



The Biology of Menopause

MENOPAUSOLOGY



The Menstrual Health Timeline Explained

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WELCOME

Menopausology takes a look at the biology of menopause in a relevant and meaningful way. We introduce you to the framework of the menstrual health timeline and the blueprint for ovarian aging, across life stages.



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Health Disclaimer:

The information, including but not limited to, text, graphics, images, and other material contained in this guide is for informational and educational purposes only. Always seek the advice of your physician or other qualified health care provider with any questions you may have regarding a medical condition or treatment and before undertaking a new health care regimen.



WHAT IS MENOPAUSOLOGY?

The Bi(Ology) of (Menopaus)e

The story of menopause starts the moment two chromosomes unite. When a person is born with ovaries and a uterus a menstrual health timeline is forecast. Once the ovaries ‘switch on’ a hormone journey unfolds before your very eyes, which is quite different to someone born without ovaries and a uterus. **The timeline represents ovarian aging across life stages.**

The history of humans shows that the topic of menstrual health has fascinated scholars for millennia. Aristotle (384-322BC) and his friends are known to have been curious as to “why female fertility ceases long before death”. He described the permanent cessation of menstruation around the age of 40.

Yet two thousand years later the basic biology of the menstrual cycle (beyond reproduction), menstruation, and the menstrual health timeline is not taught to anyone. A survey carried out by The Menopause School could not find one person who had received a lesson on menstruation and menopause in formal education, or at any time in their lives.

The following pages will present you with a different way of thinking about periods, perimenopause, and beyond.

Once you have read this guide you will know:

- What the menstrual health timeline is
- The benefits of understanding it and,
- Why it can be tricky to navigate

Definition:

Menopause (noun) is typically when a menstruator has not had a menstrual cycle for 12 consecutive months, combined with signs that suggest the ovarian activity that drives menstruation has changed, and consequently, the menstrual cycle has stopped, permanently.



THE MENSTRUAL HEALTH TIMELINE

Understanding Ovarian Aging

The Menstrual Health Timeline represents a hormone health journey from the day ovaries switch on around the age of 8.

A few years later menstruation occurs for the first time and the menstrual cycle begins. To start with cycles can be irregular, but over a lifetime there will be between 400-500 menstrual cycles.

The menstrual cycle is an essential life rhythm like a heartbeat and continues for another 40-45 years. Over this timeframe, the ovaries are aging. Each cycle, the ovaries produce sex hormones in a pattern that triggers ovulation and menstruation (unless a pregnancy occurs). The brain is a key part of this process. Within a couple of years of starting, cycles become regular, and total circulating sex hormone levels rise until the late 20s – levels plateau until the late 30s when the tipping point of ovarian aging is reached.

“ *The story of menopause starts with the story of menstrual health*

Ovarian aging then starts to speed up, and ovarian activity becomes unpredictable in hormone output. Menstrual cycle patterns change in frequency and flow. Sex hormone levels start to fluctuate erratically, like a ball bouncing downstairs. The next part of the timeline is called **perimenopause**.

The shifts in menstrual cycle patterns and sex hormone levels create a total mind-body experience. The way the changes are observed and felt we call signs & symptoms. From early to late **perimenopause** the disrupted menstrual cycle pattern continues, sometimes with no menstruation for several months only to start again. Total circulating levels of sex hormones continue to decline.

Menstruation eventually stops permanently. After twelve consecutive months with no menstruation - **this is Menopause Day**. The menstrual cycle no longer occurs, but at this point some ovarian hormone production continues for a few years into the next phase call **Postmenopause**. In due course total sex hormone levels will be 10% of premenopause levels.

The Typical Menstrual Health TIMELINE

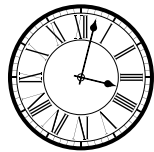
OVARIES
SWITCH ON

8

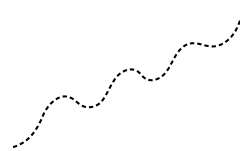
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PERIODS START,
BUT CYCLE IS
IRREGULAR

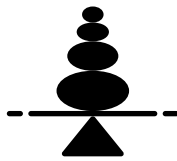
MENSTRUAL CYCLES
THEN BECOME
PREDICTABLE



ESTRADIOL LEVELS
RISE UNTIL THE LATE
20S



ESTRADIOL LEVELS
ARE CONSTANT FOR
~10 YEARS



~ AGE 37 TIPPING
POINT, PERIODS
MAY BECOME
IRREGULAR



ESTRADIOL LEVELS
START TO FALL
UNPREDICATBLY



PERIMENOPAUSE
CHANGING LEVELS
AFFECT PHYSIOLOGY
LASTS 4-7 YEARS



MENOPAUSE (DAY)
AFTER 1 YEAR WITH
NO MENSTRUAL CYCLE



Postmenopause

OTHER TYPES OF MENOPAUSE

Menopause Day can be reached in different ways

The Typical Menstrual Health Timeline can be altered due to surgery, other forms of medical intervention and because the pre-programmed framework is shorter than others.

Surgery

Surgical menopause occurs when ovaries are removed (oophorectomy). This represents a permanent stop to ovarian activity, by no longer being present in the body. Although the uterus may stay intact there will be no menstruation.

Signs and symptoms: a rapid fall of sex hormones, once made by the ovaries, leads to an instant onset of perimenopause, menopause and postmenopause all at the same time. The full spectrum of symptoms may occur in quick sequence, and the mind-body experience is intense.

When a medical procedure removes the uterus (hysterectomy) and the ovaries remain, this is not classed as surgical menopause. The ovaries continue to operate in a cyclical way but there will be no menstruation (loss of menstrual fluid from the endometrial lining of the uterus) and ovarian aging continues in the background along the menstrual health timeline. However, the relative reproductive organ disturbance also has a massive affect on the body. Menopause Day may be reached earlier as a result.

Chemical

Prescribed treatments for health challenges such as breast cancer and endometriosis can trigger a stop in ovarian activity, which may lead to a sudden menopause. The menopause may be temporary and only take effect whilst taking the medication. Depending on the age, this may mean a person experience a 2nd typical menopause at a later date.

Signs and symptoms: with the quick change in hormone levels symptoms can seem more exaggerated. As the person may also have symptoms from the condition they are receiving treatment for, the combination of the two is certainly difficult to navigate.

Early Menopause and Premature Ovarian Insufficiency (POI)

The menstrual health timeline is shorter and menopause day is reached between the ages of 40-45 (Early) or before the age of 40 (POI), but may still menstruate and ovulate. Signs and symptoms are similar to a typical menopause, but the psychological impact is acute. As it is happening at a much younger age there is an increased risk of cardio vascular disease and osteoporosis. There may also be a higher incidence of anxiety and depression, low thyroid and eye health concerns.



THE SEX HORMONES

Beyond secondary sexual characteristics

A team of powerful hormones

The sex hormones involved in menstruation are the same ones in menopause. Tuning in to the mind and body during the menstrual cycle will give an insight into how sensitive someone is to the changing levels. This is certainly worth exploring so there is a baseline to refer to when larger shifts occur at the point of perimenopause.

The Sex Hormones

Oestrogens - a category of hormone that has multiple roles (see below)

Progesterone - derived from cholesterol, most often noted for its role in periods and pregnancy, but is also a brain chemical that helps with managing stress and is involved in bone formation.

Testosterone - signals the body to make new red blood cells, and has a role in bone density, muscle mass, sense of well-being, metabolism, and libido.

All three help to support the hormone collective (50+ hormones), and have a connection to nearly all hormone pathways in one way or another. They are both protective and supportive. This is why every hormone fluctuation in the menstrual cycle creates subtle physical and emotional differences.

The specific oestrogen made in the ovaries during the menstrual cycle, called estradiol, is incredibly powerful in its own right.

Estradiol has a role in all eleven systems of the body and plays a part in the anti-inflammatory response, mood (part of the happy hormone family), brain energy and the nervous system, body temperature, skin smoothness, bone and muscle formation, great working metabolism, immune function, digestive system, kidney function, supports other hormones, and of course the menstrual cycle and reproduction.

MENSTRUAL HEALTH IN PERIMENOPAUSE

The Tipping Point

Perimenopause is the part of the timeline between Menopause Day, and the time when ovarian activity changes. The tipping point is typically marked by a change in menstrual cycles, but many people notice psychological indicators first.

When the menstrual cycle is a regular heartbeat along the timeline, the physical and emotional resilience window is narrow. The sex hormones have a tighter control over things. Each menstrual cycle is like a rhythmical reset. This is often termed metabolic flexibility.

- Stressful situations may be more manageable.
- Energy levels may be more stable.

The different levels of sex hormones across the menstrual cycle phases each have their strengths and vulnerabilities. Tuning into the fluctuations and learning to listen to the mind and body as it follows this incredible sequence, will help explore how to optimise the best way of eating, moving, rest & destressing.

During perimenopause when ovarian activity becomes different and menstrual cycles change, the sex hormone levels go up and down erratically, and the physical



and emotional resilience window gets wider.

The eleven systems experience much larger shifts and find it difficult to come back to the center again, which makes stress harder to manage and energy levels less stable. The menstrual cycle reset doesn't happen as often, or the window of opportunity to do so is shorter. The change in rhythm reduces metabolic flexibility.

The way the mind & body react to the sensitivity in the changes in sex hormone levels and rhythms are referred to as perimenopause signs & symptoms.

There are three categories:

Physical e.g. heavy periods, joint pains, hair loss.

Psychological e.g. sadness, anxiety

Physiological e.g. brain fog, insomnia

Where a person is on the Menstrual Health Timeline, and the Menstrual Cycle pattern, will have a direct impact on physical and mental health.

MENSTRUAL MATHS

Puberty is when periods usually start aged ~11

The ovaries are programmed to experience 400-450 cycles over a total of ~35-45 years. The early cycles are intermittent but settle into a 'regular' pattern until the late 30s. The timeline may be primarily affected by PCOS, Smoking, BMI, Race & Ethnicity.

Premenopause

When ovarian activity begins to change, around the late 30s but, no obvious signs and indicators of the change can be felt.

Perimenopause (aka menopause transition)

The time before menopause day represents the last ~7-10 years of ovarian activity. The ovarian cycles often become intermittent. Signs and indicators are likely to be experienced.

Periods stop for 12 consecutive months = Menopause Day

11 + 40 = 51 - the average age of menopause for White people

11 + 35 = 46 - the average age of menopause for South Asian people

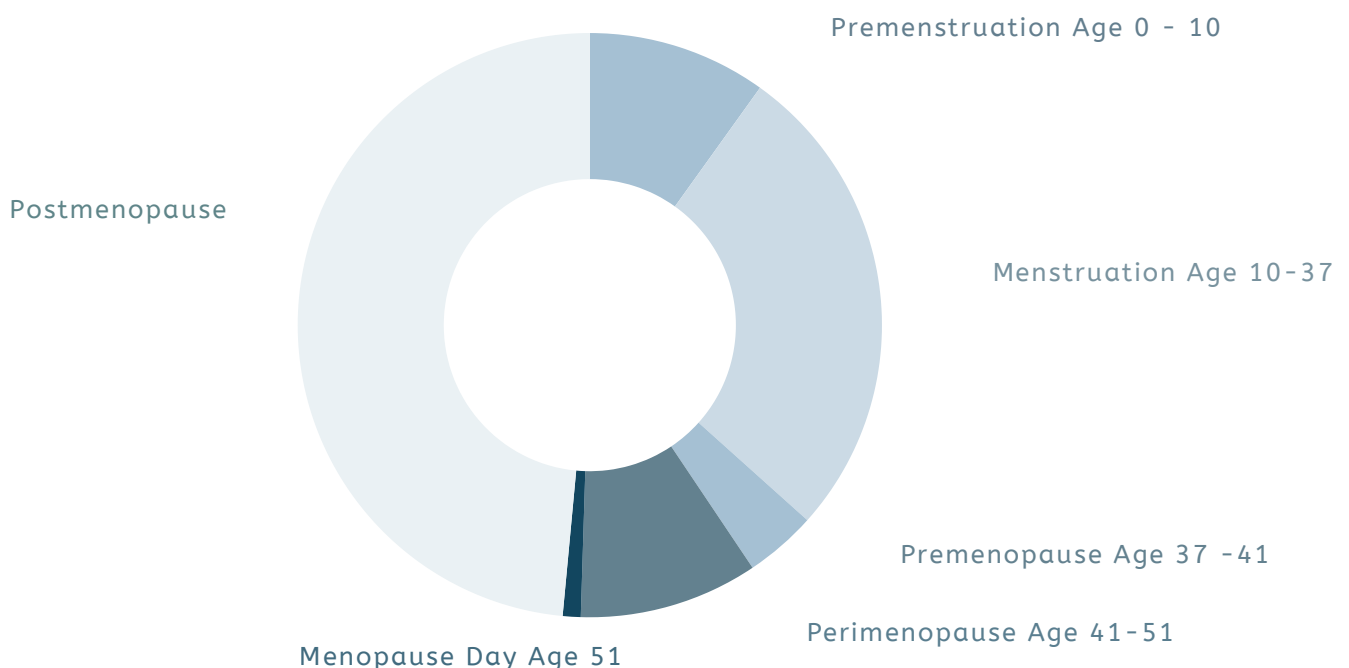
11 + 38 = 49 - the average age of menopause for Afro-Caribbean people

Postmenopause is the day after Menopause Day

Menopause day + 1 day = Postmenopause + ∞

Postmenopause is a retrospective moment in time because you don't know you have reached it until you have reached Menopause Day

See below the 'typical' time frames spent in each zone (based on living from 0 to 100!)





MANAGING MENSTRUAL HEALTH

Based on 5 key areas

You cannot control ovaries, but you can influence the body's response to the hormone shifts, by creating a positive operating environment, aka lifestyle factors.

The key long-term objectives when managing menstrual health are to:

- Find ways to minimise the sensitivity to the changing levels
- And help the sex hormones to be as effective as possible

Breathing well

Stress levels are a key factor in sex hormone function. Breathing well reduces stress and helps sex hormones work better.

Nutrition

Eating a wide variety of real foods provides the essential nutrients the body needs to function well, including gut and liver health, which directly supports hormone function.

Movement

Exercise keeps joints supple and muscles strong. It also increases oxygen in the body and improves heart health. Some types of movement help to lower cortisol levels, helping sex hormones work better.

Rest & Destress

Sleeping well, having a good circadian rhythm, and reducing stress all support hormone function.

Social Connection

Staying connected to other humans supports levels of happy hormones, which helps sex hormones work better.



THE BIGGER PICTURE

‘Menopause is the planned end of ovarian function’

Dr Jen Gunter, OB/GYN, Author of *Menopause Manifesto*

Menopause is not a hormone deficiency and it is not a disease.

Menopause is a chemical re-ordering and each menstruator will face the same long-term biological pressures, with or without symptoms along the way.

How you menopause matters

Some people will notice many symptoms, some a few, some none. Symptoms create wear and tear on the mind and body so taking action to manage them effectively is very important.

Postmenopause, the lower levels of sex hormones and all their protective benefits are significantly reduce, so paying attention to your well-being activity is of paramount importance for healthy aging. Menstruators are at increased risks to certain conditions when compared to people who don't menstruate.

Such as:

- Type 2 Diabetes
- Cardiovascular disease
- Bowel Cancer
- Dementia
- Osteoporosis

Whilst menopause should not be a surprise, it is a shock to many. This is due to a lack of safe, sensible, and supportive information at different touch-points in a menstruator's life. We hope you have found this guide insightful and will encourage you to be curious to learn more. With knowledge comes clarity, with wisdom comes calm, and by connecting with the process people can travel with grace and confidence along the menstrual health timeline from periods to perimenopause and beyond.



Healthy aging is directly related to healthy menopause



HOW CAN WE HELP?

The Menopause School provides a wide range of comprehensive resources and services for individuals and organisations as part of our Menstrual and Menopause Health Workplace Wellness Program.

Lunch & Learn

Workshops

Menopause Support Groups

Individual Care

Please visit our website for more information.

Or email info@themenopauseschool.com

You can self-refer and speak to a Menopause Doula today.

If you would like 1:1 support, or are curious to know what that involves, please reach out.

Other titles in the series

Menstrual Health 101

Menopause Journal & Tracker

Menopause Hormone Therapy

Menopause Mapping

The bottom line:

Curiously there is no joined-up study topic of the specific biology of the menstrual health timeline and Menopausologists don't exist ... yet!

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