

### Menopause

#### What is menopause?

Menopause is a normal change in a woman's life when her periods stop—some women call menopause “the change of life.” During menopause, a woman's body slowly makes less of the hormones estrogen and progesterone. This usually happens between the ages of 45 and 55. A woman has reached menopause when she has not had a period for 12 months in a row, and there are no other causes for this change (such as pregnancy). Menopause is considered early or premature if it occurs before age 40.<sup>9</sup> The average age of menopause is 51 years.<sup>10</sup>

During and after menopause, a woman's ovaries no longer produce estrogen, though her body still produces a small amount of this hormone. It is partly this lack of estrogen that increases a woman's risk of having a stroke.

#### What is surgical menopause?

Surgical menopause is when your periods stop because of the surgical removal of the uterus. This procedure is called a *hysterectomy*, and it may also involve removing one or both ovaries. Your periods stop once your uterus is removed; however, your body will continue to produce estrogen if your ovaries are left intact.<sup>10, 11</sup> Eventually you will stop producing estrogen with natural menopause, probably a year or 2 earlier than if you still had a uterus. You may also have surgery to remove your ovaries but that leaves your uterus in place. This procedure is called *oophorectomy*

. If both ovaries are removed, you will enter menopause. If only one is removed, you will continue to have periods until natural menopause. Some medical treatments, such as radiation treatment for cancer, may damage the ovaries and trigger menopause.

Each year, more than 600,000 hysterectomies are performed in the US. One in three women in the US have had a hysterectomy by age 60.<sup>11</sup> African-American, Hispanic, and American-Indian women are significantly more likely to have a hysterectomy than white women, while

Asian/Pacific Islander women are less likely.

10

### **Should I consider hormone therapy to reduce my risk of stroke?**

No. Clinical trial data indicate that estrogen plus progestin hormone therapy, as well as estrogen alone, *increases* stroke risk in healthy postmenopausal women and provides no protection against stroke for women with established heart disease. The Women's Health Initiative clinical trial examined 16,608 generally healthy postmenopausal women and found that estrogen plus progestin increased stroke risk by 44%, including in women with no history of cardiovascular disease.<sup>2</sup>

If you are currently taking hormone therapy and are worried about increased stroke risk, see your doctor about gradually tapering off.

[Click here](#) to learn more about hormone therapy and stroke.

### **Does age at menopause affect my risk of having a stroke?**

Early or premature menopause has been linked to early death. A study of more than 6000 women found that those who underwent early menopause (ages 35 to 40) had a greater likelihood of dying early from any cause.<sup>12</sup>

However, with respect to stroke, a study involving close to 20,000 Norwegian women found no link—after a 37-year follow-up—between age at natural menopause (early, normal, or late menopause) and dying from stroke. A Spanish study also found no significant relationship between having a stroke and particular age at menopause.<sup>13, 14</sup>

### **Do age and menopause have an effect on other risk factors for stroke?**

Yes. The risk of developing [diabetes](#) , [high blood pressure](#) , and [high cholesterol](#) increases with age. Almost all risk factors become more common in women than in men at older ages because women live longer than men, and after menopause women lose the protective benefits of estrogen. Only smoking remains more common in older men.

15

Menopause, either natural or surgical, increases your levels of total cholesterol. It also increases levels of chemicals involved in the body's immune system response, such as interleukin-6, and it increases levels of [homocysteine](#) , a protein linked to the development of damaged arteries. <sup>16-19</sup> Both of these compounds may increase your risk of stroke.

The risk of developing [metabolic syndrome](#) —a collection of risk factors for both heart disease and stroke, including a large waistline (greater than 35 inches), higher than normal blood sugar, blood pressure, and triglycerides—is higher in postmenopausal than premenopausal women.

20

[Next: References](#)

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