

# Solutions

LIFE AND DISABILITY INSURANCE

Medical Underwriting at Work for You



## MetLife

## White Matter Lesions *Hidden Dangers Illuminated by Brain Beacons*

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**Alice, 48**, a realtor, has applied for life and disability income insurance. She had a brain MRI after an unusually severe headache four years ago. Her results came back normal other than mild white matter lesions (WML). Because of her long history of frequent migraines, Alice's physician told her these were of no concern and started her new migraine medication. She has had only one or two headaches per year since then, always of mild severity.

**Henry, 58**, a veterinarian, has also applied for life and disability income insurance. He had a concussion from being kicked by a horse three years ago. His MRI showed that he had two lacunar infarcts at some time in the past, and moderate WML. Henry had a history of poorly controlled hypertension, so more intensive treatment was begun. Since then, Henry's blood pressure has been well controlled.

### Underwriting Outcomes

Alice would qualify for a Preferred policy for life insurance and Standard for a disability insurance policy.

Henry, on the other hand, would receive a moderate substandard rating on his life insurance policy, and he would not qualify for a disability policy, because of his history of lacunar strokes and moderate WML.

### Understanding White Matter Lesions

White matter lies just below the surface gray matter of the brain. In it are "axons," parts of nerve cells that act like wires, allowing nerve cells to communicate with one another. Axons are wrapped by a whitish fatty substance called myelin, which helps speed signals along the axons.

White matter is nourished by arteries that travel down from the surface of the brain. Thickening of the walls of these arteries (known as "small vessel disease") often develops with advancing age, especially with a history of hypertension, causing an insufficient blood supply to the white matter. This causes myelin to break down and be replaced by plasma, which appears as bright "spots" on MRI scans.

Without normal myelin, nerve signals travel more slowly. This impairs information processing, memory, conceptualization, concentration, judgement, and speed and control of movement. The greater the severity and rate of progression of WML, the greater the risk of impairment to functional abilities, cognition, and mobility, plus conditions of depression and urinary incontinence. Walking often becomes slower and imbalanced, increasing the likelihood of falling and hip fractures.

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### Questions to ask your clients who have a history of white matter lesions

- When were the WML found, and why was the brain scan done?
- Is there a history of hypertension, stroke, migraines, or other disorders?
- Who is the physician following this? What does s/he say is the reason for the WML?

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# White Matter Lesions

## *Hidden Dangers Illuminated by Brain Beacons*

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WML are often noted on MRI reports as “incidental” findings. They become increasingly common with advancing age; nearly everyone in their 80’s has them. Hypertension is their second strongest predictor, and the severity of WML correlates with its duration and control. Other atherosclerotic risk factors and a history of vascular disease are also associated.

The significance of WML largely depends on their underlying cause, their size, location and speed of progression.

- Mild, punctate lesions are often labeled age-related, usually progress slowly, and impart little or no extra mortality or morbidity.
- Moderate lesions, showing early confluence of punctate lesions, tend to progress more quickly. These suggest significant ischemia, especially if associated with poorly controlled hypertension or with tiny white matter strokes (lacunar infarcts).
- Severe, extensive confluent lesions generally progress the fastest.

The risk of stroke increases with the severity of WML to over three times that of the general population, and following a stroke, persons with WML tend to be more disabled than those without WML.

The overall mortality of those with WML more severe than simply age-related due to small vessel disease is over twice that of the general population. Death is usually from dementia, stroke, or cardiovascular disease. Migraine headaches are also associated with WML, possibly also due to vascular changes. Those with migraines are almost four times more likely to have WMLs than the general population, with those having a long history of frequent migraines being most at risk. The long-term consequences of these WML are not clearly known.

Other causes of WML include anatomic variations, genetic disorders preventing myelin development, demyelinating diseases such as multiple sclerosis, viral infections, Lyme disease, sarcoidosis, vasculitis, lupus, amyloidosis, toxins, trauma, tumors, radiation, chemotherapy, and Vitamin B12 deficiency. The mortality and morbidity of these WML are usually mainly that of the underlying disorder.

Because mortality and morbidity are largely correlated with not only the severity but also the speed of WML progression, follow-up MRIs are useful. Newer MRI techniques such as diffusion tensor and magnetization transfer imaging are providing greater insight.

*The cases presented are hypothetical. Actual underwriting decisions will be based on a review of the complete medical history.*

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