
Risk-Taking Behavior: Noncompliance with Medical Advice

October, 2008 • Hank George, FALU, CLU, FLMI

This article consists of additional content on risk-taking behaviors which we could not fit into our September CE course on *Underwriting Implications of Socioeconomic Status and Risk-Taking Behaviors*.

We decided to share it with all website registrants for two reasons:

- It is incredibly relevant to insurability.
- It gives you a good idea of the quality of our CE courses.

Note: “nonadherence” and “noncompliance” tend to be used interchangeably in the medical literature and we will do likewise in this article.

Why is this subject important?

“Nonadherence to physician treatment is an increasingly recognized cause of adverse outcomes and increased health care costs, especially among patients with cardiovascular disease.”

Anil K. Gehi, MD, et al.
The Heart and Soul Study
Emory University Medical School, Atlanta
Archives of Internal Medicine
167(2007):1798

What are the overall compliance rates with screening tests for cancer?

In a University of Michigan study involving 4800 community-based primary care patients [Ruffin]:

- 63.8% of women had at least one Pap smear within the past 3 years.
- 41.8% of women had a clinical breast examination within the past year.
- 48.2% of women age 40-49 and 38.5% age 50 and over had a mammogram within 1-2 years.
- Only 29% age 30-39 and 17% age 50 and over were considered to be “current” for all breast-cancer screening tests.
- Among patients age 50 and over, 33% of men and 38% of women had a digital rectal examination within 1 year.
- 26% of men and 28% of women had a stool occult blood test within 1 year.
- 22% of men and 17% of women had a sigmoidoscopy within 5 years.

- 28.7% of men had a PSA test within 1 year.

As you see here and as further data will show, compliance with routine cancer prevention testing is poor. This trend has been demonstrated worldwide.

Is there a “healthy adherer” effect associated with having at least one of these tests?

Yes. [Peterson]

- A woman who had a mammogram within 2 years was 4 times more likely to also have colorectal cancer screening, as compared to a woman who did not have a mammogram.
- A man who had a PSA test within 2 years was > 3 times more likely to have had colorectal screening than a man who had not had his PSA checked.

Why is this important?

Because – as we showed in our 2008 CE course on Risk Implications of Rx and Other Forms of Patient Noncompliance – “healthy adherers” have more favorable risk profiles and hence better mortality and morbidity than persons who demonstrate the opposite pattern of behavior.

Are the compliance rates with routine cancer screening significantly better among healthcare workers?

Yes...but still well short of what is expected: [Anwar]

- Mammography 91%
- Colonoscopy 78%
- PSA/digital rectal exam 68%
- Pap smear/pelvic exam 89%

Are patients with chronic diseases that require complex care less likely to have routine screening tests for other disease risks?

Yes.

One study found that women with diabetes were 32% less likely to have screening mammograms than women who were diabetes-free. [Lipscombe]

Is the use of alternative and complementary medicine associated with greater compliance with routine surveillance tests?

Yes...this was shown in a study of compliance with periodic colonoscopy in patients with inflammatory bowel disease [Friedman] and we have seen it reported in other studies over the years.

Screening For Colorectal Cancer

What are typical compliance rates in colorectal cancer screening?

- In a UK primary care screening program, 57% [Scholefield]
- Among 1st degree relatives of patients with colon cancer in a German tumor registry, 39% [Ruthotto]
- Among patients advised repeat surveillance colonoscopy in a Rochester, New York study, 82% – and 71% remained noncompliant over 3 years *despite being urged by their physician to comply* [Scherer]

What factors are linked to the likelihood of compliance with colorectal screening?

Compliance:

- Age 60-69 – compliance 50% greater than at younger ages
- Higher education – compliance doubled with some college
- Higher education – compliance 70% higher with ≥ 16 years of education as compared to < 12 years [Albano]
- Higher income – in both genders [Ananthakrishnan]
- Higher household income
- Having a person physician – compliance increased 60%
- Having health insurance – compliance increased 67%
- Adherence to mammography – compliance increased 130%
- Adherence to Pap smear screening – compliance increased 70%
- Adherence to PSA testing – compliance increased 224%

Noncompliance

- Failure to do other screening was #1 predictor in a Texas study [Patel]
- Self-reported good health – reduced compliance by 21%
- Current smoking – but not former smoking – reduced compliance 35%

Except where noted, all data used in the answer to this question came from these two University of Michigan studies: Carlos. *Academic Radiology*. 129(2005):451 and Carlos. *Journal of the American College of Surgery*. 200(2005):216.

Does occult blood screening correlate with a lower risk of colorectal cancer?

Yes.

In a Minnesota study, patients offered screening had a 21% reduction in CRC mortality as compared to only a 6% reduction in patients who did not have the opportunity to be screened. [Mandel]

Screening Mammography

What % of patients comply with mammographic screening on the basis recommended by the American Cancer Society? [Blanchard]

In a 72,417 patient study at Massachusetts General Hospital between 1992 and 2002, 56% had 3 or fewer mammograms and only 6% had 10 or more during that interval.

Does mammographic screening compliance increase with age in elderly women?

No.

McCarthy found that compliance was 29% at ages 67-74, 23% at ages 75-84 and only 10% at ages 85 and over.

What factors are associated with compliance with mammographic screening?

- Having health insurance [Blanchard, Nash]
- Residing in a higher median income community [Blanchard]
- Having a higher net worth [Williams]
- Being married (vs. single, divorced or widowed) [Wu]
- Having a college degree [Albano, Wu]
- Seeing a physician for any reason in the past 12 months [Wu]
- Having an attending physician [Nash]
- Being a non-smoker [Nash]
- Having had a flu shot in the past 12 months [Wu]
- Not being diabetic [Wu]
- Currently taking HRT [Wu]
- Having had hepatitis B vaccination [Wu]

Does mammography compliance favorably impact breast cancer mortality?

Yes.

McCarthy found that women ages 67 and over who had screening mammograms were over 3-fold more likely to have stage I vs. \geq stage 2 breast cancer.

Blanchard reported that BC mortality in patients who complied with annual screening prior to diagnosis (12%) was less than half of that seen in patients who were noncompliant (25%).

After a mean follow-up interval of 10.7 years, Moss found that all-cause mortality was twice as high in women who accepted their first invitation to have screening mammography, as compared to those who did not.

Ernster revealed that CV mortality was 20-30% lower in women with ductal carcinoma in situ

than in those who did not have this condition. The only significant difference was the much higher rate of screening mammography in those with DCIS. *This study in particular reflects the broad implications of the “healthy adherer” effect associated with mammography compliance!*

Other Screening

Are persons at high risk for disease inherently more compliant with screening than those who are not?

Not necessarily...

In a cohort of middle-aged women in South Carolina, those with high-grade precancerous changes were 40% less likely to be compliant. [Eggleston]

In a Cornell Medical Center study of patients with incidental pancreatic cysts who were told they had a risk of developing cancer, only 60% were compliant with advised periodic screening. [Kulkarni]

Several studies have shown that persons traveling to areas with a high risk of malaria were compliant with anti-malaria prophylaxis between 32% and 78% of the time. [Hoebe, Landry, Lobel]

This tells us that factors independent of one’s risk of medical adversity clearly factor into whether or not a person is going to comply with related medical recommendations.

Does having recommended eye examinations reduce the risk of functional limitations in the elderly?

Yes, significantly, for both ADLs and IADLs. [Sloan]

Is there an association between the type of outpatient test recommended and the probability of patient compliance?

Yes, as shown in a NY City study where 34% were compliant with radiographic studies, 29% with heart-related studies and 25% with colonoscopy.

In this study, compliance was highest with diagnostic procedures (50%) and worst with lab tests (15%). [Moore]

Are smoking and drinking associated with patient noncompliance?

In a group of California asthmatics, the only manner of drinking linked to noncompliance was bingeing.

Being a current smoker was also a significant predictor of non-compliance (as is true in nearly all studies we have reviewed). [Haskard]

Is leaving the hospital against physician advice a risk factor for subsequent mortality?

It was in a cohort of upstate New York MI patients. New circulatory disease events were 1.5 to 2 times more common after 12 months and 700 day mortality was 36% higher in those who checked out of the hospital against their physicians' advice. [Fiscella]

Underwriting Implications

What major conclusions can be drawn from the information cited in this article?

1. Nonadherence to screening tests is a major risk-taking behavior, with important mortality and morbidity implications.
2. Those who are nonadherent in one context are likely to behave similarly in other contexts as well.
3. There are risk factors for noncompliant behavior and they tend to be similar among across all types of patient noncompliance.
4. Socioeconomic factors – income and education, in particular – are powerfully associated with following MD advice and this undoubtedly explains a portion of the more favorable overall mortality seen with larger face amount life insurance policies.
5. We already ask about – and in some companies, test for – factors related to being a healthy adherer vs. noncompliant.
6. The potential to increase our use of these factors in underwriting has never been greater than it is right now, because of teleinterviews.

We urge mortality and morbidity risk insurers to further investigate the insurability implications of being a **healthy adherer** vs. a **risk-taker**, and then to build these considerations into how they determine insurability.

Perhaps the most important payoff from doing this is sending the message that personal health habits – choices applicants make – will now play a greater role in their access to insurance. This message is likely to resonate favorably with insurance seekers as well as those who regulate insurance.

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About the Author



Hank George, FALU, CLU, FLMI, is CEO of Hank George, Inc, a firm devoted to providing high quality underwriting education and productivity resources for life and health insurers worldwide.

Hank is an honors graduate of the University of Wisconsin-Milwaukee. He began his insurance career in 1970 and his underwriting career in 1973 with Northwestern Mutual, attaining the officer position of Director of Medical Underwriting in 1975 and thereafter functioning as a member of the company's medical staff. After working with Manufacturers Life in Toronto and Lincoln National Re in Indiana, Hank joined *then*-Home Office Reference Laboratory (HORL) in 1987 and attained the position of Senior Vice President. Hank left ExamOne (the successor to HORL) in 2003 to launch his current business.

Hank was founder and first editor (1985-2003) of *On The Risk*, an underwriting professional magazine. He is the founder what is now the LOMA International Underwriting Congress and served as chair of the first four congresses. Hank founded and chairs the LOMA Health Underwriting Study Groups and also founded and manages, for the benefit of the industry, four life underwriting study groups comprising over 70 companies.

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Hank has addressed nearly all major underwriting associations in the world. In addition, he has been a 2-time main platform speaker at both the Million Dollar Round Table and the Top of the Table. He is a 3-time main platform speaker at the World Critical Illness Conference and has addressed over 200 other organizations worldwide. Hank is a frequent speaker at agent/broker conferences hosted by insurers.

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Hank resides in his hometown of Milwaukee, Wisconsin. His hobbies include reading, seeing films, and political blogging. Hank is what is known as a "cheesehead" (rabid fan of the Green Bay Packers football team), as well as a devout fan of the UWM Panthers, Wisconsin Badgers, Marquette Golden Eagles, Milwaukee Bucks, Milwaukee Brewers and Toronto Maple Leafs. He may be reached at hankgeorge@aol.com.