication Usage:** Since drugs are implicated in 12-39% of all cases of delirium, potentially high-risk medications should be discontinued or dose-reduced whenever possible.<sup>5</sup> Herbal remedies, over-the-counter medications (including diphenhydramine contained in Tylenol PM and Advil PM), and illicit substances should also be considered in a medication review.
- **Co-morbid conditions:** Since delirium is frequently a symptom of commonly encountered medical conditions (including stroke, dementia, CHF, and chronic renal failure), a careful review of co-morbidities should be conducted.
- **Pain levels:** The presence of severe pain is associated with delirium.<sup>3</sup>
- **Alcohol and Drug Use:** Alcohol intoxication, alcohol withdrawal, and benzodiazepine withdrawal are frequently associated with delirium.<sup>5</sup>
- **Environmental Factors:** Restraint use, lack of environmental stimulation, and multiple procedures have been known to precipitate delirium.

Once a careful history is taken, the initial diagnostic workup for delirium should include serial administration of the **mini-mental state examination (MMSE)** or Mini-Cog to assess for cognitive impairment, if the patient is able to cooperate. Although neither test should be used exclusively to diagnose delirium, changes in scoring over time may be clinically useful. The CAM or DSM-IV criteria<sup>3</sup> may also be used to establish a formal diagnosis of delirium. The sensitivity and specificity of the CAM are 94-100% and 90-95%, respectively, but similar data are not available for the DSM-IV criteria.<sup>9</sup>

In addition to a thorough physical examination, targeted laboratory studies should be ordered to uncover the etiology of delirium, including a complete blood count (CBC), chemistries (including calcium), BUN/creatinine, as well as urinalysis and urine culture. Other potentially useful studies might include liver function tests, serum albumin, vitamin B12 level, ammonia level, TSH, urine toxicology screen, blood culture, chest x-ray, pulse oximetry, arterial blood gas, lumbar puncture, EKG, and EEG. Head CT does not need to be performed unless there is an antecedent history of trauma or neurological deficit on physical examination, or unless no etiology of delirium can be identified.<sup>2</sup>

Once diagnosed, the management of delirium need not always include pharmacologic agents. Most agents which modify symptoms of delirium prolong the condition. Interventions should be targeted at the underlying etiology of delirium. Non-pharmacologic interventions might include posting a calendar in the hospital room, the presence of family members or a hired companion, provision of sensory aids (e.g., hearing aids and glasses), communication aids such as dry-erase boards, relaxing music, and uninterrupted sleep facilitated by minimizing medication administration overnight. Placement in a noisy area (e.g. near the nurses' station) or with another delirious patient should be avoided if possible. Physical restraints should be avoided except for severe agitation when the patient poses a danger to self, and they should be used for the shortest possible time with frequent re-evaluation.

If pharmacologic management becomes necessary, reasonable choices include haloperidol 0.5 to 1 mg IV or IM twice daily as needed, quetiapine 12.5 mg orally twice daily as needed, or trazodone 25 to 50 mg orally at bedtime. Since the antidopaminergic activity of haloperidol frequently causes extrapyramidal problems, with worsened gait being the most problematic, the total daily dose of haloperidol should not exceed 2 to 3 mg. Benzodiazepines and other hypnotics should be avoided in elderly patients except in cases of alcohol or benzodiazepine withdrawal.<sup>10</sup> Once the diagnosis of delirium is established, the clinician should monitor the patient, since symptoms typically wax and wane and may persist beyond hospital or nursing home discharge for weeks to months.

## RESOLUTION

Evaluation of A.R. revealed several possible precipitants of hypoactive delirium. Mild contraction alkalosis and borderline hyponatremia thought secondary to her diuretic were identified. The Foley catheter was removed, and her nightly zolpidem was held. She was treated for a urinary tract infection. The furosemide dosage was reduced by half. The patient's daughter was encouraged to spend more time with her mother and to bring in pictures from home. For the next 24 hours, A.R.'s symptoms continued to wax and wane. At 48 hours post-diagnosis, A.R. was noted to have returned to baseline, and two weeks later she was discharged home to complete physical therapy.

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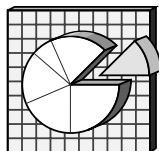
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## Injury Visits to Hospital Emergency Departments in Rhode Island, 2005

Edward F. Donnelly, RN, MPH, and Jay S. Buechner, PhD

In 2005 in the United States, there were approximately 41.9 million visits to hospital emergency departments where either the patient's stated reason for the visit or the treating physician's principal diagnosis was related to an injury, poisoning, or adverse effect of medical treatment.<sup>1</sup> This translates to 14.4 visits per 100 persons during that year.

Beginning January 1, 2005, hospitals in Rhode Island have reported patient-level data on visits to emergency departments (EDs) to the Rhode Island Department of Health.<sup>2</sup> This report presents summary information for 2005 on hospital ED visits in Rhode Island for injuries, poisonings, and adverse effects of medical treatment, together referred to as "injuries" in this report.

### METHODS

Under licensure regulations, the eleven acute-care general hospitals and two psychiatric facilities in Rhode Island report to the Department of Health's Center for Health Data and Analysis a defined set of data items on each emergency department visit beginning with visits occurring January 1, 2005. The data include patient-level demographic and clinical information. This analysis covers ED visits occurring January 1 – December 31, 2005, including those where the patient received treatment only in the ED, was held for observation, or was admitted as an inpatient. Due to ongoing investigations into the manner in which hospitals report their ED data, the data presented here are provisional and subject to change.

Principal diagnosis and cause of injury for each patient were extracted from the ED record where available, otherwise from the inpatient record or observation stay record. Diagnoses, coded in ICD-9-CM,<sup>3</sup> were grouped as for published national data.<sup>1</sup> ICD-9-CM external cause of injury codes ("E-codes") used to record the mechanism of injury were grouped according to national standards.<sup>4</sup>

### RESULTS

In 2005, there were 456,069 visits to hospital EDs in Rhode Island. Five hundred thirteen (513) records that did not report a diagnosis or were missing the age or sex of the patient were excluded from this analysis, leaving 455,556. The first-listed diagnosis for 121,477 of these visits (26.7%) was an injury, poisoning, or adverse effect of medical treatment. (Figure 1)

By age group, injury was the most common first-listed diagnosis in records of ED visits for children less than 15 years of age. (Table 1) Nearly one-third of children's ED visits (32.2%) were due to injury. Injury is also the most common first-listed diagnosis for the age groups 15-44 and 45-64. However, the proportion of all visits with injury diagnoses declines with age. Injury falls to second place among ED records of persons 65+ years of age behind findings of signs and symptoms, i.e., visits where no definitive diagnosis was arrived at.

The highest rates of injury ED visits and the largest number of records occurred in persons 15-24 years of age. (Figure 2) Males account for more than 60% of injury visits in this age group. Rates fall steadily through middle age groups, then increase sharply in the group 65+ years of age.

Males make up the majority of all reported injury visits to hospital EDs. (Figure 2) In these visits, more males than females were reported in every age group through age 54. Females made up the majority of injury visits and had higher population rates of visits than males in the age groups 55-64 and 65+.

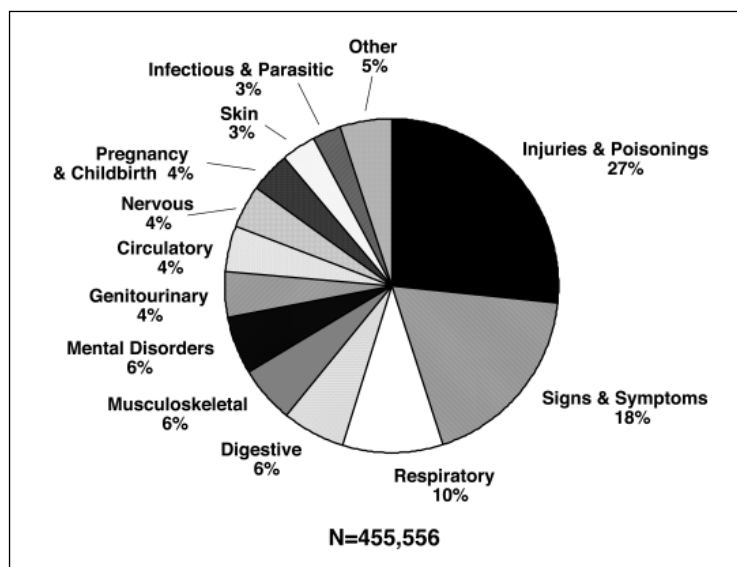


Figure 1. Percent distribution of visits to hospital emergency departments by major diagnostic group, Rhode Island, 2005

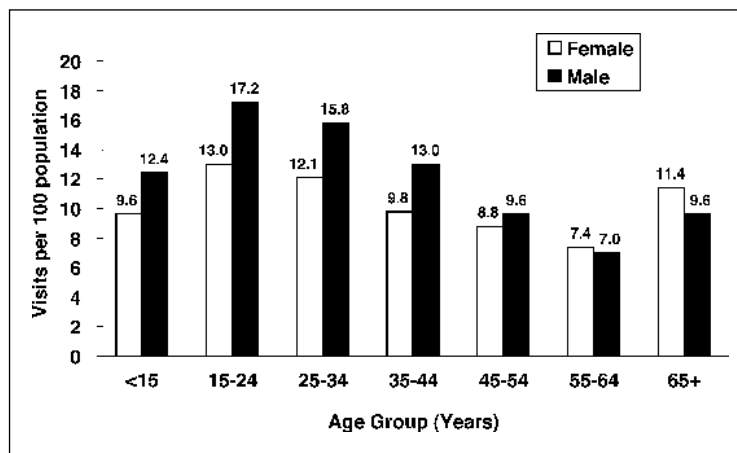


Figure 2. Injury ED visits per 100 population, by sex by age group, Rhode Island 2005

**Table 1.**  
Most common first-listed diagnostic categories for visits to hospital emergency departments,  
by age group, Rhode Island, 2005

Rank	Age Group				
	0-14 Years	15-44 Years	45-64 Years	65+ Years	All Ages
1	Injury and Poisoning (32.2%)	Injury and Poisoning (28.8%)	Injury and Poisoning (24.8%)	Symptoms, Signs, and Ill-defined Conditions (20.1%)	Injury and Poisoning (26.7%)
2	Symptoms, Signs, and Ill-defined Conditions (17.2%)	Symptoms, Signs, and Ill-defined Conditions (18.8%)	Symptoms, Signs, and Ill-defined Conditions (21.8%)	Injury and Poisoning (18.7%)	Symptoms, Signs, and Ill-defined Conditions (18.2%)
3	Diseases of the Respiratory System (16.9%)	Complications of Pregnancy, Childbirth and the Puerperium (8.3%)	Diseases of the Respiratory System (8.3%)	Diseases of the Circulatory System (14.5%)	Diseases of the Respiratory System (9.8%)
4	Diseases of the Nervous System and Sense Organs (9.0%)	Diseases of the Respiratory System (7.6%)	Mental Disorders (7.8%)	Diseases of the Respiratory System (11.0%)	Diseases of the Digestive System (6.1%)
5	Infectious and Parasitic Diseases (6.5%)	Diseases of the Musculoskeletal System and Connective Tissue (6.0%)	Diseases of the Musculoskeletal System and Connective Tissue (6.8%)	Diseases of the Digestive System (7.3%)	Diseases of the Musculoskeletal System and Connective Tissue (5.7%)
Total Number of Visits	67,915	213,017	90,663	83,831	455,556

treatment, and on more closely defined target populations. These analyses will be performed in conjunction with public health intervention programs, and selected findings will be reported in future issues of *Health by Numbers*.

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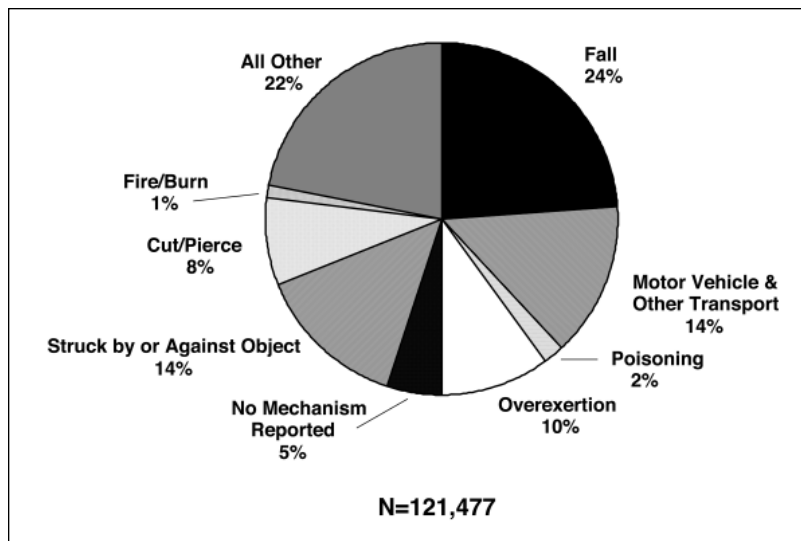


Figure 3. Percent distribution of injury visits to hospital emergency departments by mechanism of injury, Rhode Island, 2005

The most commonly reported mechanism of injury among patients seen in hospital EDs was falls, which resulted in 24% of all visits in Rhode Island in 2005. (Figure 3) Next most common were motor vehicle traffic and other transport injuries (14%) and injuries caused by being struck by or against an object (14%). Injuries due to fires or burns (1%) and poisonings (2%) were relatively uncommon. Among ED visits for injuries, 5% had no mechanism of injury recorded.

## DISCUSSION

The availability of statewide patient-level records on hospital ED visits in Rhode Island has broad implications for public health efforts in our state. For example, persons who are injured are more likely to be treated in the ED than to be admitted as inpatients, events also routinely reported to the Department by hospitals. The ED data support the analysis of data on less severe injuries, on critical injuries such as eye injuries that do not often require inpatient

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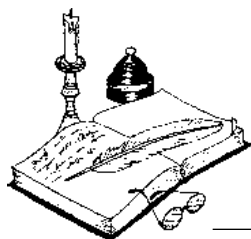
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# Physician's Lexicon

## The Perplexing Privative Prefixes

The ancient Greeks cleverly employed a handful of prefixes, attached to their nouns, to denote the sense of "not, less, away from or, particularly, without." These prefixes are called privative to convey the meaning of loss or withdrawal. When the noun begins with a consonant, the privative is generally *a-*; when it begins with a vowel, it is *an-*.

The word, privative, is derived from the Latin, *privatus*, meaning apart from the State, belonging to the individual. Words such as privation and deprive preserve the meaning of being dispossessed of something; while words such as private, privy and even privilege emphasize the additional sense of apartness from authority.

Medicine possesses an abundance of privative words, particularly in neurology where there are such words as aphonia, aphasia, alexia, amentia and agnosia, all imparting the message of deprivation of a particular cognitive faculty. There are, of course, many other

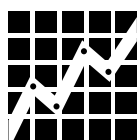
medical terms with privative prefixes such as anemia [actually, *an-haemia*, deprived of blood], anabolism, anaerobe, anacoustic, amnesia [a recollection, without forgetting], amenorrhea, amyotonia, amyotrophic, anacidity, anesthesia [lacking in sensation] and analgesia [without pain]. And in nonmedical terms such as anarchy and anecdote [literally, that which is not published.]

Yet another Greek prefix is *ana-*, generally meaning backward, upward, again or anew. Amongst medical words employing this prefix are terms such as anatomy [to cut up, to dissect, using the Greek root meaning to cut as in words such as atom and tomography], anaphylaxis [a word coined by the French physiologist Charles Richet [1850 – 1935] to describe an augmented immunologic responsiveness in contrast to prophylaxis, meaning something which is protective, based on a Greek root meaning a guarding as in words such as phylactery, a safeguard or an amulet.] The word,

analysis, means, literally, to break up anew; and analogy means a similarity, but literally, next to the word.

The Latin equivalent of the Greek privative prefix, *a-*, is the word, *sine*, also meaning without; it appears in *sine qua non* [without which there is nothing] and in the legislative term, *sine die* [without a specific date.] The English word, sinecure [a job without much required labor or, formerly, a church benefice without cure of souls], comes from the Latin phrase *beneficium sine cura*, a benefice without any accompanying duty of curing the soul. The word, sincere, meaning genuine, unfeigned or authentic, represents a merging of the Latin phrase, *sine cera*, meaning without decay. The dental word, caries, is also derived from the Latin, *cera*.

— STANLEY M. ARONSON, MD



RHODE ISLAND DEPARTMENT OF HEALTH  
DAVID GIFFORD, MD, MPH  
DIRECTOR OF HEALTH

## VITAL STATISTICS

EDITED BY COLLEEN FONTANA, STATE REGISTRAR

### Rhode Island Monthly Vital Statistics Report Provisional Occurrence Data from the Division of Vital Records

Underlying Cause of Death	Reporting Period			
	December 2006	12 Months Ending with December 2006		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	250	2,690	251.5	3,257.0
Malignant Neoplasms	184	2,297	214.7	6,107.5
Cerebrovascular Diseases	36	383	35.8	415.0
Injuries (Accidents/Suicide/Homicide)	51	531	49.6	8,273.5
COPD	34	485	45.3	432.5

Vital Events	Reporting Period		
	June 2007	12 Months Ending with June 2007	
	Number	Number	Rates
Live Births	1,173	13,709	12.8*
Deaths	800	10,055	9.4*
Infant Deaths	(12)	(102)	7.4#
Neonatal Deaths	(10)	(71)	5.2#
Marriages	867	6,919	6.5*
Divorces	271	3,156	3.0*
Induced Terminations	355	4,659	339.8#
Spontaneous Fetal Deaths	56	979	71.4#
Under 20 weeks gestation	(52)	(906)	66.1#
20+ weeks gestation	(4)	(73)	5.3#

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.

(b) Rates per 100,000 estimated population of 1,067,610

(c) Years of Potential Life Lost (YPLL)

**Note:** Totals represent vital events which occurred in Rhode Island for the reporting periods listed above. Monthly provisional totals should be analyzed with caution because the numbers may be small and subject to seasonal variation.

\* Rates per 1,000 estimated population

# Rates per 1,000 live births



## MEDICAL MALPRACTICE TOPICS

INFORMATION FOR RHODE ISLAND PHYSICIANS FROM BABCOCK & HELLIWELL

# Workers' Compensation in the Medical Office

John Tickner, CPCU, President, Babcock & Helliwell

The distinct work setting and risks involved in a medical office are unique—and pose a challenge to workers' compensation program management.

Slips and falls are among the most common workplace injuries, and they are also among the most costly. The back is injured more often than any other body part, with cut and puncture injuries a close second.

Inadequate training and workflow issues, poor lifting techniques and/or a failure to get assistance, improper equipment use, and plain carelessness all contribute to workplace accidents and injuries.

Fewer injuries within the office mean fewer workers' compensation claims and, ultimately, lower insurance costs. To reduce injuries:

- Have a formal, written safety/accident policy that requires immediate treatment of every injured employee. Distribute this policy to all employees.
- To help prevent slip and fall accidents, get rid of all office clutter.
- All office safety precautions should be re-checked on a regular basis for maximum prevention.
- Do not allow the practice to treat any employee except in an absolute emergency. To do so can place the practice in a no-win conflict of interest as both provider and employer.
- Require prompt reporting of every incident so the practice can easily investigate and confirm the validity of each claim. Late reporting casts great suspicion on a claim's legitimacy.
- Promptly and thoroughly investigate every claim.
- Obtain witness statements; determine how the injury occurred and how it is logically related to the workplace.

Once a claim has been determined to be legitimate, attention shifts to healing injured workers and getting them back to work.

An effective "light-duty" program is key to this effort as it speeds employee rehabilitation and promotes employee good will. Not only do light-duty programs allow recuperating employees to be at least partially productive, but they also keep the employee involved with the employer and co-workers.

Repeated accidents and lost time pose a special problem. A reasonable, consistently applied absence control policy can help medical practices avoid an "employer retaliation" suit if an employee seeking benefits must be discharged or if other action must be taken.

Document employee problems such as discipline and attendance. Also, practice managers must learn not to respond negatively to an employee's intentions to file a claim. If an employee's claim is suspicious, it should simply be investigated, not presumed to be fraudulent.

In the state of Rhode Island, every medical practice with employees must provide workers' compensation insurance. Enlightened practices understand that an effective program can also be a tool to boost employee morale and improve safety. Conversely, a poorly run program may dishearten employees by breeding hostility and suspicion.

*John Tickner, CPCU, is president of Babcock & Helliwell, a privately held independent insurance agency established in 1892 that provides professional insurance-related services of all kinds. Babcock & Helliwell is an agency for ProMutual Group, New England's largest medical malpractice insurance provider and the second-largest provider in Rhode Island. The views expressed are solely those of John Tickner, CPCU, and Babcock & Helliwell.*

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### NINETY YEARS AGO, DECEMBER 1917

James B. Ayer, MD, of Boston, contributed "Determination of Activity of the Pathological Process: The Keynote in the Treatment and Progress in Syphilis of the Central Nervous System. He noted: "...half of all new cases coming to the Nerve Room of the Massachusetts General Hospital during the past year were suffering from syphilis of the central nervous system." He praised salvarsan, but cautioned that it was not useful for all patients.

The Journal announced the opening of Navy Base Hospital No. 4. At the request of the Navy, the Trustees of Rhode Island Hospital had established a base hospital, with 500 beds and 3 donated "motor" ambulances. In July the War Department had established a School for Instruction in Military Roentgenology at Cornell Medical College and a similar school for laboratory methods.

An Editorial, "The Income Tax," conceded the need to pay for the war effort. "This is our country and unless it is our country in the future, we will have little use for money." Under The Act of September 1916, a physician earning \$15,000, after deductions and exemptions, would pay \$101.60. Under The War Revenue Act of 1917, that same physician would pay \$414.50.

### FIFTY YEARS AGO, DECEMBER 1957

Janis Gailitis, MD, J.A. Alegre, MD, B. Motola, MD, and Joanne Hologgitas, MA, MAT, discussed the treatment of a 33 year-old housewife admitted to Newport Hospital in "Acetazoleamide (Diamox) in Sick Cell Disease." Dr. Hilkowitz had presented evidence that acetazoleamide inhibited the sickling of red cells *in vitro* and *in vivo*. The authors duplicated the experiment. They found the treatment "totally unsuccessful." The patient "changed radically for the worse during treatment...and improved when the drug was discontinued."

Lt. Leon L. Feltman, MC, USNR, and Lt. Mary T. Lynch, MC, USN, contributed "Experiences with Asian Influenza among Navy Personnel." On June 2, 1957, "an explosive outbreak of influenza occurred aboard the USS Barry, berthed in Newport," marking the first known cases in this country. The physicians treated 80 patients; treatment was symptomatic, avoided antibiotics, stressed bed rest, fluids and aspirin. For 87% of patients, the fever lasted 1 to 3 days.

In "Scleroderma, Associated with Neurological and Psychogenic Symptoms," Laurence A. Senseman, MD, discussed several cases where the diagnosis was not made initially.

An Editorial, "Present Status of Chemotherapy in Tuberculosis," noted that new drugs offered "optimism" for treatment.

### TWENTY-FIVE YEARS AGO, DECEMBER 1982

This issue marked the 40<sup>th</sup> anniversary of the activation of the 48<sup>th</sup> Evacuation Hospital, the Rhode Island Hospital Unit in World War II.

Thomas J. Perry, Jr, MD, described this hospital, established in 1942. Mobilization began on August 17, 1942, when 69 physicians and nurses from Rhode Island assembled at Camp Devens. The unit sailed for India on January 20, 1943. The unit...went to the end of a "narrow railway in a bamboo thicket...about 40 miles from Burma." The group split. Part went with the Army Corps of Engineers, which was building Ledo Road through the jungle to connect with Old Burma Road to bring supplies to China. The rest went to help evacuated Chinese troops. Dr. Perry recounts: "This was interesting duty, treating tropical disease, vitamin deficiency, tuberculosis and parasitism among other things, but was made less desirable by temperatures that exceeded 100 degrees daily maximum for months on end. During one memorable 2 week stretch, the daily maximum varied from 120 to 127 degrees." At one time, the 750-bed hospital held 1700 patients. In 1945 the original Rhode Island unit was broken up, and personnel were rotated back to the States.

In "Ten Years before 'M\*A\*S\*H,'" John S. Dziob, MD, FACS, a Rhode Island Hospital physician who worked on the China-Burma-India Theater with the Corps of Engineers, recounted his memories.

Abdul N. Memon, MD, and John Yashar, MD, in "A Primary Lung Cancer in a Chronic Lymphocytic Leukemia Patient," discussed the case of a 59 year-old man diagnosed with CLL and squamous cell cancer of the lung. The authors conceded: "A high incidence of concomitant tumors is not readily explained."

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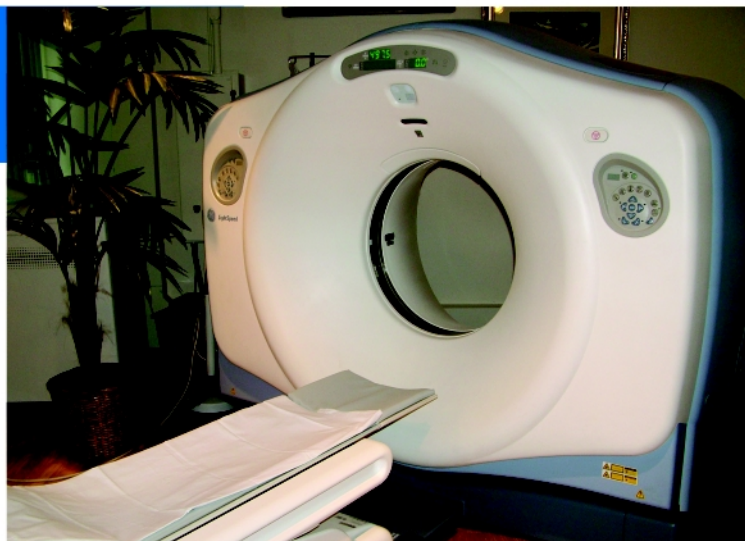
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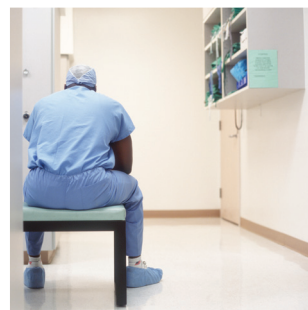
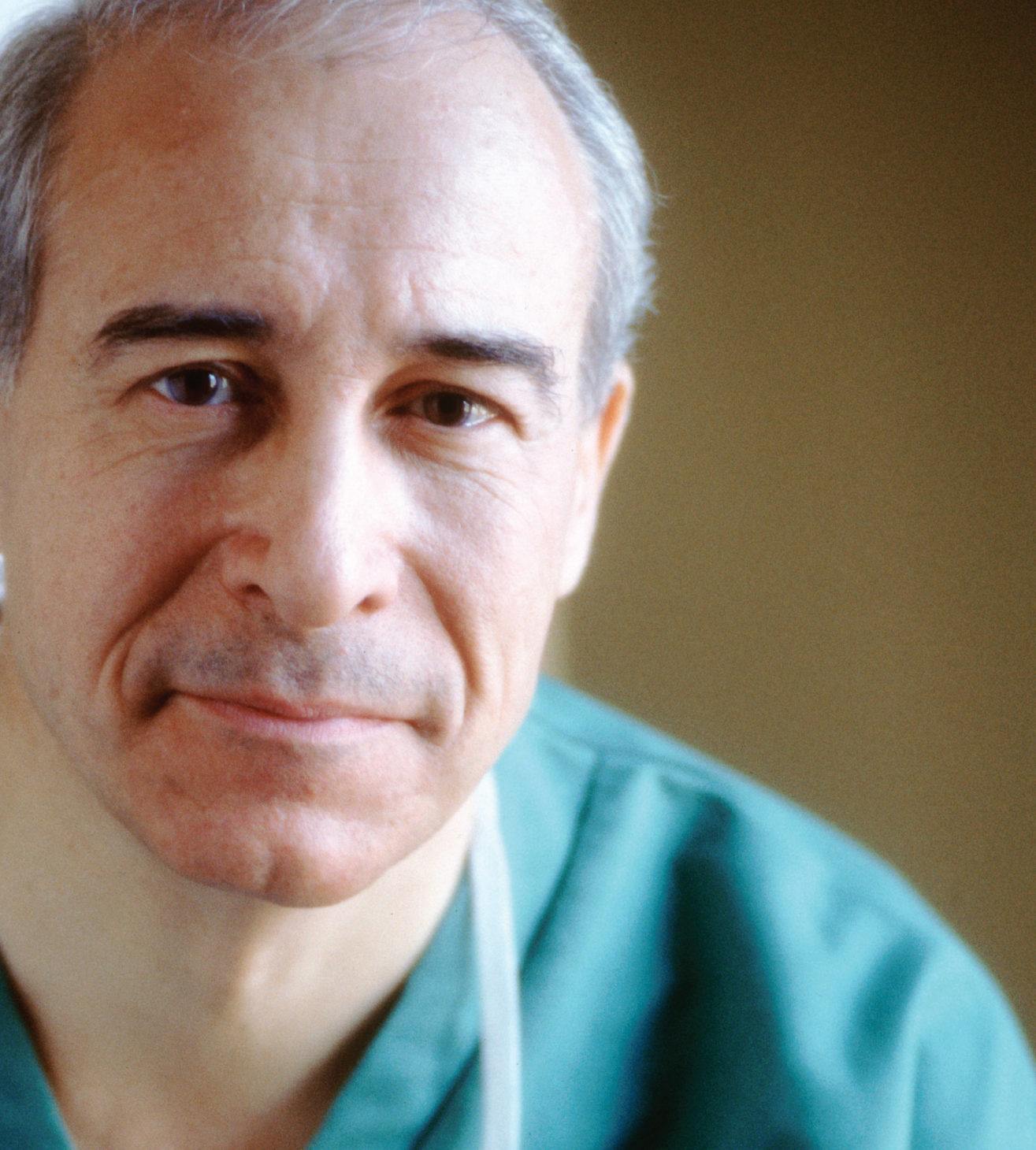
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