'The book my patients have been waiting for.'

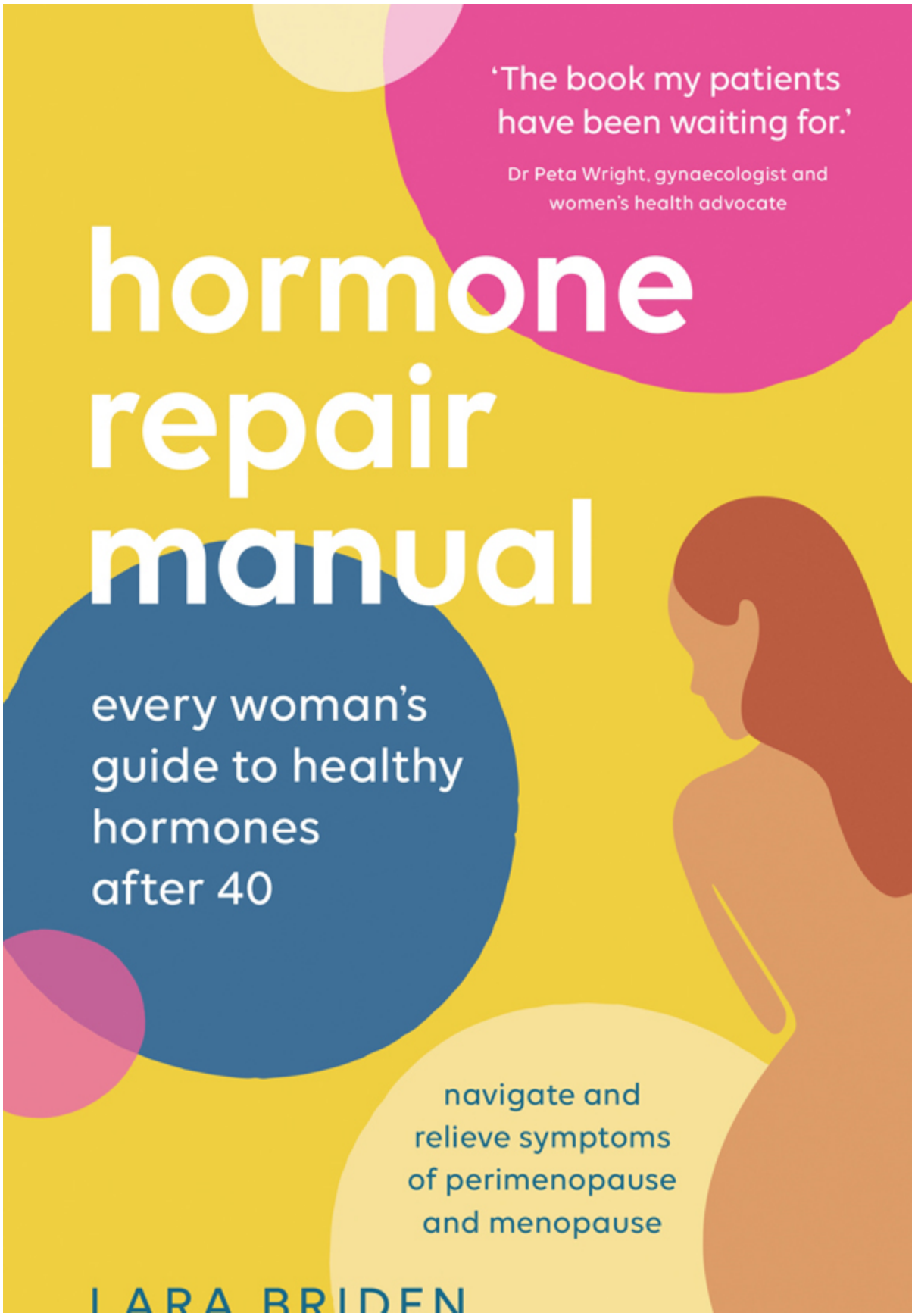
Dr Peta Wright, gynaecologist and women's health advocate

hormone repair manual

every woman's guide to healthy hormones after 40

navigate and relieve symptoms of perimenopause and menopause

LARA BRIDEN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About *Hormone Repair Manual*

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The *Hormone Repair Manual* is a must-have guide to understanding and overcoming the symptoms of perimenopause and menopause.

Naturopath Lara Briden, author of the international bestseller *Period Repair Manual*, has more than 20 years’ experience in women’s health. Her fresh approach aims to overturn the stigma of perimenopause and menopause and show women that:

- many symptoms are temporary and manageable
- emotional challenges can present an opportunity to thrive
- a focus on health during this period can bring benefits for years to come.

Addressing common symptoms such as hot flushes, insomnia, mood changes, migraines, weight gain, low libido and heavy periods, Lara offers practical solutions of diet, lifestyle, nutritional supplements and tips for how to speak to your doctor about hormone therapy.

The *Hormone Repair Manual* is backed by evidence-based research and case studies and is a reassuring guide to soothing, nourishing and strengthening your body, mind and spirit during this time of change.

hormone repair manual

Every woman's guide to healthy hormones after 40

LARA BRIDEN

MACMILLAN
Pan Macmillan Australia

Contents

To my patients

Introduction

Welcome to *Hormone Repair Manual*, your guide to healthy hormones after 40.

If you read my first book *Period Repair Manual*, you know how passionate I am about women's hormones and periods. In fact, you could say I'm a cheerleader for women's hormones and all the benefits that come from natural menstrual cycles.

With this book, I'm equally passionate about the final few years of periods called *perimenopause*, and the years after periods called *menopause*. I didn't include the word perimenopause or menopause in the title because I didn't want you to think, 'Oh, this book doesn't apply to me', when in fact, if you're 40 (or even close to 40), then it very much *does* apply to you.

Why am I so passionate about perimenopause and menopause?

First, because it's happening to me. I'm 50 at the time of writing and have started having long gaps between periods and forgetting where I parked my car. I'm also discovering a new feeling of cheeky independence, which I'll explain more in Chapter 2 and which I had heard about from patients but never really understood until it happened to me.

The second reason I'm passionate about perimenopause and menopause is that I'm eager to shine a light on how normal and okay it is. I'm doing so in response to an unofficial survey I conducted on my social media pages where I asked, 'Are you afraid of menopause?' and 64 per cent of women responded, 'Yes'. In the comments, they described being frightened of symptoms, which is understandable, but also of being frightened of the stigma of menopause, which is also understandable, but sad. How can society still attach such stigma to a normal natural process that happens to 51 per cent of the population?

We'll tackle stigma in Chapter 2, where I'll offer what I hope are a few new angles on the whole thing. I'll also invite you to view menopause as a separate process from aging, which is accurate, because, although perimenopause happens alongside aging, it's actually an independent process that is more akin to *second puberty*. We'll explore the concept of second puberty in Chapters 1, 2 and 4 and I'll present the argument that, from an evolutionary perspective, menopause may actually have evolved as a beneficial *adaptation* to give rise to a longer human lifespan. Viewing menopause as a beneficial adaptation is just one of several ways to find *meaning* in the process and see beyond the common narrative that menopause is just an accident of living too long.

How to use this book

The first four chapters are all about understanding the process of perimenopause, both emotionally and biologically, including a discussion of the importance of regular ovulation. If it seems strange to learn about ovulation just as you're about to stop ovulating forever, consider that 'stopping ovulation' is the cause of most symptoms that might arise. To understand symptoms and how to treat them, you need to start by understanding ovulation.

The final six chapters of the book are all about treatment. Drawing on the latest research and my own twenty-five years' working with patients, I'll provide nutritional and hormonal treatment strategies for symptoms

ranging from heavy periods to weight gain to anxiety and night sweats. We'll begin with a General maintenance chapter about the nervous system and diet and then move into a full discussion of hormone therapy before surveying each symptom individually and how to treat them with both conventional and natural treatment options.

Start by reading the book from cover to cover, because there are essential topics nestled within each chapter. For example, Chapters 5 and 8 provide a detailed description of *insulin resistance* or prediabetes, which, for reasons that will become clear, is crucial for almost every part of the perimenopause and menopause story. Chapter 7, the 'brain chapter', is where you'll learn about hot flushes, and Chapter 10 is where we'll discuss long-term concerns such as vaginal dryness, cognition and bone health.

Special boxes

Throughout this book, you'll encounter definitions, tips, patient stories and special topics.

DEFINITION

Definition boxes provide simple explanations for any technical words. You can also find these explanations in the Glossary at the end of the book.

TIP

Tips are extra bits of information you may find helpful.

PATIENT STORIES

Patient stories are fictionalised stories based on my real patients, with names and some details changed.

🔍 **SPECIAL TOPIC: EXPLORE IN MORE DETAIL**

Special topics to provide you with extra, in-depth information.

How to speak with your doctor sections

At times, you'll need your doctor's help, either for diagnosis or treatment, and I want your doctor–patient conversations to be as productive as possible. Towards that goal, I have provided short How to speak with your doctor sections, which are lists of statements and questions to assist in communication about topics such as How to speak with your doctor about progesterone for heavy bleeding.

Are the recommendations evidence-based?

For all the diet, lifestyle and supplement recommendations, I have provided a reference to a scientific study whenever possible. That amounts to more than 350 studies to support many of my recommendations. When I have not provided a reference, it's because research was not yet published on that topic, such as for some of the herbal medicines, as well as for concepts like the role of mast cell activation and histamine in perimenopausal mood symptoms. I hope that scientists will one day study those treatments and concepts, but in the meantime, I want you to have the benefit of them. If that means being ahead of the curve of scientific inquiry, then so be it.

More importantly, my recommendations are based on the success of thousands of my patients. Most are simple and safe to try, and when there are precautions, I list them. I also ask that you speak with your doctor or pharmacist about possible interactions with your medical conditions or medications, or if you are pregnant or breastfeeding. Always cross-check the labels or packaging for precautions and dosage instructions. To assist you, I've provided a list of Suggested supplements brands on page 308, but I have not been paid to mention any product or brand name. At the end of

the day, you should choose the supplement that is available to you and is not too expensive.

Chapter 6 is a big discussion of menopausal hormone therapy and is as up to date as I could make it, given the evidence is constantly changing from ‘hormones are good for prevention’ to ‘use them only for symptom relief’ and back again. My observation is that estrogen and progesterone therapy can be helpful for some things, so I’ll survey the latest research and consensus and share the experiences of my own patients.

In the book in general and the hormone therapy chapter in particular, I have drawn on the research and writing of my colleague Professor Jerilynn C. Prior, who is a Canadian endocrinology professor and the author of the perimenopause book *Estrogen’s Storm Season: stories of perimenopause*. Professor Prior is a huge advocate of the benefits of progesterone treatment, either as a companion to estrogen or on its own and you’ll encounter her quotes and protocols throughout the book.

My education and background

My first degree was a Bachelor of Science (BSc) from the University of Calgary, where I published my honours thesis as a scientific paper on the foraging behaviour of male and female bats. That work in evolutionary biology was the beginning of my love of science and the natural world, and has informed the way I work with patients. For example, I view the body as a logical, regenerative system that knows what to do when it’s given the right support with nutrition and natural treatments.

After my biology degree, I went on to qualify as a naturopathic doctor (ND) from the Canadian College of Naturopathic Medicine (CCNM) in Toronto, Canada. It’s one of seven accredited colleges of naturopathic medicine in North America: two in Canada and five in the United States. The first two years of training are similar to conventional medical programs, while the final two years provide hundreds of hours of training in nutritional and herbal medicine, as well as clinical training in an outpatient clinic. After graduating in 1997 under my maiden name, Lara Grinevitch, I

was certified by the Naturopathic Physicians Licensing Examinations (NPLEX), which are professional licensing exams administered by the North American Board of Naturopathic Examiners (NABNE).

My first five years of practice were in Pincher Creek, Alberta, Canada, in the 1990s, which was an interesting time to be a natural doctor because even basic things like probiotics were viewed as strange. 'Good bacteria?' said one colleague. 'How ridiculous!' The 1990s were also a somewhat scary time for women's health. Many of my patients were being treated with high-dose birth control pills, routine hysterectomies, and an old style of hormone therapy called Premarin®. As I strove to find better solutions for my patients, I discovered that natural treatments yielded even better results than I had been taught to expect. For example, diet and supplements worked for many symptoms such as hot flushes, and body identical hormone therapy (then called bioidentical) was a viable and safe alternative to the conventional hormone replacement therapy or HRT. This treatment is now known as menopausal hormone therapy or MHT.

Fast-forward twenty-five years and body identical hormone therapy has become the standard hormone therapy recommended in most conventional settings, such as your GP's rooms. The switch to body identical treatment took longer than I expected, but it did finally happen, and means you now have easy access to 'natural hormones' as one of several options your doctor might routinely prescribe. To be sure you do get the safer and more natural type of hormone therapy, see the full discussion in Chapter 6.

After practising in rural Alberta, I moved to Sydney, Australia, where I had consulting rooms for nearly twenty years before finally settling in Christchurch, New Zealand. I currently live in New Zealand but commute to Australia to deliver presentations and occasionally touch base with my Sydney patients.

I'm a member of the Scientific Advisory Council for the Centre for Menstrual Cycle and Ovulation Research, founded by Professor Prior in 2002 at the University of British Columbia, and the Endometriosis Special Interest Group (ESIG) of Endometriosis New Zealand. I also sit on the

editorial board of *Vital Link*, the official journal of naturopathic medicine of the Canadian Association of Naturopathic Doctors.

To my thousands of patients over the years, thank you for entrusting me with your health and stories. I dedicate this book to you.

Lara Briden

Part One

Understanding perimenopause and menopause

‘Nothing in life is to be feared,
it is only to be understood.
Now is the time to understand
more, so that we may fear less.’

Marie Curie

1

Hormone revolution: why everything is different after second puberty

If you've picked up this book, it's because you feel that something is changing with your body and maybe with your life.

You're not imagining things. By your late thirties or early forties, something *is* changing with your body and, more particularly, with your brain, and it can feel bewildering, frustrating and liberating all at the same time. The change is not a single event, but a process called perimenopause, which is the two to twelve years *before* your periods stop. Perimenopause is different from menopause, which is the life phase that begins one year after your last period.

This book is about both the process of perimenopause and the life phase of menopause, which together could comprise more than four decades.

What do you need to understand about this important new chapter in your life?

First, understand that symptoms (if you experience them) are likely to be temporary. Not *all* perimenopausal symptoms are temporary but many are, and knowing that will prevent you from thinking, 'Oh, my goodness, this is how I'm always going to be now'. It's not how you're always going to be; this too shall pass.

Next, understand that perimenopause is not just chaotic 'hormonal fluctuation', but a *sequence of events*, beginning with low progesterone paired with temporarily high estrogen, and concluding with low estrogen and some significant changes to insulin metabolism. Perceiving the process as a sequence of describable events will help you to find the right treatment.

Finally, know that perimenopause and the early years of menopause are a *critical window* for health, and that's true even if you don't have symptoms. By critical window, I mean a *sensitive period* or inflection point, during which time small health problems could, if not addressed, amplify into larger and more permanent health problems later in life. The good thing about an inflection point is it also gives you a *window of opportunity* to make small changes that could pay huge dividends for your future health.

So there we have it:

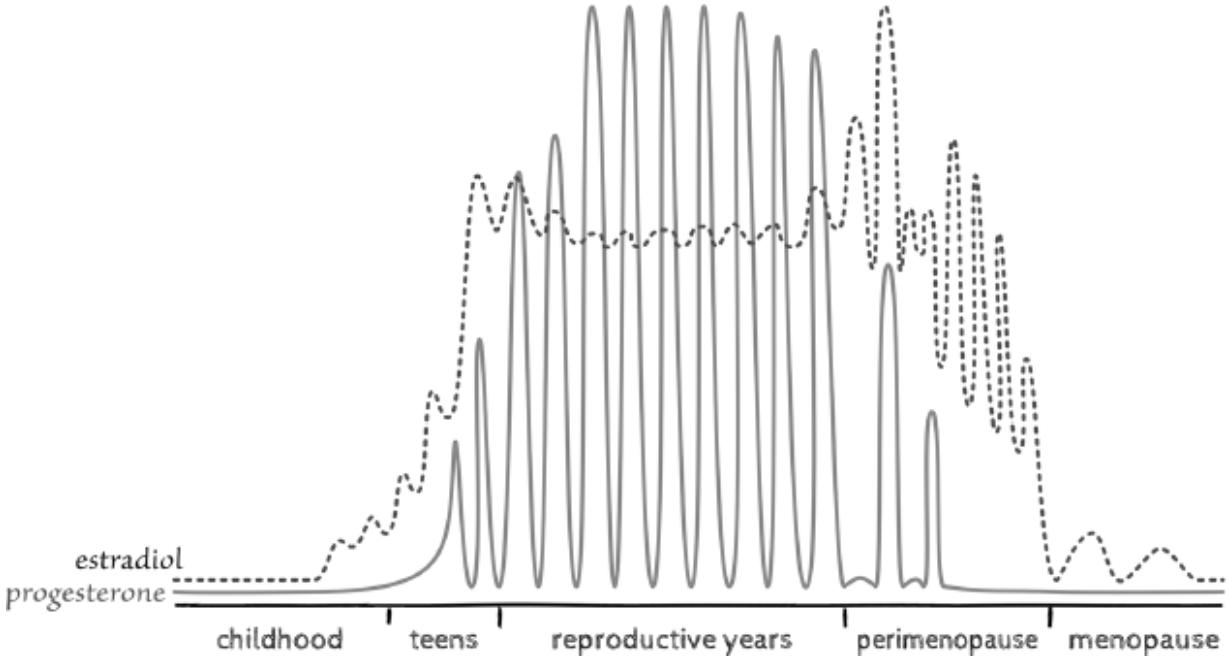
Many symptoms are temporary.
Perimenopause is a sequence of events.
Perimenopause and the first couple of years of menopause are a *critical window* for health.

Let's now explore those concepts in detail.

Perimenopause is second puberty and is temporary

Perimenopause is not about aging. If you're 35 or even younger, then you're clearly still young. And even if you're 50, perimenopause is happening alongside aging but is not *caused* by aging. Instead, perimenopause is a sequence of hormonal events and changes that are more

akin to puberty or second puberty. Consider the following representation of lifetime estrogen (estradiol) and progesterone, depicted by endocrinology professor Jerilynn Prior.



Adapted from JC Prior, 'Perimenopause lost – reframing the end of menstruation', *Journal of Reproductive and Infant Psychology*, 2006, vol. 24, pp. 323–35.

Estrogen is low in childhood and then high and fluctuating during the teen years, especially in comparison to progesterone, the 'period-lightening hormone', which is low until regular cycles become established. High estrogen paired with low progesterone occurs in both first and second puberty, with progesterone being *slowly gained* in first puberty and *slowly lost* in second puberty. High estrogen paired with low progesterone is why you may have encountered heavy periods as a teen and, unfortunately, why you could encounter them again in your forties. Eventually, with second puberty, you will also lose estrogen and arrive at the stable low estrogen of menopause that is similar to childhood levels.

The process of hormonal change could last ten years, which means symptoms could last ten years but won't last forever. Therefore, you'll want

to think twice before accepting as permanent any diagnosis such as chronic fatigue or *fibromyalgia*.

> 📖 **FIBROMYALGIA**
>
> Fibromyalgia is the condition of unexplained chronic widespread pain and heightened pain response to pressure. It typically affects women aged 40–60.

Professor Prior talks about perimenopausal fibromyalgia in her book *Estrogen's Storm Season* and attributes it to temporary perimenopausal sleep disturbance:

> Because of sleep disturbance, some women get extremely achy and tired. Some of us, very early in perimenopause, are diagnosed with chronic fatigue syndrome or fibromyalgia. If we knew that our symptoms were part of perimenopause, we'd have room for hope. Instead, we're often given a diagnosis and end up going on disability, losing not only our health, but also our identities and our jobs.

We'll speak more about fibromyalgia, and how to treat it, in Chapter 8.

Other symptoms of second puberty that are temporary include heavy periods, pelvic pain, sore breasts, migraines, night sweats and most importantly: anxiety and depression. According to most research, the risk of anxiety and depression goes up with perimenopause only to come right back down again with menopause. In other words, if you can just hang on – or support yourself with the treatments provided in Chapter 7 – you could reach your mid-fifties and find your mood is at least as good as when you were younger, and maybe even better. That's according to several lines of evidence, including research from the University of Melbourne, which concluded that the majority of women over 60 report feeling 'pretty fantastic', and the observations of US psychologist Mary Pipher, who says that 'a woman in her seventies is likely to be the happiest she's ever been'.

Professor Prior says women need to know that ‘perimenopause ends in a kinder and calmer phase of life appropriately called menopause’.

Not every symptom in your forties can be attributed to perimenopause. Far from it. Symptoms such as pain and fatigue can instead be an indication of an underlying health problem so you should check with your doctor. One condition to keep an eye on is thyroid disease, which exists independently of perimenopause but can also be amplified or worsened by perimenopause – or even mistaken for perimenopause because the symptoms are so similar. We’ll explore the intersection between thyroid disease and perimenopause in Chapter 8.

So far, we’ve looked at how many symptoms of second puberty are likely to be temporary. Let’s now turn to perimenopause as a sequence of events.

Perimenopause is a sequence of events

It starts with losing progesterone. At some point in your forties or even late thirties, you will start to make less progesterone, despite still having regular periods. You’ll learn *why* in Chapter 3, but for now, just accept that it does happen and can bring a whole host of symptoms, such as anxiety, breast pain, heart palpitations, night sweats, frequent migraines and crazy, heavy periods. The fact that perimenopausal symptoms stem largely from losing progesterone, not estrogen, is why – and we’ll get into this – progesterone, not estrogen, can be the better treatment.

As you’re losing progesterone, you could start to experience higher estrogen than ever before; in fact, up to three times higher, which can cause symptoms such as irritable mood, breast pain and heavy periods. High estrogen symptoms stem both from the direct effects of the hormone and from estrogen’s indirect effects on mast cells and histamine, which we’ll explore in Chapters 4 and 5. Perimenopausal hot flushes stem from the fluctuation in estrogen and the drop from high to low, which means, according to Professor Prior, that flushes while you’re still having periods are more likely to respond to progesterone than to estrogen.

Eventually, after your final period, you'll move into the territory of lower estrogen, which is just that: *lower* estrogen, not deficient estrogen, because there's nothing 'deficient' about having the level of hormone that is normal for the life phase you're in. Also, as we'll see, you still make a fair amount of estrogen during that time but it fluctuates, so again, many of the symptoms come from the drop from high to low. Menopausal symptoms such as insomnia, memory loss and vaginal dryness can respond to estrogen plus progesterone therapy.

Your new state of low progesterone and lower estrogen can also contribute to a change in insulin sensitivity called prediabetes or insulin resistance.

INSULIN RESISTANCE

Insulin resistance is the condition of reduced sensitivity to the hormone insulin, leading to chronically (i.e. ongoing) elevated insulin levels. It's also called hyperinsulinemia, metabolic syndrome or prediabetes, and is a major player in abdominal weight gain and many other menopausal symptoms.

Identifying and reversing insulin resistance will be one of the most important parts of your menopause journey. I'll explain why in Chapters 4, 5, 7 and 8, where I'll also explain the role of relative testosterone dominance, and provide treatment strategies such as *intermittent fasting*.

INTERMITTENT FASTING

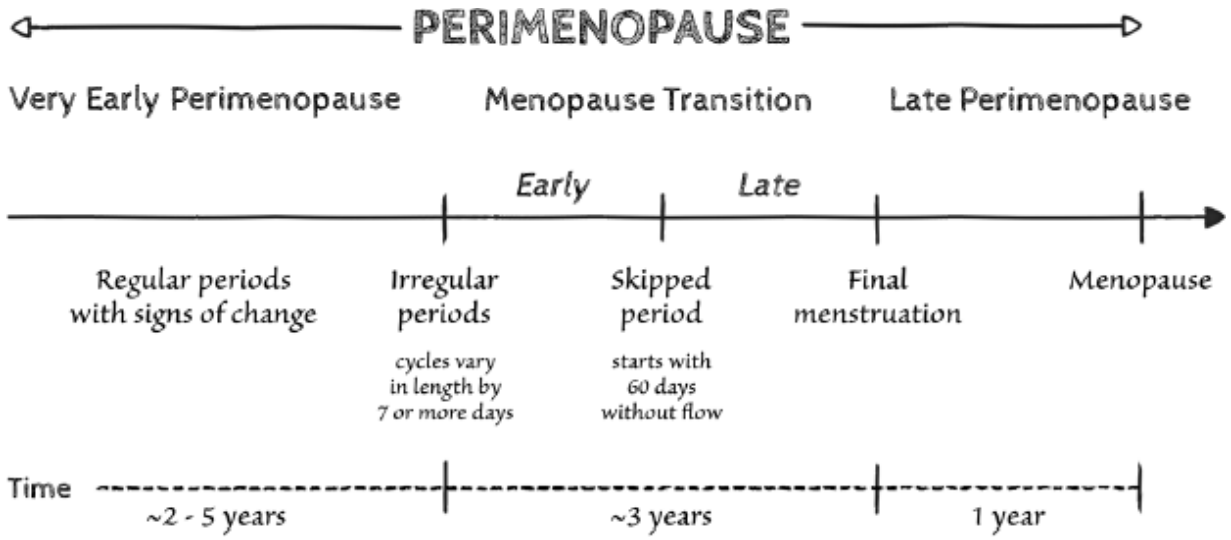
Intermittent fasting is daily cycling between periods of fasting and eating.

The perimenopause sequence of events is:

lower progesterone
high and wildly fluctuating estrogen
lower estrogen
possible insulin resistance.

On average, the entire natural perimenopause transition takes about seven years, and Professor Prior breaks it down into the following four phases plus menopause, which we'll explore in more detail in Chapter 4:

very early perimenopause, when cycles are still regular
early menopause transition, from the onset of irregular periods
late menopause transition, from the first cycle of more than sixty days
late perimenopause, which is the twelve months from the final period
menopause, which is the life phase that begins one year after your last period.



If you reach menopause before the age of 45 or undergo menopause that is surgically or medically induced, you won't experience these four phases but will instead move directly to a very low estrogen state. Such a sudden transition can produce stronger symptoms than natural perimenopause, and almost always requires estrogen plus progesterone therapy, which we'll also discuss in Chapters 4 and 6.

If you had a partial hysterectomy (removal of the uterus) but retain your ovaries, you will still go through the four phases of the natural perimenopause transition and have years of 'hidden cycling', which means years of high estrogen and 'premenstrual' symptoms, such as mood changes, breast pain and even endometriosis pain – just no bleed to signal

what's going on. It can make for a confusing time, because you or your doctor could mistakenly assume you're in menopause and could therefore try to use estrogen to treat symptoms of high estrogen.

That happened to my patient Rita.

RITA – NOT YET MENOPAUSE

Rita was 48 when she came to me for help with 'menopausal symptoms' including irritable mood and monthly migraines.

'Those sound like high-estrogen symptoms,' I observed, 'but tell me what's going on.'

'I get a bad headache about twice a month,' Rita told me. 'And around the same time, my breasts swell. My doctor gave me an estrogen patch but it seems to worsen my mood and headaches.'

I looked at her notes and saw she'd had a hysterectomy three years before.

'You're still cycling,' I said.

'But I don't have periods,' Rita replied.

'Only because you don't have a uterus to bleed,' I said. 'But your ovaries are cycling and making lots of estrogen, which is why there's a monthly pattern to your headaches.'

We tested Rita's FSH, a pituitary hormone that can indicate menopause, and it came back in the non-menopausal range.

'I suspect you've got a few years of cycling ahead of you,' I said. 'Let's try a treatment more suitable for the high-estrogen of perimenopause.'

Rita started magnesium and progesterone – my two favourite treatments for perimenopause – and felt a lot better.

'That should work for now,' I said, 'Until you get closer to menopause, at which time, you could be fine, or you could start to notice symptoms from lower estrogen such as hot flushes and vaginal dryness. If that happens, you can think about adding estrogen therapy.'

Just a word about the FSH blood test, which we'll revisit in Chapter 3. FSH stands for follicle-stimulating hormone, which is the hormone your pituitary gland makes to talk to your ovaries. If you're not yet in menopause, your FSH will usually be lower than 40 IU/L although it fluctuates, so it could occasionally be higher. Because FSH fluctuates so widely during perimenopause, most doctors are reluctant to test it, which is

fair, but I still order FSH to detect early menopause or to assess for a *non-menopausal* state in patients like Rita.

In summary, if you had a hysterectomy and don't know what's going on, here are a few things to keep in mind:

You could still be cycling, especially if you're seeing a monthly pattern to symptoms such as headaches, mood or pain. Recognising a hidden cycle means you can say, 'Oh, *that's* why I had a few bad nights' sleep; I was coming up to my "period"'.
If you can detect the day when you feel relief from your mood or sleep symptoms, that's 'day one' of your hidden cycle.
Tracking temperatures (Chapter 3) could enable you to pinpoint if and when you ovulate and have a premenstrual phase.

You can also speak with your doctor, which brings us to the first How to speak with your doctor section.

How to speak with your doctor about perimenopause if you've had a hysterectomy

- 'I understand that because I still have my ovaries, it's possible I'm still having menstrual cycles.'
- 'Could my symptoms be premenstrual symptoms?'
- 'Would it be suitable to test my FSH to see if I've actually achieved menopause?'

Recall that we're exploring a few key concepts. So far, we've looked at how *perimenopause is second puberty and therefore temporary* and how *perimenopause is a describable sequence of events*. We now come to perimenopause as a *critical window*.

Perimenopause is a critical window for health

As stated earlier, a critical window is a sensitive period or inflection point when small problems (if unaddressed) can amplify to larger health problems down the track. Critical windows are times of *physiological flux*, and other examples include childhood, puberty, pregnancy and the post-partum period – all times of increased vulnerability to the onset of new health conditions. Some researchers describe such times as physiological 'tipping points', when small perturbations can amplify in a way they wouldn't during a time of steady-state physiology.

The critical window concept affects every aspect of health. For example, data from the US Study of Women's Health Across the Nation (SWAN) identifies perimenopause as a vulnerable time for the onset of heart disease and calls it 'a critical window of opportunity for prevention'. Much of the cardiovascular risk stems from the shift to insulin resistance, which we'll explore, and which fortunately, can be improved by simple diet and exercise.

Another aspect of health that can be affected is the immune system, which, as we'll see, essentially *remodels* itself during perimenopause. That's why perimenopause (like the post-partum period) is a risky time for the onset or worsening of autoimmune diseases. The best example is Hashimoto's thyroid disease, which we'll discuss in Chapter 8, along with strategies for keeping your immune system safe and healthy through its remodelling process.

Finally, perimenopause is a risky time for the brain, in a similar way to childhood, puberty, pregnancy and post-partum. During all those times, the brain *recalibrates*, which to use a computer analogy is like a software update. If all goes well with the update, the result is slightly different, but still healthy brain function. However, if even a small glitch is encountered during the update process, the result can be a larger health problem than if the same glitch occurred during steady-state physiology. One example is the slightly increased risk of first onset of serious mental health problems during adolescence and early adulthood, and then again during perimenopause. Overall, the risk for serious mental illness is low, so please

don’t worry. I present this example only to illustrate the importance of both first and second puberty as times of ‘neurological transition’.

Another example of the brain’s recalibration process is the slight cognitive decline that occurs with perimenopause, which is usually temporary but can sometimes amplify to become dementia later in life. According to neuroscientist Lisa Mosconi, Alzheimer’s disease in women ‘begins with menopause’. Which is not to say that Alzheimer’s is *caused* by perimenopause because it’s ‘more like a trigger than a cause’. ‘If a woman is somehow predisposed to Alzheimer’s,’ says Mosconi, then perimenopause ‘is when the risk manifests itself in her brain’. We’ll explore cognition and dementia prevention in Chapters 7 and 10.

In summary, perimenopause is temporary, it’s a sequence of events, and it’s a critical window. This book is your guide to navigating that process of change, with the aim of delivering you safe and happy into the stable final third of your life.

How bad is it going to be?

At this point, you’re probably wondering how bad the symptoms of perimenopause are going to be. If you’ve heard horror stories from friends, you might be worried, but your actual experience will depend on lots of factors.

If you reach menopause before the age of 45 or undergo surgical or medical menopause, you’re at greatest risk of symptoms and long-term health risks. I’ll provide special mention of those situations throughout the book.

If you go through a natural perimenopause transition, you have a 25 per cent chance of severe symptoms. More likely, you’ll suffer only mild symptoms or even no symptoms. If you suffer *no* symptoms, celebrate your good fortune but also remember you’re still in a critical window and should therefore take extra care with your health for a few years.

If you *do* suffer strong symptoms, it’s due to a combination of genetics, your general state of health and the state of your periods before

perimenopause. Let's look at each in turn.

Genetics

Genetics determine both the timing of menopause and, to some degree, the types and severity of symptoms. If you can, ask your mother and older sisters about any history of heavy periods, night sweats or sleep problems. Their experience with perimenopause could provide some insight into what you can expect. That's why I say to my younger sister, 'I'll go first and let you know how it is'.

Fortunately, genes are only part of the story. Equally important is the *expression* of those genes, which can be modified by nutrition, movement, and supporting a healthy circadian rhythm – topics we'll cover in the coming chapters.

The state of your general health

Perimenopause is like a barometer of health in that it can reveal and amplify underlying health issues. For example, if you're already stressed and not sleeping well, the perimenopausal recalibration of your brain could make sleep almost impossible. If you're deficient in the minerals iodine and zinc, the ups and downs of estrogen could manifest those deficiencies as breast pain and vaginal dryness respectively. Finally, if you're already tending towards mild insulin resistance, the shift to lower estrogen could push you into full insulin resistance and abdominal weight gain.

'Perimenopause as a barometer of health' means that the best treatment for perimenopausal symptoms is often the treatment you needed anyway.

The state of your periods before perimenopause

If you had easy periods, you can probably expect an easy perimenopause, because symptomless periods were a good indication that everything was working well, including your body's ability to clear or metabolise estrogen (Chapter 9) and your brain's ability to adapt to the normal ups and downs of hormones (Chapter 7).

If you had difficult periods, you could experience a more difficult perimenopause, because the same issues that affected your periods are going to affect your perimenopause. One example is impaired estrogen metabolism, which can contribute to heavy periods during your reproductive years and even heavier periods during perimenopause. Another example is *neurosteroid change sensitivity*, which is your brain's sensitivity to changing levels of hormones, and can contribute to both premenstrual *and* perimenopausal mood symptoms.

Finally, if you still take the pill or combined oral contraception, you could encounter the problem of 'estrogen withdrawal' when you stop it. That's what happened to my patient Bronwyn.

BRONWYN – COMING OFF THE PILL

'My hot flushes are terrible,' Bronwyn told me. 'They came on with a vengeance as soon as I stopped the pill. And my skin is drying up.'

'You may have already been in menopause for a while,' I pointed out. (Bronwyn was 53.) 'The pill was just masking it by giving you fake periods and a strong synthetic estrogen that prevented hot flushes. Unfortunately, estrogen is addictive, so you're now suffering estrogen withdrawal.'

Bronwyn looked at me in dismay. 'How long does estrogen withdrawal take?' she asked.

'Hard to say,' I admitted. 'At least several months.'

I talked to Bronwyn about magnesium supplements, exercise and some of the other ways to adapt to lower estrogen, but by this point she was at the end of her tether.

'Maybe I should just go back on the pill,' she proposed.

'If you want to go back on estrogen, you're better off looking at hormone therapy,' I explained. 'Modern menopausal hormone therapy is body identical, which makes it gentler and safer than contraceptive drugs.'

Bronwyn chose to use a body identical progesterone capsule and estrogen patch, which she hoped to eventually taper down.

Body identical estrogen and progesterone are identical to the body's own hormones and so are safer and have fewer side effects than contraceptive drugs or older types of hormone therapy such as conjugated horse estrogens

(Premarin®), which were popular in the 1990s. Body identical has the same meaning as bioidentical, which was the term formerly used to describe hormones that are identical to the body's own hormones. The main difference between 'body identical' and 'bioidentical' is that body identical is the preferred conventional term and bioidentical the term traditionally applied to customised hormone formulas dispensed by a compounding chemist, back in the day when compounding was the only way to obtain hormones identical to the body's own hormones. Modern body identical products are available from any doctor and pharmacy, and are widely regarded as safer than non-body identical hormone therapy (Chapter 6).

Were you surprised when I said to Bronwyn that pill bleeds are fake periods and 'estrogen is addictive'? We'll cover those topics in the coming chapters, including a section in Chapter 3 called What does the pill mean for perimenopause? For now, suffice it to say that Bronwyn experienced strong symptoms because she moved directly from the pill to menopause and therefore did not have the opportunity to move gradually through the four phases of perimenopause.

Is hormone therapy always the answer?

In both patient stories so far, my patients opted for hormone therapy, which is common but not the rule. Rita took progesterone for perimenopause, which I suspect is all she was going to need. Bronwyn took both progesterone and estrogen, in large part because she was in the challenging situation of trying to transition from high-dose synthetic estrogen. As we'll see in the coming chapters, some of my patients do not require hormone therapy but, instead, do well on simpler, non-hormonal treatments.

Your decision to use hormone therapy will depend on many factors, which we'll discuss, and on your preference. If you don't want to take hormone therapy, that's perfectly okay because there are other options for many symptoms. At the same time, if you do *want* to take hormone therapy (and your doctor says it's safe), then that's okay too. As we'll see in

Chapter 6, modern hormone therapy is safer than the old ‘hormone replacement’ of the 1990s.

What comes after and staying well in the long term

Your immediate goal is to feel well during what can be a tricky transition. Depending on your situation, feeling well could require changing your diet, lifestyle and/or taking supplements or hormone therapy, many of which could be temporary measures. As you move deeper into the life phase that is menopause, your health should stabilise and you could find you no longer need the supplements or hormone therapy for night sweats, mood or sleep problems. Instead, you may need to shift your attention to milder, ongoing symptoms such as bladder problems and vaginal dryness, all of which we’ll explore in Chapter 10. The final What comes after chapter is also where I’ll provide strategies for maintaining the long-term health of your bones, heart and brain.

Are you ready to embark on the journey to menopause? Let’s begin by exploring the emotional and social aspects of this important life event.

2

Stigma, freedom, grief and everything in between

How do you feel emotionally about the prospect of menopause? Or about the experience so far if you're further along? If you're anything like me, your experience of menopause when it arrives might differ from what you expected. In addition, your experience might differ from that described by other women, which is allowed.

If there's a theme of this chapter, it's that there's no one *right way* to emotionally transit into menopause. You might rejoice or you might grieve or you might feel a mix of the two, and that is fine. You have permission to feel what you feel and not apologise or feel the need to explain yourself. In fact, as we'll see, the freedom to not apologise or people-please might be one of the best things about second puberty.

Let's begin by addressing what I see as the elephant in the room, and that's the stigma of menopause and the shame that can cause us to feel.

Stigma and shame

If you're entirely comfortable with becoming menopausal and feel no sense of shame, you can skip this section. If, however, you've come up against the stigma of menopause or felt even a fleeting flash of shame, let's get it out in the open so we can dispel it.

Menopause is nothing to be ashamed of. I know that. You know that. But, unfortunately, we may still encounter a distinct sense of awkwardness from others that can be easy to internalise if we're not careful.

SONIA – TOO MUCH INFORMATION

Sonia is a doctor in her late forties. She works in a busy teaching hospital and could be considered in every way at the peak of her career.

One day on a coffee break with her colleagues, Sonia mentioned in passing, 'Oh, I'm all sweaty because I'm having a hot flush'. The men in the group responded almost in unison, 'Oh, Sonia! Too much information', laughed awkwardly and quickly changed the subject. The other women in the group were younger than Sonia and remained silent.

Sonia told me she felt a flash of shame that was in many ways worse than the hot flush that precipitated the moment. She was with a group of colleagues with whom she was accustomed to easy banter, but at that moment she learned that, for them, her simple experience of a hot flush was highly off-putting. But why? A hot flush is not in the category of intimate bodily functions like sex or even the bleeding of menstruation. Instead, a flush is just feeling hot, which can happen to anyone, and which presumably even male colleagues would have no qualm discussing casually.

Sonia pondered the interaction over the following weeks and decided she had been well within her rights to make a casual mention of menopause. The next time she experienced a flush, she boldly mentioned it and, when her colleagues winced, made the friendly retort: 'Come on, guys. Seriously? You're doctors'.

For me, there are several interesting aspects of this story, including, I would say, the rather valiant way Sonia held her ground in the second encounter. I was also interested that the young women remained silent, which I suspect was because they felt the stigma of the 'M-word' and preferred to stay out of it. Perhaps the most interesting aspect was that, as Sonia pointed out, they were all doctors and should have known better. If

menopause carries a stigma even in what should be the knowledgeable profession of medicine, what hope is there for other professions?

Indeed, according to the British Medical Association, menopause does carry a stigma with doctors. The Association surveyed more than 2000 female doctors and discovered that although many experienced symptoms of perimenopause, few were willing to discuss it with colleagues or managers for fear it would result in being ‘laughed at or ridiculed’.

‘If I mentioned my perimenopausal symptoms,’ said one respondent, ‘I would be stigmatised and disrespected as someone who was no longer rational or capable’.

As a refreshing contrast, Michelle Obama said her husband Barack was unfazed by the perimenopausal symptoms reported by her and some of his senior cabinet members. ‘It’s fine’, Barack told his colleagues. ‘This is just how we live.’

Speaking openly about perimenopause is the best way to counter stigma and normalise women’s experience in the workplace. It’s also helpful in the personal sphere as I discovered in a recent conversation with my nephew, who is in his early twenties. We were together with family members, which included mostly women but also a couple of men. When asked about my work, I mentioned menopause, and in response, the couple of men present, of course, made a gentle joke about ‘too much information’. At first we women laughed along with them, acknowledging the taboo, but then I decided to gently point out that menopause is actually an interesting topic and not at all inappropriate for mixed company. At that moment, my young nephew, bless him, sincerely responded, ‘Oh, interesting’, before pausing and finally asking, ‘Actually, what is menopause?’

My nephew confessed that he knew only that menopause was somehow vaguely about aging, but didn’t know it meant the end of periods when one is still fairly young and certainly didn’t know it could be affecting his 40-something mother and aunt. I proceeded to explain all the interesting things about menopause from an evolutionary perspective (which we’ll get into below), and my nephew was (or at least seemed) genuinely attentive to the

information because he's a thoughtful young man who is interested in the world.

Destigmatising menopause by speaking about it can make us feel better and more confident. It may even reduce the impact of physical symptoms, which suggests that to at least some degree, shame amplifies physical symptoms.

NAILA – IT MEANS I'M OLD

I'd been working with Naila on hot flushes, which, after a month of treatment, had reduced from four per day to just a few per week. Her sleep was good, with no night sweats. So far, she was using magnesium and taurine (Chapter 7), and we were discussing what further treatment (if any) she required.

'I'm open to helping you explore further treatment options, including hormone treatment,' I said, 'but first I'm just trying to understand the main symptom you need to see improved. Is it still the hot flushes?'

She nodded yes, the flushes.

'It's only a few flushes in the week,' I pointed out, 'and hot flushes aren't harmful. Are they severe?' I asked her. 'Or distressing in some way?'

At that moment, she teared up, and I knew we had arrived at the crux of the matter.

'Tell me,' I encouraged.

'It means I'm old,' she said quietly, which made me sit back in my chair and tear up a little too. Even the occasional hot flush was upsetting to Naila because it signalled to her that she's old.

'They make me feel like my life is over,' she continued. 'That I'm no longer a woman.'

To which I pointed out that she is still a woman and likely has decades of vibrant life ahead of her. 'Menopause is not synonymous with aging,' I explained, 'although of course, you're also aging, which is allowed.'

Naila decided to speak to her doctor about estrogen therapy to eliminate the flushes, in large part, I think, to avoid any emotional reminder of the change. I think she was also hoping estrogen would have some anti-aging effects.

As to whether estrogen therapy (i.e. estradiol) is 'anti-aging', that's still very much up for debate. Estradiol does increase the thickness and elasticity of the skin, which, in theory, should reduce wrinkling, especially if applied topically. However, estrogen is not usually prescribed for that purpose, and

there are almost no studies to support its use for cosmetic purposes. As you'll see in coming chapters, I'm generally supportive of estrogen therapy, even for its anti-aging effects, but please know there are plenty of other ways to slow biological aging, including all the obvious strategies such as eating well, staying active and, most importantly, not smoking.

> **TIP**
>
> This chapter is about the range of emotional responses to menopause that arrives naturally at the appropriate age of 45–55. Early or surgical menopause is a different situation and may understandably be associated with more negative emotions. See Chapter 4 for a discussion of that process.

Coming to terms with aging

First, 50 is not elderly. Which is not to say that elderly is bad, because of course it's also a normal life phase, but that's for another book. This is a book about perimenopause and menopause, which means you're in the approximately 40–60 age range and therefore possibly several decades from elderly. The erroneous conflation of menopause with old age is reinforced by the 'walking stick' type stock images consistently and frustratingly used by the media for articles about menopause. No wonder my nephew thought menopause was just 'vaguely about aging'.

Second, aging is allowed. Fifty is not old, but it's also not exactly young. Most of us at 50 are unlikely to have a face that looks 30, and I say why should we have to? Every time we praise a woman for looking young, or at least for not looking old, we reinforce the pervasive and oppressive belief that aging is bad, and that, as women, we need to strive to stay young and nubile. Which, obviously, we cannot do and shouldn't have to try. Instead, we remain strong if we're able, healthy if we're lucky, and sexually active if that's what we want for our pleasure. None of that requires looking a certain way.

I had personally feared – I'd even say *dreaded* – the loss of a youthful appearance. If you felt the same, I think we can be forgiven for such vanity.

We live in a culture that continually tells us that smooth-skinned and lithe-figured is the only acceptable way for a woman to be. For that reason, it was quite natural for me to dread the loss of my youthful appearance, but then something surprising happened. I arrived at 50 and discovered that I simply don't care as much about looking young as I thought I would. I mean, I care about being healthy, which usually results in looking somewhat younger. I also care about being well groomed and wearing nice things, and yes, I colour my hair, although I truly admire women who keep their natural grey. I just don't care to engage in an all-out battle with aging because, at the end of the day, I have better things to do. It's a refreshing departure from the constant need to be pretty that many of us feel as young women.

Lexicographer Erin McKean put it well when she said: 'You don't owe prettiness to anyone. Not to your boyfriend/spouse/partner, not to your co-workers, especially not to random men on the street. You don't owe it to your mother, you don't owe it to your children, you don't owe it to civilization in general. Prettiness is not a rent you pay for occupying a space marked "female"'. In the same social media exchange, McKean went on to say, 'I'm not saying that you shouldn't be pretty if you want to'. In other words, you don't owe prettiness to anyone, but you also don't owe *un*prettiness to anyone or to menopause. Your appearance is yours to do with as you wish and as you can, so long as you don't feel oppressed by the unrealistic pressure to stay as pretty as you were in your twenties.

For me, letting go of being the young kind of pretty has been a great relief, and part of a larger long-term project of letting go of perfectionism. Brené Brown says that 'Perfectionism is the belief that if we live perfect, look perfect, and act perfect, we can minimize or avoid the pain of blame, judgement, and shame. It's a shield. It's a twenty-ton shield that we lug around thinking it will protect us when, in fact, it's the thing that's really preventing us from flight'. If you're also experiencing menopause as the lifting of the 20-ton shield that is the self-consciousness of your reproductive years, then you're also catching a glimpse of what I can only describe as the 'Don't give a f*ck' freedom of menopause.

Freedom and invisibility

I'd heard about the freedom of menopause from patients, but I guess never believed it. The moment I began to understand was on a walking holiday several years ago with my sister, who, though younger than me, is wiser than her years. She drew my attention to the small groups of happy 50-something women we were passing on the trail.

'They're in on a secret,' my sister observed. 'Their kids are grown, and their husbands aren't with them. They're just themselves now.'

I hadn't noticed the older women until my sister pointed them out, which speaks volumes, I think, about the *invisibility* of older women – which I would argue is related to the freedom of menopause. Invisibility and freedom are two sides of the same coin.

First, menopausal invisibility is mostly (not exclusively) about being less visible to men, especially younger men – clearly only an issue if you're heterosexual and cared about that sort of thing in the first place. Menopausal invisibility can also make it harder to be heard or taken seriously at work, especially if you don't colour your hair. While this is incredibly unjust, it's true nevertheless if you work with men or appear in the media. Friends tell me it's easier to be grey in more female-dominated fields, which makes sense, and it all may change with the new 'embrace the grey' movement on social media. The more we see powerful, successful grey-haired women, the more we will learn to view grey as 'distinguished' for women, just as we do for men.

There are several positive aspects to menopausal invisibility. On the men front, there's the fact that you are less likely to attract unwanted attention from random men on the street, a decidedly positive change. 'Sailing under the radar of the male gaze seems to be a problem for precisely no one', observed Sam Baker, the former editor of *Cosmopolitan* UK. If you're like me, you may also find yourself less distracted by potential romantic partners, which leaves room to think about other things. It's a freedom from being preoccupied with sex the way you might have been when you were younger, but it doesn't mean you stop having sex if having sex is what you want to do, either with a partner or with yourself.

Because yes. With menopause, you will still be a sexual being in whatever way is pleasurable to you, and that's true whether your libido goes up (which can happen), stays the same or goes down. If your libido or desire for sex goes down, it's okay. It does not necessarily mean something is *wrong* with you but instead may be a perfectly normal response to fatigue from perimenopausal sleep disturbance, declining estrogen levels, or simply sexual boredom after 20 or 30 years of marriage. We'll look more at desire in Chapter 10, where we'll also explore treatment options for issues such as vaginal pain, dryness and prolapse. In the meantime, I like how Lisa Renee describes perimenopausal sex in her blog post 'Open Letter to Women': 'You will find sex alternately mind-blowing and non-existent, emphasis probably on the latter'. I can definitely relate to that.

Another positive aspect to menopausal invisibility is that you will no longer be questioned about whether you have children. It's a welcome change if you're like me and did not have biological children. It may even be welcome if you did have children, but now have an opportunity to be seen as just you, and not constantly put in the category of 'mother' or 'not mother'.

Freedom from being gawked at by strange men; freedom from being preoccupied with sex; freedom from being questioned about your reproductive status. Those are just a few privileges on the 'freedom side' of the invisibility–freedom coin. There's also the significant freedom from caring as much as you used to about pleasing others. The need-to-please of our reproductive years may stem, at least in part, from estrogen and progesterone, which arguably have the effect of making women kinder, gentler and more self-sacrificing. To cope with what British journalist Caitlin Moran calls the 'ass-hattery of small children', women are kept 'tipsy and philosophical on shots of warm oestrogen' and are thus better able to cope with the 'ass-hattery' of everyone else. Until menopause arrives, writes Moran, and suddenly, there's no more '"lady forgiveness" left in the tank'.

If you've run out of 'lady forgiveness', then you've arrived at the time in your life when you will begin to find it easier to say no. Not relentlessly no,

because, of course, you still have responsibilities, especially if you still have young children at home; just more frequently no, because you're starting to realise that it's not your job to put everyone else's needs ahead of your own. Hopefully, saying no will mean spending more time doing what you enjoy and, more importantly, spending less time apologising or justifying yourself for doing so. My menopausal patients report increased time spent on activities such as travel, volunteer work, singing, getting a PhD, running and strength training. 'For me, menopause is about getting strong', said one patient, and, true to her word, she spends hours with her trainer working on lifts.

My passion is walking, both 'around the local park' walking, if that's all I can get, and all-day or multi-day walking when that's available to me. I love heading out and feeling all the small things fall away. When I'm walking, it's just me in my body with my feet on the ground, and it doesn't matter that I'm behind on my emails or should really get my act together to write a new blog post. Walking has been my act of rebellion ever since I was a girl and read the delightful description of Lizzie Bennet in Jane Austen's *Pride and Prejudice*: 'To walk three miles, or four miles, or five miles, or whatever it is, above her ankles in dirt, and alone, quite alone! What could she mean by it? It seems to me to show an abominable sort of conceited independence, a most country-town indifference to decorum'.

The words were spoken by Miss Bingley, who, of course, meant them as a criticism of Lizzie, but who unwittingly described a state of 'conceited independence' that is highly appealing to those of us who desire to be alone and 'above our ankles in dirt'. When I first read the passage, I decided it is wonderful to be alone in the countryside, and have drawn comfort and pleasure from the pastime ever since. Only now, decades later, can I finally see how those words spoke to an authentic part of myself that is ready to return to its semi-wild ways.

Return to girlhood

In a beautiful essay called ‘The wildness of girlhood’, Tasmanian writer Bonnie Mary Liston opens with the Emily Brontë quote: ‘I wish I were a girl again, half savage and hardy, and free’, and then goes on to describe nine-year-old girls as having an outlook that is ‘a strange mix of anger and joy’. She tells of the ‘girls who become obsessed with horses, or wolves, or witches, and who knew themselves to be wild creatures like those. They vanish outdoors, hiding in trees, sticking their hands in the dirt, making potions from mud and sticks. They escape into complex worlds of their own imagining, shared between other little girls or solitary kingdoms’.

‘Of course, it passes’, she writes. ‘We age out of wildness and straight into puberty, where our anger is on ourselves, and our bodies, and our mothers, and I don’t know what else. We’re part of the world again, and sometimes we forget being wild altogether.’

Liston’s description of girls is in line with the findings of Harvard psychologist Emily Hancock, who says that girls crystallise their most authentic sense of self sometime between the ages of 8 and 10. After that, Hancock says, puberty arrives and girls can often start to feel the pressure of the female gender role. ‘Puberty requires girls to swap blue jeans for a skirt and independence for the female role’, she writes, and then concludes that the process can *reverse at menopause*, when women have an opportunity to reconnect with the inner girl and reclaim their lost sense of self. ‘By reaching back to the girl within, [menopausal women] are on their way to reclaiming their independence and identity.’

Reconnecting with my nine-year-old self has been a wholly unexpected but enchanting part of the perimenopause transition. It’s given me permission to walk more and to shirk my duties in a way I could never have predicted.

‘I just don’t feel like cooking a vegetable tonight,’ I now sometimes say to my husband. It’s an act of rebellion because I would normally insist on adding a green vegetable to the meat and potatoes prepared by my husband.

‘We can do what we want,’ I say. ‘No one is the boss of us.’

‘You’re like a kid again,’ teases my husband, who will then will sometimes cook the vegetable or just agree we eat dinner without it.

Of course, I don’t recommend routinely skipping vegetables, because vegetables are healthy. I’m just inviting you to occasionally not bother with that irksome task of chopping broccoli or loading the dishwasher, but instead head out on a walk or do whatever it is you need to do. You might find that shirking duties and reclaiming your nine-year-old-self is a direct conduit to increased emotional energy, enthusiasm and what has been described as ‘menopausal zest’.

I caught a glimpse of menopausal zest one day when out on a long walk with my husband and he wanted to turn back because it was late and we’d already been walking for five hours. ‘Oh, let’s keep going,’ I urged. ‘All the way to the point.’ We then happened to meet another couple our age, and they were in the same situation, with the man flagging and the menopausal woman raring to go. My husband remarked on the energy of 50-something women. ‘Where’s my menopausal upgrade?’ he wondered.

The Japanese word for menopause is *konenki*, which translates as ‘renewal years’ or ‘energy’. And if there is an energy upgrade at menopause, it surely stems from the resurgence of the girl within, a phenomenon that appears to span the boundaries of culture. For example, in a study of women from the traditional Chichimila culture of the Yucatán in Mexico, anthropologist Yewoubdar Beyene observed that many of the women reported feeling ‘young and free’ with menopause because it meant they could return to the stage of life before the burdens and restrictions of their reproductive years.

If you haven’t yet experienced any sense of being ‘girl-like’ or ‘young and free’, then, of course, that’s fine. There’s lots of other stuff going on.

Grief

According to grief expert David Kessler, ‘Grief is a change, usually one we did not want. Grief is the recognition of that change, but it’s also the loss of a connection. And at its heart, grief is love; it’s love for whatever we had that is now gone.’ Kessler explains that grief can be *macro,* such as for the loss of the loved one, or *micro,* such as for a divorce or other life change.

Menopause is a life change, a micro-grief, and, ultimately, a love for the youth that is gone. As much as we may want to just ‘get on with it’ and not wallow in negative thoughts, it’s important to at least acknowledge the grief we may naturally feel at the end of our reproductive years. I feel it. For one thing, I’m sad to reach the end of my reproductive years and of the opportunity to have biological children. I’m also sad to see the end of my youth, because although in many ways I still feel young, I know in reality that I’m not, and it’s a relief just to say so. It’s even more of a relief to hear it said by others, such as actor Gillian Anderson, who declared that ‘perimenopause and menopause should be treated as the rites of passage that they are. If not celebrated, then at least accepted and acknowledged and honoured.’

In short, it’s okay to be sad. Sad you’re not young, sad you’re losing power in a society that values younger women, sad that it might be ‘too late’ to do all the things you wanted to do. Of course, it’s not too late for many things, but it is too late for some things; opportunities have passed you by just as they have for all of us.

It’s also okay to feel sad about children who are grown, or children who are lost, or children who never came into being. Just as it’s okay to feel sad about all the other relationships that are changing or being lost as you move through life.

Menopause is like the beginning of autumn, which is a beautiful and productive season, but is also the second half of life, and therefore the time when you start to understand, perhaps for the first time, that life is precious and finite. ‘When the 50-year-old woman says to herself, “Now is the best time of all”,’ wrote Germaine Greer, ‘she means it all the more because she knows it is not forever’.

The way through grief, according to Kessler, is to find *meaning*. ‘We always think we’re supposed to make grief smaller,’ says Kessler. ‘But the reality is: we have to become bigger.’ Which I adore. *Becoming bigger* feels like the freedom we spoke about earlier in the chapter. And, as Germaine Greer explains, it might start with realising that ‘when you are young, everything is about you. As you grow older and are pushed to the margin,

you begin to realise that everything is not about you, and that is the beginning of freedom.'

Life is not about you. Neither is menopause. Instead, life and menopause are part of the larger and continuous experience of generations upon generations of women.

The meaning of menopause through an evolutionary lens

Menopause is unique to humans and just a few species of whale. Most other animals, including long-lived mammals like African elephants and great apes, continue to reproduce until close to the end of their lifespan. Menopause is, in other words, quite special, or, from the perspective of evolutionary biology, quite weird.

'It's weird that women and whales live beyond menopause', says Harvard anthropologist Bridget Alex and most scientists agree. Why do we stop reproducing when we are only half or, at the most, two-thirds of the way through our lifespan? It requires an explanation, which, until recently, was that we now live longer and so outlive our ovaries. But is that true? Or is human longevity more ancient than we thought?

Ancient people did have a relatively short *life expectancy*, which means that, on *average*, many of them died young due to infection, injury or, in the case of women, childbirth. Life expectancy is a statistical construct and quite different from *lifespan*, which is the most extended period over which biological life may reasonably extend. As an example, take two people, one of whom dies before their first birthday but the other lives to 70. Their average *life expectancy* is 35, but the observed *lifespan* is 70.

Updated archaeological evidence now tells us that, if individuals from ancient societies were lucky enough to escape early death, a good number of them *did* live to 70 or 80 or beyond. According to Stanford historian Walter Scheidel, 'the lifespan of humans – as opposed to life expectancy, which is a statistical construct – hasn't really changed much at all'.

So if at least some women have always lived to 70 or 80, it brings us back to the question of ‘why stop reproducing at 45’? Could it be that menopause *itself* is beneficial and not just an accident of living too long?

Historian Susan Mattern from the University of Georgia argues that, yes, menopause is beneficial both for humanity and for individual women trying to pass on genes (which is how evolution works). In her book *The Slow Moon Climbs: the Science, History, and Meaning of Menopause*, Mattern builds the case that extended human longevity evolved in response to natural selection for traits that permitted women to spend decades in the post-reproductive state. Because long-lived post-reproductive women were so *useful* to their family groups, she says, they were able to pass on their long-lived genes to their descendants, resulting in a longer lifespan for both women and men. In that way, male descendants benefited from the selection pressure on a female trait.

Such an analysis is part of the *grandmother hypothesis*, which has been around for a while but has recently gained traction. This posits that at some point in our evolution, it became more advantageous for women to redirect their resources into providing support to their *existing* children and grandchildren, rather than producing more children of their own. Furthermore, the grandmother hypothesis requires that post-reproductive women are valuable to their family groups, which indeed they are. According to studies of present-day forager peoples such as the Tsimané of the Bolivian Amazon and the Hadza of Tanzania, the foraging productivity of older women is high, peaking at 50 and remaining high until their death. More importantly, menopausal women share most of the food they gather, and are estimated to provide each grandchild with an additional 2000 kilojoules per day. According to the research of anthropologist Kristen Hawkes from the University of Utah, Hadza women routinely live well into their seventies and eighties, and provide more food for the group *than any other age or sex*. Far from elderly women being a drain on society, observed science writer Natalie Angier, ‘The Hadza might worry . . . what would happen if they didn’t have their corps of old ladies’.

Thanks to menopause, argues Mattern, and the support provided by post-reproductive women, young women were able to have more babies close together, which enabled human groups to bounce back from famine and other crises. Humans were also able to evolve bigger brains and thrive in all parts of the world – all because of the food, childcare and wisdom provided by grandmothers.

If you're a grandmother or hope to be a grandmother, you may have personal experience of the meaning derived from such a role. I'm not a grandmother myself but I'm still comforted by the knowledge that I descend from a long line of grandmothers who have been highly *useful* to their communities. I also derive meaning from the knowledge that the physiological changes I'm undergoing with menopause are probably the expression of generations of successful adaptation, and not merely the accident of living too long.

TIP

The environment and life history under which menopause evolved differ substantially from our modern environment and relatively few number of pregnancies. It's an *evolutionary mismatch* that may account for some of the modern symptoms of menopause not reported by women in forager societies. See Chapter 4 for a discussion.

Viewing menopause through the lens of evolutionary biology is just one way to 'become bigger' and find a way through the grief. There are countless other emotional and spiritual ways to reframe the experience, including caring for grandchildren or other children, helping your community, or turning your gaze to volunteer work or other large projects. My project is to share my knowledge with women and improve their lives. By doing so, I experience what I can only describe as a motherly or grandmotherly feeling for all the young women who benefit from my teachings.

Additional routes to meaning include writing poetry or working to save the environment or even just spending time in nature and being grateful to

be alive. After all, it's common to still be alive by 50 but not a certainty; only about nine in ten of us make it this far.

Everything in between

As stated at the beginning of this chapter, there is no one *right way* to transit emotionally into menopause and beyond. The experiences are as diverse as women themselves, which is how it should be.

To research this chapter, I conducted an informal survey on my social media accounts, asking women to express how they feel about the prospect of menopause or their experience so far if they're further along in the process. Here are some of their responses:

> 'I love my monthly cycle and celebrating its rhythm. I'm sad to lose it and not feel like a woman any more.'
>
> 'Very relieved that periods are a thing of the past.'
>
> 'The stigma is the worst, menopause less so.'
>
> 'Grateful to not have to deal with periods any more.'
>
> 'Looking forward to not having to worry about all things period-related and the risk of pregnancy.'
>
> 'I think science should make this journey as comfortable and symptom-free as possible.'
>
> 'It's like childbirth. No one wants to talk about it because it's messy and unhinged.'
>
> 'Seeing women who I admire speak openly about menopause has made a huge difference in my anxiety levels towards it.'
>
> 'I feel invisible now. Like I'm not noticed in the room the way I was when I was young and beautiful.'

‘Giving up my youthful beauty which created a lot of privilege also has brought me to a deeper place with my compassion for others.’

‘I feel grateful to find strength from time in nature.’

‘My loss of libido feels like a loss of vitality.’

‘Trying to embrace it.’

‘Every day that I’m alive is certainly a blessing but I’m also sad that I sometimes don’t recognise my face in the mirror.’

‘Happy to be reaching the end of endometriosis pain.’

‘Happy to finally feel free from people-pleasing.’

‘I grieve for my youth, especially when I catch sight of changes in my appearance. But I think I have found myself and know what I want from life and finally have the confidence to go for it.’

‘I’m scared because I haven’t had kids yet.’

‘All through my forties, I wondered how I’d feel if I got pregnant. The feelings never caused me distress, other than a bit of wistfulness for what might have been.’

‘I have fear and sadness because I have not been able to have children. Where will my support come from?’

‘It’s been a rough at times crazy ride but I’m not complaining because it’s part of being a woman and alive and my best friend didn’t get to go through it because she died of breast cancer.’

‘I’m nervous because I don’t know anything about it.’

‘I worry about how people view me quite a lot.’

‘I don’t care so much about what people think any more and that’s a huge relief!’

‘My body feels like a stranger. I’m grieving for the ease of who I used to be and for my role as a young mother.’

‘I’m approaching it with curiosity and intend to view it as the next great transition.’

‘I’m sad watching the younger me leave the room.’

‘I can’t wait to get rid of periods and the pain and mood symptoms that come with them – I say, bring it on!’

‘I’m terrified because I watched my mum have such a horrible time. But also looking forward to being sterile.’

‘Hallelujah. Menopause hasn’t been the awful experience it’s painted to be.’

‘Terrified.’

‘Definitely wiser, not taking any nonsense.’

‘Can’t wait.’

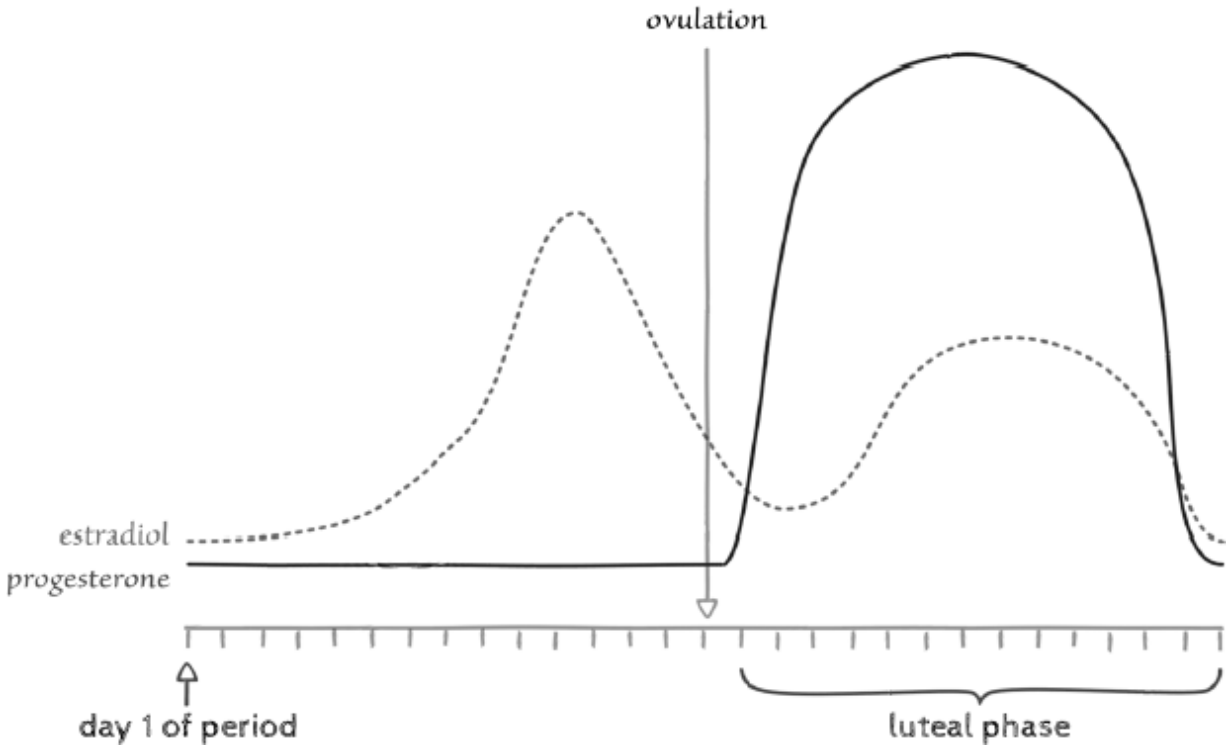
3

Cycle while you can: the value of natural, ovulatory menstrual cycles

With menopause, you reach the end of menstrual cycles. Until you achieve menopause, however, you should try to keep cycling for as long as you can. Why? Because natural menstrual cycles are good for you.

Does that surprise you? You may have been given the impression that menstrual cycles are only for making babies, and that once you're done with all that, you can take or leave periods. In reality, menstrual cycles are not just for making babies; they're also for making hormones.

With each natural menstrual cycle, you make a large surge of estrogen (estradiol) in the days leading up to ovulation and then an even larger surge of progesterone in the two weeks after ovulation. It looks like this.



As you can see, ovulation is the central event of the menstrual cycle, with the two-week phase after ovulation being referred to as the *luteal phase*.

LUTEAL PHASE

The luteal phase is the ideally two-week-long time between ovulation and the first day of menstrual flow. It's named for the *corpus luteum*, which is a temporary ovarian gland that makes progesterone, and is the only time in the cycle when you make high levels of progesterone.

And that brings us to a couple more definitions.

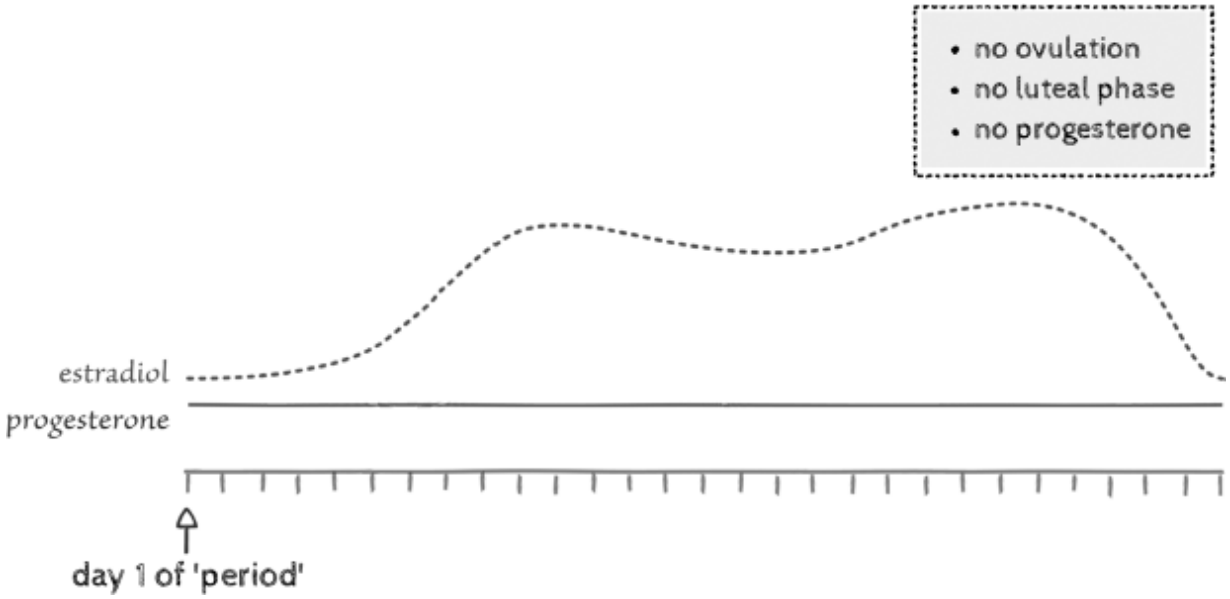
OVULATORY CYCLE

An ovulatory cycle is a menstrual cycle in which ovulation occurred and progesterone was made.

ANOVULATORY CYCLE

An anovulatory cycle is a menstrual cycle in which ovulation did not occur, so no progesterone was made.

Anovulatory cycles have no luteal phase, so they look like this.



With an anovulatory cycle, you make estrogen but do not achieve ovulation, so do not make progesterone. With a *too-short luteal phase*, you achieve ovulation but do not make a sufficient amount of progesterone because your luteal phase is shorter than ten days.

Anovulatory cycles and short luteal phases are common during perimenopause and can cause problems such as heavy bleeding, prolonged bleeding, endometrial thickening and uterine polyps. Anovulatory cycles have other names, such as *anovulatory bleeding*, *dysfunctional uterine bleeding* and *estrogen dominance*, all of which we'll discuss in Chapter 9.

The important thing to understand at this stage is that a healthy menstrual cycle is, by definition, an ovulatory cycle, which consists of estrogen, followed by estrogen plus progesterone. The two hormones work in partnership and together, they have many benefits.

Queen estrogen

Estradiol is the estrogen you make on the way to ovulation. It's not your only estrogen, because you also make estrone from adipose (fat) tissue and a number of estrogen metabolites in your gut. But estradiol is your strongest and best estrogen and, together with progesterone, it does many important jobs, including building muscle and bone and maintaining the health of the brain and heart.

TIP

Estrogen is a generic term that can refer to any kind of estrogen, including the body's own estradiol as well as phytoestrogens (plant estrogens) and the ethinylestradiol drug used in the pill.

Estradiol is also important for maintaining a healthy metabolic rate and the ability to lose fat around your waist. Its metabolic benefits stem primarily from the way it (together with progesterone) enhances insulin sensitivity and helps to prevent insulin resistance and diabetes. Estrogen is why, after adjusting for muscle mass, reproductive-age women have better insulin sensitivity than men and are therefore less likely to develop insulin resistance and diabetes. Losing estrogen at menopause removes that 'estrogen advantage' and increases our risk of insulin resistance and abdominal weight gain.

Estradiol also increases muscle strength and the desire to move and exert the body, and can even act as a natural appetite suppressant. That's why you feel less hungry in the days leading up to ovulation (when estradiol is high) and more hungry in the final few days before your period (when estradiol drops away).

Not to overstate it, but estrogen is wonderful. I like the way science writer Natalie Angier describes the hormone: 'Estrogen is . . . like chocolate because it is a near-universal symbol for *Eat me*. Rare and mutant is the human who hates chocolate. By the same token, very few parts of the body hate or ignore estrogen. Almost every two-bit organ or tissue wants a bite of it'.

The potential downside of estrogen is that it stimulates breast tissue and *thickens the uterine lining*, which can lead to heavy periods, especially during the early perimenopause years when you make a higher than normal amount of estrogen. These unwanted stimulatory effects of estrogen will only occur if you don't make enough progesterone to counterbalance it.

Sister progesterone

Progesterone is the hormone you make *after ovulation* and, interestingly, you make far more progesterone than you do estrogen. This may not be apparent when you look at your blood results because the hormones are measured in different units; pmol for estrogen and nmol for progesterone. For example, a good peak progesterone level is 80 nmol/L, which is 100 times more than an average peak estradiol level of 800 pmol/L (0.8 nmol/L). The chart of the ovulatory cycle I showed on page 48 was not to scale, because, if it were, estrogen would be so low compared to progesterone as to appear as a flat line. Most types of hormonal birth control suppress ovulation and so completely suppress progesterone.

Progesterone has many beneficial effects, most notably thinning the uterine lining, which counteracts estrogen's thickening of the uterine lining, and can help to *prevent heavy periods*. Another beneficial effect of progesterone is that it calms the brain and can, therefore, reduce anxiety and promote sleep. Progesterone also reduces inflammation, normalises immune function, builds bones, protects the heart, increases metabolic rate and may help to prevent breast cancer.

Eventually, with perimenopause, you will stop ovulating and lose almost all progesterone. That's in stark contrast to estrogen which is *high in perimenopause* and only moderately low in menopause because you will continue to make estrogen with the enzyme *aromatase*.

📖 **AROMATASE**

Aromatase is an enzyme that converts androgens to estrogens.

ANDROGEN

An androgen is a hormone that promotes male characteristics. Examples include testosterone and the adrenal hormone DHEA (dehydroepiandrosterone).

We'll speak more about aromatase, DHEA and estrogen in the coming chapters, but, for now, just remember that estrogen is the hormone you lose only partially; progesterone is the hormone you lose entirely.

Ovulation builds health

Your cumulative lifetime exposure to both estrogen and progesterone is beneficial – even years after you reach menopause and make less estrogen and no progesterone. That's according to research that has linked a longer 'reproductive lifespan' (years spent pregnant or having ovulatory cycles) with a reduced long-term risk of both heart disease and dementia and confirmed by a recent analysis of the huge Nurses' Health Study which found that women live longer if they have a history of regular, natural menstrual cycles. According to Professor Prior, 'regular menstrual cycles with consistently normal ovulation during the premenopausal years will prevent osteoporosis, breast cancer and heart disease' and she attributes most of that benefit to progesterone. Incrementally, cycle by cycle, progesterone builds bone, protects the breasts, and helps to build a healthier, more resilient physiology.

Each and every ovulatory cycle, therefore, is like a deposit into the bank account of long-term health. The same cannot be said for each and every cycle on the progestin drugs of hormonal birth control.

Progestins are not progesterone

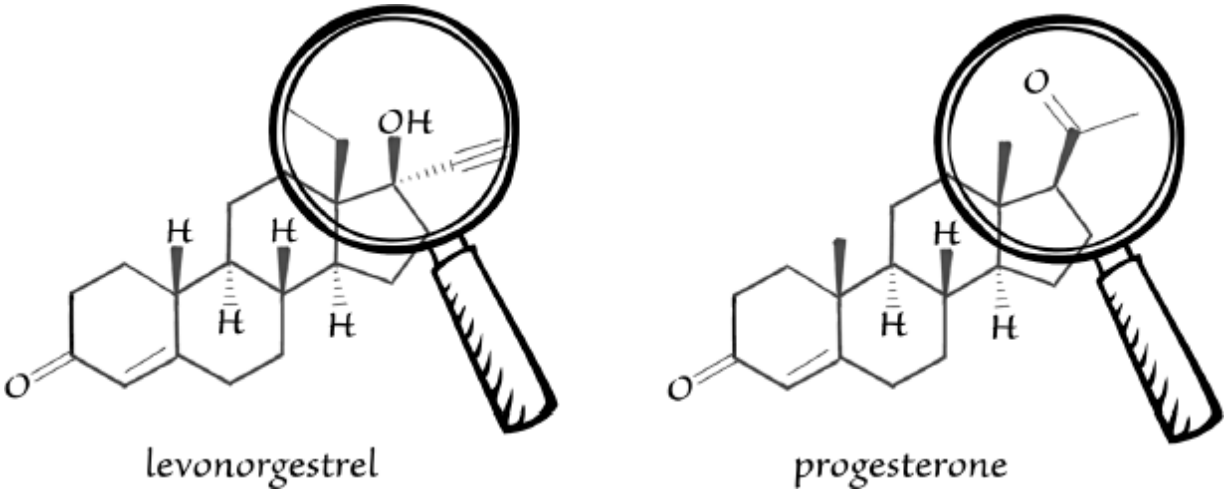
Progestin is the term for drugs that are similar to progesterone. They have names like levonorgestrel, drospirenone and norethisterone, and although they have some of the same effects as progesterone, they also have many

opposite effects. The terms progestin and progesterone cannot be used interchangeably.

Consider as an example the contraceptive drug levonorgestrel, which is the progestin used in many pills and the hormonal IUD.

> **IUD**
>
> An intrauterine device, also known as a coil, is a small, usually T-shaped, birth control device inserted into the uterus to prevent pregnancy or lighten flow.

When viewed side by side with progesterone, you can see that levonorgestrel is a different molecule.



Because levonorgestrel is different, it has different effects on the body. In fact, the only way that levonorgestrel is similar to progesterone is that it thins the uterine lining and therefore prevents heavy periods just like progesterone. In most of its other effects, levonorgestrel is different from progesterone, and sometimes the opposite of progesterone.

The best example of an opposite effect is how levonorgestrel can cause acne and hair loss, two symptoms that are improved by progesterone. Levonorgestrel causes those side effects because it's actually more similar to *testosterone* than to progesterone, which makes it *androgenic* or testosterone-like. The androgenic nature of levonorgestrel also contributes

to other side effects, such as mood problems, breast cancer risk and *weight gain*, which we'll revisit when we look at the role of testosterone and androgens in abdominal weight gain in the coming chapters.

> **TIP**
>
> Natural progesterone and estradiol have beneficial *anti*-androgen effects.

Levonorgestrel is just one example of a progestin. Not all progestins are androgenic but instead can have different side effects, such as high blood pressure or mood symptoms. Some progestins may even alter the shape of the brain, which makes sense considering that progesterone is normally beneficial for the brain.

In short, progestins are not progesterone.

Table 1 Progesterone versus progestins

Progesterone	**Progestins**
Beneficial for cardiovascular health	Can cause high blood pressure
Stimulates hair growth	Can cause hair loss
Has anti-androgen properties	Can be androgenic, or testosterone-like
Generally good for mood and sleep	May cause anxiety and depression
Helps to reduce the risk of breast cancer	Can increase the risk of breast cancer

Many of the side effects of hormonal birth control and conventional types of hormone therapy are due to the side effects of progestins, which we'll explore further in Chapter 6. If you need a way to prevent pregnancy, keep reading for several non-hormonal methods discussed later in the chapter.

Can you still cycle or are you in menopause?

I hope I've convinced you that cycling and ovulation are important. In theory, you could be able to ovulate almost right up to your final period, although in practice, you're likely to experience more and more anovulatory cycles, which is just part of the process. Eventually, with menopause, you will stop ovulating and making progesterone but continue to make some estrogen via aromatase.

Which brings us to the big question: 'Can you still cycle or are you in menopause?'

If you've already arrived at menopause, you can skip this section and move straight to Chapter 4, keeping in mind that a hysterectomy or other procedure that stops bleeding does not automatically mean you're in menopause.

If you're not yet in menopause (or you're not sure), understanding *if* you can still cycle and make estrogen and maybe progesterone is important for knowing if 1) you can get your period back (as in Julie's case on page 57), and 2) you're more likely to benefit from progesterone or estrogen therapy (Chapter 6).

Understanding if you can still cycle hinges on a few simple questions:

Are you having periods?
If not, is your follicle-stimulating hormone or FSH in the non-menopausal range? (Keeping in mind that FSH fluctuates during perimenopause and, for that reason, is not routinely tested.)
If your FSH is in the normal range, what is your *obstacle to ovulation*?

Are you having periods?

Assuming you still have a uterus, a period is the first obvious sign that you're cycling and *might* have ovulated. I say 'might have ovulated' because you might instead have had an anovulatory cycle. It's entirely possible to bleed without having ovulated (anovulatory cycle) but it's *not* possible to do the opposite and ovulate without going on to bleed except in the situations of pregnancy, endometrial ablation (Chapter 9), hysterectomy or the hormonal IUD, which we'll discuss later in the chapter. Recall from

Rita's story on page 18 that, even with a partial hysterectomy, it's possible to have a hidden hormonal cycle that produces premenstrual symptoms; there is just no bleed to indicate what's going on.

If you're *not* having periods, your next question is why not? Is it menopause or something else? To find out, you'll need to see your doctor for assessment, including possibly a blood test for FSH.

Is your FSH in the non-menopausal range?

If you're not yet in menopause, a blood test should indicate an FSH level less than 40 IU/L.

> **TIP**
>
> One elevated FSH result is not enough to confirm menopause.

As I explained in Chapter 1, FSH fluctuates quite widely, so it's not usually used to assess perimenopause. An FSH test can, however, help to identify either 1) early menopause, or 2) when a lack of periods is due to something other than menopause. In other words, if your FSH is below 40 on a couple of occasions, and especially if it's below 20, then your lack of periods is not due to menopause but to some other *obstacle to ovulation*.

There are numerous possible obstacles to menstruation and ovulation, including thyroid disease and high prolactin, and it's your doctor's job to identify what's going on.

> **PROLACTIN**
>
> Prolactin is a pituitary hormone that plays an important role in breastfeeding but, when high, can suppress ovulation.

If you're not in menopause and your doctor has ruled out other issues, then your lack of periods is likely to be due either to *undereating*, which is less common in women over 40; or polycystic ovary syndrome (PCOS). I'll

explain each condition and then we'll look at Julie's experience with thinking she was in menopause when, in reality, she had PCOS.

Undereating or hypothalamic amenorrhea

Hypothalamic amenorrhea or HA means lack of periods (amenorrhea) due to the hypothalamus, which is the hormonal command centre of the brain. HA is usually the result of illness, stress, excessive exercise and/or undereating, and is not a malfunction but is the hypothalamus making the smart decision to switch off ovulation. HA is more likely if you're younger than 30 but can occur at any age with illness, severe stress or undereating.

Lack of periods can be the result of too few calories or *too little carbohydrate*, so you might need to be a little careful with a low-carb or keto diet, which we'll discuss later in the book.

PCOS

PCOS is a hormonal condition that can cause infrequent cycles, anovulatory cycles or no cycles. It's characterised by an abnormally high level of testosterone or other androgens, and produces symptoms such as acne, hirsutism (facial hair), abdominal weight gain and insulin resistance.

Like hypothalamic amenorrhea, PCOS is more common in younger women, or at least more common in its classic form, but can also occur in older women. The aspect of PCOS that you probably won't see in your forties is the ultrasound finding of *polycystic ovaries*, which we'll discuss below. The aspects you *could* see are *insulin resistance*, *high androgens* and *anovulatory* cycles, resulting in long or heavy bleeding. You could also see *no* cycles, which is what happened with my patient Julie.

JULIE – PCOS NOT MENOPAUSE

At 42, Julie's periods started coming further and further apart and then stopped for six months. She had always had long cycles but never this bad, so thought she must be in early menopause.

Julie consulted her GP, who did a few blood tests including for FSH, which was 12 IU/L and therefore in the non-menopausal range. He also ordered a pelvic ultrasound, which showed a thickened uterine lining but normal ovaries.

'You're not in early menopause,' said her doctor. 'I'm not sure what's going on but you should take the pill to regulate your period.'

Julie wasn't satisfied with that answer so came to me for further assessment.

'I've never taken the pill before,' she said. 'Why should I start now?'

'You'll need something to thin your uterine lining,' I said. 'But it doesn't have to be the pill. Besides, a pill bleed is not a real period and will only mask the underlying problem.'

To understand what was going on, I considered Julie's other symptoms of facial hair and weight gain around her middle. I also tested Julie for insulin, which showed she had insulin resistance. The combination of lack of periods, facial hair, thickened uterine lining and insulin resistance is typical of the hormonal condition PCOS.

'Although it was never diagnosed, you've probably been tending to PCOS most of your life,' I explained. 'That's why your cycles were always long and that's probably why you've now stopped having periods.'

Julie worked to reverse insulin resistance (Chapter 8) and took 'cyclic progesterone therapy' (Chapter 9) to thin her uterine lining and restore ovulation.

Within four months, she was able to re-establish a 40-day cycle.

Did you notice that Julie's ovaries looked normal on the pelvic ultrasound? That's because the ultrasound finding of *polycystic ovaries* characteristic of PCOS is unlikely to occur in your forties, for the simple reason that you have fewer eggs or follicles at this age.

PELVIC ULTRASOUND

A pelvic ultrasound is an imaging study that your doctor may order to view your ovaries and uterus. The ultrasound wand (transducer) will be applied to your lower belly and/or inserted into your vagina.

The so-called cysts of the 'polycystic' finding are eggs or follicles, which are normal for the ovary. They're different from abnormal *ovarian cysts*, which we'll discuss in Chapter 9.

It is entirely possible to have the hormonal condition PCOS without having polycystic ovaries. At the same time, it's possible to have polycystic ovaries without having the hormonal condition PCOS.

TIP

PCOS cannot be diagnosed – or ruled out – by ultrasound.

How to speak with your doctor about your lack of periods

- 'Am I in menopause? Or could there be another reason I'm not having periods?'
- 'Is it possible it's PCOS? In that case, can you please test me for insulin resistance?' (Refer to the Testing for insulin resistance section on page 102.)

Pill bleeds are not periods

Did you notice that I told Julie a 'pill bleed is not a period'? That's important.

A real period is the bleed at the end of an ovulatory menstrual cycle; a pill bleed is a withdrawal bleed from contraceptive drugs. There's no medical reason to bleed monthly on the pill, so there would have been no point in Julie taking the pill to 'regulate' her cycle because it can't actually do that. And unfortunately, in Julie's case, the pill would have masked her PCOS and potentially *worsened* her underlying insulin resistance. She would also have missed the opportunity to re-establish ovulation and progesterone in the important years leading up to menopause.

The only advantage of the pill in Julie's case is that it could have helped to thin her uterine lining and prevent a condition called *endometrial hyperplasia*. Non-pill ways to prevent endometrial hyperplasia include the hormonal IUD, 'cyclic progesterone therapy' (Chapter 9), and/or re-establishing ovulation to make progesterone and thin the lining.

At this point, you could be wondering:

What if I'm already on the pill? Can't I just take it until menopause? Maybe even use it to avoid or delay menopause?

What are my alternatives for avoiding pregnancy?

Those are the topics for the rest of this chapter.

What does the pill mean for perimenopause?

The pill cannot prevent or delay menopause so, pill or not, you will go through perimenopause at about the age your mother or female relatives did. In fact, because the pill *suppresses* ovarian function and reduces the number of follicles, it could, if anything, bring menopause about a little sooner.

The main difference with being on the pill is that, like Bronwyn on page 23, you *will not know* you've reached menopause because you'll still be having pill bleeds. And if you're already in menopause when you stop the pill, you could experience sudden and severe symptoms due to withdrawal from synthetic estrogen. It can be a little like falling off the 'estrogen cliff' and straight into hot flushes and, indeed, a history of pill use has been linked with a higher incidence of hot flushes.

My recommendation is to stop the pill as soon as you can – preferably while you're still able to cycle. Such an approach will enable you to make your own hormones for a while and undergo a *gradual* decline of estrogen rather than falling off the estrogen cliff.

The conventional recommendation with regard to perimenopause and contraception is to switch to a non-hormonal method, implant or progestin-only pill around the age of 50, and then wait to see if 1) you get periods, confirming you're not yet in menopause, or 2) you don't get periods, suggesting you have achieved menopause. Keep in mind that you probably won't see a period on methods such as the Depo-Provera® contraceptive injection or hormonal IUD, so they can also mask menopause.

Let's now survey all the methods of contraception, including progestin-only and non-hormonal methods.

Contraception for perimenopause

You are potentially still fertile during perimenopause, so if you're in a heterosexual relationship, you'll need some form of contraception until two years after your last period if you're younger than 50, or one year after your last period if you're 50 or older.

You won't need contraception beyond 55, regardless of when you had your last period.

Hormonal methods

Hormonal methods include combined estrogen and progestin methods such as the patch, pill and ring, as well as progestin-only methods like the mini-pill, rod, injection, implant and hormonal IUD.

As discussed, combined estrogen and progestin methods mask menopause because they prevent hot flushes and produce withdrawal bleeds. The Depo-Provera injection and hormonal IUD also mask menopause by stopping bleeds, but they cannot prevent hot flushes. In contrast, other progestin-only methods such as the implant or progestin-only pill do not mask menopause, because if you have not achieved menopause, you *should continue to see* the random breakthrough bleeding typical of those methods.

The hormonal IUD is so commonly prescribed that it deserves special mention.

Hormonal IUD

The hormonal IUD is a plastic device that delivers the contraceptive levonorgestrel directly inside the uterus. It's available as different brands (Mirena®, Jaydess®), which vary according to the dosage and the number of years they can be left in place. IUDs can mask menopause by stopping all menstrual flow, but they do so via local action in the uterus rather than by shutting down ovarian function.

Of all the types of hormonal birth control, the hormonal IUD may be the better choice for perimenopause because:

it usually does not suppress ovulation, and so can permit some ovulatory cycles and progesterone
it can dramatically reduce menstrual flow to relieve heavy, flooding periods. As we'll see in Chapter 9, progesterone capsules are an alternative strategy for lightening flow.

Risks and side effects of the hormonal IUD include:

mood problems, hair loss and skin breakouts due to the testosterone-like nature of levonorgestrel
pain during insertion and for a few days after
increased risk of ovarian cysts
increased risk of thrush.

How to speak with your doctor about a hormonal IUD and menopause

- 'I'm not seeing periods, but is that just because of the hormonal IUD?'
- 'How will I know when I'm actually in menopause?'

With the hormonal IUD, the simplest way to know when you're in menopause is the onset of hot flushes and/or vaginal dryness. Because the IUD contains no progesterone or estrogen, it can do nothing to relieve those symptoms. You could also ask your doctor to test for FSH, keeping in mind that FSH levels fluctuate quite widely and so can only offer a suggestion of menopause, not a confirmation.

Copper IUD

The other type of IUD is the copper IUD, which contains no contraceptive drugs and so permits normal ovulation and hormones. It tends to make periods *heavier*, so it's not as popular in perimenopause, but if your periods are on the light side, you could consider it. One of the main advantages of the copper IUD is that once inserted, it can last five to ten years and, according to Jean Hailes for Women's Health, twice that time if inserted

after the age of 40. The copper IUD can also be used as emergency contraception if inserted within 120 hours (five days) of intercourse.

Possible side effects of the copper IUD include:

increased menstrual flow by 20–50 per cent, especially during the first year after insertion. For example, if your flow is normally 50 mL per month, then it will increase to between 60 and 75 mL. Over time, it may decrease again.

increased risk of bacterial vaginosis (BV), which causes vaginal discharge with a fishy odour

possible increased risk of anxiety after IUD insertion, which some women attribute to possible copper toxicity. As for so many aspects of women's health, there is extraordinarily little research, but one study *did* find higher copper levels in the blood of IUD users.

SPECIAL TOPIC: IUD INSERTION AND REMOVAL

Hormonal and copper IUDs involve a similar procedure for insertion and removal.

IUD insertion is a quick procedure that can be done in the doctor's rooms with no sedation or general anaesthesia. It's not surgery but the insertion of hormonal IUD is sometimes done as part of another anaesthesia-requiring gynecological procedure.

IUD removal is also simple and something you can request from your doctor at any time. A patient once told me she'd like to try an IUD but didn't want to then have to 'convince her doctor to remove it'. Just to clarify: there should be no 'convincing' involved, because it's your body. When you want your IUD removed, your doctor will remove it.

Fertility awareness methods (FAM)

Fertility awareness is another way of avoiding pregnancy. It works by recognising your six-day fertile period and then abstaining or using condoms or withdrawal during that time.

FAM is different from the rhythm method, an old style of FAM that relies solely on calendar dates. Modern methods of FAM use the objective signs of cervical fluid, cervix changes or body temperature, and it's worth

taking a minute now to discuss the fascinating way that temperature can be used to track ovulation and progesterone.

SPECIAL TOPIC: TRACKING BASAL BODY TEMPERATURE (BBT)

Tracking temperatures detects ovulation because the progesterone made after ovulation has the handy effect of raising basal body temperature by about 0.3 degrees Celsius. In other words, if you observe a sustained temperature rise for the approximately two weeks before your period, then you know *for certain* that you ovulated. When measured properly, temperature is as accurate as a blood test for progesterone. See Professor Prior's Centre for Menstrual Cycle and Ovulation Research site (CeMCOR.ca) for a description of her Quantitative Basal Temperature method.

Tracking BBT can be used as part of a FAM method of avoiding pregnancy, or simply to determine if you're ovulating. The way it works is you take an under-the-tongue temperature every morning and observe the pattern. A sustained temperature rise indicates ovulation and the onset of the luteal phase. Ten to fourteen days later, temperatures will drop again, signalling the onset of a period or 'hidden period' in the case of the hormonal IUD or partial hysterectomy.

If your luteal phase is shorter than ten days, you've had a short luteal phase, as described earlier. If you see no temperature rise at all, then you did not ovulate that cycle but might still be able to ovulate in future cycles.

If you wish to use BBT as part of a FAM method of avoiding pregnancy and your cycles are regular, you could try an approved algorithm such as Daysy Fertility Tracker® or Natural Cycles® to make the calculations for you. Alternatively, with the right training, you can learn to make the calculations manually. The good thing about the long and potentially anovulatory cycles of perimenopause is that you will potentially have a greater number of 'safe' or infertile days, but, at the same time, unfortunately, face a greater challenge trying to identify *when* they are. According to Natural Fertility NZ educator Karen Featherstone, perimenopausal women can (with the right training) enjoy 'longer phases of infertility which can be used for unprotected intercourse with no risk of pregnancy'.

For more information about FAM, read Toni Weschler's book *Taking Charge of Your Fertility*, or seek training from one of the several

organisations and online trainers listed in the Resources section at the end of this book.

Male condoms

A male condom is a latex or plastic sheath that you put over your partner's penis before intercourse. It catches the ejaculated sperm and prevents it from entering your body.

It's a simple barrier method that has the added benefit of protecting against sexually transmissible infections. Condoms need not mean a loss of pleasure, because there are new, more comfortable brands, such as the crowd-sourced Hex™, which is allegedly unbreakable; and myONE Perfect Fit®, which offers 60 different sizes.

Avoid condoms packaged with spermicide, because spermicide is toxic and could make you more susceptible to infections, especially urinary tract infections (UTIs), which are more common during perimenopause.

Withdrawal or pull-out method

When used properly by older, experienced couples, withdrawal has a *perfect use* failure rate of just 4 per cent, comparable to barrier methods. Perfect use means the failure rate of a contraceptive method when used perfectly. In contrast, *typical use* allows for human error. The typical use failure rate for withdrawal can be as high as 28 per cent.

TIP

Before having sex twice in one session, be sure to ask your partner to clean his penis and to urinate to wash out any sperm remaining in his penis after the first ejaculation.

Female tubal removal

What used to be called 'tubal ligation' is now generally referred to as removal because complete removal of the fallopian tubes has a lower long-term risk of ovarian cancer. Previous techniques accomplished permanent

blockage of the tubes by severing, clamping or cauterising them. The removal procedure is done by keyhole surgery under general anaesthetic.

Officially, tubal removal does not interfere with ovulation or hormonal balance, but some women experience lower levels of progesterone, which can result in irregular or heavy periods.

Vasectomy

Vasectomy is the male equivalent of tubal removal, but is not surgery. Instead, it's a simple in-office procedure done with a local anaesthetic. *Post-vasectomy pain syndrome* is reported in 10 per cent of men who have undergone vasectomy.

Another male method, which will hopefully soon come to market, is similar to vasectomy but fully reversible. It's called Vasalgel® and is a one-time gel injection into the vas deferens (the tube that carries sperm from the testicles to the ejaculatory ducts). Similar technology has already completed clinical trials in India.

Going forward

I hope I've convinced you to at least *consider* having natural, ovulatory cycles for the final few years of your cycling life. If you can achieve ovulatory cycles, you will experience the many benefits of progesterone, which could make your transition through perimenopause a little easier. If your symptoms are too strong for you to tolerate natural cycles, then consider progesterone capsules, which we'll discuss in the coming chapters.

4

The hormonal and physiological changes of second puberty

In this chapter, we're going to explore the physiological changes of perimenopause and menopause, and survey the many different symptoms that can arise. We'll begin with a discussion of a natural perimenopause transition and its four phases. We'll then look at early menopause and menopause that's induced medically or surgically. Finally, we'll touch on why menopausal symptoms might be worse in our modern environment, and whether menopause itself might one day be preventable.

Here's a brief bird's-eye view: If you've been having natural ovulatory cycles, your starting place is the *estrogen, then estrogen plus progesterone* monthly pattern described and illustrated in the previous chapter. During the first few phases of a natural perimenopause, you'll move to *high, fluctuating estrogen paired with low or no progesterone*, and then finally, with menopause, to *low estrogen and no progesterone*.

According to Professor Prior, these changes happen over four phases plus menopause:

very early perimenopause, when cycles are still regular
early menopause transition, from the onset of irregular periods
late menopause transition, from the first cycle of more than sixty days
late perimenopause, which is the twelve months from the final period
menopause, which is the life phase that begins one year after your last period.

We'll revisit the phases later in the chapter, where we'll review the timing, symptoms, and menstrual patterns of each phase. For now, let's examine the increase in estrogen and decrease in progesterone that happen simultaneously during the earliest phases of perimenopause, kicking off with the progesterone side of the equation.

Losing progesterone

It's a lot easier to make estrogen than progesterone. That's because you make estrogen on the *journey to ovulation* and, as we saw with anovulatory cycles, you can also make quite a lot of estrogen but never actually reach ovulation.

In contrast, you make progesterone only *after* ovulation and, unfortunately, ovulation is hard to do. Ovulation was hard even when you were young and had active ovarian follicles. Back then, to be able to ovulate, you needed healthy insulin sensitivity together with healthy thyroid function and lots of other factors. That's why in my first book, *Period Repair Manual*, I refer to regular ovulation and regular cycles as your *monthly report card* of health.

Now, in perimenopause, you still need all those things (healthy insulin, thyroid, and so on), but you're also faced with the additional challenge that your follicles are just not as active or responsive as they used to be. That's why you're now starting to have anovulatory cycles and make less or no progesterone.

Low or no progesterone is the crux of the matter. Losing progesterone when you still have lots of estrogen (maybe even *more* estrogen) accounts for many of the symptoms of perimenopause, including migraines, breast pain and *heavy periods*.

The combination of high estrogen and low or no progesterone goes by many different names, including:

anovulatory cycles
hormone imbalance
estrogen and progesterone imbalance
dysfunctional uterine bleeding
ovulatory dysfunction
unopposed estrogen
estrogen dominance.

TIP

'Estrogen dominance' is not a term your doctor is likely to use. They might prefer to speak of 'anovulatory cycles' or 'anovulatory bleeds', which are the terms used in this book.

As we saw in Chapter 1, the last time you were in this situation of high estrogen and no progesterone was during first puberty, when your hormonal system was still maturing. Back then, you had anovulatory cycles just like now, so back then, you may also have had symptoms of unopposed estrogen, such as migraines and heavy periods.

You'll feel it when you lose progesterone, because the hormone affects many aspects of health including the immune system and, most importantly, the brain. Losing progesterone means you have to *recalibrate* those systems (especially the brain), and if that goes smoothly, you should be okay. If it *doesn't* go smoothly, you could develop one or more of the following symptoms.

Mood and sleep disturbance

Losing progesterone changes the brain and nervous system and can reduce your ability to cope with stress. It also increases the risk of anxiety, depression, memory loss, and sleep disturbance, which untreated can cause chronic body pain. The mood symptoms of early perimenopause can also be affected by histamine or mast cell activation, which I'll explain in a special topic on page 75.

> **TIP**
>
> You will be more vulnerable to perimenopausal mood and sleep symptoms if you have a history of premenstrual mood symptoms, which are usually caused by a hypersensitivity to a changing level of hormones.

Hot flushes and night sweats

Hot flushes and night sweats can begin early in perimenopause when you're still making lots of estrogen but no progesterone. Unfortunately, if flushes start early (while you're still having regular periods), they could continue for as long as ten years. If flushes start later (after the final period), they will probably last only a year or two.

The hot flushes of perimenopause tend to occur just before, during or after the period. See Chapter 7 for a full discussion of hot flushes, including mechanisms and treatment.

Heart palpitations

Heart palpitations is the term to describe the sensation of a pounding or fluttering heartbeat or the sensation of a skipped heartbeat. It's a common and distressing symptom of perimenopause and can accompany hot flushes, temporarily increasing heart rate by up to sixteen beats per minute. Perimenopausal heart palpitations have not been well studied, but according to Professor Prior they are most likely caused by the loss of heart-stabilising progesterone and the consequent lengthening of a part of the cardiac cycle (heartbeat). She proposes progesterone as a treatment.

If your palpitations are occasional and mild, they should improve with magnesium (Chapter 5) and progesterone (Chapter 6). If, on the other hand, your palpitations last longer than a few minutes or seem to be getting worse, please check with your doctor. Other possible causes of palpitations include stress, caffeine, heart problems and overactive thyroid function.

TIP

Many of the symptoms discussed in this chapter could also be due to other causes. Check with your doctor before assuming your symptoms are attributable to perimenopause.

How to speak with your doctor about heart palpitations

- 'Is what I'm experiencing called "heart palpitations"?'
- 'My understanding is that heart palpitations are common with perimenopause.'
- 'Could I perhaps try treatment with progesterone?' (See the How to speak with your doctor about progesterone for perimenopause section on page 147.)

Migraines

Migraine frequency can increase during perimenopause, primarily because the brain is deprived of the beneficial calming effect of progesterone, and because perimenopause is associated with high and fluctuating levels of both estrogen and histamine, two major factors in migraines. For treatment ideas, see Chapter 7.

TIP

Frequent migraines can occur during adolescence (when estradiol is high and progesterone is low) and then improve during the reproductive years until perimenopause (when estradiol rises and progesterone drops again).

Autoimmune disease

Autoimmune disease or *autoimmunity* is the situation of the immune system attacking the body's own tissues. Some types of autoimmune disease are more common during perimenopause and early menopause because of the massive remodelling of the immune system that occurs due to losing first progesterone and then estrogen. The most common autoimmune disease is *Hashimoto's thyroid disease*, which we'll discuss in Chapter 8.

Heavy periods and period pain

Progesterone thins the uterine lining, decreases menstrual flow and helps to prevent period pain. That's why you're more likely to experience heavy periods and period pain at times of low progesterone (both first and second puberty); see Chapter 9 for more information.

That was the 'losing progesterone' side of the equation. Now, let's look at high and fluctuating estrogen.

High and fluctuating estrogen

Contrary to what you've heard, estrogen is probably not on a slow, gradual decline during perimenopause. It could be, in which case you'll experience a gradual lightening of your periods. More likely, you'll experience estrogen that spikes up to three times what it was when you were younger and fluctuates wildly in what Professor Prior describes as the 'the ovary's grand finale' or a 'fireworks show'.

High, fluctuating estrogen can produce symptoms of high estrogen (heavy periods, breast pain and irritable mood) interspersed with symptoms of *dropping* estrogen (night sweats and depression).

Heavy and painful periods

Estrogen thickens the uterine lining, which, in combination with low progesterone (discussed above), can cause heavy menstrual flow and pain, and worsen gynecological conditions such as adenomyosis, where the uterine lining grows within the muscle of the uterine wall. We'll explore all

those issues in Chapter 9 and also look at ways to promote healthy *estrogen metabolism* or detoxification.

> **TIP**
>
> High, fluctuating estrogen can result in large amounts of fertile mucus, which is the cervical fluid that usually precedes ovulation. Except, in this case, the fertile mucus is entirely due to abnormally high estrogen, and may not be associated with ovulation.

Breast pain

Breast tissue is sensitive to estrogen, and breast soreness or tenderness in the front of the breast is, according to Professor Prior, a classic sign of high estrogen. She recommends that perimenopausal women test for breast tenderness (and therefore for high estrogen) by pushing the palm of the hand straight back into the front of the breast and comparing the soreness to the same pressure applied to the thigh. Tenderness on the side of the breast or up into the armpit (but not the front of the breast) is not due to high estrogen but is more a normal sign that ovulation has occurred.

In my experience, breast pain can also be a sign of iodine deficiency, which we'll discuss in Chapter 9.

Irritable mood

High, fluctuating estrogen can also contribute to insomnia, irritability and even a feeling of extreme rage. Part of the problem is the way estrogen stimulates mast cells and histamine, which can create anxiety and contribute to heavy periods, migraines, hives, hayfever and other symptoms.

> **SPECIAL TOPIC: MAST CELL ACTIVATION SYNDROME (MCAS) AND HIGH HISTAMINE**
>
> Mast cells are immune cells that releases prostaglandins, inflammatory cytokines and *histamine*, all of which can play a big role in women's health.
>
> You probably know histamine as the immune-signalling protein that causes allergies and swelling, but it has lots of other jobs. For example, histamine regulates

stomach acid, stimulates the brain and boosts libido, which is why estrogen increases libido and antihistamines decrease it.

Too much histamine can be the result of either 1) poor clearance through the gut, or 2) *mast cell activation syndrome (MCAS)*, a common condition in which mast cells inappropriately and excessively release histamine and other inflammatory compounds.

Symptoms of mast cell activation and high histamine include urticaria (hives), nasal congestion, low blood pressure, irritability, insomnia, migraines, joint pain, fluid retention, tinnitus (ringing in the ears), nausea and diarrhea. Mast cell activation can also contribute to gynecological problems such as heavy periods and period pain, because 1) histamine stimulates excess estrogen production, and 2) uterine mast cells release prostaglandins and heparin, which can directly cause heavy bleeding.

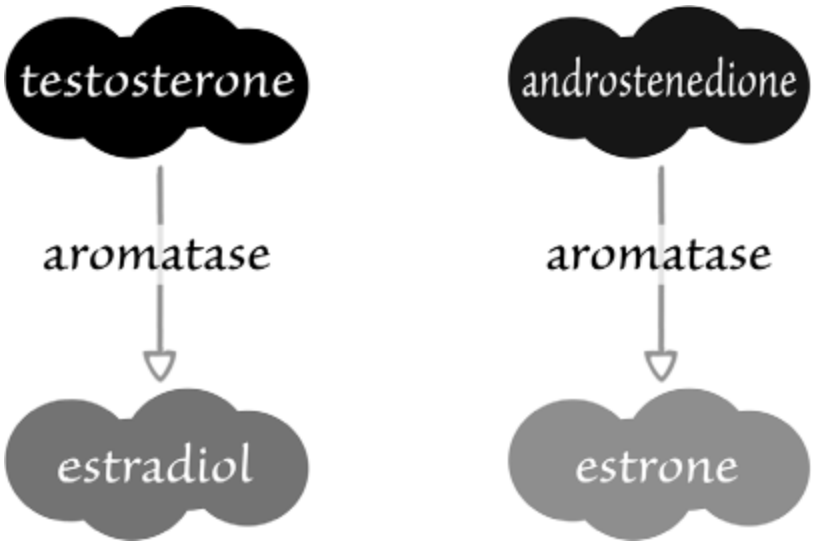
As stated, estrogen increases histamine. It does so by directly stimulating mast cells to release histamine and by downregulating the diamine oxidase (DAO) enzyme that clears histamine. As estrogen stimulates histamine, so histamine stimulates the ovaries to make more estrogen. The net result can be a vicious cycle of *estrogen → histamine → estrogen → histamine*.

Many symptoms of so-called estrogen dominance (such as PMS and heavy periods) may actually be symptoms of histamine or mast cell activation. The onset of perimenopausal allergies, which we'll discuss in Chapter 8, is another symptom of the high histamine of perimenopause.

For treatment ideas, see the Low-histamine diet on page 111.

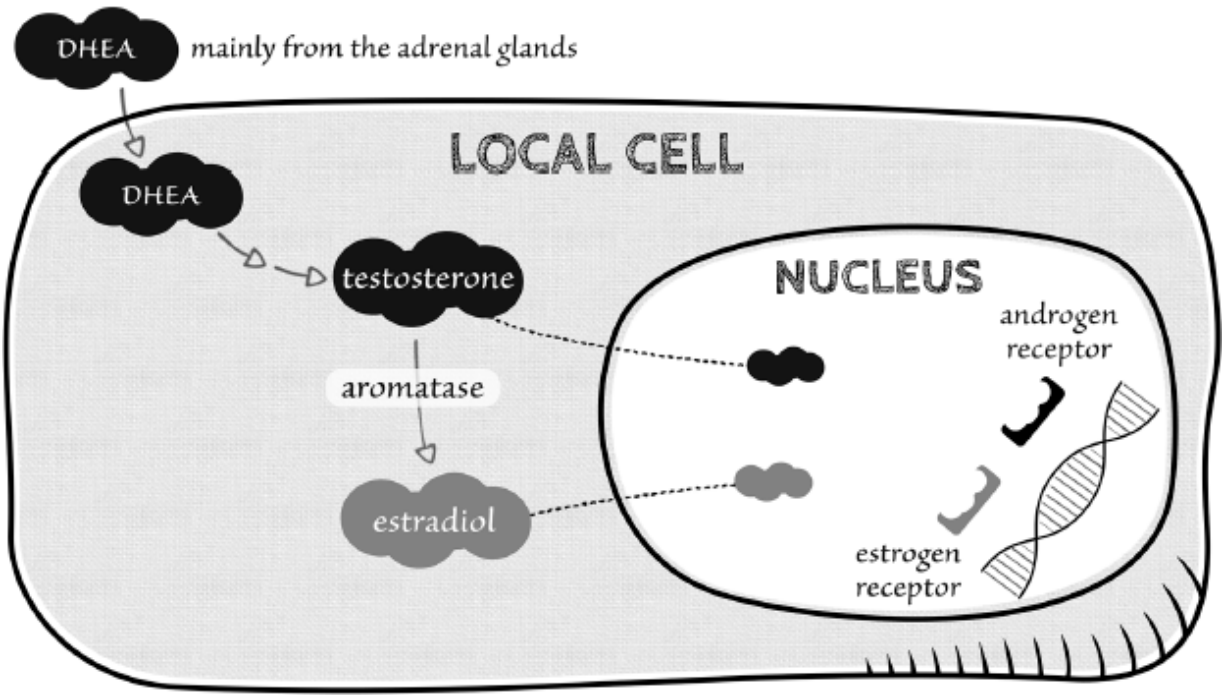
Losing estrogen

We've looked at the high, fluctuating estrogen of the earlier phases of perimenopause, which can also cause symptoms from dropping estrogen or withdrawal from high to low. Let's now move into the territory of consistently lower estrogen that begins after your final period. By 'lower estrogen', I do not mean '*no* estrogen' because you will always have some estrogen, just not as much as before. In menopause, you'll continue to make estradiol with your ovaries (about 10 per cent of what you used to make) and the rest of your body with an enzyme called aromatase. Aromatase converts the androgens testosterone and androstenedione into the estrogens estradiol and estrone and does so in every individual cell of every tissue.



By making estrogen locally, tissues such as the heart and brain can make just what they need and no more. They are therefore provided with some estrogen (which is essential) but at the same time sheltered from the effects of too much. Such tightly controlled local production of estrogen is called *intracrinology* and is important for men, women and children.

For men and children, local cell intracrinology is the *primary* source of estrogen. For women of reproductive age, estrogen from intracrinology is secondary to the huge amount of estradiol made by the ovaries. Upon reaching menopause, ovarian estrogen production falls away and intracrinology once again takes over. In menopause, your body 'dials up' estrogen by 1) upregulating aromatase activity and, 2) increasing production of androgens including androstenedione from the ovaries and DHEA (dehydroepiandrosterone) from the adrenal glands. By maintaining a healthy level of DHEA (Chapter 5), you can support the process of intracrinology and maintain a healthy level of intracellular estrogen.



A third way your body 'dials up' estrogen is by adjusting the number and sensitivity of estrogen receptors, which are the docking stations for estrogen. By increasing the sensitivity of estrogen receptors, your body can amplify the signal of your new lower level of estrogen. That process of upregulating aromatase and dialling up estrogen receptors can take months to years, which may account for the duration of menopausal symptoms.

In general, the upregulation of aromatase is a good thing because it provides you with the estrogen you'll always need. At the same time, too much aromatase activity in abdominal adipose (fat) tissue can produce too much of an estrogen called estrone, which, in your menopausal years, is a risk factor for cardiovascular disease, fibroids, pelvic pain, abnormal uterine bleeding and breast cancer. High activity of abdominal adipose aromatase is usually due to insulin resistance and is another reason to identify and reverse insulin resistance (Chapters 5 and 7).

Let's now look at the symptoms associated with lower or dropping estrogen.

Hot flushes and night sweats

When hot flushes and night sweats begin during perimenopause, they are the result of low progesterone and fluctuating estrogen and are best treated with progesterone. If flushes continue past the final period, they are more the result of lower (but still fluctuating) estrogen and can improve with estrogen plus progesterone therapy. See Chapter 7.

Mood and sleep disturbance

As we saw earlier, the mood symptoms of the early phases of perimenopause are due to low progesterone, high estrogen and mast cell activation or histamine. The mood symptoms of the later phases of perimenopause and the early years of menopause are due to a change within the energy system of the brain associated with lower estrogen. See Chapter 7.

Vaginal dryness

Low estrogen can cause thinning of the tissues of the vagina, vulva and urethra. It's called *vaginal atrophy* or the *genitourinary syndrome of menopause* (GSM), and is one of the few permanent, rather than temporary, symptoms of menopause. Symptoms include dryness, pain, itching, increased urinary frequency, incontinence, prolapse and increased susceptibility to urinary tract infections (UTIs). See Chapter 10.

Body aches and pains

Aching muscles and joints are common symptoms of menopause, outranking hot flushes in some studies. As described in Chapter 1, it's not uncommon to receive the diagnosis of fibromyalgia during perimenopause and the early years of menopause, most likely due to disturbed sleep and the loss of the natural anti-inflammatory benefits of progesterone and estrogen. See Chapter 8 for treatment and, of course, check with your doctor, especially if your pain is new or severe; it could be something else.

Abdominal weight gain

Finally, lower estrogen and progesterone can cause a metabolic change that contributes to weight gain around the middle. There are a few things going on. First, you're losing the beneficial anabolic properties of estradiol, which means you're losing muscle mass, which slows metabolism. You're also losing the anti-inflammatory, metabolism-stimulating properties of both estrogen and progesterone, which can lead to insulin resistance, a very important topic in this book. Menopause puts you at risk of insulin resistance and, at the same time, having insulin resistance can worsen the symptoms of menopause. Part of the problem is the natural shift to 'relative androgen excess' with perimenopause and menopause.

SPECIAL TOPIC: THE 'TESTOSTERONE DOMINANCE' OF PERIMENOPAUSE AND MENOPAUSE

Testosterone can increase abdominal weight gain in women. More precisely, androgens can contribute to abdominal weight gain and insulin resistance when they're high compared to progesterone and estradiol, because *relatively* high androgens override the normal insulin-sensitising properties of progesterone and estradiol. Relatively high androgens is exactly what happens with perimenopause and menopause, when first progesterone and then estradiol drop away while androgens remains constant and even slightly increase. I call it testosterone dominance.

If you're interested in a more technical view of what's going on, the testosterone dominance of perimenopause and menopause arises from two mechanisms. The first is a slight increase in androgen production, which is temporary because androgen production is generally on a slow decline, just as it is for men. The second is the greater availability of unbound or 'free testosterone' thanks to a drop in sex hormone-binding globulin (SHBG), which is the protein that binds testosterone and estrogen. Various factors contribute to the drop in SHBG, including a lower level of estrogen, a greater tendency to insulin resistance and, in some cases, low thyroid function. Addressing such factors can help to increase SHBG, which will bind more testosterone and improve relative androgen excess. Phytoestrogens (Chapter 5) can also increase SHBG.

And that brings us to what can only be described as a frustrating bidirectional relationship between androgens and insulin resistance. It works like this: *relatively high* androgens drive insulin resistance and, at the same time, *insulin resistance drives more androgens*, both by lowering SHBG and by directly stimulating the ovaries to make more androgens.

Relative androgen excess promotes abdominal weight gain and a change from an hourglass body shape to a squarer shape with a thickened waist and heavier upper body. It may also increase the risk of breast cancer and cause mild hirsutism (facial

hair) and hair loss, which we'll address in Chapter 10. Clearly, those are not good outcomes.

At the same time, it's important to have at least *some* androgens because they're beneficial for muscle, bone, mood, libido and conversion to estrogen.

Menopausal insulin resistance and weight gain are more likely to be a problem if you previously had the hormonal condition PCOS, like my patient Julie on page 57. That's because androgen excess and insulin resistance are the key features of PCOS and (without treatment) will tend to progress and worsen with menopause. By identifying and reversing insulin resistance in her early forties, Julie was probably going to be able to lessen the relative androgen excess of menopause. See Chapters 5, 8 and 10 for a full discussion of insulin resistance and menopausal weight gain.

We've completed our survey of the changes and symptoms of perimenopause and menopause. Let's now turn our attention to diagnosis, and how you can tell where you are in this process of change.

Diagnosis of perimenopause

There's no blood test for perimenopause and it's usually not worth attempting to measure levels of estrogen and progesterone. Instead, perimenopause is diagnosed based on symptoms and context.

According to Professor Prior, a midlife woman *with regular cycles* is likely to be in perimenopause if she has any three of the following nine changes:

new-onset heavy and/or longer flow
shorter menstrual cycles (25 days or less)
new sore, swollen or lumpy breasts
new mid-sleep waking
increased menstrual cramps
onset of night sweats, in particular premenstrually
new or markedly increased migraine headaches
new or increased premenstrual mood swings

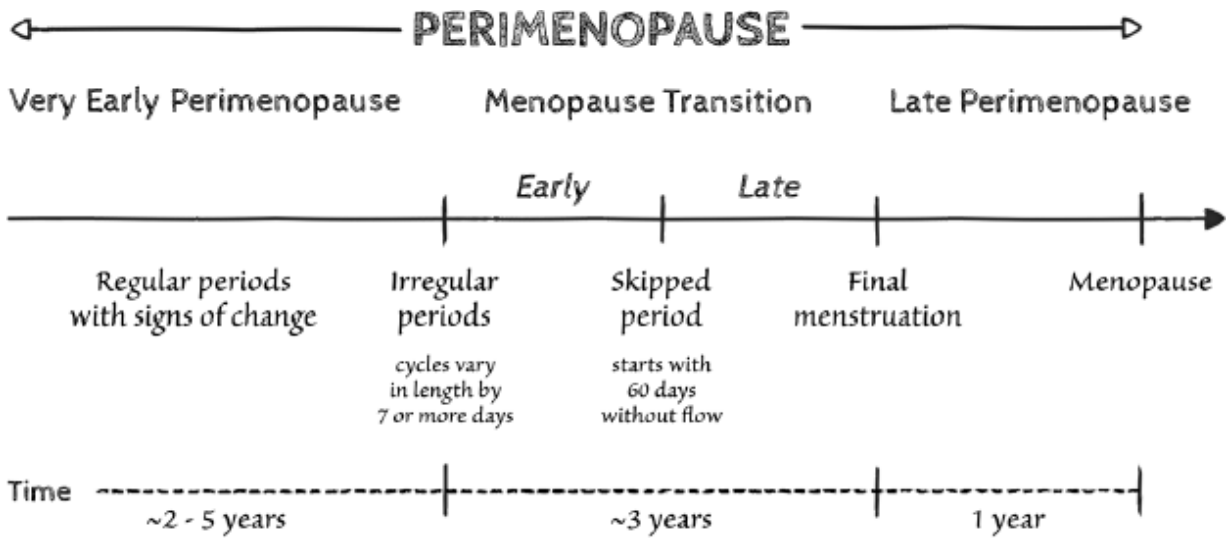
weight gain without changes in exercise or eating.

In other words, if you're older than 35, and have at least three symptoms on this list, then you are likely to be in perimenopause.

Menopause, on the other hand, is the life phase that begins twelve months after your last period. Early or premature menopause, which we'll discuss a little later, can be diagnosed by a blood test for FSH.

The timing of perimenopause

On average, the process takes about seven years, spread over Professor Prior's four phases that we'll now discuss in more detail.



Professor Prior adapted these phases from the 2012 Executive summary of the Stages of Reproductive Aging Workshop, which was convened at the 2011 North American Menopause Society conference.

1 Very early perimenopause

Your menstrual cycle is still regular during this phase, although it could shorten to 21–26 days. You probably have less progesterone than you used to but *more* estrogen, which puts you at risk of heavier periods, increased period pain, migraines and sleep disturbance. This phase typically lasts two to five years.

2 Early menopause transition

Your cycle is starting to become irregular and, counting from day 1 to day 1, could vary in length by more than seven days.

TIP

Day 1 is the first day of the proper flow of your period.

Like the earlier phase, you still have low progesterone and high, fluctuating estrogen, but now, when your estrogen drops, it goes even lower, which could trigger worsening hot flushes and night sweats. The timing from the onset of irregular cycles until the first skipped period is two to three years.

TIP

The exact timing of menopause from this point could be made easier by a blood test called anti-Müllerian hormone (AMH). According to new research, women older than 47 whose AMH level was below 0.1 pmol/L have a 67 per cent chance of having their final period within the next twelve months and an 82 per cent chance of having it within the next two years.

3 Late menopause transition

Now is when you miss your first period or have your first cycle that is longer than 60 days. Breast pain should ease but hot flushes and night sweats could intensify, and you may still be in for a very heavy period or two. From this point, it should be about four years until you achieve menopause, which will be twelve months after your final period.

4 Late perimenopause

Late perimenopause is when you have had what you suspect is your final period and you’re waiting twelve months to achieve menopause. This is the beginning of the change to lower estrogen so you should start to notice

fewer symptoms of high, fluctuating estrogen such as migraines and mood symptoms. Unless you get another period, in which case, your estrogen will go up again and some of those symptoms could return. The younger you are, the more likely you are to get another period, and if you do, you'll have to start counting all over again to reach menopause. Hot flushes could continue for one or more years from this point.

Menopause

Finally, menopause is the life phase that begins one year after your final period. Professor Prior describes it as 'graduation to menopause' and says it can be a time of real celebration. Most symptoms should resolve except for those we'll discuss in Chapter 10, the What comes after chapter.

In summary, perimenopause begins with short cycles and heavy bleeding and ends with long cycles with light bleeding, then finally a year with no bleeding.

And as explained, the four phases apply only to menopause that arrives naturally in your late forties or early fifties. They don't apply to menopause that comes early due to primary ovarian insufficiency or medical or surgical menopause.

When menopause comes early

Primary ovarian insufficiency or 'early menopause'

Menopause before age 40 is primary ovarian insufficiency (POI), also called *premature ovarian failure*, *premature menopause* or *early menopause*. It's different from menopause in that it is due to a dysfunction of the ovaries. According to some experts, POI typically occurs quite suddenly, without the sequence of perimenopausal events described above, and can be associated with more intense symptoms. Professor Prior says POI can also cause mood changes and heavy flow for several years before periods stop.

Primary ovarian insufficiency affects about one in 100 women and is diagnosed by two high FSH readings (more than 40 IU/L) at least a month apart. Risk factors include genetics, autoimmune disease, and chemotherapy or radiation treatments. In most cases, the cause is not known.

If you have primary ovarian insufficiency, pregnancy is unlikely but not impossible. One systematic review of the research found that up to 5–10 per cent of women with POI go on to conceive without medical intervention.

In terms of treatment, you will likely require menopausal hormone therapy to relieve symptoms and reduce your long-term risk of osteoporosis, heart disease and dementia. I'll provide special mentions of POI in Chapter 6, the Menopausal hormone therapy chapter.

You'll also need lots of emotional support, because the diagnosis of primary ovarian failure is an understandably stressful event. It would be normal to experience emotions such as devastation, shock and confusion, as was found by one study, so please know you're not alone and reach out for help from your doctor and the support groups listed in the Resources section.

Medical or surgical menopause

Medical or induced menopause is when you lose the function of your ovaries due to medical or surgical treatment. The most common causes include chemotherapy, radiation or the surgical removal of the ovaries as part of a total hysterectomy. As we saw in Rita's story on page 18, surgical removal of the uterus but not the ovaries does not cause menopause, although it does cause periods to stop.

Medical or surgical menopause is not normal menopause. For one thing, it causes a more rapid decline of hormones, which can result in unusually strong symptoms, especially hot flushes. It's also associated with an unusually low level of hormones, because you won't have the continued supply of estrogen and androgens provided by functioning menopausal ovaries. Low hormones could, in turn, increase your long-term risk of osteoporosis, heart disease and dementia, a risk that hormone therapy can help to reduce but not entirely mitigate. For this reason, most experts now

recommend that ovaries should not be removed except if there is a high risk of ovarian cancer. Speak to your doctor.

Are menopausal symptoms a side effect of modern life?

As we saw in Chapter 2, menopause is not new. In fact, according to historian Susan Mattern and her book *The Slow Moon Climbs: the science, history, and meaning of menopause*, menopause has been around for as long as we have been human, and may even have been the driving force behind the evolution of a longer human lifespan.

But while menopause is universal in human society, menopausal symptoms are not. For example, present-day forager women do not report many (or often any) negative symptoms and generally view menopause as a positive event. Many of those same women go on to live healthily and happily into old age, which kind of flies in the face of the narrative that losing estrogen is the beginning of disease and decrepitude.

What's going on? Is it possible that losing estrogen is not that big a deal except in the context of something else? And if so, what is that 'something else'? What aspect or aspects of modern life set us up for menopausal symptoms? There are several contending factors.

The first is the relatively fewer number of years we spend pregnant or breastfeeding. This is true particularly during the lead-up to menopause, when most of us have either had no pregnancies or only a few pregnancies but many years earlier. In contrast, women in forager societies will usually have spent many more total years pregnant or breastfeeding, including the years leading up to menopause. That means they experience menopause not as a stopping of periods, but instead as a seamless transition from the low estrogen state of breastfeeding to the equally low estrogen state of menopause, thereby avoiding the high, fluctuating estrogen and then 'estrogen withdrawal' of modern perimenopause.

A second and rather troubling possibility is that at least some of the symptoms and health risks of menopause (including mood symptoms) may be attributable to the release of toxic lead from bones during the normal

accelerated bone loss of menopause. In our modern world, lead accumulates slowly in the bones over a lifetime, especially in women who were exposed to higher levels such as from living in a home built before 1960. Other environmental toxins could play a role in symptoms and even the timing of menopause, but, unfortunately, there has not yet been much research. I'll provide treatment ideas in the Environmental toxins section of Chapter 5.

Yet other factors that could make us more vulnerable to menopausal symptoms include all the modern-day problems we'll cover in Chapter 5, such as disruption of circadian rhythm, chronic inflammation, impaired microbiome and, most importantly, *insulin resistance*. As we saw earlier in this chapter, menopause increases the risk of insulin resistance and, at the same time, insulin resistance can worsen the symptoms of menopause. Women in traditional forager societies live in a food environment of low calories and low sugar and are therefore less likely to develop insulin resistance and menopausal symptoms.

Can menopause be delayed?

The short answer is *not at this stage*. The timing of menopause is fixed based on genetics. It can be brought a little earlier by illness or smoking but there's no known way to push it later.

That could, of course, change if medicine discovers ways to keep the ovaries switched on for additional years or even decades. Such a scenario is possible because it is looking more likely that ovaries *do not run out of eggs* but actually contain ovarian stem cells that could, in theory, be stimulated to grow to make new follicles or eggs. It's a theory that's been around for a while and has been hotly debated from both sides, with some scientists claiming ovarian stem cells don't exist and others insisting that it's only logical that they do. For example, researcher Jonathan Tilly says, 'There's no fathomable reason why a woman would have evolved to carry stale eggs around for decades before attempting to get pregnant while men evolved to have fresh sperm always available'.

Through my lens as a biologist, I suspect we do have ovarian stem cells. What we do with them, however, is another matter. Our normal physiology is to shut down ovarian function at about the age of 50, and no diet or lifestyle can change that. The only way to reactivate ovarian stem cells will be with technology, such as the PRP (platelet-rich plasma) technology, which is currently under investigation. It uses an isolate of growth factors derived from a person's own blood serum and has been used by a team of Greek researchers to 'rejuvenate' ovaries and restore fertility. In one study, the treatment was given to thirty women between the ages of 46 and 49, two-thirds of whom went on to restart their menstrual cycles and produce eggs, and one woman to give birth.

The other technology under investigation does not involve stem cells but instead freezes the ovarian tissue of a woman when she is young and then reimplants it when she reaches the age of menopause. By doing so, the researchers say, the technique could delay the age of menopause by twenty years. The freezing part of the technique is currently being offered by a fertility clinic in the UK.

Although I mention these technologies, I do not necessarily endorse them. Nor do I oppose them, just as I do not oppose hormone therapy. I personally would not undergo 'menopause-delaying' technology, even if I were still of eligible age, which I am not. But if such techniques can be demonstrated to be safe and beneficial in the long term, they might be worthy of consideration.

Now that we've looked at how menopause happens, let's move straight into what you can do to feel better.

Part Two

Treatment

‘Healing is a matter of time,
but it is sometimes also a
matter of opportunity.’

Hippocrates

5

General maintenance for perimenopause and beyond

Welcome to the treatment section of the book. In the coming chapters, I'll provide targeted treatments for your specific perimenopause and menopause symptoms. I know you might be tempted to skip ahead, but this chapter is important because general health maintenance will lay the groundwork for all the other treatments.

What is general maintenance for perimenopause and menopause? It's all the ways you can soothe, cool, nourish and strengthen your body.

Soothe your nervous system

Losing first progesterone and then estrogen can be a little destabilising for your brain and nervous system. To adapt, they need to recalibrate, and that process requires a certain degree of overall health and resilience.

So step one of general maintenance is to build that health and resilience of your nervous system. Doing so will help you to feel better now and

improve your chances of staying well in the long term. Recall from Chapter 1 that perimenopause is a critical window for health in general and the nervous system in particular. Managing your stress now could go a long way to preventing mood problems later.

To get a handle on your nervous system, you need to get to know three aspects of your nervous system: your *autonomic nervous system*, your *hypothalamic-pituitary-adrenal (HPA) axis* and your *circadian rhythm*. Let's look at each in turn.

Autonomic nervous system

The autonomic system is the part of the nervous system responsible for unconscious bodily functions such as breathing, digestion and heartbeat. It plays a huge role in both responding to and recovering from stress, depending on which half of the autonomic system is activated.

The half that increases the feeling of stress is the *sympathetic nervous system*, which is associated with the neurotransmitters adrenaline and noradrenaline and increases breathing, pulse and alertness. Some sympathetic activity or *tone* is beneficial because it enables you to respond to unexpected challenges or demands. Too much sympathetic tone can create a state of chronic hyperarousal or chronic tension, which is not good for your sleep, brain or hormonal system.

> **TIP**
>
> Noradrenaline narrows the brain's thermoneutral zone (optimal operating temperature range) and therefore plays a role in menopausal hot flushes. More about that in Chapter 7.

The half of the autonomic nervous system that reduces the feeling of stress is the *parasympathetic nervous system*, which is associated with the hormone oxytocin and the neurotransmitter acetylcholine and slows breathing, pulse and alertness. Parasympathetic activity or *tone* promotes functions that the body likes to do when it's at rest, including sleep, healthy

digestion and healing. In the words of integrative gynecologist Sara Gottfried, ‘recovery occurs in the parasympathetic nervous system’.

If you want an easy way to assess your parasympathetic tone, consider measuring your heart-rate variability (HRV), which is the degree to which the intervals between heartbeats vary from one heartbeat to the next. You can measure it with a Bluetooth heart-rate monitor combined with an app for your smartphone.

Higher heart-rate variability is good because it’s associated with a higher level of parasympathetic tone. True, your heart is beating less regularly, which sounds bad, but it actually means that your parasympathetic nervous system is in control and so is responding to your breath and other stimuli by adapting your heart rate. Healthy heart-rate variability means your nervous system is in a state of *resilience*.

One of the biggest players in heart-rate variability and parasympathetic tone is the *vagus nerve*, a cranial nerve that communicates directly from the brain to the body. Such direct communication is like a high-speed fibre-optic cable between your brain and body, and enables your brain to minutely monitor your physical status and know if all is well.

TIP

Think of your vagus nerve as a ‘stress-reset button’.

Diet and lifestyle for increased parasympathetic tone

You can calm your vagus nerve and parasympathetic nervous system by sending it signals of calm and safety such as the following:

Get outside into nature. Walking within nature (green exercise) increases parasympathetic tone both immediately following the activity and hours later during sleep.

Build social connections. Whether it’s with a partner, family, friends or even just a pet, regular social connection promotes the release of oxytocin, engages the vagus nerve and improves heart-rate variability.

Try a breathing technique with long exhalations. Consciously slowing your breath and making long exhales activates the vagus nerve and calms the sympathetic fight-or-flight stress response.

Yoga. Slow exhales are a big part of yoga, and as Dr Mithu Storoni explains in her book *Stress-Proof: the scientific solution to protect your brain and body*, yoga has a few more things going for it. Poses that place the hands above the head stimulate blood pressure sensors in the neck and chest, and signal the brain to alternate between sympathetic and parasympathetic. Combined with the practice of stillness, this exerts a top-down regulation of the autonomic nervous system and stress response. The slow style of traditional hatha yoga has been shown to have beneficial effects on heart-rate variability and parasympathetic tone.

> **TIP**
>
> Forward bends are particularly good at switching on the parasympathetic nervous system.

This is just a sample of the many techniques that can improve the health of the autonomic nervous system. Others include bitter foods, massage or bodywork, cold-water exposure and maintaining healthy gut bacteria.

Hypothalamic-pituitary-adrenal (HPA) axis

Closely related to the autonomic nervous system is the HPA axis, which is the communication between the brain (hypothalamus and pituitary gland) and the adrenal glands or stress glands. If you've heard the term 'adrenal fatigue' or 'adrenal exhaustion', then that's what I'm talking about. *HPA axis* is the correct medical term for the whole system that includes the adrenal glands, and *HPA axis dysfunction* or dysregulation is the correct term for a reduced ability to cope with stress.

When your HPA axis is functioning well, you produce higher amounts of the stress hormones cortisol and adrenaline only when you need them, and then turn them off again.

When your HPA axis is not functioning well, you make chronically higher levels of cortisol and adrenaline, and that can contribute to depression, insomnia, fatigue, reduced muscle mass, low libido, impaired immune function and insulin resistance. Of note, all these symptoms are also associated with menopause.

The other connection between HPA axis dysfunction and menopause is that HPA axis dysfunction is associated with a reduced level of the adrenal hormone DHEA, which as you may recall from the last chapter is the precursor to the intracrine or local production of estrogen with aromatase. Therefore, taking steps to improve the functioning of your HPA axis can help to make estrogen during menopause.

HPA axis dysfunction can result from chronic stress, as well as from undereating, illness, nutrient deficiency, sleep deprivation and disruption of the circadian rhythm, which we'll discuss shortly. HPA axis dysfunction can also result from perimenopause, because progesterone normally helps to improve the functioning of the HPA axis.

So as you enter perimenopause, you may find yourself more vulnerable to HPA axis dysfunction in response to chronic stress and other factors. HPA axis dysfunction, in turn, can worsen or cause many of the symptoms of perimenopause and menopause.

Testing for HPA axis dysfunction

At this stage, there is no reliable way to assess for HPA axis dysfunction. A recent study surveyed all possible methods including salivary cortisol, and concluded that none are accurate predictors of fatigue or symptoms. Better testing methods may become available in the future, but in the meantime, I assess HPA axis dysfunction based on the symptoms of insomnia and morning fatigue.

Diet and lifestyle to regulate the HPA axis

Activating the parasympathetic nervous system is an excellent way to stabilise and regulate the HPA axis. So that includes all the strategies we

just discussed, including getting outside, breathing techniques and yoga.

Other strategies include doing more of what you enjoy and supporting a healthy circadian rhythm (see below). Maintaining a healthy HPA axis may also require you to allocate more time for rest, which I know is tough to do in our nonstop world. A hectic schedule can lock you into the kind of busyness that is simply not conducive to a healthy HPA axis. Your body needs you to slow down, and if you can't find a way to do that, your body will find one for you.

From a dietary perspective, one of the best ways to help your HPA axis is to maintain stable blood sugar. That means avoiding dessert-type foods and eating protein with every meal, especially breakfast.

Several nutritional supplements can stabilise the HPA axis, including B vitamins and magnesium, which we'll discuss a little further on.

Circadian rhythm

Every cell in your body has a 'clock' and is on a twenty-four-hour schedule. Keeping to that schedule is an excellent way to promote general health, including the health of your metabolism, mood, sleep, bones and, of course, HPA axis.

The master clock for all your body clocks is a part of the brain called the *suprachiasmatic nucleus*, which is like the lead metronome, keeping all the other clocks in sync. It does so by coordinating the release of various neuronal and hormonal signals, including cortisol from the HPA axis and melatonin from the pineal gland. In the simplest terms, cortisol is your daytime or *daylight* hormone, and melatonin is your *darkness* hormone. Melatonin promotes sleep and has many other jobs, such as maintaining healthy digestion, immune function and metabolism.

The fastest way to disrupt your circadian rhythm is to do things at the wrong time, such as eating or being exposed to blue light during the night. If you've ever cared for a child or a pet, you know how much they like to function on a schedule. Your body is the same, so please give it what it needs *when* it needs it.

Perimenopause itself can disrupt circadian rhythm, because the suprachiasmatic nucleus is quite sensitive to both progesterone and estradiol. It's yet another system that has to recalibrate.

Diet and lifestyle for a healthy circadian rhythm

Morning light and evening dark. Blue-wavelength light is naturally strongest in the morning and weakest in the evening. Exposure to blue light tells your brain it's daytime, which is good when it actually *is* daytime, especially when it's morning. Try starting your day with time outside, maybe even a morning walk, which ticks the boxes of both morning light and beneficial *green exercise*. Just as blue light tells your body it's morning, the lack of blue light tells your body it's night, which is why you can support your circadian rhythm by avoiding blue light in the evening. Simple strategies include dimming your screen, wearing blue-blocker glasses or stopping screen time an hour or two before bed.

Morning protein. Eating protein by 10 am sends beneficial signals to the 'clock genes' that regulate insulin and metabolism. That's why morning protein can help to regulate circadian rhythm and promote weight loss. Even if you're doing a method of intermittent fasting (discussed later), try to have at least a small serving of protein by 10 am.

Reduce alcohol. Alcohol lowers melatonin and can disrupt the circadian rhythm. That's one of several reasons to consider reducing alcohol or stopping it altogether. We'll explore more about alcohol later in the chapter.

Warm bath. A warm bath or shower an hour or two before bed will improve your ability to both fall asleep and stay asleep. It works by temporarily raising body temperature and then allowing it to drop again, which will make you feel sleepy. Interestingly, a bath in the afternoon can also help to normalise circadian rhythm and improve mood.

Melatonin. Melatonin can be taken as a sleep aid and works, in part, by lowering core body temperature and therefore supporting circadian rhythm. We'll speak more about melatonin and other sleep supplements in Chapter 7.

In summary, maintaining a healthy nervous system requires strategies for the autonomic nervous system, HPA axis and circadian rhythm. Fortunately, many of the same commonsense strategies work for all three.

Next, we come to all the ways you can reduce chronic inflammation.

Cool inflammation

Reducing chronic inflammation is an essential part of a healthy perimenopause transition, because untreated, chronic inflammation just makes everything harder. For example, chronic inflammation can stimulate the sympathetic or stress-inducing part of the nervous system, which means more hot flushes. Chronic inflammation is also bad for mood and sleep, and can make periods heavier. Finally, chronic inflammation can worsen insulin resistance and menopausal weight gain.

What is chronic inflammation? In simplest terms, it's the chronic, long-term activation of the immune system. It's different from acute inflammation, which is the short-term activation of the immune system to heal a wound or defend against infection.

Chronic inflammation involves chemical messengers made by your immune system. They have names like TNF-alpha, IL-6, and IL-8, which you don't need to learn. I'll refer simply to *inflammatory cytokines* or inflammation.

CYTOKINES

Inflammatory cytokines are chemical messengers that your body uses to fight infection. They are part of your body's inflammatory response.

What causes chronic inflammation?

Chronic inflammation can result from anything that activates, stresses or impairs immune function. That could be simple things like junk food, lack of sleep or chronic emotional stress. Or it could be more complicated issues, such as chronic infection with Epstein-Barr virus or autoimmune

disease. We'll touch on autoimmune disease in the Autoimmune thyroid disease section in Chapter 8.

Inflammation can also result from something as obvious as smoking. Cigarette smoke contains cadmium, pesticides and other hormone-damaging, immune-activating toxins, making smoking one of the most inflammatory things you can do, and one of the few lifestyle factors that has been shown to bring menopause sooner. If you're a smoker, your first step is to find a way to quit.

Finally, chronic inflammation can result from insulin resistance, problems with digestion and exposure to environmental toxins. Let's look at each in turn.

Insulin resistance

I'll refer to insulin resistance again and again throughout the book, but this is where I define and explain it.

Put simply, insulin resistance is the condition of having chronically elevated levels of insulin, the hormone that stimulates cells to take up glucose. It's also called hyperinsulinemia, metabolic syndrome, or prediabetes and there's at least a one in two chance you have it. Untreated, insulin resistance can progress to type 2 diabetes.

With insulin resistance, the problem is not insulin itself, which is, of course, an essential and beneficial hormone. Benefits of insulin include turning food into energy (essential for life), promoting muscle growth (which means it's *anabolic*), and helping to maintain a healthy menstrual cycle. Low insulin is why undereating can cause young women to lose their periods.

With insulin resistance, the problem is underlying metabolic dysfunction and therefore a reduced ability of the cells to *respond to insulin*, leading to a compensatory increase in insulin. High insulin is, therefore, a *marker* of underlying metabolic dysfunction and also a cause of reduced *metabolic flexibility*, which means a reduced ability for cells to switch from using glucose for energy to using ketones, which are a metabolite of fat.

High insulin is also a *driver* of inflammation, and leads to a type of inflammation called *meta-inflammation*, short for ‘metabolic inflammation’. Untreated, insulin resistance, metabolic inflexibility and meta-inflammation can progress to many negative long-term health outcomes, including abdominal weight gain, which we’ll discuss in Chapter 8, and the following:

memory loss
symptoms of high androgens, such as facial hair and some types of hair loss
high cholesterol
increased long-term risk of osteoporosis, heart disease and dementia
hot flushes
uterine fibroids
anovulatory bleeding and thickened uterine lining.

One of the ways that insulin resistance contributes to a thickened uterine lining is by upregulating the enzyme aromatase we met in the previous chapter. That leads to higher levels of estrone, which can contribute to abnormal uterine bleeding, adenomyosis, fibroids and an increased risk of breast cancer.

Insulin resistance symptoms and risk factors

Do you have insulin resistance? Are you sure?

The main sign of insulin resistance is abdominal weight gain, which is apple-shaped weight gain or weight gain around your middle or upper body. Some of my patients describe it as ‘bra-strap weight gain’.

TIP

Get out the tape measure. To assess for apple-shaped obesity, take a measure at the level of your belly button. You’re aiming for a waist measurement of about 89 cm or less. A more precise measure is to calculate your waist to height ratio. Your waist should be less than half your height.

It is also possible to have insulin resistance but develop no noticeable degree of abdominal weight gain, and that's why it's important to test (below) and look at other signs and symptoms such as fatigue, sugar cravings, high triglycerides, high cholesterol, skin tags and *acanthosis nigricans*, a dark, velvety discolouration of the skin in the armpits, groin and folds of the neck. Another classic sign of insulin resistance is *fatty liver*, which we'll explore in Chapter 8.

Risk factors for insulin resistance include a family history of diabetes or a *personal* history of gestational diabetes or PCOS. As discussed in the testosterone dominance special topic on page 79, having PCOS and therefore already tending to high androgens could put you at greater risk of insulin resistance.

TIP

High testosterone worsens insulin resistance and insulin resistance worsens high testosterone.

Testing for insulin resistance

The test for insulin resistance is a test for the hormone insulin – not a test for glucose. In other words, insulin resistance cannot be ruled out by a normal blood sugar or glucose reading. Testing for insulin can be done either as 'fasting insulin' or an 'oral glucose tolerance test (GTT) with insulin', which is the test where you give a fasting blood sample and then drink a glucose drink before giving two more samples at one- and two-hour intervals. If you're going to have a glucose tolerance test, it's much more useful to have it 'with insulin' so you can also see your insulin readings.

How to speak with your doctor about testing insulin

Your doctor may only be familiar with the standard version of the *glucose tolerance test*, so you could try saying:

- ‘I’m concerned I may have insulin resistance because I have _____.’ Possible reasons include a fatty liver, a family history of type 2 diabetes, a personal history of PCOS or the presence of skin tags.
- ‘Do you think it’s worth ordering a glucose tolerance test?’

If your doctor agrees to order a glucose tolerance test, then ask:

- ‘Can we test insulin as well?’ Your referral will need to indicate that insulin be tested, fasting, and at the 1-hour and 2-hour intervals. If your doctor cannot order the insulin part of the test, then offer to pay for it privately, which is easy to do in Australia and New Zealand.

Once you have your result, look at the insulin result, not just the glucose result. A healthy ‘fasting insulin’ should be less than 10 mIU/L (60 pmol/L). One and two hours after the glucose drink, a healthy insulin reading should be less than 60 mIU/L (410 pmol/L). High insulin means you have insulin resistance. Normal insulin means you have good *insulin sensitivity*.

When it comes to perimenopause and menopause, insulin resistance is a key consideration because 1) underlying insulin resistance can worsen almost any symptom, and 2) the natural testosterone dominance of menopause can worsen insulin resistance. Fortunately, insulin resistance can be reversed with strategies such as intermittent fasting, movement and eating enough protein. We’ll explore all the treatments, both conventional and natural, in Chapter 8.

Digestive health

Digestive problems are another source of inflammation, so fixing a digestive problem is an important part of reducing chronic inflammation. To

understand the ‘digestive’ kind of inflammation, please understand that your immune system and digestion are, in a sense, one continuous entity. For example, 80 per cent of your immune system is clustered around your digestion, where it’s in constant communication with your gut and gut bacteria. Anything amiss with your gut or gut bacteria can, therefore, activate your immune system and cause inflammation.

The things that can go amiss with digestion include food sensitivities, intestinal permeability and problems with the gut bacteria or microbiome.

Food sensitivities

A food sensitivity or a food intolerance occurs when a food upsets your gut bacteria or inflames your gut lining – thereby activating your immune system. Food sensitivity refers to any adverse reaction to a food and is a broader, more complex reaction than a food allergy. Symptoms of sensitivity include headaches, joint pain, digestive bloating and food cravings, many of which can also be attributed to other causes, making it a somewhat controversial topic.

> **TIP**
>
> Did you notice that food cravings are a symptom of food sensitivity? Often, the craving is for the food that causes the sensitivity (wheat or dairy), but can also be a craving for sugar.

Any food can potentially trigger a food sensitivity reaction, but the most commonly reactive foods are wheat and dairy products.

Wheat or gluten

You’ve probably heard conflicting opinions about wheat and gluten, with some people claiming wheat is bad and others saying it’s just fine.

The truth is that wheat is probably fine but *could* be a problem depending on the individual. And *if* wheat is a problem, it’s an issue with either FODMAPs or gluten, or sometimes both.

FODMAPs

FODMAPs are several types of carbohydrate, each of which can cause digestive bloating and lead to the diagnosis of *irritable bowel syndrome* (IBS). The term is an acronym invented by researchers at Monash University in Australia, and stands for *fermentable, oligo-, di-, mono-saccharides and polyols,* a group of short-chain carbohydrates that, for some people, can be difficult to digest and absorb. Foods high in FODMAPs include wheat, legumes, certain vegetables and fruit, and a common prescription for IBS is to temporarily cut back on those foods. I recommend also seeking help from a clinician to address the underlying *cause* of a FODMAP-sensitivity, which is usually *small intestinal bacterial overgrowth* or SIBO.

SPECIAL TOPIC: SMALL INTESTINAL BACTERIAL OVERGROWTH (SIBO)

SIBO is the overgrowth of normal gut bacteria in your small intestine. It's the underlying cause of up to 80 per cent of cases of IBS and can also produce symptoms such as fibromyalgia, restless legs and the skin condition rosacea. SIBO can also worsen perimenopausal symptoms by impairing estrogen metabolism (i.e. removal from the body), activating mast cells and worsening autoimmune thyroid disease, all of which we'll discuss in the coming chapters. A decline in stomach acid with perimenopause can put you at greater risk of SIBO.

The classic symptom of SIBO is abdominal bloating shortly after eating. Other symptoms include nausea, pain, constipation and acid reflux. Official diagnosis is made with a breath test, which involves drinking glucose or lactulose and then measuring breath hydrogen and methane over the next 60 to 90 minutes.

Treatment usually involves temporarily cutting back on high-FODMAP foods while at the same time doing a course of the antibiotic rifaximin or a herbal antimicrobial formulation such as oregano and berberine. The digestive enzyme supplement betaine hydrochloride (betaine HCL) can also help to promote bowel motility.

Relapse is common but can be prevented by:

- maintaining a healthy level of stomach acid, which can mean supplementing with betaine HCL and pepsin after a meal
- avoiding food sensitivities such as to wheat and dairy, because they can create inflammation that impairs bowel motility
- avoiding as much as possible medications that cause SIBO, such as antibiotics, stomach acid medication and the oral contraceptive pill
- taking a probiotic strain such as *Lactobacillus plantarum* 299v, which treats IBS
- taking the herbal medicine milk thistle, which promotes bowel motility.

Gluten

Gluten is not a carbohydrate like FODMAPs, and usually does not cause digestive bloating. So if bloating is your main symptom, refer to the FODMAP section. Instead, gluten is a protein that can disrupt immune function and the nervous system, but only if you are sensitive to it.

TIP

There's no gluten in rice, corn, millet, quinoa or potatoes. There is gluten in wheat, rye, barley and spelt, which is an easier-to-digest, lower-FODMAP cousin of wheat.

Gluten sensitivity can take the form of either *celiac disease* or *non-celiac gluten sensitivity* (NCGS). Of the two, celiac disease is more severe and can be easily diagnosed with a blood test providing you consumed at least some gluten during the few weeks prior to the test. That's why it's important to test for celiac disease *before* eliminating gluten from your diet.

Non-celiac gluten sensitivity (NCGS) is more common than celiac disease and cannot be ruled out by a standard celiac blood test. Instead, it must be assessed based on your existing conditions, your family history, a possible test for the *celiac gene* and trial avoidance.

First, consider whether you or anyone in your immediate family has a condition that can be linked with gluten sensitivity. Such conditions include psoriasis, endometriosis, migraines, osteoporosis and autoimmune disease.

Next, speak to your doctor about a possible blood test for the 'celiac gene' or 'celiac genotype', which are variants of the genes HLA-DQ2 and HLA-DQ8.

How to speak with your doctor about testing for the celiac gene

- 'There's celiac disease [or gluten sensitivity] in my family. And I have many unexplained symptoms. Could we possibly test me for "celiac

genotype”?’

If your doctor is not able to order the test, offer to pay for it privately or self-order it from the lab. Depending on the lab, the test for ‘celiac genotype’ is approximately $100.

Testing positive for a celiac gene does not necessarily mean you have celiac disease, but is instead evidence that you could have NGCS and be susceptible to autoimmune disorders. For example, a positive result for the celiac gene carries only a 4 per cent chance that you will develop celiac disease but a much higher probability that you could go on to develop other autoimmune conditions, such as autoimmune thyroid disease. Testing negative for the celiac gene means you probably don’t have to worry about gluten sensitivity and are at lower risk of autoimmune disease.

Beyond symptoms and testing, the simplest way to know if you have a gluten sensitivity is just to try strictly avoiding gluten for at least eight weeks and see how you feel. ‘Strictly avoiding’ means no gluten at all, which is quite different from reducing your wheat intake, as you can do for FODMAPs. I like how pharmacist Izabella Wentz explains it in her book *Hashimoto’s Protocol* when she says ‘there’s no such thing as *partially* gluten-free’. Trying gluten-free is an all-or-nothing strategy for at least an eight-week elimination period.

In summary, if you experience digestive bloating from wheat, it’s likely to be a problem with FODMAPs. If, on the other hand, you experience brain fog, psoriasis, autoimmunity or migraines, it’s more likely to be a problem with gluten.

Bread is, of course, also a carbohydrate food that could, in theory, contribute to insulin resistance. But as we’ll see in Chapter 8, sugar (not starch) is more likely to be the driver of insulin resistance.

Dairy

Cow’s dairy is the second most common food sensitivity that contributes to the digestive type of inflammation, resulting in problems with mood,

immune function and heavy periods.

The problem with dairy is not the fat or lactose – although some people do have difficulty digesting lactose. The problem is a protein called A1 beta-casein, which in some people forms an inflammatory peptide called beta-casomorphin-7 (BCM-7) that can cause digestive symptoms such as diarrhea and/or non-digestive symptoms such as recurrent infections, premenstrual mood symptoms, period pain and heavy flow.

Consider my patient Shirley.

SHIRLEY: LIGHTER PERIODS FROM STOPPING DAIRY

'I've always had heavy periods,' Shirley told me, 'but nothing like now.'

At 46, Shirley was passing large clots and bleeding through her clothes. From the number of super-pads she was filling, we estimated that Shirley was losing at least 250 mL of menstrual fluid per cycle, which is far more than the acceptable upper limit of 80 mL.

'You're having anovulatory cycles,' I explained. 'And therefore not making the progesterone you need to lighten your cycle, but that's only part of the problem.'

I asked Shirley about her health history and learned she had suffered recurrent tonsillitis as a teenager, which, to me, is one of the classic signs of sensitivity to A1 casein.

'I need you to stop having all normal dairy products including cheese, yoghurt, milky coffees and ice cream,' I said.

'But I'm a dairy queen,' she replied. 'I can literally live on the stuff.'

This didn't surprise me, because people often crave A1 casein when they've been having an inflammatory reaction to it.

'Please just try it for two months,' I urged. 'You can still have butter and goat cheese because it doesn't contain A1 casein.'

Shirley was ready to try anything, because she had already had an iron infusion from her doctor and been told the hormonal IUD was her only option.

I also asked Shirley to speak to her doctor about taking ibuprofen with her periods, which can lighten flow by decreasing prostaglandins.

Shirley cut cow's dairy for two cycles and, to her relief, found that her flow became lighter. Not dramatically lighter at first, but after a couple more cycles, she was down to about 100 mL per cycle, which was manageable with a menstrual cup and iron tablets.

'My mood is also a lot better,' Shirley told me. 'I've noticed that I don't feel as irritable premenstrually and I'm less bloated and puffy.'

Dairy is not the only factor in heavy periods, as we'll see in Chapter 9, but when dairy's a factor, avoiding it can produce dramatic results. Avoiding dairy lightens periods by calming mast cells in the uterine lining and therefore reducing the heparin release that can contribute to heavy bleeding. Calming mast cells can also reduce histamine, which may be what relieved Shirley's irritable mood and puffiness.

TIP

Some people are fine with dairy because they don't have the digestive enzyme that converts A1 casein to its inflammatory metabolite (BCM-7).

If you're among the one in three people who react badly to dairy, you'll be happy to know you can probably tolerate 1) dairy that contains relatively little casein, such as butter, cream, ricotta and whey protein powder, and 2) dairy that contains only A2 casein, such as Jersey cow's, goat and sheep dairy.

Finally, a word about dairy and bone health. According to the recent US Study of Women's Health Across the Nation, 'Dairy intake is not associated with improvements in bone mineral density or risk of fractures across the menopause transition'. We'll look more at bone health in Chapter 10.

SPECIAL TOPIC: DAIRY AND BREAST CANCER RISK

A large 2020 study linked cow's milk consumption to a small increase in the risk of breast cancer. The study tracked 53,000 women over eight years and found that women who drank one or two glasses of milk per day had a 50–80 per cent increased risk of breast cancer, which equates to an absolute risk of three to four cases of breast cancer per 100 milk drinkers compared to two per 100 of women who don't drink milk.

It's important to remember, even with a well-done study like this one, that an observational study cannot prove causation and I'm definitely not suggesting you immediately stop all dairy products. The study found no link with cheese, and I myself consume a fair amount of goat and sheep cheese. At the same time, I think it's worth taking note of this study and avoid a heavy intake of milk or milky coffees.

Low-histamine diet

We've just seen how A1 casein can activate mast cells, release histamine and contribute to perimenopausal symptoms such as insomnia, mood issues and heavy periods. The role of histamine in perimenopausal symptoms is why symptoms can often be relieved by antihistamine medication.

Avoiding dairy is one way to calm mast cells, but you could also look more broadly at a *low-histamine diet*, which means reducing alcohol and amine- or histamine-*containing* foods, such as aged cheese, avocado, smoked or tinned fish, shellfish, deli meats, yeast, vinegar and fermented foods.

The goal with a low-histamine diet is not to avoid foods entirely, but simply to reduce them to a level where they don't cause symptoms. Additionally, you may find you're less sensitive to histamine foods during the low-estrogen times of your cycle, such as just after your period and more sensitive during the high-estrogen times of your cycle, such as ovulation and the premenstrual phase.

> 🔍 **SPECIAL TOPIC: THE POSSIBLE ROLE OF NICKEL ALLERGY IN IBS AND ENDOMETRIOSIS**
>
> Do you react to cheap jewellery with a rash or contact dermatitis? That's a sign of a nickel allergy, which affects up to one in three people.
>
> In a fascinating new study, a small group of people with both nickel allergy and IBS found improvement in their symptoms when they avoided foods with a high-nickel content, including tomatoes, beans, chocolate, wheat, corn, onion, garlic, shellfish, nuts and tinned foods.
>
> A later study by the same researchers found that a low-nickel diet also improved the symptoms of endometriosis, a gynecological disease we'll discuss in Chapter 9 that is strongly linked with digestive issues.

Other ways to reduce histamine include improving gut health, and supplementing vitamin B6 (page 219), which upregulates diamine oxidase (DAO), the enzyme that clears histamine.

As your gut health improves, you should become better able to tolerate histamine-containing foods.

Just a reminder that we're discussing the role of digestive health in generating chronic inflammation and the symptoms of perimenopause. So far, we've covered common food sensitivities including wheat, dairy and high-amine or histamine foods. We've also discussed the role of FODMAPs and SIBO in digestive problems.

Let's now move on to intestinal permeability and problems with gut bacteria or microbiome.

Intestinal permeability

Normally, intestinal cells are tightly joined to create a barrier to prevent microbes, toxins and food proteins from entering the body. Intestinal permeability occurs when that barrier is breached by infection, alcohol, antibiotics, hormonal birth control, SIBO or food sensitivities such as to gluten or dairy. With intestinal permeability, proteins and toxins from the gut can enter the body and activate the immune system.

Intestinal permeability is called 'leaky gut' by the natural medicine community and leads to what is called *endotoxemia* by the scientific community. The term endotoxemia specifically refers to a slight elevation in the blood levels of toxins called lipopolysaccharides (LPS) derived from a type of unfriendly gut bacteria. Endotoxemia contributes to *meta-inflammation*, discussed earlier and may play a role in endometriosis and adenomyosis, discussed in Chapter 9.

Thanks to estrogen, women of reproductive age have better gut integrity than men – both in terms of the junctions between intestinal cells and the thickness of the mucus lining. Women of reproductive age thus generally have less endotoxemia which, of course, all changes with menopause. The menopausal shift to intestinal permeability and endotoxemia contributes to the associated increased risk of insulin resistance, weight gain and fibromyalgia.

There's no simple way to diagnose intestinal permeability, but signs include symptoms of chronic inflammation such as skin conditions, joint pain and autoimmune disease. We'll explore treatment in the Autoimmune thyroid disease section of Chapter 8.

Gut microbiome

Your gut microbiome is the sum of your gut bacteria. When you have a friendly gut microbiome, it helps to reduce inflammation, regulate the HPA axis and support a healthy mood.

When you have an unfriendly microbiome, or *dysbiosis*, it can generate inflammation and interfere with many aspects of a healthy perimenopause transition. As we'll see in Chapter 9, too many of a certain type of unfriendly bacteria can impair estrogen metabolism and contribute to heavy periods. Dysbiosis can also affect the health of your vaginal microbiome and worsen the symptoms of dryness and vaginal irritation that we'll cover in Chapter 10.

There's a bidirectional relationship between the microbiome and perimenopause, in that problems with the microbiome can worsen perimenopausal symptoms, and, at the same time, changing hormones can alter the composition of the gut microbiome. That's why you may be experiencing changes with your digestion.

Diet and lifestyle to support digestive health

Reduce alcohol because it can damage the microbiome.
Eat vegetables and healthy starches because they feed friendly bacteria.
Avoid ultra-processed food because it starves friendly bacteria.
Avoid concentrated sugar because it can feed *un*friendly bacteria.
Identify food sensitivities such as to wheat and dairy and avoid these foods if they are creating inflammation.
Identify a possible sensitivity to high-amine or nickel-containing foods and reduce them if they are creating inflammation.
Manage stress because it causes dysbiosis.
Exercise because it improves the health of the gut microbiome.
Get enough sleep because it supports a healthy microbiome.
Ensure adequate stomach acid because it helps to reduce unfriendly bacteria. If you experience digestive bloating and heartburn, consider that it

might be due to *low* (rather than high) stomach acid and could improve with betaine HCl.

Avoid, as much as possible, medications that damage gut bacteria. That includes hormonal birth control, antibiotics and stomach acid medications.

SPECIAL TOPIC: THE CHALLENGE OF COMING OFF STOMACH ACID MEDICATION

Stomach acid medications such as omeprazole (Losec®) are proton-pump inhibitors (PPIs) that switch off the stomach's natural and beneficial 'acid barrier' and therefore permit the migration of oral bacteria into the gut. The result can be the overgrowth of unhealthy bacteria, leading to dysbiosis, SIBO and IBS. PPIs have been linked to anemia, osteoporosis and an increased risk of dementia, so all considered, they're not the kind of medication you want to be on in the long term unless you really need them.

If you're taking PPIs for gastritis or acid reflux, you may find you can achieve similar or even better results with a wheat-free, dairy-free diet together with a digestive enzyme that supports stomach acid. Melatonin is another treatment option.

Before attempting the transition to natural treatment, speak to your doctor and understand that stopping a PPI can cause rebound stomach acid, especially if you stop suddenly. The best strategy is to taper it down slowly and perhaps use a different kind of medication as an interim measure.

Fermented foods such as natural yoghurt and sauerkraut are another way to support a healthy microbiome, but I advise you to proceed with caution, especially with yoghurt. First, normal yoghurt contains A1 casein, which is unaltered by fermentation and can cause a mast cell reaction; and second, fermented foods contain amines such as histamine, which can contribute to high histamine (page 111).

Probiotics for digestive health

A final strategy is to take *probiotics* which are beneficial strains of bacteria. Probiotics can be helpful certainly, but they're not a *panacea*, because there is relatively little understanding as to how they work. For example, we have a *little* knowledge about how certain probiotics work for certain conditions, but we cannot say there is one best probiotic that works for every condition

or every individual. The research is moving so quickly that we're likely to see interesting developments in the coming years.

In the meantime, here are a few things to understand:

Diet has a more powerful effect on the microbiome than any probiotic.

Probiotic species *do not* colonise your gut. In other words, they do not become established as permanent residents in your intestine but instead exert beneficial effects on your microbiome, intestinal wall and immune system as they *pass through*.

Clinical benefits have been demonstrated for specific *strains* (or subtypes) of certain bacteria species. You may not get the same benefit from another strain of the same species.

Different probiotic strains work for different conditions. For example, the probiotic strain *Lactobacillus plantarum* 299v is clinically proven to treat IBS, while the strains *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 can normalise the vaginal microbiome and relieve yeast (i.e. candidiasis or thrush) infections.

It's better to choose a product with many individual bacteria but *fewer* strains or types. That way, there is more of the effective strain to exert its influence.

Probiotics work best in combination with a prebiotic or fibre supplement. Such products are called *synbiotics*.

If you experience digestive bloating from a probiotic, it could be a sign of SIBO, in which case you may benefit more from a course of a herbal antimicrobial discussed earlier.

SPECIAL TOPIC: CONSTIPATION

Regular, easy bowel motions support digestive and immune health, take pressure off the bladder and other pelvic organs and assist with healthy estrogen metabolism. A daily bowel motion is ideal but it's not just about the frequency; it's also about being able to eliminate completely as a log that comes out smoothly.

If you suffer constipation, your doctor will probably prescribe a combination of drinking enough water, eating more vegetable fibre and taking a stool softener like lactulose, all of which are reasonable suggestions.

Other strategies include identifying a possible underlying cause of constipation, such as thyroid disease, dairy sensitivity, low stomach acid or a harsh iron supplement. If an iron supplement is the problem, try switching to the gentler type described in Chapter 9.

You may also be able to get things moving with a simple magnesium supplement, which, as we'll see on page 133, has other benefits. Magnesium oxide, carbonate or citrate are the most laxative forms of magnesium.

Before we leave the topic of chronic inflammation, let's take a quick look at how you can reduce the harm from environmental toxins.

Environmental toxins

Inflammation can be the result of environmental toxins such as solvents, plastics, pesticides or toxic metals like lead. I've left this topic until last because 1) avoiding toxins may not be as important as other factors such as eating vegetables to feed your microbiome, and 2) avoiding toxins can be tough to do.

That said, it's worth at least considering toxins, because they can cause problems such as:

bringing on menopause sooner
stimulating fibroid growth
contributing to perimenopausal symptoms
increasing the risk of long-term problems such as thyroid disease, insulin resistance, weight gain and heart disease.

Toxins that affect hormones are called *endocrine-disrupting chemicals* (EDCs), or endocrine disruptors, and include pesticides, solvents, fire retardants, mercury, lead and plastic softeners such as bisphenol A (BPA). There are several mechanisms by which EDCs cause damage, including directly altering hormone levels, interfering with hormone receptors and impairing healthy estrogen metabolism.

According to the US Endocrine Society, the evidence is clear. They recently issued a statement saying, 'there is mounting evidence for effects

[from EDCs] on . . . thyroid, neuroendocrine, obesity and metabolism, and insulin and glucose homeostasis'.

One group of toxins are *obesogens*, which are chemicals that cause insulin resistance and weight gain. They include pesticides, BPA and similar agents, as well as phthalates, which are commonly used in cosmetics, moisturisers, nail polish and hairspray.

Other toxins of concern are mercury perchlorate, per- and polyfluoroalkyl substances (PFAS), polychlorinated biphenyls (PCBs), and dioxins, which can accumulate in groundwater, soil, and food grown in contaminated soil. Lead is also potentially a problem not so much from current exposure but, as we saw in Chapter 4, from a *history* of exposure, which might have caused lead to accumulate in bones and now mobilise with the inevitable bone loss of menopause. If you suspect a history of lead exposure, such as growing up in close proximity to a busy road before unleaded petrol was introduced, your best strategy is to take steps to slow bone loss (Chapter 10) and support healthy detoxification (see below).

Minimise your exposure

We are all exposed to toxins, so until our governments legislate tougher restrictions or the restrictions already in place slowly take effect, we just have to make the best of a bad situation and try to minimise our individual exposure. You cannot avoid all toxins and can only make sensible, obvious choices *when possible*. For example, if you can afford to buy organic food then do so, but if you cannot afford it, don't worry; it's better to eat non-organic vegetables than no vegetables at all.

Try to avoid as much as possible chemicals used in farming, gardening and building materials, and reduce your exposure to unnecessary household products such as air fresheners, dryer sheets, waterproofing chemicals, stain repellents and carpet cleaners. Use an activated-carbon water filter to remove chlorine from your drinking water, choose cosmetics that do not include phthalates and always wash your hands after handling thermal-paper cash-register receipts, because they're high in BPA.

You can also take the simple step of trying to prevent toxic residues from coming inside your house. That means taking off your outside shoes, regularly cleaning up dust, and getting rid of carpets, which accumulate dust and residue.

Environmental Working Group (EWG)

The best resource for information about environmental toxins is the US non-profit organisation Environmental Working Group (ewg.org). The people behind the organisation have been working in this field for over two decades and provide regular updates and publish new research about the environmental toxins in US food, cosmetics and household products.

Diet and lifestyle to support healthy removal of toxins

Detoxification is the biggest and most energy-consuming activity your cells undertake, and they do it *every minute of every day*. In other words, your body is made to detoxify.

To support your body's natural detoxification process:

Maintain a healthy gut microbiome because it assists the healthy removal of toxins via your stools.

Identify and avoid triggering food sensitivities because they can create inflammation in the gut, which impairs healthy detoxification.

Get enough sleep because deep sleep is when your detoxification systems are most active.

Sweat in the sauna or during movement to mobilise and eliminate stored toxins. Be sure to drink plenty of water.

Consider taking the nutritional supplements sulforaphane, N-acetyl cysteine, selenium or glycine, which can upregulate healthy detoxification pathways. Selenium and glycine are particularly helpful for the healthy clearance of toxic lead.

Reduce or eliminate alcohol because it impairs your body's ability to detoxify.

Alcohol

The environmental toxins section is a good place to talk about alcohol. Because yes, alcohol can impair the healthy detoxification of other toxins and, of course, alcohol is *itself a toxin*.

I know that's not good news but hear me out. The alcohol industry has worked hard to convince you that a glass of wine is healthy, almost in the category of yoga or eating vegetables, but alcohol is not healthy and never was.

In fact, alcohol is particularly unhelpful during perimenopause, and here's why:

Alcohol is bad for sleep. We saw earlier that long-term alcohol use can reduce melatonin and disrupt your circadian rhythm. Alcohol can also worsen the hot flushes and night sweats that disrupt sleep.

Alcohol shrinks the brain, and in particular the hippocampus, the part of the brain that regulates the HPA axis or stress-response system. The result can be dysregulation of the stress response or HPA axis – not a good situation when you're already in the vulnerable time of trying to recalibrate your HPA axis.

Alcohol damages the gut microbiome, activates mast cells and histamine, and promotes intestinal permeability or endotoxemia.

Alcohol stimulates appetite in women and so leads to overeating.

Alcohol can make it harder to build both healthy muscle and healthy bones, two things that are already a challenge in menopause.

Finally, alcohol impairs estrogen metabolism, which is why it's a risk factor for estrogen-related conditions such as fibroids and breast cancer. Even one drink per day significantly increases the risk of breast cancer, and alcohol is estimated to be the sole cause of at least 8 per cent of breast cancers.

Where did the idea come from that moderate alcohol consumption is healthy? It began with early studies that seemed to show a U-shaped curve for alcohol and heart health, with moderate drinkers having a reduced risk of heart disease compared to both heavy drinkers and abstainers. Of note,

that U-shaped curve applied only to heart disease and never to cancer. There's always been an undisputed linear relationship between alcohol and cancer.

Alcohol's famous U-shaped curve for heart disease now appears to have been mostly wishful thinking. According to Boston University epidemiologist Tim Naimi, 'there has been a strong surge of scientific work in the past decade that's kind of thrown a wet blanket on the idea that a little bit of alcohol is a health tonic'.

The problem comes down to this: Scientists did not previously control for the confounding factors of 1) why some people don't drink, and 2) why some people limit themselves to drinking moderately. In the first category, people who don't drink, are healthy teetotallers, true, but also all the people who can't drink due to health problems, or people who used to drink heavily but have now quit. Many of those people go on to develop heart disease and therefore contribute to the perceived higher risk of non-drinkers. In the second category, people who limit themselves to drinking moderately, are people who, according to Naimi, 'can maintain regular drinking with small volumes [because they] are pretty well-adjusted people'. He points out that moderate drinkers are also, on average, more educated, belong to country clubs and drive nice cars. 'But does a little bit of alcohol cause them to do better in college or to drive a BMW?' he asks. 'The answer is: not likely.'

All considered, is alcohol good or bad? Well, for starters, it's definitely not good, and we all need to stop saying it is. At the same time, a small amount of alcohol is probably not that *bad*. It all depends on the amount and frequency, as well as your symptoms, lifestyle and family history. In my view, more than five drinks per week is too much for any woman, and way too much for any woman with a family history of breast cancer. When it comes to breast cancer, the risk from alcohol is greater than the risk from any type of menopausal hormone therapy and most experts agree that the safest amount of alcohol is none.

Avoiding alcohol may also help to relieve symptoms of perimenopause and my clinical observation is that patients who drink little or no alcohol are

significantly more likely to report a symptom-free perimenopause transition. If you need help stopping alcohol, speak to your doctor.

SPECIAL TOPIC: WHAT ABOUT COFFEE?

I often hear alcohol and coffee conflated as two harmful substances that need to be avoided but coffee is not harmful like alcohol, and may even be beneficial.

First, please understand that, in addition to caffeine, coffee also contains an array of beneficial polyphenols that have been found to lower inflammation, improve insulin sensitivity, protect the liver and promote healthy estrogen metabolism. Coffee may even lower the risk of breast cancer.

At the same time, coffee does contain caffeine, which is a stimulating drug that can cause or worsen anxiety, insomnia and HPA axis dysfunction. Your tolerance for caffeine depends on your genetic ability to metabolise it and whether you take the pill or estrogen therapy, which impair caffeine metabolism.

As for perimenopausal symptoms, coffee seems to improve or worsen hot flushes depending on the study but has been consistently found to improve mood, concentration and memory.

Finally, it's worth pointing out that milk and sugar are likely to be the most harmful part of your daily flat white routine. Consider switching to a long black either on its own or with just a splash of milk.

That concludes our discussion of chronic inflammation. Let's now turn to all the ways to nourish and strengthen your body.

Nourish your body

Navigating the perimenopause transition requires good nutrition. In this section, we'll look at all the nutrients you need to stay healthy, starting with all-important protein.

Protein

Protein provides the amino acids you need for, well, everything. Amino acids are essential for the repair and maintenance of every cell in the body, including the digestive system, immune system and brain. Amino acids also help to maintain healthy muscles and bone, something that's especially

important heading into menopause, when lower estrogen can cause you to lose muscle and bone density.

As a menopausal woman, you'll need a little more protein than you did when you were younger, just to maintain muscle mass. What does that look like in practical terms? When you were younger, you probably needed at least 1 gram of protein per kilogram of ideal body weight per day. For example, if you're 65 kilograms and that's your ideal weight, then you used to need about 65 grams of protein per day, which equates to 22 grams of high-quality protein with every meal. With menopause, you need closer to 1.2 grams per kilogram per day, so more like 78 grams in total which is 26 grams per meal or 20 grams per meal plus a protein snack or supplement. If you do high-intensity exercise or have insulin resistance, you'll need even more protein, because amino acids are required to repair muscle and replace the protein lost due to insulin resistance.

SPECIAL TOPIC: WHAT DOES 20 GRAMS OF PROTEIN LOOK LIKE?

Here is a rough guideline of the amount of *actual food* you need to obtain 20 grams of protein:

- red meat – 77 grams
- chicken breast – 87 grams
- almonds – 93 grams
- salmon – 105 grams
- feta cheese – 121 grams
- eggs – 159 grams (3 whole eggs)
- tofu – 167 grams
- chickpeas – 242 grams
- lentils – 263 grams

If you're relying solely on plant protein, there are a few things to keep in mind. First, you'll need a greater volume of 'plant-based protein' to obtain all the necessary grams of total protein. For example, to obtain 20 grams of protein, you'll need 242 grams of chickpeas compared to 87 grams of chicken. Second, to obtain the complete array of all nine essential amino acids, you'll need to combine grains and pulses. Additionally, you may

need to supplement the amino acids *leucine* and *taurine*, which cannot be easily obtained from plant protein. We'll look more at taurine in Chapter 7.

SPECIAL TOPIC: ARE YOU VEGAN OR VEGETARIAN?

It's easier to be healthy if you eat animal products such as meat, eggs, fish and cheese because animal foods are the best source of protein, zinc, iodine, methionine, leucine, choline, glycine, coenzyme Q10, active vitamin B6 (pyridoxal-5-phosphate) and vitamin B2 (riboflavin). Animal products are the *only* source of preformed vitamin A, creatine, vitamin B12, carnosine, taurine, heme iron, EPA and DHA omega-3 fatty acids, vitamin D3, and the MK-4 subtype of vitamin K2, which is important for bones and cardiovascular health.

Animal foods are also highly satiating thanks to their high protein density so they can help you to feel full and not overeat.

If you feel better on a vegan diet, ask yourself if it might be because you feel better off dairy. As we saw earlier in this chapter, A1 casein can cause inflammation and mast cell activation – two issues that can be a big problem for health. I've spoken to more than one former vegan who came to realise that the health improvements they observed on a vegan diet were primarily due to stopping dairy.

If you prefer to be vegetarian, please eat eggs and non-inflammatory A2 dairy products such as goat and sheep dairy.

If you prefer to be vegan, consider supplementing with vitamin B12 and all or some of the following: zinc, iron, iodine, choline, taurine, vitamin D, preformed vitamin A, vitamin K2, omega-3 fatty acids and protein.

The satiating effect of protein is sometimes called the *protein leverage hypothesis*, which states that because protein is the body's primary appetite, people will continue to eat until they've obtained sufficient protein, even if that means overeating calories.

It's like your body wakes up every morning wondering, 'Am I going to obtain all the amino acids I need today?' Remember, your goal is 65 grams and if you're not even close to that by midday, you could start to feel hungry, distressed and prone to snacking. If you get all the way to evening without obtaining 65 grams, you're likely to binge, which is eating to excess without being able to stop yourself. It's your body saying, 'Right. I need amino acids and I'm just going to keep eating until I get them'. Evening binge foods could be anything including sugar, but they're often

‘protein decoy’ foods, which are not protein but *taste* like protein thanks to their *umami* flavour. Chips are the best example.

The solution to evening binging is to harness protein leverage to your advantage by eating plenty of high-protein foods early in the day, before you get too hungry. That means eggs, cheese or meat by at least 12 pm, and preferably by 10 am. We saw earlier that morning protein is good for circadian rhythm; it also helps to calm the nervous system, stabilise blood sugar and make you feel full, so you won’t snack. We’ll see an example of the power of protein in Mandy’s patient story on page 203.

Protein is the macronutrient you need every day at just the right amount. Too little protein and you’ll overeat; too much and you could undereat and accelerate aging. Fat and carbohydrate, on the other hand, can be dialled up and down.

Fat and carbohydrate

Fat and carbohydrate are the energy macronutrients you can adjust depending on your activity level and whether you’re trying to lose weight. For example, if you’re more active, you need more energy and therefore more fat and carbohydrate; if you’re less active or trying to lose weight, you need less.

Of course, you want at least *some* fat and carbohydrate because they’re both beneficial for health. Fat provides valuable fat-soluble nutrients and essential fatty acids, while whole-food carbohydrates provide soluble fibre and resistant starch to help you to feel full, feed gut bacteria and promote healthy estrogen metabolism.

Neither fat nor carbohydrate is inherently bad. The problem is ultra-processed food.

Avoid ultra-processed food

According to the *British Medical Journal*, ultra-processed foods are ‘formulations of food substances often modified by chemical processes and then assembled into ready-to-consume hyper-palatable food and drink

products using flavours, colours, emulsifiers and . . . other cosmetic additives'. Ultra-processed foods include almost all types of junk food, such as chips, prepared desserts, fast food and soft drinks. As you can imagine, they are associated with very bad health outcomes, including insulin resistance, heart disease and fatty liver, which we'll cover in Chapter 10.

Ultra-processed foods are devoid of the nutrients needed by you and the fibre needed by your microbiome. They also commonly contain harmful food additives, high-dose fructose (Chapter 8) and processed vegetable oils.

Processed vegetable oils include oils such as soy, corn, canola and cottonseed oil and can contain either or both 1) trans fat, and 2) a high dose of omega-6 fatty acids. Trans fat is an industrially produced oil that's used by manufacturers to make food crispy and increase shelf-life. It's often present in foods like baked goods, microwave popcorn and takeaway foods and is so unhealthy for heart health that it's banned in some countries, but still permitted in Australia and New Zealand. Omega-6 fatty acids are not as unhealthy as trans fat and are in fact beneficial and essential when consumed as part of whole foods such as nuts, seeds and brown rice. Omega-6 fatty acids are only a problem when consumed in large amounts from processed vegetable oil and junk food. By outcompeting beneficial omega-3 fatty acids, high-dose omega-6 fatty acids can promote inflammation and fatty liver.

Although technically a vegetable oil, olive oil is not a source of omega-6, but instead provides beneficial monounsaturated fatty acids. Take care to choose a quality brand of olive oil, as some brands have been blended with other vegetable oils.

TIP

The healthiest fats for cooking are olive oil, butter, coconut oil and avocado oil. You also want to increase your omega-3 intake with seafood, organic eggs and grass-fed meat.

Vegetables and phytonutrients

Vegetables are healthy because they provide important nutrients such as vitamin C, folate and magnesium. They also provide fibre to aid with satiety and feed the gut bacteria, and a wonderful cocktail of beneficial anti-inflammatory *phytonutrients*.

Phytonutrients are naturally occurring plant chemicals. They have names like polyphenols, flavonoids, lutein and resveratrol, and many have been researched for their anti-cancer, anti-inflammatory effects. Phytonutrients work by switching *off* pro-inflammatory genes and switching *on* anti-inflammatory, anti-aging genes. One of my favourite phytonutrients is *sulforaphane*, which is found in cruciferous vegetables. It activates a chemical pathway called Nrf2, which in turn activates hundreds of detoxifying, anti-inflammatory and antioxidant genes. Food sources of sulforaphane include broccoli, cauliflower, kale, brussels sprouts, cabbage, bok choy, collard greens and broccoli sprouts, and even a few non-cruciferous vegetables such as leeks.

Phytonutrients are best obtained from vegetables and fruit, but can also be taken as a supplement. Earlier, I mentioned the supplement sulforaphane for healthy detoxification, and later we'll look at curcumin for reducing inflammation and lightening periods, and quercetin for perimenopausal allergies.

Phytoestrogens (plant estrogens)

Phytoestrogens are a special group of phytonutrients that occur naturally in almost all plant foods. The two major classes are *isoflavones* from soy; and *lignans* from seeds, whole grains, legumes, fruits and vegetables.

They're called phytoestrogens because they interact with estrogen receptors but they're not estrogen. In fact, they bind so weakly to estrogen receptors that they effectively block estradiol and are therefore better described as *anti*-estrogen. The best example of the anti-estrogen effect of phytoestrogens is the way isoflavone crops such as red clover can suppress the fertility of livestock. Some researchers even suggest that phytoestrogens evolved as a way for plants to protect themselves from overgrazing by impairing the fertility of female herbivores.

In a chapter called ‘Agriculture and selection for high levels of estrogen’, evolutionary biologist Grazyna Jasienska makes the case that ancient humans evolved a higher level of estrogen in response to the anti-estrogen effect of phytoestrogen-rich plant foods such as legumes and grains. It could be said, therefore, that those of us with agrarian ancestors are ‘hormonally calibrated’ to a relatively high intake of phytoestrogens, to shelter us from our own high estrogen.

What does that mean for perimenopause and menopause? Well, for one thing, it’s fine to eat phytoestrogens like legumes and seeds. They’ve long been part of our traditional diet, and our hormonal system is adapted to them.

During perimenopause, when estrogen is high, phytoestrogens have a beneficial anti-estrogen effect and can help to lighten periods and promote healthy estrogen metabolism. Food-based phytoestrogens may even help to prevent hormone-sensitive cancers.

During menopause, when estrogen is low, phytoestrogens can have a mild *pro-estrogen* effect, which has led to a great deal of research into the use of phytoestrogen supplements like soy as an alternative to hormone therapy. Unfortunately, most research has found no clear evidence that phytoestrogen supplements can relieve menopausal symptoms or reduce the risk of osteoporosis. They can, however, increase the level of the testosterone-binding protein SHBG (page 276), which can ease testosterone-dominance symptoms such as weight gain, hair loss and facial hair. We’ll look more at the phytoestrogen research in the next chapter.

Finally, concentrated extracts of soy isoflavones have been found to suppress thyroid function, but soy as a food should be fine as long as you also have enough iodine, discussed on page 135. In other words, it’s fine to eat tofu and soy sauce.

Your best diet

There’s no one ‘best diet’ that works for everyone. (If there were, I would surely give it to you!)

Instead, there's *your* best diet, which may not even have a name. In its simplest description, your best diet is the way of eating that delivers all the essential nutrients, including amino acids, and the diet that makes you *feel good*. It's a diet low in ultra-processed foods and therefore does not generate inflammation or cause insulin resistance. And if you're prone to a mast cell or histamine response, your best diet may also be low in cow's dairy or other foods that cause a histamine response.

Here are a few additional guidelines.

Be satisfied

Structure your day around full, hearty meals that include a generous serving of protein and maybe starch. By giving your body what it needs, you will feel satisfied and be able to maintain this way of eating over the long term. You will also be less likely to snack.

Avoid snacking

Unless you're fuelling post-training or actively trying to gain weight, there should be no reason to eat between meals. Consistently snacking, especially on ultra-processed foods, can increase insulin, create inflammation and put stress on the digestive and immune systems. Snacking in the evening is particularly harmful and the exact opposite of the beneficial overnight fast we'll discuss in the intermittent fasting section of Chapter 8.

That said, if you're stressed or haven't slept well, you might feel hungry and need to snack, and that's okay. And if you're struggling to reach your protein goal, then please go ahead with a mid-afternoon high-protein snack such as nuts or boiled eggs.

TIP

If you crave sugar in the afternoon, it could mean 1) you're not eating enough protein, 2) you have an underlying food sensitivity such as to dairy, or 3) you're addicted to sugar – see Chapter 8.

Be flexible and joyful in your eating

Unless you have a sensitivity such as strong gluten sensitivity, you can be flexible and enjoy a variety of foods without fearing the occasional items that don't conform to your new diet. Eating should not be a stressful activity.

Don't forget water

Staying hydrated is important for many aspects of health, including brain health and cognition. Choose plain water, or sparkling, carbonated water. Black coffee or tea are also fine, but no juice or other liquid calories.

SPECIAL TOPIC: TOP TWENTY SHOPPING LIST

If you need help picturing what to eat, first picture yourself throwing away all ultra-processed foods, including chips, biscuits, ice cream, muesli bars, snack foods and sweetened beverages including fruit juice.

If you can't bear to throw those items out, then at least stop buying them, and instead do your shopping 'around the edges of the supermarket', where you'll find the meat, produce and whole foods. Here's my shopping list.

- meat, poultry or fresh fish
- tinned fish
- eggs
- goat or sheep feta or other cheese
- butter
- olive oil
- 85 per cent cocoa dark chocolate
- coffee
- coconut milk
- fresh fruit
- frozen berries
- broccoli and other green veggies
- potatoes or sweet potatoes
- beetroot and pumpkin
- leeks and onions
- mushrooms
- tinned tomatoes and tomato paste
- rice
- spelt pasta
- spelt flour for the bread maker

One of our routine dinners is roast chicken, which my husband then turns into stock so I can have my favourite breakfast of chicken soup. 'I struggle to remember the time in my life before I was constantly making stock for your breakfasts,' he jokes.

You'll notice my list includes spelt, which is a cousin of wheat. I like spelt because it's tasty and easier to digest than wheat, but it does contain gluten so is not suitable if you have a gluten sensitivity.

Sample menus

Here is a three-day sample of what I eat. I personally avoid cow's dairy but I'm fine with gluten, FODMAPs and histamine foods. And although I generally restrict my eating window to 9 am to 7 pm and avoid high amounts of concentrated fructose, I don't have insulin resistance, so don't do a longer extended overnight fast or worry about restricting overall carbohydrates. Finally, because I do not train heavily, I don't require pre- or post-workout fuelling. Your situation may be different, in which case, please modify as required.

Day 1

8 am: Tall glass of water then one filter coffee with coconut cream or MCT oil
9.30 am: Leftover lamb with ½ avocado and sliced radishes
2 pm: Frittata with eggs, salmon, goat feta, onion, herbs and sweet potatoes. Side salad with olive oil and apple cider vinegar. 1 pear. 3 squares of dark chocolate.
7 pm: Roast chicken with roast veggies and asparagus

Day 2

8 am: Tall glass of water then one filter coffee with coconut cream or MCT oil
9 am: Homemade chicken soup (from the chicken the night before)
1 pm: Green salad with goat feta, homemade hummus, leftover roast veggies, grated beetroot, olive oil and lemon juice
4.30 pm: Oat crackers and almond butter
7 pm: Pan-fried salmon with white rice, tomato coulis and steamed broccoli
8 pm: Pear oat crumble with coconut cream

Day 3

8 am: Tall glass of water then one filter coffee with coconut cream or MCT oil
9 am: Homemade spelt bread with butter, goat feta and greens from the garden

2 pm: Fried leeks and mushrooms with rice and tinned salmon. 1 pear. 3 squares of dark chocolate.
7 pm: Roast lamb with sweet potato, brussels sprouts, butter and salt. 2 mandarins.

Minerals

Let's now turn our attention to three minerals that I often prescribe for my patients in perimenopause and menopause: magnesium, zinc and iodine.

Magnesium to the rescue

In a paper called, 'Magnesium in the gynecological practice: a literature review', researchers conclude that magnesium is effective treatment for menopause and perimenopause and observe that it works primarily by 'normalizing the action of different hormones (mainly progesterone) on the central nervous system'. That makes magnesium the perfect support for the dynamic recalibration process of perimenopause.

Other direct benefits of magnesium include:

soothing the nervous system and promoting sleep
preventing migraines
building bone
supporting thyroid hormone
promoting healthy estrogen metabolism
helping to absorb and assimilate vitamin D
fuelling mitochondria (page 280)
lowering inflammation and slowing aging
reducing the risk of heart disease and insulin resistance.

Food sources of magnesium include nuts, seeds, dark chocolate and leafy green vegetables, but it's hard to get enough from food because when you're under stress, your body has the unfortunate strategy of actively *peeing out* magnesium to rev up your nervous system. Being subjected to stress, therefore, can increase your requirement for a magnesium supplement.

Can you test for magnesium deficiency?

Magnesium is commonly deficient during perimenopause and menopause, but unfortunately there's no easy test. A blood test is not reliable because most magnesium is *inside* the cells and therefore not detectable in blood serum. A 'red cell magnesium' test is a little more accurate but still not a good indicator of the nutritional status of the body as a whole. The simplest way to test for magnesium deficiency is to just try taking a supplement and see how you respond.

Dose and safety

Unless you have pre-existing kidney disease, magnesium is safe to try and take long-term. Some forms (magnesium chloride) can cause diarrhea, but gentler forms (magnesium chelate or glycinate) are usually fine. Magnesium glycinate or bisglycinate (magnesium joined to the amino acid glycine) has the added benefit of providing glycine, which promotes sleep and supports healthy insulin sensitivity. We'll look more at glycine in the Sleep section in Chapter 7.

The therapeutic dose is 300–400 mg, and please read the label to confirm you're getting 300 mg of *elemental* magnesium, not 300 mg of the total chelated compound (magnesium plus glycine). Most magnesium capsules provide about 100 mg magnesium per capsule, so you'll probably need three capsules. If you can access a magnesium glycinate powder, choose that over capsules because it's easier to absorb.

Zinc

There are three ways zinc helps to relieve symptoms of perimenopause and menopause.

It dials down cortisol and the stress response and helps to regulate the HPA axis. That makes zinc one of my favourite supplements for mood symptoms (Chapter 7).

It reduces inflammation and prostaglandins, which helps to relieve period pain and even more severe conditions like endometriosis and adenomyosis (Chapter 9).

It’s great for skin, hair and the vaginal epithelium, and so can improve both complexion and vaginal dryness (Chapter 10). Zinc also supports healthy collagen and helps to improve androgen symptoms such as hirsutism or facial hair.

Can you test for zinc deficiency?

Zinc is easier to test than magnesium. The test is *plasma zinc*, and a healthy result should fall within 11–23 µmol/L or 70–150 µg/dL.

Symptoms of zinc deficiency include hair loss, dermatitis and white spots on the fingernails. If you are vegetarian or vegan, you can assume you’re deficient and should probably supplement.

Dose and safety

The best form is zinc citrate or picolinate taken directly after food. (If you take zinc on an empty stomach, it could cause nausea.) Doses of up to 30 mg are safe; just don’t take more than 80 mg per day for more than three months without speaking to a clinician, because it could deplete copper.

Iodine

Iodine is one of my favourite nutrients for women’s health, especially for perimenopause, because iodine deficiency is most common in women aged 40–49.

You may know iodine as being important for thyroid health, but it’s also important for the immune system, eyes, brain, ovaries and breasts. In those tissues, it acts to reduce inflammation and promote estrogen metabolism, thereby making cells *less sensitive* to estrogen. That’s why iodine can be helpful for ovulation pain, ovarian cysts, fibroids, premenstrual mood and, most importantly, *breast pain*, which we’ll discuss in Chapter 9. Iodine can make it easier to tolerate estrogen therapy and may even reduce the risk of breast cancer.

Safety concerns

The dosage of iodine is more controversial than almost any topic in natural medicine. On the one hand, your doctor will be reluctant for you to exceed

the Australian recommended daily intake (RDI) of 150 mcg (0.15 mg), and that's fair. Too much iodine can trigger autoimmune thyroid disease and/or suppress thyroid function. Too much iodine can also cause acne, and more than 225 mcg (0.25 mg) is not safe during pregnancy.

On the other hand, some natural practitioners recommend mega-doses of up to 50,000 mcg (50 mg), which is much, much more than your doctor considers safe. That's why you need to read the label carefully.

The dose I prescribe for my patients ranges from 250 mcg (0.25 mg) to 3000 mcg (3 mg) depending on their requirements and the baseline health of their thyroid. Let's consider my patient Mia as an example.

MIA – TESTING THYROID BEFORE TAKING IODINE

Mia had painful lumpy breasts, which her doctor had called fibrocystic breast disease.

'Iodine is the best treatment for breasts,' I said. 'But we first need to check your thyroid to make sure it's safe for you.'

I asked Mia if anyone in her family had thyroid disease, especially autoimmune thyroid disease, which can run in families and she said 'no'. I then ordered the blood tests TSH, free T4, and thyroid antibodies, which, fortunately, all came back normal.

'Your thyroid is fine,' I said, 'so it's safe for you to take 3 mg of molecular iodine per day for your breasts.'

After two months, Mia's breast pain and lumpiness were almost gone.

Thyroid antibodies are autoimmune antibodies that the immune system makes against the thyroid gland. They're a feature of autoimmune disease, which we'll discuss in Chapter 8, but for now, just understand that if you test positive for thyroid antibodies, you should probably not take more than 500 mcg (0.5 mg) of iodine. That's what I would have prescribed for Mia if she had tested positive.

Obtaining iodine safely

It's all about giving the breasts the iodine they need without upsetting the thyroid. You can do that by 1) staying low with the dose if you have thyroid antibodies, 2) taking 150 mcg selenium to help to protect the thyroid gland,

and 3) choosing (if possible) molecular iodine (I2), which is preferentially absorbed into breast tissue and therefore safer for the thyroid than potassium iodide (KI).

Food sources of iodine include:

iodised salt (400 mcg per teaspoon)
seafood (10–190 mcg per 100 grams)
butter from grass-fed cows
plant foods such as mushrooms and leafy greens, but only if they're grown in iodine-rich soil.

Seaweed is another source but cannot be relied on as an iodine source because it also contains bromine, which prevents the uptake of iodine.

Finally, you'll notice I didn't test Mia for iodine deficiency and that's because there is no reliable test. Instead, I look to breast tenderness as a sign of iodine deficiency, and find it more useful than any lab test.

Strengthen your body

Movement plays a crucial role in both perimenopause and menopause.

The main goal of movement is not weight loss, although it could help with that. Nor is it mood, although it will help with that. The main goal of movement or exercise is to reduce inflammation, improve insulin sensitivity and *build muscle*.

Loss of muscle is called *sarcopenia*, Latin for 'lack of flesh', and is defined as the degenerative loss of skeletal muscle mass, quality and strength, and the replacement of muscle fibres with fat. Sarcopenia impairs strength, which can lead to frailty and falls, and it directly contributes to osteoporosis, depression and cognitive decline. Unfortunately, some degree of age-related sarcopenia is inevitable for both women and men. For women, menopause is associated with an additional 'rapid decline in muscle mass' that does not occur in men, and is probably due to the loss of estrogen. Remember, estrogen is an *anabolic* or muscle-building hormone.

Which is not to say that you cannot build or maintain muscle in menopause, because of course, you can. Non-exercise strategies for preventing and reversing sarcopenia include lowering stress, reducing or avoiding alcohol, and eating enough calories and protein, especially the amino acid leucine. Given that estrogen is anabolic, estrogen therapy could, in theory, also be helpful, but a recent analysis of numerous studies found no significant benefit.

The best way to build and maintain muscle is to move your body especially with resistance or strength training, which has been found to improve hot flushes, cognition and brain health. Strength-training can be done at a gym or as a simple at-home practice with resistance bands or lunges, squats and planks using your own body weight. For an evidence-based series of squats and other exercises, check out the '7-minute workout' listed in the Resources section, and take care to build up the muscles on the *back of your body*, including your glutes, because they are an important part of core strength and often get neglected. Back muscles also help to support the pelvic floor, as we'll see in Chapter 10. If you prefer other styles of movement, you'll be happy to know that yoga and even walking can also improve sarcopenia.

I hope this General maintenance chapter has provided you with new ideas for feeling better – and we're only getting started. Let's now move on to all the other treatment options, starting with hormone therapy.

6

Menopausal hormone therapy (MHT)

Menopausal hormone therapy (MHT) or just *hormone therapy* is the modern term for what used to be called hormonal replacement therapy or HRT. The name was changed to differentiate it from hormone replacement for endocrine abnormalities such as growth hormone deficiency, and really, ‘hormone therapy’ is a better term because the lower estrogen of menopause is normal, not a deficiency.

Whatever term you use, taking hormones with menopause has been and still is controversial, with the pendulum swinging back and forth between enthusiasm to fear and, lately, back to great enthusiasm. As we’ve seen in the patient stories so far, many of my patients choose hormone therapy, and I support them in that decision. At the same time, some of my patients find they don’t require it, and I support them in that decision too. As we’ll see, the only time estrogen plus progesterone therapy is truly *needed* is for the prevention of long-term health risks associated with early or medically induced menopause.

Let’s begin by acknowledging three seemingly conflicting things that are true all at the same time:

The lower estrogen of menopause is a natural state, not a deficiency. There should, therefore, be nothing inherently disease-promoting about lower estrogen or health-promoting about supplementary estrogen. ‘Something that is a normal part of the life cycle,’ says Professor Prior, referring to lower estrogen, ‘cannot at the same time be a cause of major disease and debility’. As proof of the inherent healthfulness of lower estrogen, consider our discussion in Chapter 2 about how many of our female ancestors lived well into old age and how their menopausal vitality may even have been the driving force for the evolution of a longer human lifespan.

Hormone therapy, including estrogen therapy, can relieve menopausal symptoms such as hot flushes, mood issues and sleep disturbance. For that reason, it’s something to at least consider, perhaps while you’re waiting for natural treatments to take effect. And keep in mind that hormone therapy doesn’t have to mean estrogen; it can mean taking progesterone on its own, which we’ll explore in this chapter and throughout the book. It can also mean taking only *vaginal estrogen*, which is very safe and can be a lifesaver.

Estrogen plus progesterone therapy can reduce the risk of osteoporosis, and possibly even the risk of heart disease and dementia, although that’s up for debate. As discussed in Chapter 4 and later in this chapter, estrogen may work primarily by mitigating the shift to insulin resistance that naturally occurs with menopause in the context of our modern food environment. By employing other methods of reversing insulin resistance, you may be able to reduce your body’s need for estrogen therapy.

In this chapter, we’ll first survey the *types* of hormone therapy. We’ll then move into a discussion of progesterone for perimenopause and estrogen for menopause, before finally looking at *troubleshooting*, where we’ll discuss side effects and other tricky issues.

Types of hormone therapy

This is one of the most important parts in the book, second only to the General maintenance chapter. Why? Because if you're going to take hormone therapy, you want to choose the *safest* and most appropriate type.

By 'safest', I mean *body identical* which, as you'll recall from Chapter 1, refers to hormones that are molecularly identical to the body's own hormones. Most (not all) modern estrogen prescriptions are body identical, but unfortunately, only some progestin prescriptions are body identical progesterone.

By 'appropriate' type of hormone therapy, I mean understanding the difference between *estrogen plus progesterone* versus *progesterone-alone*, something we'll explore further in the progesterone for perimenopause section. We'll also touch on vaginal estrogen and testosterone.

Ultimately, your decision to use hormone therapy (and what type) is highly individual and will depend on your symptoms, health history, family history and preference. Those are details you'll need to discuss with your doctor to decide if 1) hormones are likely to be helpful, and 2) estrogen, in particular, is likely to be safe. Progesterone is usually safe.

Estrogen

Let's start with estrogen and a brief discussion of safety. In general, estrogen is associated with a small increase in breast cancer risk of 0.1 per cent per year, which means an increased incidence of one case per 1000 women per year of use. To put that in perspective, it's a similar or even slightly lower risk than the risk from alcohol or low physical activity. Of note, those statistics are based mostly on data about *non-body identical* hormones such as Premarin® and progestin Provera®, which are the most dangerous types of hormone therapy.

SPECIAL TOPIC: HORSE ESTROGENS

Premarin is an old-style estrogen drug that contains about 30 different hormones, including androgens, many of which are not body identical. The two main active

ingredients are estrone sulfate and equilin sulfate, the second found only in horses. Together, the whole compound is referred to as *conjugated equine estrogens*, and is extracted from pregnant mares' urine.

Although Premarin is still sometimes prescribed, it has turned out to be not safe for either breasts or heart. Part of the problem is the progestin Provera it is usually paired with (discussed opposite), but the other issue is that horse estrogen equilin is more strongly stimulating to breast tissue than human estrogen. Premarin also increases the risk of blood clots and heart disease, mainly because it's taken orally which is not a safe way to take estrogen.

In contrast to Premarin, modern estrogen therapy is usually body identical estradiol and *transdermal* (absorbed through the skin) which allows it to directly enter the bloodstream and not form dangerous blood-clotting factors in the liver. The safest type of estrogen is, therefore, an estradiol patch (Estradot® or Climara®), gel (Sandrena® or Estrogel®) or vaginal estrogen.

Vaginal estrogen

Using estrogen locally to relieve vaginal dryness or bladder symptoms does *not* carry the health risk associated with systemic estrogen and may even be safe with a history of breast cancer. That's according to the American College of Obstetricians and Gynecologists (ACOG) who recently stated that vaginal estrogen carries no 'increased risk of cancer recurrence among women currently undergoing treatment for breast cancer or those with a personal history of breast cancer'.

The available products for vaginal estrogen are Vagifem Low® and Ovestin®, which are both body identical estrogen. Vagifem is low-dose estradiol and Ovestin is estriol, which has only about one-tenth of the potency of estradiol.

We'll revisit vaginal estrogen in Chapter 10, when we discuss vaginal dryness and the genitourinary syndrome of menopause (GSM).

Progesterone

We now come to an interesting part of the hormone therapy story. As we saw in Chapter 3, progesterone is important for health but, oddly, has traditionally been assigned a minor role in hormone therapy.

Progesterone's primary role – in fact, from some perspectives, its *only* role – has been to protect the uterine lining from estrogen. In other words, to prevent estrogen from stimulating an abnormal build-up of the uterine lining that could lead to uterine cancer. This use of progesterone stems from the earliest days of hormone therapy, when estrogen was used on its own and did lead to uterine cancer. To combat that effect, a progestin drug was added to thin the uterine lining. These drugs were (and often still are) referred to as progesterone but are not progesterone. Instead, they're progestins, which as discussed in Chapter 3 can have negative effects compared to progesterone, particularly for mood, hair loss and weight gain.

The other negative effect of progestins (but not progesterone) is on breast tissue. New research has identified progestins, and particularly medroxyprogesterone (Provera), as the *primary cause of the breast cancer risk associated with hormone therapy*. To reduce exposure to progestins, experts now recommend either 1) using the lowest possible dose of progestin, which is a hormonal IUD, or 2) choosing oral micronised progesterone *instead* of a progestin. Progesterone does the same job of protecting the uterine lining but without the mood side effects or breast cancer risk of a progestin. In fact, according to Professor Prior, progesterone may even help to reduce the risk of breast cancer. Oral micronised progesterone is also safe for heart disease because it does not carry a clotting risk.

Fortunately, modern Australian and New Zealand guidelines now recommend oral micronised progesterone (i.e. real progesterone) as the uterine-protecting component of hormone therapy. It's called 'oral micronised' progesterone because it's taken orally as a capsule and the progesterone is micronised into fine particles to improve absorption.

Oral micronised progesterone is available by prescription as the brands Prometrium® in Australia and Utrogestan® in New Zealand. All other brands of 'progesterone' are actually progestins, and that includes the

tablets Primolut® and Provera, and the patch Estalis® (see Table 1). See later in the chapter for a discussion of progesterone cream.

Progesterone-alone treatment

Under current guidelines, the only officially recognised use of oral micronised progesterone is as the progesterone part of MHT – in other words, estrogen plus progesterone, and, even then, only if you have a uterus.

As you'll see below and in the coming chapters, progesterone can also be used *on its own* (without estrogen) for perimenopausal symptoms such as night sweats, heart palpitations, sleep issues, migraines, mood problems, heavy periods and even for some menopausal symptoms. 'Progesterone-alone' or 'progesterone even with a hysterectomy' is a departure from the current official guidelines but it's in line with the protocols of Professor Prior, which are available in her book *Estrogen's Storm Season: stories of perimenopause* and her website the Centre for Menstrual Cycle and Ovulation Research (see Resources).

Professor Prior's progesterone protocols are based on decades of clinical experience and her own extensive scientific research into the benefits of progesterone for both perimenopausal and menopausal symptoms.

Testosterone

Testosterone is sometimes prescribed to enhance clitoral sensitivity and sexual desire, and works for about half the women who try it, but only if *estrogen therapy is already in place*.

The other claims for testosterone are that it improves mood and wellbeing, and can help to prevent osteoporosis, sarcopenia and cognitive decline, but there's no evidence that testosterone can do any of those things.

I'm nervous about testosterone because of its tendency to promote insulin resistance and weight gain (Chapter 4). In fact, one study found that 'testosterone treatment is associated with a significant increase in weight', and another found that it may be risky for breasts. All that said, if you don't

have insulin resistance or a history of breast cancer, I think it's probably okay to try a small dose of testosterone so long as you also take estradiol and progesterone to shelter you from high androgens. Stay low with the dose and watch for signs of excess testosterone such as acne, hair loss, insulin resistance and abdominal weight gain.

The other androgen that is sometimes prescribed is DHEA, which, when applied topically, can be effective for the genitourinary syndrome of menopause (GSM). DHEA is not yet available in Australia or New Zealand.

SPECIAL TOPIC: LIVIAL® OR TIBOLONE

Another type of menopausal therapy is the drug tibolone, which is best described as a *synthetic steroid* rather than a hormone. As a drug, it acts a *little bit* like estrogen, progesterone and testosterone, but not completely like any of those hormones and can cause side effects such as acne and increased facial hair. Tibolone can also increase the risk of endometrial cancer, breast cancer and heart disease.

A hormone therapy summary

Do you know what you're taking? Read the label. Estradiol or oestradiol (alternative spelling) is body identical estrogen and 'oral micronised progesterone' is progesterone. Other ingredients such as norethisterone or medroxyprogesterone acetate are *progestins*.

Table 2 Menopausal hormone therapy (MHT) options

Name	**Ingredients**
Angeliq	**Body identical estradiol** + progestin drospirenone
Kliovance or Kliogest	**Body identical estradiol** + progestin norethisterone
Femoston	**Body identical estradiol** + progestin dydrogesterone
Estalis	**Body identical estradiol** + progestin norethisterone
Livial or Xyvion	Tibolone
Provera	Progestin medroxyprogesterone acetate
Primolut	Progestin norethisterone

Mirena IUD	Progestin levonorgestrel
Premarin	Conjugated equine estrogens
Estrofem tablet	**Body identical estradiol**
Progynova tablet	Synthetic estrogen that converts to **body identical estradiol**
Climara patch	**Body identical estradiol**
Estradot patch	**Body identical estradiol**
Estraderm patch	**Body identical estradiol**
Estrogel gel	**Body identical estradiol**
Sandrena gel	**Body identical estradiol**
Vagifem Low	**Body identical estradiol**
Ovestin pessary	**Body identical estriol**
Prometrium capsule	**Body identical progesterone**
Utrogestan capsule	**Body identical progesterone**

As you can see from Table 2, body identical estrogen can be obtained as a patch, gel or vaginal pessary, and is prescription-only. Body identical progesterone can be obtained as Prometrium (or Utrogestan) or a compounded capsule, which are prescription-only, or as progesterone cream, which you can obtain from an overseas online dispensary without a script. Progesterone cream can relieve certain symptoms (which we'll discuss) but is not part of conventional hormone therapy because it *cannot* protect the uterus from estrogen therapy.

Perimenopause versus menopause

We've looked at the types of hormone therapy and why, if you take hormone therapy at all, you should always choose body identical. Let's now move into a discussion of hormone therapy for the two very different situations of perimenopause versus menopause.

Hormone therapy for perimenopause

Recall from Chapter 4 that perimenopause is a time of low progesterone and high, fluctuating estrogen, resulting in symptoms such as hot flushes, night sweats, insomnia, migraines, very heavy flow and a reduced ability to cope with stress. Because you're still cycling, your doctor may offer the pill, or less likely, an estrogen patch, but in either case, you're being offered more estrogen when you already have too much estrogen.

A better approach is progesterone-alone, either as a cream if your symptoms are mild, or a progesterone capsule if your symptoms are stronger. Progesterone capsules (rather than cream) is the stronger and better treatment for heavy periods and insomnia.

How to speak with your doctor about progesterone for perimenopause

Remember, your doctor knows Prometrium or Utrogestan only as a companion to estrogen for menopausal therapy and may not be familiar with Professor Prior's protocols for using it alone.

- 'I'm experiencing an increased frequency of migraines/mood problems/insomnia, which I understand could be perimenopause.'
- 'This Canadian endocrinology professor recommends using micronised progesterone for perimenopausal symptoms.' Print out the following study and take it to your appointment: 'Oral micronized progesterone beneficial for perimenopausal hot flushes/flashes and night sweats'. See the Resources section for the full citation.

Then say:

- 'Could I try a few months of Prometrium (or Utrogestan)?'

If your main symptom is heavy bleeding:

- 'Could I try a few months of Prometrium (or Utrogestan) for heavy bleeding? I understand it can work as well as a progestin to lighten flow, but without the side effects. See this protocol by a Canadian

endocrinology professor.' Print out the following document and take it into your appointment: 'For Healthcare Providers: managing menorrhagia without surgery'. See the Resources section for the full citation.

If your doctor expresses concern about the safety of progesterone, say:

- 'Actually, my understanding is that, when it comes to breast cancer risk, progesterone is safer than a progestin.' Print out the following document and have it ready: 'Body-Identical Hormone Replacement Therapy' by the WHRIA (Women's Health and Research Institute of Australia). See the Resources section for the full citation.

If your doctor is hesitant, offer to leave it with them and return for a second appointment. That will give them a chance to look at the information and confer with colleagues.

Once your doctor prescribes Prometrium or Utrogestan, you can obtain the capsules from any chemist. Be sure to take progesterone at bedtime, as it is sedating so can make you feel sleepy or groggy. A cream is usually not sedating so can be applied at any time.

In summary, progesterone-alone is usually the best choice for perimenopause. It can also be used for menopause which we'll explore in the next section.

SPECIAL TOPIC: DO YOU NEED TO TEST HORMONES?

In general, there's no reason to test your progesterone or estrogen levels before taking those hormones. If you're still cycling (i.e. perimenopausal), your hormones fluctuate day-to-day, so it's not like you'll be able to compare 'before' and 'after' levels. And if you're not cycling (i.e. menopausal), you can assume your hormones are low even without testing.

It all comes down to symptoms and *whether or not you're still cycling*, as discussed in Chapter 3. If you don't have symptoms, you probably don't need

hormone therapy, regardless of what your hormone levels show. If you *do* have symptoms, you may need progesterone-alone if you're cycling (perimenopause) and progesterone plus estrogen if you're not (menopause).

Hormone therapy for menopause

Around the time of your final period, you could start to experience symptoms of more continuously lower estrogen, including hot flushes, body aches and vaginal dryness. Those symptoms could still respond to *progesterone-alone* (discussed later in this section) or they might require the addition of estrogen. Except for vaginal estrogen, I recommend never taking estrogen-alone without progesterone, even if you've had a hysterectomy. Your doctor thinks progesterone's only job is to protect the uterus, but as we've seen, progesterone has many other jobs including promoting sleep and protecting the breasts. See the How to speak with your doctor about hormone therapy for menopause on page 154.

The following recommendations for estrogen therapy take into consideration both symptoms and disease risk because estrogen *started at the right time* can reduce the long-term risk of osteoporosis. There is even some evidence that estrogen may help to reduce the risk of diabetes, heart disease and dementia, but probably only in women who underwent surgical or medically induced menopause or entered menopause before the age of 45.

The official recommendations for hormone therapy

If you have a personal or family history of breast cancer, you will probably be counselled to avoid estrogen therapy. The same may be true if you have heart disease, uncontrolled high blood pressure, liver disease or a history of a blood clot. You could still be able to take progesterone.

If you entered natural menopause after 45 and have no symptoms or osteoporosis risk, there is probably no reason to take estrogen. According to the Cochrane Collaboration (the international authority on evidence-based medicine), 'hormone therapy is not indicated for primary or secondary

prevention of cardiovascular disease or dementia, nor for preventing deterioration of cognitive function in postmenopausal women'.

If you entered natural menopause after 45 and have symptoms and/or a higher risk of osteoporosis, you could consider taking estrogen plus progesterone. As to *how long* you take it, the jury is still out. Most experts agree that hormone therapy is safe for five years but make no recommendations beyond that except to say there's probably 'no reason to place a mandatory limit'. In terms of the research, the recommendations are constantly being updated, so your best plan is to stay in touch with your doctor and be kept informed of the latest advice.

If you underwent surgical or medically induced menopause or entered menopause *before the age of 45* (primary ovarian insufficiency), there's a strong case for taking estrogen plus progesterone for disease prevention, at least for a while. According to Professor Susan Davis at Monash University, 'unless there's a specific reason they can't, it's especially important women with early menopause take [hormone therapy] to optimise their health. This is true regardless of how severe their symptoms are'. Indeed, the evidence does suggest that without estrogen therapy, entering menopause before 45, and particularly before 40, is associated with an increased risk of osteoporosis, heart disease, dementia and premature death.

Finally, if you're more than ten years past menopause, you should almost certainly *not* commence estrogen, because there's no evidence it will help, and it could cause *harm*. That's according to the 'window of opportunity' or 'timing' hypothesis, which states that estrogen started around the time of menopause can reduce the risk of heart disease but estrogen started more than ten years after the final period can *increase* the risk. The explanation for this paradoxical response is that estrogen can only be protective *before* the progression of arterial plaques. Once heart disease is present, estrogen (especially oral estrogen) is a risk because it promotes blood clots.

Progesterone-alone for menopause

Progesterone-alone can relieve the symptoms of natural menopause but not the symptoms of early menopause or surgical or medically induced menopause. That's because progesterone can work only in the presence of at least a certain amount of estrogen, which with natural menopause is provided by the ovaries both as estrogen and androgen precursors to estrogen (Chapter 4).
Progesterone-alone can also be helpful when:

You cannot take estrogen due to a clotting risk or other health issue.
You reacted badly to estrogen or an estrogen-progestin combination.
You need support tapering down estrogen (see the Troubleshooting hormone therapy section on page 156).
You tolerated estrogen at first but then started having side effects, as happened with my patient Deborah.

DEBORAH – WHY DID TREATMENT STOP WORKING?

Deborah was 51 and a few years past her hysterectomy when she developed moderately severe hot flushes and the new symptom of waking at 3 am. Her doctor prescribed Estradot and Prometrium, which worked well for about six months.

'But then things went haywire,' she told me. 'Out of nowhere, I started getting headaches and breast pain, and I really don't understand what's going on. Perhaps I need to take more estrogen?'

'Not more,' I replied. 'If anything, you probably need to *take less* estrogen or temporarily stop it, because it sounds like you're having another cycle and so making lots of your own estrogen. In other words, you're back in the high-estrogen state of perimenopause rather than the low-estrogen state of menopause. But of course, you don't have a uterus so you can't see that you've got your cycle back.'

I recommended that Deborah speak with her doctor about temporarily stopping the estrogen patch but continuing the Prometrium.

'At some point,' I said, 'you may start flushing again, and then you'll know you're back in the state of low estrogen. At which time you could think about restarting the patch.'

On-again off-again estrogen is common during the first year without periods. The way I explain it to patients is:

‘You’re still having the occasional cycle and therefore still making a lot of estrogen at times.’
‘Start by taking progesterone.’
‘If you develop vaginal dryness or worsening hot flushes (symptoms of low estrogen), stay on progesterone and consider adding estrogen.’
‘If you notice headaches or breast tenderness (symptoms of high estrogen), stay on progesterone but take a break from estrogen.’

Breast pain is a sign of high estrogen, and although short-term breast tenderness is harmless, women who develop breast pain on hormone therapy are at a greater long-term risk of breast cancer. Breast pain can also be a sign of iodine deficiency.

What dose of hormone therapy?

One pump of progesterone cream delivers 20 mg of progesterone, which is typically applied once or twice daily inside the elbows or behind the knees at bedtime. Progesterone cream can relieve mild flushes, mood symptoms or perimenopausal migraines but *cannot* substantially lighten periods or protect the uterus from estrogen therapy.

The standard dose of oral micronised progesterone (Prometrium or Utrogestan) is 100 to 300 mg taken at bedtime and dosed either continuously or cyclically, two weeks on, two weeks off. The advantage of continuous dosing is that it can provide more solid support for sleep, mood and control of heavy bleeding. The advantage of cyclic dosing is that it can induce a regular withdrawal bleed and therefore prevent the erratic bleeding that can occur during the perimenopausal years. With menopause, bleeding is no longer an issue so most doctors switch to continuous dosing.

The lowest dose of estrogen is the Vagifem Low pessary, which provides 10 mcg of estradiol, or Ovestin cream, which provides 1 mg of estriol.

The Estradot patch comes in different strengths of 25 mcg, 37.5 mcg, 50 mcg, 75 mcg or 100 mcg, and delivers that dose of estradiol per day. Professor Prior says, ‘no menopausal woman should need more than 50

mcg', and I tend to agree. I usually recommend starting with progesterone and then adding 25 mcg of estradiol, going up with the dose only if needed for symptoms. The advantage of starting with progesterone is that 1) progesterone-alone is sometimes sufficient, and 2) progesterone can help to prevent possible side effects of estrogen.

I'll provide more information about dose in the coming chapters, as we explore specific symptoms.

How to speak with your doctor about hormone therapy for menopause

If you have a uterus and want to take estrogen and progesterone, the conversation will be simple, because a body identical estradiol patch plus Prometrium (or Utrogestan) is probably what your doctor would offer anyway. Don't say anything about 'natural hormones' or 'bioidentical', because, depending on the doctor, that could just make things harder. Instead, simply say:

- 'I've heard that the best combination is Estradot plus Prometrium (or Utrogestan).'

If your doctor insists on a different, non-body identical type of hormone therapy, ask why and perhaps seek a second opinion. If you're already on another type of hormone therapy, such as the Estalis patch, and you want to change, try saying:

- 'I'm experiencing side effects with this prescription and I've heard that Estradot plus Prometrium is better with fewer side effects.'

If your doctor prescribes cyclic progesterone but you'd like to try it continuously for sleep, try saying:

- 'I find that I sleep better on the nights I take progesterone and would like to take it continuously if that's okay.'

If your doctor offers estrogen but no progesterone because you don't have a uterus, try saying:

- 'If it's okay, I'd like to combine the estrogen with Prometrium (or Utrogestan) even though I don't have a uterus, because I've heard that progesterone is helpful for sleep, and sleep is my main symptom.' Show your doctor a printed copy of the study 'Progesterone prevents sleep disturbances and modulates GH, TSH, and melatonin secretion in postmenopausal women'. See the Resources section for the full citation.

Or:

- 'If it's okay, I'd like to combine the estrogen with Prometrium (or Utrogestan) even though I don't have a uterus. According to this Canadian endocrinology professor, micronised progesterone can relieve menopausal symptoms.' Show your doctor a printed copy of Professor Prior's study, 'Oral micronized progesterone for vasomotor symptoms – a placebo-controlled randomized trial in healthy postmenopausal women'. See the Resources section for the full citation.

If you would like to try progesterone-alone for menopause, try saying:

- 'According to this Canadian endocrinology professor, micronised progesterone alone can relieve menopausal symptoms.' Show her a printed copy of Professor Prior's study, 'Oral micronized progesterone for vasomotor symptoms – a placebo-controlled randomized trial in healthy postmenopausal women'. See the Resources section for the full citation.

If your doctor is hesitant, offer to leave it with them and return for a second appointment.

Some doctors insist that progesterone cannot be used without estrogen, but according to Professor Prior, it definitely can.

Troubleshooting hormone therapy

Side effects

Possible side effects of estrogen therapy include headaches, irritable mood, nausea and breast pain, and possible side effects of progesterone therapy include digestive bloating and grogginess. If your type and dose of hormone therapy is right for you, it should feel good and not cause side effects. If it *does* cause side effects, check with your prescribing doctor and, together, work through the following questions:

Were you taking body identical estradiol and progesterone? If not, consider switching to Estradot and Prometrium.
Was the dose too high? If so, consider temporarily stopping and starting again at a lower dose.
Were you taking estrogen on its own (with no progesterone)? Consider temporarily stopping estrogen while you put progesterone in place. By starting progesterone before you start estrogen, you can gauge if progesterone-alone is all you need, and, even if you still need estrogen, taking progesterone before estrogen can make it easier to tolerate estrogen. Correcting an iodine deficiency can also relieve breast pain and make it easier to tolerate estrogen, because iodine stabilises estrogen receptors.
Did you react badly to progesterone-alone? First, consider if you're in a state of very low estrogen due to surgical or medical menopause. In such a case, you should probably take both estrogen and progesterone. Beyond that, see the special topic about Progesterone sensitivity on page 186.

Switching from the pill

If you're still on the pill when you reach menopause, review Bronwyn's patient story on page 23 and the section in Chapter 3 where we discussed falling off the 'estrogen cliff'. Then speak to your doctor about Estradot and Prometrium.

Tapering down estrogen

As we'll see in the next chapter, the brain gets used to estrogen; you might even say it becomes *addicted* to estrogen. Which is why stopping the pill or any kind of estrogen therapy can cause withdrawal and hot flushes, as we saw with Bronwyn's story on page 23. Once you're on estrogen plus progesterone, your best plan may be to take it for as long as you might expect to experience symptoms (usually about four years), and then, if you want to come off, taper it down slowly over weeks or even months. Staying on progesterone during that tapering-down process can shelter you from estrogen withdrawal symptoms. You can then stop progesterone at any time because it does not cause withdrawal.

TIP

No treatment decision is immutable; you can always try hormone therapy and then change your mind. For reasons of safety, however, you should not commence estrogen therapy if you're ten or more years past your final period.

Is there such a thing as 'herbal hormone therapy'?

Before we leave the topic of hormone therapy, let's revisit *phytoestrogens*.

As we saw in Chapter 5, phytoestrogens occur naturally in most plant foods and are an important part of the diet and hormonal health. But phytoestrogens are not estrogen. In fact, during perimenopause, when estrogen is high, phytoestrogens have a beneficial anti-estrogen effect, which can help to lighten periods and promote healthy estrogen metabolism.

During menopause, when estrogen is low, phytoestrogens could, in theory, have a mild *pro-estrogen* effect, but in practice they really don't. The research is clear. There have been hundreds of studies of soy isoflavones, and so far little to no evidence that they can relieve hot flushes or any other symptom of perimenopause. Likewise, soy isoflavones have not been found to offer any protection to bones or heart. Some studies have shown small benefits for *some* women but not others, a difference that researchers attribute to differences in gut microbiomes, and the role that plays in transforming phytoestrogens to a more active form.

On the plus side, phytoestrogens that occur naturally in food do not seem to increase the risk of estrogen-sensitive cancers and may, in fact, *lower* the risk of breast cancer. The same cannot be said of concentrated soy supplements, which should probably be avoided if you have a history of breast cancer. Speak to your doctor.

In short, phytoestrogens are a beneficial constituent of plant foods and some herbal medicines, but they are not 'hormone therapy'.

Let's now move deeper into the treatment chapters and explore all the different symptoms you can treat with hormonal and/or non-hormonal strategies.

7

Rewiring the brain: help for hot flushes, sleep, migraines, memory and mood

Ready for a *major reorganisation of your brain*? Buckle up, because that's what's going to happen. According to the latest research, the brain undergoes massive rewiring during perimenopause and the first few years of menopause, and that recalibration process is the origin of many symptoms of perimenopause, including mood issues, sleep disturbance, memory loss and hot flushes.

Before we get down to individual symptoms and how to treat them, let's look at *why* your nervous system has to reorganise in the first place. It comes down to this: during your reproductive years, your brain became quite used to progesterone and estrogen.

For starters, your brain liked how progesterone calmed neurons; stabilised the HPA axis; and stimulated a compound called *brain-derived*

neurotrophic factor (BDNF), which promotes healthy *neurogenesis*, or growth and development of new nerve cells. Losing progesterone during perimenopause marks the beginning of a great change, which you could experience as sleep disturbance, migraines and a reduced ability to cope with stress.

Your brain also liked estrogen and how it reduced inflammation, regulated your circadian rhythm and boosted serotonin, which is why (in part) estrogen is addictive. Your brain also really liked – you might say, came to *depend on* – how estrogen supported the *energy system* of your brain by improving insulin sensitivity and stimulating mitochondria, which are the little powerhouses of cells we'll explore in Chapter 10.

In simplest terms, estrogen helps brain cells use glucose for energy, and moving to the lower estrogen state of menopause can result in an up to 25 per cent drop in the energy and activity of the brain. The drop will be even greater if you underwent surgical menopause and therefore don't have ovaries to provide estrogen and androgen precursors. It's basically a temporary 'energy crisis' while your brain adjusts and recalibrates. Successful recalibration should restore normal brain energy and put you on the road to a healthy midlife brain. Unsuccessful recalibration could, unfortunately, prolong the low energy state and be a tipping point towards a longer-term risk of cognitive decline.

How can you successfully recalibrate your brain's energy system? By cultivating *metabolic flexibility*, which is your cells' ability to shift between glucose and ketones for energy. There are several ways to do that, including exercise, intermittent fasting and maintaining a healthy microbiome. One of the best ways to cultivate metabolic flexibility is to prevent or reverse *insulin resistance*, because insulin resistance puts the brakes on the body's ability to burn fat and provide ketones to the brain.

Do you have insulin resistance? Are you sure? Review the Testing for insulin resistance section on page 102 and know there's about a one in two chance you *do* have insulin resistance, even if your doctor never mentioned it. If you have insulin resistance, then reversing it with the strategies discussed in Chapter 8 is one of the most important ways to improve

perimenopausal symptoms and promote the long-term health of your brain. If you don't have insulin resistance, you can focus on the other treatments provided below.

Another way to promote metabolic flexibility is, of course, estrogen, which is probably how estrogen therapy relieves brain symptoms such as hot flushes. Whether you actually take estrogen therapy is up to you, because, as we'll see below, it's not a complete fix and (except in women with early or surgical menopause) has not been proven to reduce the risk of dementia. Your brain can also make its own estrogen with *intracrinology* (Chapter 4), and, estrogen therapy or not, you'll still need to identify and reverse insulin resistance as well as employ some of the other strategies discussed in this chapter.

Basic action plan for brain reorganisation

Here are some simple strategies to support brain energy and relieve many of the neurological symptoms of perimenopause and menopause, including mood issues, sleep disturbance, memory loss, migraines and hot flushes.

Identify and reverse insulin resistance for all the reasons discussed above. Treatment strategies are provided in Chapter 8.

Soothe your nervous system with the strategies provided in the General maintenance chapter, such as supporting your autonomic nervous system, HPA axis and circadian rhythm.

Reduce or quit alcohol because alcohol is toxic to the brain and impairs healthy neurogenesis. My observation is that the simple change of stopping alcohol can sometimes relieve all symptoms of perimenopause and menopause.

Move your body and build muscle because it helps to reverse insulin resistance, improve brain energy and promote healthy neurogenesis. Strength training, in particular, has been found to improve hot flushes and long-term brain health.

Take a magnesium supplement (page 133), which works by calming the brain, stabilising the HPA axis and promoting neurogenesis. It also

helps to reverse insulin resistance and promote metabolic flexibility.

Ensure an adequate intake of taurine, which is a sulfur-containing amino acid that you produce in small amounts but also must consume to meet your brain's requirements. Food sources include fish, meat and dairy, or you can supplement at a dose of 3 grams. Taurine acts in the brain as a beneficial neurotransmitter to calm neuroexcitation and promote healthy neurogenesis. It also supports healthy energy metabolism, which could make it exactly what the doctor ordered for assisting the brain through its temporary energy crisis. See Suggested supplements brands on page 308 for a list of brand-name supplements that contain both magnesium and taurine.

The basic action plan can go a long way to relieving symptoms of mood, sleep, migraines, memory and hot flushes. Try it first for a few weeks and then, if you still need help, consider some of the more symptom-specific treatments discussed in this chapter (including hormone therapy).

Hot flushes

Hot flushes, also called hot flashes or vasomotor symptoms, are the most recognisable symptom of both perimenopause and menopause, and are experienced by up to 75 per cent of women. They typically occur as a feeling of intense heat, which can come on suddenly or slowly. Alternatively, they may be experienced as tingling, a red or flushed face, sweating, burning skin, or even stronger symptoms such as dizziness, chills, nausea, night sweats, pressure in the head or the sensation of the heart beating faster than usual. The latter symptom is called heart palpitations, which we discussed in Chapter 4.

Hot flushes can last anywhere from just seconds to ten minutes, but on average last about four minutes and occur anywhere from every few days to up to several per hour. Hot flushes are generally not considered to be harmful, but frequent flushing during menopause has, unfortunately, been linked to an increased risk of dementia and heart disease later in life. The link is probably not likely to be *causative* but is instead correlative, as both

flushes and the disease risk could stem from the same underlying problem of impaired energy metabolism and insulin resistance.

What causes hot flushes?

The official cause of flushes is not known, but most research points to the brain, specifically to a narrowing of the *thermoneutral zone* of the brain's thermoregulatory mechanism. It's basically a narrowing of the range of temperature that the hypothalamus considers to be normal – like a touchy thermostat. Before menopause, the hypothalamus accepts as normal a shift in body temperature of up to 0.4 degrees Celsius, which allows you to step indoors or enjoy a hot drink without your body trying to cool itself with a flush or sweat. With perimenopause and menopause, even the tiniest shift in body temperature can result in the hypothalamus trying to make a 'temperature adjustment' with shivering or sweating.

The narrowing of the thermoneutral zone is affected by estrogen – not so much by *low* estrogen but by a fall from high to low. In fact, you're more likely to experience a narrowing of your thermoneutral zone (and therefore flushes) if you were exposed in perimenopause to the high, fluctuating estrogen levels described in Chapter 4. In contrast, you may be *less* vulnerable to hot flushes if you were exposed in perimenopause to (on average) a lower level of estrogen. Mechanisms by which dropping estrogen narrows the thermoneutral zone include 1) direct effects on the hypothalamus, and 2) alterations in levels of serotonin and adrenaline, which in turn, affect the hypothalamus. The role of neurotransmitters is why stress management is so important during perimenopause; the more stressed you feel, the more likely you are to flush.

Conventional treatment for hot flushes

Estrogen therapy is the main conventional treatment and is highly effective. It works by stabilising the thermoregulatory mechanism and supporting brain energy. As discussed in Chapter 6, estrogen works best when combined with progesterone.

Progesterone-alone can also relieve hot flushes, especially during perimenopause. It works by calming the brain and reducing adrenaline, thereby stabilising the thermoregulatory mechanism. If your doctor is reluctant to prescribe progesterone, see the How to speak with your doctor sections in Chapter 6. You could also try a progesterone cream, understanding that it is a lower dose than a capsule and so might work only for mild symptoms.

Antidepressants are another conventional option and work by lowering adrenaline. They are moderately effective but can, unfortunately, also cause side effects, such as weight gain, reduced libido and an increased risk of osteoporosis.

Diet and lifestyle for hot flushes

Employ the basic action plan, including identifying and reversing insulin resistance, soothing your nervous system and quitting alcohol. Movement is particularly helpful, with both strength training and yoga performing well in studies. For example, a recent systematic review found that yoga relieves hot flushes, night sweats and other menopausal symptoms such as anxiety, vaginal dryness and even painful intercourse.

Avoid stimulants or trigger foods, such as alcohol and spicy foods. You may need to observe your pattern of flushes to learn which foods are a problem.

Supplements and herbal medicines for hot flushes

Magnesium and **taurine** are my top two supplement recommendations for hot flushes. Of all my patients who try that combination for hot flushes, approximately half find it's all the treatment they need.

Of course, many other supplements are marketed for hot flushes but I haven't found many (or any) to be particularly effective. One of the more popular herbal medicines is *black cohosh*, which I don't prescribe but will discuss briefly.

Black cohosh

Cimicifuga racemosa (black cohosh) is a popular herbal medicine for hot flushes that has undergone several clinical trials with mixed results. A 2010 meta-analysis concluded it may slightly improve menopausal symptoms, but much of that may be due to the placebo effect.

How it works: Black cohosh does not contain significant amounts of phytoestrogens (despite early claims that it did). Its primary mechanism seems to be that it interacts with serotonin, dopamine and opioid receptors in the brain.

What else you need to know: The exact quantity of the herb depends on the concentration of the formula. A proprietary blend of black cohosh called Remifemin® delivers 20 mg of a concentrated extract. Because black cohosh is not estrogenic, it carries no known risk for breast cancer or vaginal bleeding. There were early reports of liver toxicity, but subsequent research has been unable to establish a link. Most experts now conclude that the reports were due to a contaminant and not black cohosh.

> 🔍 **SPECIAL TOPIC: WHAT IF FLUSHES DON'T END?**
>
> In theory, hot flushes should occur only during your late perimenopausal years, including the twelve months after your final period. After that, your brain should recalibrate and re-establish its normal thermoneutral zone.
>
> In practice, of course, that's not always what happens. You could go on to flush for as long as ten years after your final period, especially if you suffer chronic stress or have insulin resistance. In those later years, the best strategy is to work to stabilise the HPA axis (Chapter 5) and reverse insulin resistance.
>
> You could also find yourself in the situation of flushing later in life because you're trying to come off estrogen. Review the Tapering down estrogen section on page 157.

Checklist for hot flushes

Take magnesium plus taurine.
Reduce or quit alcohol.
Move your body.
Identify and reverse insulin resistance.

Consider taking progesterone-alone or in combination with estrogen.

Sleep

Sleep disturbance is the second most common symptom after hot flushes. During perimenopause, the problem can be trouble falling or staying asleep or both. With menopause, the problem is more likely to be waking too early. As to *why* perimenopause and menopause so strongly affect sleep, it's a combination of:

high histamine during the high-estrogen stage of perimenopause
disruption of the sleep centres of the brain due to the drop in progesterone and estradiol
altered circadian rhythm due to the drop in estradiol
reduced melatonin
impaired ability to cope with stress
sleep-disturbing symptoms such as hot flushes, bladder frequency, fibromyalgia and restless legs syndrome
sleep apnea.

Restless legs syndrome is the condition of having an unpleasant aching or crawling sensation in the legs and a strong desire to move them. We'll discuss it in Chapter 8.

Sleep apnea, also called obstructive sleep apnea (OSA), is a potentially serious sleep disorder in which breathing repeatedly stops and starts during the night. Symptoms include loud snoring, gasping or snorting sounds, frequent urination during the night, dry mouth or headaches on waking, and daytime sleepiness and fatigue with trouble concentrating. Without treatment, sleep apnea can increase the risk of heart disease, stroke and diabetes. If you think you might have sleep apnea, see your doctor, who may order a sleep study and prescribe a CPAP machine to use at night to keep your airways open. Other treatments for sleep apnea include surgery, breathing exercises and reversing insulin resistance.

If your sleep problem is the result of sleep-disturbing symptoms, your best sleep strategy is to address the underlying symptom.

Conventional treatment for menopausal sleep disturbance

Estrogen therapy is the main conventional treatment for menopausal sleep disturbance, and it can work very well, especially in combination with real progesterone (not a progestin).

Progesterone-alone is strongly sedating when taken as a capsule, because it converts to *allopregnanolone*, a neurosteroid that interacts with GABA (gamma-aminobutyric acid) receptors. I'll refer to GABA receptors frequently throughout this chapter especially in the mood section. The other mechanism by which progesterone improves sleep is by acting directly on the sleep centres of the brain and promoting beneficial deep sleep. Progesterone also reduces mast cell activation and histamine, two underlying causes of insomnia, and *stimulates* rather than impairs the breathing reflex, so it can be safely combined with other sleep medications.

> **TIP**
>
> Progesterone is so sedating that if you have been prescribed progesterone for another condition, you should take it at bedtime or it will cause you to feel groggy.

Sleeping tablets and/or antidepressants are the other conventional options for sleep. You might get best results from an antihistamine type of sleeping tablet, such as doxylamine succinate, but speak to your doctor. Short-term or occasional use is fine but chronic, long-term use of any sleeping tablet can be habit-forming, impair sleep quality, and increase the risk of cognitive decline and dementia. Additionally, sedating antihistamines can cause weight gain.

Medicinal cannabis contains cannabidiol (CBD), which has anti-inflammatory and anxiolytic (reducing anxiety) properties and has been found in preliminary studies to improve perimenopausal sleep. Depending on the formulation, medicinal cannabis may contain *only* CBD or a

combination of CBD and tetrahydrocannabinol (THC), which is more strongly sedating and is responsible for the 'stoned' feeling associated with cannabis. Medicinal cannabis is usually ingested as oil and takes effect after 30–120 minutes. At the time of writing, it's available only with a prescription so you'll need to find a doctor or telehealth service familiar with prescribing cannabis.

Diet and lifestyle to improve sleep

Practise good sleep hygiene which includes movement and outdoor light during the day, establishing a regular relaxing bedtime routine, maintaining a cool dark bedroom, and not working in bed or being exposed to blue light in the evening.

Choose a strategy (or strategies) from the Soothe your nervous system section of Chapter 5. My top picks are yoga, morning light, protein in the morning and a hot bath before bed, but find the combination that works for you.

Reduce or quit alcohol because it impairs sleep quality and can worsen hot flushes.

Be careful with caffeine because it's a stimulant. One coffee in the morning is probably not a problem but several coffees or coffee too late in the day could affect sleep.

Consider the Low-histamine diet (page 111) if you're showing signs of mast cell activation or high histamine.

Try re-introducing starch if you developed insomnia while on a keto diet or very-low-carbohydrate diet (discussed in the next chapter). Carbs with your evening meal can help to calm the nervous system.

Make sure you're eating enough iron foods such as meat, especially if you have heavy periods, because iron deficiency can cause insomnia.

🔍 SPECIAL TOPIC: MANAGING EXPECTATIONS AND KNOWING YOUR CHRONOTYPE

Shortly, I'll survey some of the supplements for sleep, but before we do that, take a moment to consider whether your current sleep problem is new with perimenopause

or the continuation of an ongoing problem.

In the case of a new sleep problem, you can probably expect to see quick results from progesterone, magnesium, taurine and a little basic sleep hygiene.

In the case of an ongoing problem with sleep, you may see quick results, which will be great. You may, however, see only gradual improvement and not the perfect sleep cure you crave. Trust me when I say you need to *play the long game*, which means focusing on soothing your nervous system and at the same time not becoming hyper-focused on having a perfect night.

As a veteran insomniac, I've been happily surprised by the state of my perimenopausal sleep. It's not great but it's not terrible, and I don't think it's any worse than when I was younger. My current state of sleep okay-ness is the result of all the strategies I've slowly incorporated over the years, including supplements, morning light and yoga. I've also been helped by the simple advice that *it's okay to not sleep sometimes* – something my perfectionist's brain needed to hear. I now accept that I will sometimes not sleep well but it just doesn't matter as much as I thought it did.

The other thing that's helped me personally is to finally realise that I had been comparing my sleep to my husband's sleep but that he and I have different 'chronotypes', meaning different circadian rhythms and genetic requirements for sleep. He needs a solid nine hours, but I feel well on seven.

Supplements and herbal medicines to improve sleep

Magnesium and **taurine** are once again my top supplement recommendations. Here's more about their role in sleep as well as some information about a few other supplements.

Magnesium

In a small clinical trial, older adults who took magnesium had measurably lower levels of cortisol and better-quality sleep.

How it works: Magnesium calms the brain by supporting GABA, the brain's main calming neurotransmitter, while at the same time reducing glutamate, the brain's main stimulating neurotransmitter. A healthy balance between GABA and glutamate is the primary determinant of sleep quality, including time spent in slow-wave or deep sleep. Magnesium also reduces the stress hormone cortisol.

What else you need to know: The therapeutic dose for sleep is 300 mg and is best taken as magnesium glycinate, which is magnesium joined to the

amino acid glycine. You also can take additional glycine.

Glycine

Glycine is a small amino acid that has lots of jobs in the body, including building collagen, maintaining healthy insulin sensitivity and acting as a calming neurotransmitter in the brain. As a supplement, it can shorten the time to fall asleep and reach slow-wave sleep.

How it works: Glycine promotes sleep by boosting serotonin and melatonin, calming the brain and lowering core body temperature.

What else you need to know: The dose for sleep is 3–5 grams taken an hour before bed. Glycine is safe and has no known side effects.

Taurine

Like glycine, taurine is an amino acid that is also a neurotransmitter. As discussed earlier, it has other beneficial effects, such as promoting healthy insulin sensitivity and energy metabolism.

How it works: Taurine calms GABA receptors.

What else you need to know: The dose for sleep is 3 grams taken in the afternoon or evening. And if you're remembering taurine as an ingredient in energy drinks, understand that it was put there to calm the brain and counteract the stimulating effects of sugar and caffeine.

> **TIP**
>
> For my patients struggling with sleep, I typically prescribe a magnesium glycinate powder, which also contains 3 grams of taurine.

Melatonin

We met melatonin briefly in the Circadian rhythm section of Chapter 5, where we discussed it as a *darkness* hormone that works to promote sleep and synchronise the body clock. Melatonin is also good for bones, and can

have beneficial anti-inflammatory effects for migraines, fibromyalgia, acid reflux, endometriosis and bone health.

How it works: Melatonin supports a healthy circadian rhythm and lowers core body temperature.

What else you need to know: According to University of North California neurologist Dr Heidi Roth, melatonin works best for sleep when taken about six hours before bedtime and at a dose of 0.5–1.0 mg. Higher doses can be used for fibromyalgia or migraine prevention, as discussed in the Migraines section on page 173 and the Aches and pains section on page 220. Melatonin might also help to reduce the risk of osteoporosis and breast cancer.

Melatonin cannot be sold over the counter in Australia or New Zealand, so the 'melatonin' products in your local supplement shop are highly diluted or homeopathic melatonin, which will not deliver the same benefits. The only way to access real melatonin is to order it from an overseas online dispensary or obtain a script from your doctor. Most GPs are happy to prescribe melatonin (brand name Circadin®) because it's safe and not addictive.

Ziziphus

Ziziphus is my favourite herbal medicine for perimenopausal sleep problems because it can also relieve hot flushes. It's extracted from the seeds of *Ziziphus spinosa* or *Ziziphus jujuba* and has non-addictive sedating effects.

How it works: It calms the brain by enhancing both GABA and serotonin.

What else you need to know: The exact quantity of the herb depends on the concentration of the formula, so please take as directed on the bottle and do not combine with sleeping tablets except under professional advice. Several herbal sleep formulas contain ziziphus together with other sedating herbal medicines, such as magnolia (*Magnolia officinalis*).

Other herbal medicines to consider for menopausal insomnia include valerian, ashwagandha, magnolia and hops.

TIP

You don't need *all* the supplements. Start with magnesium, glycine and taurine (hopefully all in one supplement), and see how you go.

To give you hope, know that sleep typically worsens with perimenopause but then improves again during the postmenopausal years. Once again, it's a perimenopausal symptom that is likely to be temporary. This is not how you're always going to be!

Checklist for sleep

Take magnesium glycinate plus taurine.
Support your circadian rhythm with morning light and evening dark.
Move your body.
Consider taking progesterone and melatonin.

Migraines

If you already suffer migraines, you may find they become more frequent or intense with perimenopause. If you've never had them before, now could be when they appear. In fact, 'new or markedly increased migraine headaches' is one of Professor Prior's diagnostic criteria of perimenopause.

Any type of migraine can worsen during perimenopause, including migraines with or without aura, and *vestibular migraines*.

SPECIAL TOPIC: VESTIBULAR MIGRAINES AND DIZZINESS

Vestibular migraines are bouts of dizziness or vertigo that occur in people with a history of migraines. They're more common during perimenopause.

With a vestibular migraine, you may or may not get a headache but instead suffer dizziness, light-headedness, anxiety or nausea. Symptoms can go on for hours to days but are not likely to last beyond 72 hours.

If you think you might have vestibular migraines, check with your doctor, who will need to rule out other explanations. For treatments, see the migraine treatments discussed opposite.

The perimenopausal increase in migraines can be attributed to 1) intensified estrogen withdrawal during the high-amplitude estrogen swings of perimenopause, and 2) the loss of progesterone, and therefore the loss of progesterone's calming and migraine-preventing effects. Iron deficiency from heavy periods is another factor and usually results in migraines that occur just *after* the period (end-menstrual migraines).

Migraines should settle down once you achieve menopause and a lower, more stable level of estrogen. If they don't settle down, they could be the result of the low-energy brain state described at the beginning of this chapter. Surgical menopause (ovaries removed) causes exceptionally low estrogen and brain energy and is therefore a situation in which migraines can continue years into menopause.

Conventional treatment for migraines

Conventional treatment of migraines takes the form of either pain-relieving medication or migraine-preventing medication.

Pain-relieving medication includes over-the-counter options such as ibuprofen or prescription drugs such as Imitrex® (sumatriptan).

Migraine-preventing medication includes certain types of blood pressure medication as well as tricyclic antidepressants (amitriptyline) and some anti-seizure drugs.

The pill is generally not recommended because it can worsen migraines.

Estrogen therapy is also usually not recommended, especially oral estrogen, because it carries a higher stroke risk for migraine sufferers than for women without migraines. Low-dose transdermal estrogen is safer and might be helpful in a couple of situations: 1) after surgical menopause to compensate for exceptionally low estrogen, or 2) during perimenopause but taken only during the dropping-estrogen migraine 'danger window' (from five days before your period until two days into your period). Brisbane gynecologist Peta Wright says that, together with progesterone, an estradiol patch initiated during the latter part of the luteal phase can help to prevent perimenopausal premenstrual migraines.

Progesterone-alone calms the brain and is, therefore, one of the best ways to prevent and treat premenstrual and perimenopausal migraines. Check with your doctor about the exact dosing, but if you're still menstruating, you may want to take night-time progesterone throughout your entire luteal phase, and then, if you feel a migraine coming on, take a second daytime dose. See the How to speak with your doctor about progesterone for perimenopause section on page 147, and remember there's no progesterone in hormonal birth control. You can also try progesterone cream.

Diet and lifestyle for migraine prevention

Choose a strategy (or strategies) from the General maintenance chapter. My top picks for migraine prevention are getting enough sleep and reducing alcohol. You may also want to avoid common migraine triggers, such as bright sun, strong smells, and histamine-foods like red wine and aged cheeses.

A low-histamine diet can help with migraines. See the Low-histamine diet on page 111.

A ketogenic diet or very-low-carbohydrate diet has shown promise for migraine prevention in general, but has not been studied specifically for perimenopausal migraines. Because it works by helping the brain to use ketones for fuel and therefore improving brain energy, a keto diet is more likely to be helpful if you have insulin resistance or have very low estrogen due to surgical menopause. An MCT (medium-chain triglyceride) oil supplement can also boost ketones and brain energy and may therefore improve migraines and memory loss, discussed later in the chapter. See page 199 for a discussion of the keto diet.

A gluten-free diet may also be helpful, especially if you have other symptoms of gluten sensitivity, such as psoriasis or brain fog. It works by reducing inflammation, and one study involving children who were migraine sufferers found that avoiding wheat eliminated migraines in 89 per cent of the subjects.

Low-histamine, keto and gluten-free diets all have potential for migraine prevention. You cannot, however, be expected to do all three at once!

Consider your situation. Do you have insulin resistance? If so, a lower carbohydrate diet may be your better choice, although, as we'll see, you can reverse insulin resistance and improve metabolic flexibility without having to resort to a keto diet. Or do you have symptoms of gluten sensitivity or a family member with gluten sensitivity? If so, it's probably worth trialling a gluten-free diet. Finally, do you have signs of mast cell activation or high histamine as described in Chapter 4? Then a low-histamine diet is probably the best plan. Speak to your clinician.

Supplements for migraine prevention

Magnesium

According to a 2016 meta-analysis, magnesium is one of the best supplements for migraine prevention and Dr Alexander Mauskop, a neurologist at the New York Headache Center, recommends that all migraine patients should be treated with magnesium.

How it works: Magnesium calms the nervous system, reduces inflammation and stabilises serotonin receptors. It also inhibits the release of substance-P, a pain-promoting neurotransmitter involved in migraines.

What else you need to know: The dose is a minimum of 300 mg of magnesium glycinate but you can take extra if you feel a migraine coming on. The addition of taurine can have a further preventative effect.

Melatonin

Melatonin can reduce the frequency of menstrual migraines and in some studies is as effective as amitriptyline.

How it works: Melatonin prevents migraines by reducing inflammation and stabilising the neurotransmitters serotonin and GABA.

What else you need to know: The dose of melatonin trialled for migraine prevention is 3–4 mg. See the melatonin discussion earlier in the

chapter.

Vitamin B2

Vitamin B2 (riboflavin) has been clinically trialled for migraine prevention and found to reduce their frequency by 50 per cent.

How it works: It normalises the production of serotonin and improves the function of an enzyme called MTHFR (methylenetetrahydrofolate reductase), which has been linked to migraines.

What else you need to know: The dose used in the clinical trials is 200 mg twice daily.

Iron

Iron supplements can help to prevent the 'end-menstrual' type of migraines that are caused by iron deficiency. For all other types of migraine, choose one of the other treatments. Symptoms of iron deficiency include breathlessness and easy bruising.

How it works: Iron supplements correct the iron deficiency caused by heavy menstrual bleeding.

What else you need to know: Don't take iron without first speaking to your doctor and being tested for 'iron studies' or 'serum ferritin', which is the blood test for stored iron. A healthy ferritin reading should be between 50 and 200 ng/mL. If you're deficient, take 15–50 mg of iron bisglycinate (a gentle and highly absorbable form of iron) directly after food, or speak to your doctor about other iron-delivery methods (which we'll discuss in Chapter 9). Food sources of iron include red meat, eggs, lentils and leafy green vegetables.

TIP

If your migraines occur just after your period, you probably need iron.

If they occur mid-cycle or just before your period, you probably need magnesium and progesterone.

FATIMA – HORMONAL MIGRAINES

Fatima was 50 and had suffered migraines all her life but had lately found that they were debilitating and occurring every month before her period.

By 'period', she meant a pill bleed because she'd been on the pill for the past fifteen years.

'It might be time to stop the pill,' I suggested, 'because it can worsen migraines.'

This was a surprise to Fatima. 'Come to think of it,' she said, 'I think my migraines have been worse on the pill.'

'Then they should improve coming off,' I predicted. 'But if it turns out you're already in menopause, you could get a few more migraines as you withdraw from the synthetic estrogen.'

I was worried that by stopping the pill, Fatima would go over the 'estrogen cliff' (Chapter 4) and straight into menopause so I tried to shelter her with riboflavin and a powder containing magnesium and taurine. I also suggested she try a strictly gluten-free diet for a couple of months because, although she had tested negative for celiac disease, she had a family history of gluten sensitivity.

Fatima stopped the pill and, unfortunately, did experience two migraines within the first three weeks, although less severe than those she had been experiencing on the pill. She also started getting hot flushes, which suggested she was in menopause and probably had been for some time.

'Both the flushes and these milder migraines are from estrogen withdrawal,' I explained. 'They should settle down as your brain adjusts to being without the pill's estrogen. But if you want to talk to your doctor about trying some progesterone for the hot flushes, you may find it also helps with migraines.'

Fatima shared with her doctor the research by Professor Prior about using oral micronised progesterone capsules for hot flushes and was able to obtain a script. One month after starting progesterone, her flushes improved and the migraines stopped.

Checklist for migraines

Take magnesium plus taurine.
Try avoiding gluten.
Consider taking progesterone.

Memory

Feel like you're forgetting things? It's not your imagination. There's an 80 per cent chance you'll notice some degree of menopause-related *cognitive*

impairment, which can feel like brain fog, memory loss or trouble concentrating. My example in the Introduction was forgetting where I parked my car.

Learning about menopause-related cognitive impairment scared me quite a lot. Even the name sounds bad. But then I looked more closely at the research and was reassured to learn that it is usually temporary. 'During the menopause transition,' says Dr Gail A. Greendale from the University of California, 'a woman's brain may feel a little off, a little muddy, but when the transition passes, the clouds clear and the fog lifts. Sometimes all a woman needs to know is that this too shall pass.' And according to neuroscientist Lisa Mosconi, our brains are doing better than we think. She says that we feel like our cognition is affected, but 'women still outperform men in cognitive brain studies at any stage of life'.

Mosconi is the researcher I quoted in Chapter 1 who proposes that Alzheimer's disease in women begins with menopause; or rather that the *risk* of Alzheimer's begins with menopause. She says menopause is merely the trigger for other underlying factors, such as genetic predisposition, nutrient deficiency, chronic inflammation and insulin resistance. In her book *The XX Brain: the groundbreaking science empowering women to maximize cognitive health and prevent Alzheimer's disease*, Mosconi provides strategies to mitigate some of those underlying factors and prevent normal menopause-related cognitive impairment from turning into Alzheimer's or other types of dementia (of which there are several).

We'll discuss long-term dementia prevention in Chapter 10, but for now, let's look at what you can do to brighten cognition.

Conventional treatment for menopause-related cognitive impairment

Estrogen therapy can improve cognition if you start it within five years of your final period. It works by helping the brain to use glucose for energy. As to whether it can also reduce your long-term risk of dementia is another story. On the one hand, there's some evidence that estrogen can reduce the risk of dementia, especially for women who underwent surgical, medical or

early menopause (Chapter 6). On the other hand, there's worrying evidence that estrogen therapy may *increase* the risk of dementia, especially if it's started too late and outside of the 'window of opportunity'. According to neuroscientist Roberta Diaz Brinton, 'estrogen has beneficial effects if taken before or at the time of menopause when neurological health is still intact, but detrimental effects if initiated years after menopause when neurological health may have already begun to decline'. We'll look more closely at estrogen therapy and dementia risk in Chapter 10. As always, if you take estrogen, consider also taking progesterone for its many benefits, such as stimulating brain-derived neurotrophic factor (BDNF) and healthy neurogenesis (formation of new neurons).

Diet and lifestyle for healthy cognition

Employ the basic action plan (page 161), including reversing insulin resistance, soothing your nervous system, getting enough sleep and, of course, movement. Movement is so beneficial for cognition that it deserves special mention.

Movement of any kind, including walking, can increase brain size. Resistance or strength training may be particularly beneficial, and you can do it with weights or resistance bands or even just with your own body weight in the form of lunges, squats and planks. The goal is to prevent sarcopenia and build muscle, which has been found to improve cognition and reduce the risk of Alzheimer's and other types of dementia. Building muscle works both by reversing insulin resistance and therefore improving brain energy, and by directly increasing BDNF and neurogenesis.

Supplements for healthy cognition

Once again, **magnesium** and **taurine** are my top two supplement recommendations and have been found to be beneficial for brain health and cognition.

Beyond magnesium and taurine, other nutrients to consider include vitamin B12, choline and MCT oil (medium-chain triglycerides).

Vitamin B12

By the age of 50, you have at least a 40 per cent chance of being deficient in vitamin B12, which is a critical brain nutrient. Symptoms of deficiency include fatigue, brain fog, anxiety, memory problems, tingling or numbness in the hands and feet, and problems with balance. Untreated, vitamin B12 deficiency can progress to permanent brain damage. Ask your doctor to test your blood levels of vitamin B12 and then ask to see your result. An optimal level is at least 400 pg/mL, which is higher than the 200 pg/mL cut-off used by some labs. Animal products such as meat are the only source of vitamin B12 but it's difficult to absorb, especially when you're older and have lower levels of stomach acid and intrinsic factor (a protein required to absorb vitamin B12). The absorption of vitamin B12 from dietary sources is further impaired by alcohol, stomach acid medication and the diabetic drug metformin.

How it works: Vitamin B12 is an essential nutrient for healthy nerve function.

What else you need to know: If your B12 is less than 400 pg/mL and/or you're experiencing symptoms, speak to your doctor about a B12 injection or take a B12 sublingual (under the tongue) spray at a dose of 1000 mcg per day. An oral tablet is unlikely to be helpful because of the absorption issues discussed above.

Choline

Choline can be important at menopause because a drop in estrogen decreases the activity of an enzyme called PEMT (phosphatidylethanolamine N-methyltransferase), which normally assists with the manufacture of choline in the body. With menopause, your body can't make as much of its own choline, so you may need to supplement or obtain more from food sources such as eggs, liver, and salmon.

How it works: Choline is the precursor to *acetylcholine*, the neurotransmitter that supports memory, mood and intelligence. A sufficient

intake can support healthy brain function, including better memory and cognitive function.

What else you need to know: Unlike vitamin B12, there's no simple blood test for choline. Instead, you need to gauge whether you're eating enough choline-rich foods to obtain the recommended adequate intake of at least 425 mg. If you don't eat foods such as eggs or salmon, you almost certainly need to supplement. The best type of choline for brain health is CDP-choline (citicoline) or alpha-GPC (L-Alpha glycerylphosphorylcholine) at a dose of 500 mg.

MCT oil

Medium-chain triglycerides (MCT) are beneficial saturated fatty acids with six to ten carbon atoms per molecule. As a supplement, MCT oil can calm the brain, reduce inflammation and block a receptor in the brain that causes memory loss.

How it works: MCT readily converts to ketones and therefore provides a non-glucose source of energy for the brain.

What else you need to know: Small amounts of MCT oil occur naturally in coconut oil, palm kernel oil and dairy fat, but to get a substantial dose, you'll need to take a supplement. The therapeutic dose is 1–2 tablespoons in place of (not in addition to) other oils.

Checklist for memory

Test for vitamin B12 deficiency.
Build muscle.
Take magnesium plus taurine.
Consider taking choline or MCT oil.

Perimenopausal mood symptoms

As discussed in Chapter 1, most mood symptoms (if they're going to happen) occur in the perimenopausal or transition phases as a result of low progesterone combined with high, fluctuating estrogen, and respond best to

progesterone. Fewer mood symptoms are associated with the more stable lower estrogen state of the first few years of menopause but can occur and respond to estrogen therapy. Mood symptoms that begin several years *into* menopause are unlikely to be menopause-related but instead may be the result of other factors such as vitamin B12 deficiency or chronic inflammation. Check with your doctor.

The temporary mood symptoms of perimenopause include anxiety, irritability and even rage, and are essentially a dialled-up version of *premenstrual syndrome or PMS*. In fact, if you suffered PMS when you were younger, you are more likely to suffer perimenopausal mood symptoms now.

TIP

You can suffer PMS even if you don't have a uterus.

There are a few potential causes of perimenopausal (and premenstrual) mood symptoms:

iodine deficiency
high prolactin
histamine or mast cell activation
low progesterone or a sensitivity to a change in progesterone.

Let's look at each factor.

Iodine deficiency

By impairing estrogen metabolism and making brain cells more sensitive to the ups and downs of estrogen, iodine deficiency can increase the risk of premenstrual mood symptoms.

High prolactin

Prolactin is a pituitary hormone that promotes lactation, but is also involved in ovulation, orgasm, breast health, immune function and mood. A slight elevation in prolactin is common and can cause or worsen premenstrual mood symptoms. A severe elevation is a more serious problem and should be under the care of your doctor. If your blood test shows prolactin normal, but near the top of its reference range (480 mIU/L), you can consider prolactin as a player in your mood symptoms and look at the herbal medicine vitex, discussed later in this chapter.

The role of histamine and mast cell activation

In Chapter 4 we saw that high estrogen can lead to mast cell activation and high histamine, which, in turn, can cause irritability, anxiety, headaches, fatigue, brain fog, insomnia and breast tenderness – all the classic symptoms of PMS.

Signs that histamine could be playing a role in your mood symptoms include:

anxiety and other mood symptoms around the time of ovulation, when histamine is high
headaches or migraines that can be relieved by antihistamines
dermatographia, which is the appearance of raised, reddish marks after light scratching of the skin
breast pain, because histamine and mast cells are directly involved in breast pain and fibrocystic breast disease
period pain because histamine causes pain.

The role of progesterone

Progesterone is usually calming to mood; hence, the onset of mood symptoms with a perimenopausal drop in progesterone, and the relief of mood symptoms by taking progesterone. If you have a history of a severe premenstrual mood disorder called *premenstrual dysphoric disorder* (PMDD), however, progesterone may have a more complicated effect on mood.

SPECIAL TOPIC: PROGESTERONE SENSITIVITY

Although progesterone is usually soothing to mood, it could paradoxically cause anxiety if you have PMDD or what researcher Tory Eisenlohr-Moul calls neurosteroid change sensitivity, which affects about one in twenty women. Neurosteroid change sensitivity is not a negative reaction to progesterone at any dose but is instead an adverse mood reaction to any *change* in the level of progesterone, either up or down.

It's all to do with allopregnanolone, the neurosteroid metabolite of progesterone that interacts with GABA receptors in the brain. If you don't have PMDD, allopregnanolone is calming to the receptors, and stays calming throughout the cycle as your GABA receptors *alter their shape* to adapt to first higher, then lower levels of progesterone. If you do have PMDD, the normally higher level of allopregnanolone associated with the luteal phase can have a stimulating, anxiety-producing effect on the GABA receptors, because the receptors are unable to adapt by altering their shape.

The way to relieve PMDD mood symptoms is to restore the adaptability and resilience of your GABA receptors by reducing histamine and chronic inflammation. Vitamin B6 can also be helpful, as we'll discuss on page 190. When it comes to taking progesterone, you might find you cannot tolerate progesterone cream (20 mg) because that low dose produces a stimulating, anxiety-producing effect on the GABA receptors. Instead, you might feel better on a progesterone capsule (100 or 200 mg) because a higher (but not too high) dose is calming. This is because of what's called a bimodal association between serum allopregnanolone and adverse mood, which means that progesterone at a low or very high dose can worsen anxiety, while progesterone at a moderate dose can relieve anxiety.

If you find you cannot tolerate progesterone at any dose, try working with your health practitioner to address underlying histamine, inflammation or gut issues. By doing so, you may improve the resilience of your GABA receptors and be able to tolerate progesterone. If that doesn't work, you may need to abandon progesterone as a treatment and look at other options.

Conventional treatment for mood symptoms

Estrogen can be highly effective for the depression and insomnia of menopause, and works by boosting serotonin and brain energy. Estrogen is less likely to be helpful for perimenopause, because, as we saw with Rita's story on page 18, perimenopause is already a time of high estrogen. There may, however, be a role for cyclically-dosed estrogen taken only during the dropping-estrogen (late luteal) part of the menstrual cycle. That's according to Brisbane gynecologist Peta Wright, who treats perimenopausal

premenstrual mood symptoms with a combination of Prometrium® and Estradot® in the late luteal phase.

Progesterone is the best treatment for perimenopausal irritability, anxiety and rage, and works by calming GABA receptors and reducing histamine. A common strategy is to take it at bedtime during the luteal phase, but your doctor might ask you to take it every night. See the How to speak with your doctor about progesterone for perimenopause section on page 147, and remember there's no progesterone in hormonal birth control. A progesterone cream can also be helpful for milder symptoms. If you reacted badly to progesterone in the past, ask yourself if it was progesterone or a progestin. If it was progesterone, review the Progesterone sensitivity special topic on page 186. If it was a progestin, it was not a problem with progesterone but a drug side effect, as happened with my patient Jordan.

JORDAN – ANXIETY FROM THE HORMONAL IUD

'Oh, I can't take progesterone,' Jordan told me. 'It gives me a crazy mood whenever I take it, including with the hormonal IUD, and I know that's a low dose.'

'Do you mean you get mood symptoms from hormonal birth control?' I asked. 'Because that's not progesterone.'

Jordan explained that yes, any type of birth control gave her anxiety, even the hormonal IUD, which she had been assured would be fine.

'The drug in the hormonal IUD is levonorgestrel,' I said, 'which has been linked to mood problems, but you could feel quite different on real progesterone.'

Jordan was already taking magnesium, vitamin B6 and iodine, which had helped her premenstrual headaches and breast pain, but she still felt irritable during the five days leading up to her period.

'I get quite snappy with my kids at that time. More than usual.'

Jordan decided to try progesterone cream that she ordered from overseas and, on my advice, applied it behind her knees or inside her elbows at bedtime during the week before her period was due.

'I feel great on progesterone,' she told me a few months later. 'Calmer, and I think less bloated.'

Progesterone's mild diuretic effect had improved Jordan's fluid retention.

Hormonal birth control may be offered but for perimenopausal mood problems unfortunately, as we saw with Jordan, progestins can cause mood side effects.

An **antihistamine such as diphenhydramine** can improve premenstrual mood symptoms and PMDD.

Antidepressant medication is a common prescription, including SSRIs (selective serotonin reuptake inhibitors) or SNRIs (serotonin-norepinephrine reuptake inhibitors). They're not as helpful as progesterone and estrogen for perimenopausal and menopausal mood symptoms and can cause side effects such as low libido, weight gain, fatigue and a withdrawal syndrome when you try to stop. SSRIs may also increase the long-term risk of osteoporosis and cognitive decline.

Cognitive behavioural therapy (CBT) is a form of psychotherapy that focuses on modifying negative thought patterns and learning to respond to situations in more effective ways. It can be helpful for menopausal depression as well as hot flushes and sleep difficulties.

Diet and lifestyle to improve mood

Choose a strategy (or strategies) from the Soothe your nervous system section of Chapter 5. My top picks for mood are maintaining a healthy circadian rhythm, cutting back on alcohol and doing more green exercise, which is exercising out in nature.

If you're experiencing perimenopausal mood symptoms such as anxiety and irritability, you probably also want to look at the **low-histamine diet**, including **reducing dairy** and high-amine foods.

> **TIP**
>
> Avoiding cow's dairy is one of my key recommendations for severe premenstrual mood or PMDD symptoms.

Supplements and herbal medicines to improve mood

Magnesium and **taurine** are once again my favourite recommendations. Beyond those two superstars, it's worth first checking your levels of vitamin B12 (page 182), and then consider one or more of the following supplements; you don't need them all. To help you select a supplement, I've provided a 'top choice' tip for each one. Please check with your clinician or pharmacist before you try them, especially if you already take antidepressant medication.

Zinc

Zinc deficiency is strongly linked with depression, and zinc supplements have been found to improve mood in several studies.

How it works: Zinc reduces neuroinflammation and improves BDNF and neurogenesis, especially in the hippocampus, the part of the brain that regulates the HPA axis or stress-response system.

What else you need to know: The standard dose is 30 mg taken directly after food, although you can temporarily use higher doses under professional guidance. Zinc is your top choice if you show signs of zinc deficiency such as hair loss, dermatitis or white spots on the fingernails, or if you're vegetarian or vegan and therefore not obtaining sufficient zinc from your diet.

Vitamin B6

Vitamin B6 is the supplement I prescribe for premenstrual and mood symptoms such as irritability, insomnia and rage. It did well in a recent randomised controlled trial.

How it works: Vitamin B6 (also called pyridoxal-5-phosphate or P5P) assists in both the manufacture of GABA and the healthy clearance of histamine.

What else you need to know: I generally recommend between 20 and 100 mg per day in divided doses spaced out during the day (e.g. 30 mg twice daily). Be careful, because a long-term daily dose of more than 150

mg can cause permanent nerve damage. Vitamin B6 is your top choice if you have a history of neurosteroid change sensitivity or PMDD (page 186).

Iodine

Iodine is helpful for both perimenopausal mood symptoms and breast pain.

How it works: Iodine promotes healthy estrogen metabolism and makes cells less sensitive to the ups and downs of estrogen.

What else you need to know: Be careful with the dose, because too much can damage your thyroid (review the Iodine section in Chapter 5). Iodine is your top choice for mood if you also suffer breast pain, a key sign of iodine deficiency.

Vitex

The herbal medicine *Vitex agnus-castus* (also called chaste tree or chasteberry) is effective for premenstrual or perimenopausal mood symptoms associated with high or high-normal prolactin.

How it works: Vitex lowers prolactin by boosting the neurotransmitter dopamine.

What else you need to know: The exact quantity of the herb depends on the concentration of the formula. If your prolactin is above the normal reference range on a blood test, do not take vitex without first checking with your doctor, because doing so can mask the symptoms of a prolactinoma (a benign type of pituitary hormone). Vitex is your top choice for mood if you have high-normal prolactin.

N-acetyl cysteine

N-acetyl cysteine (NAC) is an important supplement for mood and, according to US psychiatry professor David Hellerstein, works best for ‘ruminations’, which are those difficult-to-control negative self-thoughts.

How it works: NAC shelters the nervous system from glutamate, a stimulating neurotransmitter. It’s also immune-modulating and anti-inflammatory, and helps to detoxify lead and other toxins.

What else you need to know: The standard dose is 500–1000 mg taken twice daily. NAC can be combined with antidepressant medication and is safe apart from possibly raising histamine levels and thinning the stomach lining, so take care if you suffer gastritis or acid reflux. NAC is your top choice if you suffer anxiety together with an inflammatory condition, such as endometriosis.

SAM-e

SAM-e (S-adenosylmethionine) is a derivative of the amino acid methionine that occurs naturally in the body and can also be supplemented. It has undergone several successful clinical trials as a mood-enhancer.

How it works: It reduces histamine and supports the manufacture of serotonin and dopamine.

What else you need to know: At a therapeutic dose of 100–200 mg, SAM-e can help to reduce anxiety, especially anxiety caused by high histamine. Higher doses are stimulating and can potentially worsen anxiety. Do not take if you have bipolar disorder and/or combine with other antidepressants except under medical advice. SAM-e is your top choice if you have high histamine.

St John's wort

St John's wort (*Hypericum perforatum*) is a herbal medicine with a long tradition of use for depression and anxiety. A recent meta-analysis concluded that it is effective for the mood symptoms of menopause.

How it works: It reduces inflammation and boosts serotonin, dopamine and GABA. It also reduces inflammation.

What else you need to know: The exact quantity of the herb depends on the concentration of the formula. For example, if you're using a standardised extract, the therapeutic dose is 300 mg. For best results, take twice daily for at least two months and do not combine with other antidepressants except under medical advice. St John's wort can reduce the efficacy of the contraceptive pill. St John's wort is suitable for almost any

situation, but in my experience is not as effective as the other supplements listed so far.

Fish oil

Supplementation with EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) omega-3 has done well in several clinical trials for major depression.

How it works: It reduces inflammation and helps to maintain the healthy fluidity of cell membranes.

What else you need to know: I recommend a fish oil supplement that provides at least 720 mg of EPA, which usually equates to 2000 mg of total fish oil. If you take blood-thinning medication, check with your doctor first.

Checklist for mood

Exercise in nature.
Take magnesium plus taurine.
If you have perimenopausal anxiety, avoid dairy and consider progesterone and vitamin B6.
If you have menopausal depression, check your vitamin B12 and consider estrogen plus progesterone.

That brings us to the end of the Rewiring the brain chapter, which was an important one. Losing first progesterone and then estrogen can lead to a sequence of brain changes, including a significant but temporary drop in brain energy. Helping your brain adapt to these changes should relieve symptoms and put you on the road to better brain health in the long term.

8

Bodily issues: weight gain, thyroid disease, allergies, and aches and pains

The previous chapter was all about the brain, which was important because the brain is the source of most symptoms of perimenopause. This chapter is about the body, including symptoms such as weight gain, aches and pains, perimenopausal allergies and the common trio of ‘perimenopause plus insulin resistance plus thyroid disease’.

Before we dive into all the symptoms and how to treat them, consider *why* your body has to undergo so many changes with perimenopause. During your reproductive years, your body, and particularly your immune system and metabolism, grew accustomed to a regular dose of progesterone and estrogen. Your immune system liked the calming and modulating effect of progesterone, and that’s why losing progesterone can trigger a shift to autoimmune disease such as thyroid disease, which we’ll explore. Likewise,

your metabolism liked the insulin-sensitising effects of estrogen, and that's why losing estrogen can trigger a shift to insulin resistance. The importance of insulin resistance cannot be overstated, both for your waistline, and for your long-term risk of dementia, heart disease and osteoporosis, all of which we'll discuss.

Reversing insulin resistance and losing abdominal weight

A discussion of abdominal weight gain is, of course, just one more instalment in a series of topics about insulin resistance and weight gain. The first mention was in Chapter 4, where we saw that menopause puts you at risk of insulin resistance and, at the same time, having insulin resistance can worsen the symptoms of menopause. We then looked at diagnosis in Chapter 5, and the impact of insulin resistance on the brain in Chapter 7. I'll now explain how to reverse the condition.

> **TIP**
>
> Insulin resistance is just one factor in weight gain. See Chapter 10 for a discussion of other factors including the all-important role of mitochondria, which are the powerhouses of the cell.

Conventional treatment for insulin resistance

Losing weight by reducing calories is the standard recommendation for treating insulin resistance, based on the faulty assumption that high insulin is the *result* of abdominal obesity and not the other way around. In fact, there's growing evidence that abdominal weight gain is the result of insulin resistance, so being told to just lose weight is like putting the cart before the horse. As you'll see, I acknowledge the importance of calories but recommend the more targeted strategy of *improving insulin sensitivity*.

Metformin (Diabex®, Diaformin®) helps to improve insulin sensitivity and is a reasonable choice, although not as effective as diet, exercise and

other treatments provided below. You can, if you like, combine metformin with natural treatments, but not with the nutritional supplement berberine, for reasons we'll discuss. Metformin can cause digestive problems and vitamin B12 deficiency so check with your doctor for a blood test for vitamin B12.

Estrogen plus progesterone therapy can also help to prevent or reverse insulin resistance. Estradiol is always insulin-sensitising while progesterone is insulin-sensitising only in the presence of at least some estrogen, such as provided by menopausal ovaries. Other mechanisms by which progesterone promotes healthy fat loss include reducing testosterone, supporting sleep and increasing thyroid hormone.

Avoid testosterone and androgenic progestins because, as we saw in Chapter 4, testosterone can worsen insulin resistance and cause abdominal weight gain.

Diet and lifestyle to reverse insulin resistance

Movement

Moving your body is the single best way to improve insulin sensitivity. It works both by improving glucose uptake into cells *during* exercise, and by building muscle to improve insulin sensitivity even when you're at rest. Remember that sarcopenia, or losing muscle mass, is the unfortunate result of losing estrogen and one of the biggest challenges of menopause. Strength training is particularly beneficial, and can be done in a gym or at home with lunges, squats, planks and resistance bands.

Protein

This important macronutrient builds muscle and is highly satiating, so will help you to eat less. Recall from Chapter 5 that menopause increases your requirement for protein, especially for the amino acid leucine. A ballpark estimate is that you need at least 20 grams of protein per meal which equates to a 77 gram serving of red meat or an 87 gram serving of chicken.

Try to have a serving by 10 am, which will help to stabilise your circadian rhythm and feel full throughout the day. I recommend meat or eggs for breakfast, and if that feels too heavy, it could be because your stomach acid has not yet kicked in. Don't force yourself to eat an early breakfast but instead try waiting until you actually feel hungry at 10 am.

TIP

Do not eat in the morning until you're hungry, and then eat a protein-rich meal such as a frittata or omelette, leftover meat, or protein powder.

Intermittent fasting

Intermittent fasting is cycling between periods of fasting and eating, and is a simple way to improve insulin sensitivity. When you restrict food, even for a relatively short time, you train your mitochondria to burn ketones rather than glucose, thereby cultivating the metabolic flexibility you need for weight loss, a healthy brain and relief from perimenopausal symptoms. Other benefits of fasting include promoting healthy gut peristalsis, upregulating anti-inflammatory cytokines and boosting brain-derived neurotrophic factor (BDNF). Intermittent fasting also stimulates the beneficial process of *autophagy*, which means your body 'eats itself' (*auto*: self, *phage*: eat), which sounds bad but gives your cells the opportunity to remove and recycle damaged parts and replace them with healthy new parts. Autophagy can increase longevity and help to reduce the risk of cancer and dementia.

Methods of intermittent fasting include alternate-day fasting, 5:2 intermittent fasting (reduced calories two days per week), and daily time-restricted eating or the *eight-hour eating window*, which is the method I prefer.

To do an eight-hour eating window, simply eat a normal dinner by 6 pm including all three macronutrients (protein, fat and at least some starch). Then have no calories until 10 am the next morning, at which time you should eat a protein-rich meal. Depending on your body clock, you can

adjust the times to earlier or later, but remember that the main goal is to *fast overnight* to allow your body to go into the beneficial state of *ketosis*.

> 📖 **KETOSIS**
>
> Nutritional ketosis is a healthy metabolic state in which your body switches from burning primarily glucose to burning more ketones (metabolites of fat). It's different from *ketoacidosis*, which is a dangerous complication of type 1 diabetes.

It's normal and healthy to enter ketosis with exercise, fasting and overnight. You can gently extend overnight ketosis by breaking your fast with a 'keto breakfast', which is a meal that is lower in carbohydrate and higher in protein. At some point (probably the evening meal), you may want to eat some starch, which of course, will put you temporarily out of ketosis but that's okay. Moving in and out of ketosis is gentler and easier than trying to stay in ketosis all the time, and starch with the evening meal will calm your nervous system, feed your gut microbiome and help you to feel full.

Won't fasting make you feel hungry? First, please don't attempt intermittent fasting if you're already underweight or underfed, in which case you don't have insulin resistance, and, therefore, don't need intermittent fasting. Second, don't attempt intermittent fasting if you're also trying to restrict calories. The whole premise of the eating window is to *eat to satiety* during that time. Third, don't be afraid of hunger, in particular, the bedtime hunger you might encounter if you're used to snacking in the evening. In the context of trying to reverse insulin resistance, a little bedtime hunger is therapeutic – what US registered dietitian Laura Schoenfeld calls 'giving your body the gift of a fasted state'.

If fasting makes you so hungry that you snack or binge, then consider if 1) you're eating enough during the day, particularly enough protein, or 2) you need to begin with a gentler nine- or even a ten-hour eating window. Over time, your metabolic flexibility will improve, and you should find it easy to fast overnight.

A ketogenic or low-carb diet

A ketogenic diet is an attempt to stay in ketosis *all the time* rather than just overnight. To achieve that, you'll need to eat fewer than 50 grams of carbohydrate per day and obtain most of your calories from fat. You'll continue to need adequate protein (Chapter 5) and low-carb vegetables (like broccoli) for their beneficial fibre.

> **TIP**
>
> Many keto menus have a lot of dairy so if you have a dairy sensitivity (Chapter 5), choose A2 dairy or non-dairy options like coconut cream.

Is a keto diet helpful? It can relieve brain symptoms such as migraines (Chapter 7) and memory loss (Chapter 10). It can also help to reverse insulin resistance but it is not the only way to accomplish that. You can achieve the same goal of enhancing insulin sensitivity by building muscle, intermittent fasting, moderately reducing carbohydrates and avoiding high-dose fructose.

Which brings us to a big conversation about sugar and fructose.

Reduce concentrated sugar

'Concentrated sugar' or *high-dose fructose* is the sugar you get from soft drinks, fruit juice, desserts, sweetened yoghurts, dried fruit and breakfast cereals. Those foods are high in fructose, whether they're sweetened with high-fructose corn syrup (55 per cent fructose), agave syrup (55 per cent fructose), table sugar (50 per cent fructose), honey (40 per cent fructose) or dates (25 per cent fructose).

Low-dose fructose, on the other hand, is the sugar you get from fruit, and it's healthy because 1) low-dose fructose improves insulin sensitivity, especially in the context of high physical activity, and 2) fruit provides beneficial nutrients, fibre and polyphenols to counterbalance the potential negative effects of fructose.

What's wrong with high-dose fructose?

The problem is not fructose itself, but the dose. At a high dose, fructose promotes insulin resistance by inducing intestinal permeability, oxidative stress, inflammation and fatty liver (see opposite). At a low dose, fructose does not have the same negative effects because most of it is converted to harmless glucose and organic acids before it can reach the liver or microbiome.

According to Princeton researcher Joshua D. Rabinowitz, 'There is a fundamental physiological difference in how smaller and larger amounts of sugar are processed in the body . . . Fructose from moderate amounts of fruits will not reach the liver. However, the small intestine probably starts to get overwhelmed with sugar halfway through a can of soda or large glass of orange juice'.

In summary, low-dose fructose is a healthy component of fruit and vegetables and is beneficial. Moderate-dose fructose from desserts that are not overly processed is harmless as long as you have good insulin sensitivity and exercise regularly. High-dose fructose from desserts (and especially from ultra-processed foods) is harmful if you have insulin resistance.

SPECIAL TOPIC: WHAT IS FATTY LIVER?

Like it sounds, fatty liver is the symptom of having fat in the liver, and is diagnosed by a combination of ultrasound and blood tests. Possible causes include inflammatory bowel disease, alcohol, vegetable oil, fructose, certain medications and, most commonly, insulin resistance. In turn, fatty liver *worsens* insulin resistance, creating a vicious cycle.

High-dose fructose contributes to fatty liver (and insulin resistance) by promoting *lipogenesis* (fat production), and by increasing inflammation, uric acid and oxidative stress.

Both fatty liver and insulin resistance become more common with menopause, but can be reversed by avoiding high-dose fructose and obtaining an adequate level of protein and choline, which helps to mobilise liver fat.

Put simply, to have any hope of reversing insulin resistance, you need to dramatically reduce or eliminate sweet drinks and most dessert-type foods, especially ultra-processed sweet foods. You can still have whole fruit, dark chocolate and desserts made with non-fructose sweeteners such as brown rice syrup, stevia or xylitol.

I understand that quitting sweet foods can be hard and may require some serious reorganisation of your pantry and shopping list. It may also mean facing the problem of sugar cravings.

How to overcome sugar cravings

Yes, cravings can be awful. They can also be overcome, which is totally worth doing, because quitting sugar to reverse insulin resistance means you will be less likely to suffer cravings in the future (because insulin resistance causes cravings).

By overcome cravings, I don't mean get used to cravings or exert your willpower to withstand cravings. I mean *be free of cravings*, to the point that you no longer want sugar or miss it. Imagine how good that will feel: to not think about sugar, no willpower required.

Here's the game plan:

Eat enough protein, especially with your morning meal, because protein satisfies appetite.
Eat full, satisfying meals that include all three macronutrients: protein, starch and fat. In other words, don't attempt to restrict your overall calories while you're trying to get off sugar.
Get enough sleep because sleep reduces sugar cravings.
Supplement magnesium because it helps sleep and reduces cravings.
Pick a start date during a lower-stress time in your life.
Go cold turkey off all normal desserts and dessert-type foods for four weeks. (You can continue to have whole fruit, dark chocolate, rice syrup, stevia or xylitol.)
Know that intense cravings will subside after twenty minutes.
Know that all cravings will subside after seven days.

Know that by reversing insulin resistance you will help to prevent future cravings.
Know that you're okay. You're not a bad person just because you crave sugar or binge on sugar.

If you find it really, really hard to get off sugar, you may be addicted. Signs include:

craving sugar even when you're not hungry
craving sugar in response to negative emotions
hiding your sugar eating from your loved ones
feeling angry or upset at the thought of giving up sugar
being unable to imagine life without sugar.

Please don't feel guilty or ashamed. Like any addiction, sugar addiction can be overcome with the right support. Reach out for professional help from a psychologist who understands addiction.

I've worked with many patients gripped by sugar cravings and have been saddened by how they always blame themselves and their lack of willpower when, in reality, the cause of the cravings could be something quite different.

Consider my patient Mandy.

MANDY – EAT TO FEEL GOOD

Mandy had struggled with her weight for years, going on and off diets and always regaining it all and more. By the time she came to me, she was also seeing a psychologist for emotional eating and working hard to eat less.

Most of Mandy's weight was distributed around her middle in the classic apple shape that suggested insulin resistance. Her cholesterol was high, which is another sign of high insulin.

I ordered a glucose tolerance test with insulin, and Mandy's insulin results were 10 mIU/L (60 pmol/L) fasting, then 72 mIU/L (541 pmol/L) at the one-hour mark and 60 mIU/L (423 pmol/L) at two hours, all of which are above the normal range.

'You have insulin resistance,' I said, 'which is prediabetes and is making you both gain weight and crave sugar. The only way out of this situation is to find a way to feel

a lot more satisfied with your meals so that you'll eventually be able to quit all dessert-type foods.'

We made a plan for Mandy to start her day with a black coffee (which she loves) and, if she had time to prepare it, a 10 am meal of eggs or meat plus vegetables. If she didn't have time, then Mandy had a simple breakfast of three boiled eggs, which gave her 18 grams of protein. She then enjoyed two more solid meals for lunch and dinner and stopped eating by 7 pm, which was a nine-hour eating window. She also took magnesium to improve insulin sensitivity.

By the time I saw Mandy a month later, she had lost a centimetre around her waist and was feeling a lot more energetic. She had even signed up with a personal trainer. At this point, Mandy was still eating sugar, because we were still at the 'feeling better' part of the plan and had not yet reached the 'quit dessert' part.

'I feel so much better,' Mandy told me. 'You're the first person who ever told me I could eat enough to feel good, considering how I look.'

By 'considering how I look', Mandy meant her body shape. She meant I was the first person to see her weight and still say she should eat in a way to feel good.

Mandy continued her protein breakfasts and time-restricted eating and found that, because her energy was so much better, she was eventually able to quit desserts.

When we retested her insulin six months later, all her readings were in the normal range. By that point, she had lost 10 centimetres around her waist.

You may have noticed that the only numbers I mentioned in Mandy's story were her insulin readings and centimetres lost around her waist. When it comes to insulin resistance and abdominal weight gain, those are the numbers that matter – not weight on a scale! As you work to reverse insulin resistance, keep in mind that muscle weighs more than fat, so gaining muscle (a good thing) could actually increase your weight. I recommend throwing your scales away or putting them in the garage.

Also, please understand that you may not see a significant amount of fat loss until your fasting insulin falls below 10 mIU/L (60 pmol/L). So instead of focusing on weight or even centimetres, try focusing on *lowering insulin* – knowing that by doing so you are reducing inflammation, becoming healthier and paving the way to *future* weight loss.

More strategies to reverse insulin resistance

We've been looking at ways to reverse insulin resistance, and have so far covered movement, protein, intermittent fasting and quitting dessert, which

is a lot. There are a few other considerations.

Support a healthy circadian rhythm because it improves insulin sensitivity. If you've been working night shifts, try to find a way to change your job situation.

Maintain a healthy microbiome because it improves insulin sensitivity and may be why frequent antibiotics can cause weight gain. If you're in the situation of requiring frequent antibiotics, your primary weight-loss strategy may be to find a way to prevent frequent infections, as we'll see with Antonella's urinary tract infection (UTI) story on page 268.

Finally, having a **healthy level of thyroid hormone** is important for insulin sensitivity. That factors into the perfect storm of menopause, insulin resistance and thyroid disease, which we'll explore shortly.

Supplements and herbal medicines for insulin resistance

Before we get into the supplements, please know that when it comes to reversing insulin resistance, diet and lifestyle *are more effective than any supplement*. Prioritise protein, quit desserts and move your body. You can then choose one or more of the following supplements, starting with magnesium.

Magnesium

Magnesium is my frontline supplement for reversing insulin resistance. According to the research, a high-magnesium diet correlates with a lower risk of insulin resistance, while a low-magnesium diet correlates with a higher risk of insulin resistance. In fact, some researchers have gone so far as to propose magnesium deficiency as one of the main *causes* of insulin resistance.

I prescribe magnesium to every patient with insulin resistance and call it 'natural metformin'.

How it works: Magnesium supports healthy mitochondria (page 280) and prevents the high intracellular calcium that can induce insulin resistance.

What else you need to know: The therapeutic dose is 300 mg and I recommend magnesium bisglycinate (magnesium joined to the amino acid glycine) because glycine has its own insulin-sensitising properties. As described in Chapter 7, I usually prescribe a formula that also contains taurine. See the Suggested supplements brands section on page 308. Magnesium can impair the absorption of thyroid medication so be sure to take it at a different time of day.

Berberine

In several clinical trials, berberine has been effective for treating insulin resistance and has even outperformed the diabetes drug metformin. It also has the nice side benefit of reducing anxiety.

How it works: Berberine activates the enzyme AMP-activated protein kinase (AMPK), which promotes ketone-burning and is sometimes referred to as a 'metabolic master switch'. Berberine also directly sensitises cells to insulin, decreases glucose production in the liver, and slows the breakdown of carbohydrates in the gut.

What else you need to know: Berberine is an alkaloid phytonutrient derived from one of several different herbal medicines such as goldenseal (*Hydrastis canadensis*), barberry (*Berberis vulgaris*), or the Chinese herb *Phellodendron amurense*. It can be taken as a concentrated berberine extract or preparation of a whole herb. The therapeutic dose of a berberine extract is 350–500 mg twice daily, while the therapeutic dose of a whole-herb preparation depends on its concentration.

There are a few precautions: Do not take berberine if you are pregnant or breastfeeding. And consult your doctor before combining it with a prescription medication such as an antidepressant, beta-blocker, antibiotic or immunosuppressant, because it can alter the level of those medications. Do not combine berberine with metformin, because the two substances act by similar mechanisms and combining them could cause abnormally low blood sugar.

Do not take berberine for more than eight consecutive weeks except under professional advice, because berberine has antimicrobial effects that

could affect your gut microbiome. With short-term use, berberine's antimicrobial effects are beneficial and can treat digestive problems such as SIBO and intestinal permeability. With longer-term use, those same effects could deplete gut bacteria. I'm cautious with berberine and usually prescribe an eight-week course taken five days per week with a two-day break. After eight weeks, I recommend stopping it for at least one month before resuming. If possible, speak to a practitioner before trying berberine.

Inositol

Inositol or myo-inositol is another supplement that's done well in clinical trials for insulin resistance, both for PCOS and menopause. In the menopause study, women who took inositol for one year experienced significant reductions in insulin and improvements in serum glucose, cholesterol and blood pressure.

How it works: Myo-inositol amplifies the effect of insulin inside cells.

What else you need to know: The therapeutic dose is 2 to 6 grams per day taken as a divided dose. It's safe, with no documented side effects.

Checklist for reversing insulin resistance

Eat adequate protein.
Move your body to build muscle.
Try gentle intermittent fasting.
Reduce high-dose fructose.
Take magnesium.

Autoimmune thyroid disease

Your thyroid is a butterfly-shaped gland at the front of your throat that produces thyroid hormone, an essential hormone for energy and metabolism.

Thyroid disease is more common in women and more common with age, so if you're a woman over 40, you have at least a one in ten chance that

something is going on with your thyroid. The trickiest thing about thyroid disease is that it can be easily mistaken for perimenopause and vice versa.

Symptoms of underactive thyroid (*hypothyroidism*) include hot flushes, fatigue, weight gain, body aches, joint pain, anxiety, depression, high cholesterol, digestive changes, heavy periods, irregular periods, hair loss, temperature intolerance, brain fog and memory problems.

Symptoms of overactive thyroid (*hyperthyroidism*) include hot flushes, racing heart, hair loss, body aches, anxiety, insomnia and fatigue.

Compare these with the symptoms of perimenopause: insomnia, brain fog, fatigue, weight gain, immune changes, hair loss and heavy periods. As you can see, there's significant overlap between the symptoms of thyroid disease and the symptoms of perimenopause. That can make it difficult to get an accurate diagnosis.

BERNADETTE – MY DOCTOR CAN'T GET MY THYROID DOSE RIGHT

'I need help with my thyroid,' Bernadette told me. 'My doctor has been hopeless in finding the right dose of my thyroid medication.'

'Okay,' I said. 'I can see that one of your previous blood results showed a slightly underactive thyroid function. And now you're saying you've tried thyroid medication but weren't helped by it. Is that right? What are your symptoms?'

Bernadette described a recent onset of brain fog, fatigue, waking at 3 am, shoulder pain and reduced ability to cope with stress. The brain fog was severely impacting her performance at job interviews.

'I used to excel in stressful situations,' she said. 'Now it's the opposite; I just can't cope. And the thyroid medication hasn't helped at all.'

'You're 49,' I observed.

'Yes.'

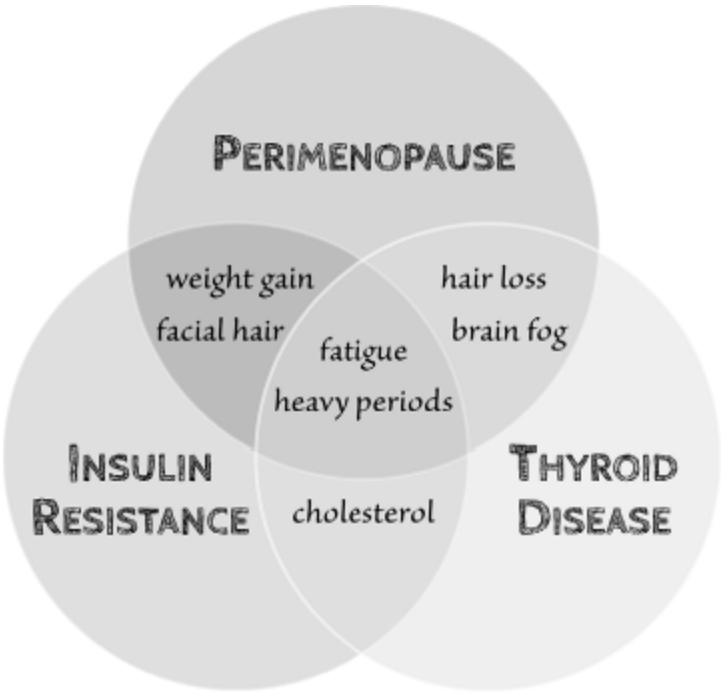
'Did you or your doctor consider that this could be perimenopause?' I ventured.

'No, my periods are still regular,' she said.

'That doesn't matter,' I explained. 'Perimenopausal symptoms typically begin while periods are still regular. I think it's worth at least trying treatment for perimenopause.'

Bernadette agreed to try evening magnesium and oral micronised progesterone (Prometrium®) in addition to her morning thyroid medication. When she returned two months later, she reported a dramatic improvement in the brain fog and was finally sleeping through the night.

If the overlap between the symptoms of thyroid disease and perimenopause were not enough, there's also overlap between both conditions and the symptoms of insulin resistance: weight gain, fatigue, high cholesterol, heavy periods and androgen excess (facial hair). The overlap is illustrated in the following diagram.



Beyond the overlap of symptoms, there's also a genuine interplay between the three conditions in that:

Both perimenopause and thyroid disease increase the risk of insulin resistance.
Insulin resistance worsens the symptoms of perimenopause and menopause.
Perimenopause increases the risk of autoimmune thyroid disease.

TIP

To feel better, you need to treat all three conditions, and that starts with *identifying* insulin resistance and thyroid disease.

The connection between perimenopause and thyroid disease is so strong that some practitioners refer to it as *thyropause*, which is hypothyroidism associated with or triggered by a drop in ovarian hormones, particularly progesterone.

How does perimenopause trigger thyroid disease?

Losing progesterone reduces free or available thyroid hormone and can trigger the autoimmunity that underlies most cases of under- and overactive thyroid.

> **TIP**
>
> Post-partum is another time when losing progesterone can trigger autoimmune thyroid problems.

We've already touched on autoimmunity a few times. For example, we saw in Chapter 4 that the recalibration of the immune system during perimenopause can be a 'tipping point' that leads down the path to autoimmune disease. We then saw in Chapter 5 the link between gluten sensitivity and autoimmune thyroid disease, and the fact that high-dose iodine isn't safe if you have the autoimmune marker *thyroid antibodies*.

Do you have autoimmune thyroid disease? If you have a thyroid diagnosis of any kind, it's likely to be autoimmune because in Western countries, autoimmunity is the most common underlying cause of both hypo- and hyperthyroidism, resulting in the full diagnosis of either Hashimoto's or Graves' thyroid disease.

> **TIP**
>
> Hashimoto's disease typically causes hypothyroidism but can cause brief periods of hyperthyroidism. Graves' disease causes hyperthyroidism.

The test for Hashimoto's is *thyroid antibodies* or *TPO-antibodies*, which your doctor probably did back when you were first diagnosed. They may have neglected to mention your result because, from their point of view, the presence of thyroid antibodies did not affect their prescription of thyroid hormone. From a more holistic perspective, the presence of antibodies is important because a higher level of antibodies correlates with a greater number of symptoms, and because antibodies or autoimmunity can be improved by the diet and supplements discussed below.

SPECIAL TOPIC: YOUR FEET ARE TRYING TO TELL YOU SOMETHING ABOUT YOUR THYROID

I know it sounds weird, but Hashimoto's thyroid disease can show up in your feet.

Common foot symptoms include:

- coarse dry skin
- cracking of the heels
- marked thickening of the skin in the soles of the feet
- yellow discolouration of the soles
- cold feet
- itchy feet
- swollen ankles
- foot pain or plantar fasciitis
- fungal infections
- thick, brittle nails.

Of course, there can be other explanations for these symptoms, which is why you should check with your doctor. If you have unexplained foot symptoms together with fatigue, high cholesterol and other thyroid symptoms (listed earlier), ask your doctor to test for thyroid disease (including thyroid antibodies; see below).

Diagnosis of thyroid disease

The standard test for thyroid disease is a blood test for *thyroid-stimulating hormone* (TSH), which is made by the pituitary gland. When your thyroid gland is making enough (or too much) thyroid hormone, it signals your pituitary gland to make less TSH. When your thyroid gland is making too little thyroid hormone, it signals your pituitary gland to make more TSH.

There is, therefore, an *inverse* relationship between TSH and thyroid function with high TSH suggesting low thyroid hormone or hypothyroidism, and low TSH suggesting high thyroid hormone or hyperthyroidism. Of the two conditions, hypothyroidism is more common.

TIP

With Hashimoto's thyroid disease, you can swing between hyper- and hypothyroidism.

How high is 'high' TSH? This diagnostic goalpost for hypothyroidism has been the subject of some debate. Under current guidelines, your doctor cannot diagnose underactive thyroid until your TSH is greater than 4 mIU/L. In other words, until your TSH is greater than 4 mIU/L, you are considered to have *normal* thyroid function. The problem is that you could have *functional* hypothyroidism (not enough thyroid hormone reaching your cells), but your TSH is low because it's being artificially suppressed by inflammation, chronic stress or medications, such as metformin or stomach acid medication.

That's why a better way to assess hypothyroidism is to consider TSH together with free T4 (the thyroid hormone thyroxine), observed symptoms and thyroid antibodies.

TIP

A 2020 meta-analysis study concluded that a blood test for free T4 (thyroxine) offers a more accurate assessment of the clinical state hypothyroidism than does the standard measure of TSH.

How to speak with your doctor about testing for thyroid disease

Your doctor will likely be quite happy to order TSH and free T4 tests. Unfortunately, if your TSH is normal, they may not be able to order

the additional test of thyroid antibodies. There are a couple of ways around that.

First, you could offer to pay privately for the thyroid antibodies test, which is available from most labs for about $45. Second, you could alert your doctor to any *family history* of autoimmune thyroid disease, because a family history together with symptoms may be enough for your doctor to justify the additional test.

Conventional treatment of thyroid disease

Hyperthyroidism (overactive thyroid)

Antithyroid medication such as propylthiouracil (PTU) or carbimazole (Neo-Mercazole®) are the treatments for hyperthyroidism (overactive thyroid). You may also be offered *radioactive iodine therapy* or surgical removal of all or part of the thyroid. A full discussion of hyperthyroidism is beyond the scope of this book. Check with your doctor.

Hypothyroidism (underactive thyroid)

Thyroid hormone is the conventional treatment and is usually given as *levothyroxine*, which is natural or body identical thyroxine or T4 hormone. Brand names include Oroxine® and Eltroxin®.

To be effective, thyroxine must be converted by your cells to *triiodothyronine*, which is active T3 hormone. Unfortunately, there are several obstacles to that conversion, including chronic inflammation, stress, insulin resistance, and/or having a common genetic variant of the *deiodinase* enzyme, which converts T4 to T3. If you have any of those issues, you could find that thyroxine (T4) works only to return your TSH test to the normal range, but not to actually make you feel better. Symptoms of poor T4 to T3 conversion include fatigue, brain fog and depression.

The solution to poor T4 to T3 conversion is to take *combination therapy*, which is thyroxine (T4) plus triiodothyronine (T3). Combination therapy is

not a new idea, because until the 1970s, the standard thyroid prescription was ‘thyroid extract’, which contains both T4 and T3. Thyroid extract, also called desiccated thyroid, is an extract of porcine (pig) or bovine (cow) thyroid gland and is still available today.

With the invention of synthetic T4 medication, guidelines changed to T4-only treatment and remained that way for fifty years until recently, when the pendulum has finally started swinging back to combination therapy. There’s growing evidence that while some patients feel well on the standard thyroxine (T4) treatment, others require both T4 and T3.

Combination T4 and T3 therapy is available as:

the standard medication Oroxine (T4) combined with Tertroxin® (T3)
a capsule of T4 and T3 from a compounding chemist
thyroid extract or desiccated porcine thyroid gland.

How to speak with your doctor about combination T4 and T3 therapy

- ‘I know my TSH and T4 are in the normal range, but I’m still suffering fatigue [and/or brain fog or depression], and wonder if it could be worth *trying* a few months on combination therapy. My understanding is that the latest research says it’s safe to do so.’ Print out a copy of the scientific paper ‘The swinging pendulum in treatment for hypothyroidism: from (and toward?) combination therapy’ and take it to your appointment. See the Resources section for the full citation.

SPECIAL TOPIC: WHY YOU MIGHT NEED TO ADJUST YOUR THYROID DOSE DURING PERIMENOPAUSE

Any situation of high estrogen can increase your requirement for thyroid hormone. That includes being on the pill, taking estrogen therapy, or even just the high, fluctuating estrogen of perimenopause. It happens because estrogen increases the level of a protein called thyroid-binding globulin (TBG) resulting in less available thyroid hormone. In other words, high estrogen can mean you need a *higher* dose of thyroid medication.

Conversely, taking progesterone can reduce your requirement for thyroid hormone because it causes more available thyroid hormone. Taking progesterone can mean you need a *lower* dose of thyroid medication. Check with your doctor.

Before we leave the topic of thyroid medication, I want to say that I consider thyroid hormone (even levothyroxine) to be a natural and highly beneficial treatment. If your blood test says you require thyroid hormone, you should probably go ahead and take it.

Diet and lifestyle for autoimmune thyroid disease

The following strategies are for Hashimoto's autoimmune thyroid disease and are in addition to (not instead of) thyroid hormone treatment. Other types of thyroid disease will require different treatment.

Avoid gluten

Most women with Hashimoto's feel a lot better without gluten, and there has even been some research linking Hashimoto's to both celiac disease and non-celiac gluten sensitivity (NGCS). For example, one study found that up to 15 per cent of Hashimoto's participants also had undetected celiac disease, and were subsequently able to completely reverse Hashimoto's by following a gluten-free diet. In another study, up to 50 per cent of Hashimoto's patients tested positive for the celiac genes HLA-DQ2 and HLA-DQ8, and showed some degree of gluten-induced intestinal permeability.

Correct intestinal permeability

Recall from Chapter 5 that intestinal permeability, also called 'leaky gut', is the situation where gaps form between your intestinal cells and permit proteins and other toxins to activate the immune system and trigger or worsen autoimmune disease. According to researcher Dr Alessio Fasano, intestinal permeability is one of three factors that drive autoimmune

disease, the other two being genetic predisposition and an environmental trigger such as a viral infection.

By treating intestinal permeability, you can improve autoimmune thyroid disease, as well as fibromyalgia (page 222) and other conditions.

Identify and remove the main *driver* of intestinal permeability, which could be gluten or another food sensitivity. Other possible drivers include SIBO, alcohol, and certain medications, such as stomach acid medication, the oral contraceptive pill and NSAID (non-steroidal anti-inflammatory drug) medication.

Identify low stomach acid and correct it with an enzyme such as betaine HCL, discussed in Chapter 5.

Identify and correct deficiencies of zinc and preformed vitamin A, two nutrients that are essential for tissue integrity and immune function.

Consider a probiotic such as *Lactobacillus plantarum* 299v, which treats IBS.

Speak to a clinician

They may help you, for example, to identify an underlying chronic viral infection such as Epstein-Barr virus (EBV), which has been shown to be one of several possible drivers of Hashimoto's disease. Treatments for EBV include supporting the immune system with zinc, selenium and vitamin D.

Supplements for autoimmune thyroid disease

We've already discussed a few supplements for intestinal permeability and EBV. Beyond those, the main supplement for autoimmune thyroid disease is selenium.

Selenium

Selenium is a key nutrient for both the thyroid and the immune system. It has undergone several clinical trials for autoimmune thyroid disease and

been found to significantly reduce thyroid antibodies in both Hashimoto's and Graves' disease.

How it works: Selenium is a structural component of *selenoproteins*, enzymes that reduce inflammation and oxidative stress in the thyroid gland. Selenium also aids with the conversion of T4 to T3, and can protect the thyroid from iodine.

What else you need to know: The therapeutic dose is 100–150 mcg per day. Higher doses can be toxic, so don't exceed 200 mcg per day from all sources, including high-selenium foods such as brazil nuts.

SPECIAL TOPIC: IODINE IS NOT A TREATMENT FOR AUTOIMMUNE THYROID DISEASE

There are different kinds of thyroid disease. In some parts of the world, iodine deficiency *is* the main cause of hypothyroidism and can be treated with iodine.

In most Western countries, iodine-deficient hypothyroidism is not common due to the fortification of food and salt. That leaves autoimmune thyroid disease as the main cause of hypothyroidism and the target of all the treatments discussed so far.

Taking iodine doesn't come into the treatment of autoimmune thyroid disease and, in fact, can worsen both Hashimoto's and Graves' disease. To put it another way, if you have thyroid antibodies, you shouldn't take iodine for your thyroid, but could take a small dose for your breasts (Chapter 9). If you *don't* have thyroid antibodies but still have slightly raised TSH, you could try taking iodine under your doctor's supervision.

That brings us to the end of autoimmune thyroid disease. Some of the same treatments could also be applied to other autoimmune diseases, such as *rheumatoid arthritis* and *lupus*, two conditions that can flare up or worsen with perimenopause and menopause.

Checklist for thyroid disease

Ask to be tested for 'thyroid antibodies' so you know if your condition is autoimmune.

If your thyroid condition is autoimmune, avoid gluten and take selenium.

Consider combined T4 and T3 therapy.

Let’s now look at some of the other kinds of inflammation that can occur with menopause, starting with perimenopausal allergies.

Allergies

Perimenopause can be associated with the onset of allergy symptoms such as hayfever, eczema, hives and asthma. In fact, one study found women are twice as likely to be diagnosed with asthma during the perimenopause transition than at other times in their lives. Perimenopausal allergies happen because of the recalibration of the immune system we’ve discussed a few times, including the tendency to high histamine and mast cell activation.

The good thing about perimenopausal allergies is that you’ll probably outgrow them when you achieve menopause.

Another type of ‘menopausal allergy’ is *salicylate sensitivity*, which if it’s going to happen, tends to show up five or so years after the final period. It causes facial swelling, flushing and headaches. Treatment is by avoiding high-salicylate substances such as tea and herbal medicines, and by taking glycine, which helps to clear salicylates.

Conventional treatment for perimenopausal allergies

Antihistamine medication is the standard conventional treatment and it’s a reasonable approach, especially because the sedating type of antihistamines can also be good for sleep.

Progesterone-alone can have beneficial antihistamine effects. In contrast, be careful with estrogen, because it can worsen a histamine reaction.

Diet and lifestyle for perimenopausal allergies

A low-histamine diet is the main strategy for allergies. See page 111.

Supplements for perimenopausal allergies

Vitamin B6

Vitamin B6 can relieve perimenopausal allergy symptoms.

How it works: It upregulates the diamine oxidase (DAO) enzyme in the gut to support the healthy clearance of histamine.

What else you need to know: I generally recommend between 20 and 100 mg per day, in divided doses spaced out during the day (e.g. 30 mg twice daily). Be careful, because a long-term daily dose of more than 150 mg can cause permanent nerve damage.

Quercetin

The bioflavonoid quercetin is a yellow pigment with a history of traditional use for preventing hayfever and other allergy symptoms.

How it works: It stabilises the cell membranes of mast cells to prevent histamine release.

What else you need to know: The therapeutic dose depends on the concentration of the preparation, but typical formulas provide 300–600 mg to be taken two to three times per day. It is generally safe with few side effects.

Checklist for allergies

Know that perimenopausal allergies are usually temporary.
Consider an antihistamine.
Review the Low-histamine diet on page 111.

Aches and pains

The symptom of aching muscles and joints is common with perimenopause and menopause, outranking hot flushes in some studies. Other perimenopausal pain symptoms include back pain, osteoarthritis, migraines, fibromyalgia and the aching of old injuries, such as that broken toe from ten years ago.

Although the exact mechanism is not well understood, the increase in pain symptoms is usually attributed to the loss of the beneficial anti-

inflammatory effects of both progesterone and estrogen. Perimenopausal insomnia may also play a role, because a lack of sleep, especially deep sleep, can lower the pain threshold, thereby increasing pain sensitivity.

If you're in pain, check with your doctor so they can rule out other possibilities including Hashimoto's thyroid disease, which is a common reason for body pain and *plantar fasciitis* or foot pain.

How to speak with your doctor about body aches and pains

- 'I'm not sleeping well. Could that be a cause of the pain?' (The answer is yes.)
- 'Could these symptoms be temporary with perimenopause?' (Again, the answer is yes.)
- 'I understand that autoimmune thyroid disease is a common reason for body pain. Have I been tested for thyroid antibodies?'

Once your doctor identifies the cause, the best strategy is to treat that cause. For example, if sleep disturbance is the problem, review the Sleep section in Chapter 7.

Conventional treatment for perimenopausal body pain

Estrogen plus progesterone therapy can relieve perimenopausal and menopausal body pain, although at this stage the evidence is mostly anecdotal. One large study found that women taking hormone therapy are less likely to develop knee osteoarthritis.

Progesterone-alone can also help due to its sleep-promoting and anti-inflammatory effects. Review the How to speak with your doctor about progesterone for perimenopause section on page 147.

As far as conventional medication goes, I view hormone therapy as a better strategy than antidepressants or pain-relief medication.

Pain-relief medication. If you require pain medication, you'll need to have a big conversation with your doctor about which type is right for you.

The most common prescription for fibromyalgia is low-dose amitriptyline, a tricyclic antidepressant, which is fine to take if you need it, but it can cause weight gain. Be cautious of the medications gabapentin or pregabalin (Lyrica®) which, despite warnings from experts, have recently become some of the most prescribed pain medications in Australia. Side effects include weight gain, addiction and depression.

Finding the right pain treatment depends on finding the right diagnosis. For example, if you have pain associated with Hashimoto's thyroid disease, refer to the thyroid section of this chapter. If you have osteoarthritis, seek advice for that condition. A full discussion of all the different kinds of pain and treatment is beyond the scope of this book, but here are some treatment ideas for fibromyalgia, the most common temporary pain syndrome associated with perimenopause.

Diet and lifestyle for fibromyalgia

Correct intestinal permeability because both intestinal permeability and SIBO are strongly linked with fibromyalgia and may even be a primary underlying cause. Refer to the information on intestinal permeability in the Autoimmune thyroid disease section of this chapter.

Find ways to relax. Choose strategies from the Soothe your nervous system section of Chapter 5. My top picks for fibromyalgia include yoga, green exercise and getting enough sleep, which can be easier said than done because insomnia is a symptom of fibromyalgia. Refer to the Sleep section in Chapter 7, especially the part about using progesterone-alone.

Do some gentle movement. Some exercise is beneficial because it builds muscle and improves sleep. *Too much* exercise, on the other hand, can worsen fibromyalgia pain and cause 'post-exertional malaise', which is feeling like you've been hit by a truck for a few days. The best plan is to start slowly with short stints of walking or yoga and aim to reach no higher than 60 per cent of your maximum heart rate. You can then build from there.

SPECIAL TOPIC: RESTLESS LEGS SYNDROME

Restless legs syndrome (RLS) is an unpleasant aching or crawling sensation in the legs and a strong desire to move them. It's a common symptom of both fibromyalgia and perimenopause but can also be the result of iron deficiency and other factors.

Conventional treatment is to address the underlying cause, such as iron deficiency. If the restless leg symptom is unexplained, conventional treatment includes sleeping tablets and medications to increase the neurotransmitter dopamine.

The best natural treatment is magnesium, which in many cases can completely resolve the symptom of restless legs. Other strategies include trying to identify and correct an underlying cause such as chronic inflammation, vitamin D deficiency, or the digestive condition SIBO, which has been linked with restless legs (page 105).

Supplements for fibromyalgia

Magnesium

We've discussed magnesium so many times already, you won't be surprised to see it here again. It's my frontline treatment for fibromyalgia and has done well in at least one clinical trial.

How it works: Magnesium supports cellular energy production, improves sleep quality, and shelters the nervous system from the excitatory effects of glutamate.

What else you need to know: Refer to previous magnesium sections for dosing instructions. If oral magnesium causes diarrhea, try a topical magnesium gel or cream.

Melatonin

We've also met melatonin a few times. According to a recent systematic review, it can relieve the symptoms of fibromyalgia.

How it works: Melatonin has analgesic, antioxidant and anti-inflammatory effects, and helps to regulate circadian rhythm.

What else you need to know: The dose for fibromyalgia is in the range of 0.5–5 mg. See the melatonin discussions in Chapter 7.

Checklist for aches and pains

Check with your doctor to get a diagnosis and address the underlying cause.
Take magnesium.
Work to improve sleep, perhaps with progesterone or melatonin.

That brings us to the end of this ‘bodily’ chapter, which included a full discussion of menopausal weight gain, thyroid disease, allergies, and aches and pains. We’ll talk more about weight and other more permanent bodily issues, such as vaginal dryness, in Chapter 10.

Before we get there, however, we need to look at the crazy, heavy periods of perimenopause, including a discussion of adenomyosis, fibroids and breast pain.

9

Estrogen rollercoaster: crazy heavy periods and breast pain

Perimenopause is a turbulent time for estrogen. As we saw in Chapter 4, your final few years of periods can be a time of higher estrogen than you ever had before, paired, unfortunately, with the near complete disappearance of progesterone. That combination of high estrogen and little or no progesterone can cause irritable mood, which we covered in Chapter 7; and heavy, painful periods and breast pain, which we'll look at now.

The stakes are high because, as science writer Natalie Angier says in her book *Woman: an intimate geography*, 'The forties are dangerous years for the uterus'. She's referring to the generations of women who lost their uterus to hysterectomy – a procedure you might also be offered if your periods get too bad.

There are a few things to keep in mind.

First, know that there are many modern alternatives to hysterectomy, including the hormonal IUD and other procedures, which we'll discuss

throughout the chapter.

Second, understand that it's *okay to resort to conventional treatment*. That's true for any symptom, but it's especially true for the heavy menstrual bleeding of perimenopause, because you cannot be expected to endure that kind of bleeding for long. In an ideal world, you would have had an opportunity to start natural treatment early in the process, before your periods got too bad. If you did not have that opportunity or have now reached the point of severe adenomyosis or other cause of heavy bleeding, you may have no choice but to undergo some kind of procedure, and that's not a failure on your part. It's still worth trying natural treatment because it can work; and even if it doesn't it will likely provide side benefits for mood or breasts.

Finally, get a second opinion. I've had countless patients who had been told by one gynecologist that hysterectomy was their only option only to discover that another gynecologist sees it quite differently.

How to speak with your doctor about the prospect of a surgical procedure

- 'How important is it that I have this procedure straight away?'
- 'Could the symptom improve on its own?'
- 'Could the symptom improve with menopause? In which case, how far away do you predict that is?'
- 'Would it be a reasonable strategy to just "watch and wait" and retest in six months?'
- 'What are my non-surgical options?'

Let's now survey the two main symptoms you could encounter: heavy flow and pelvic pain.

TIP

All of the following assessments and treatments are for if you're in perimenopause and still having periods. If you're more than one year past your final period, check with your doctor about any bleeding.

Heavy menstrual bleeding

Heavy menstrual bleeding is losing more than 80 mL of total menstrual fluid over all the days of your cycle, or a flow that lasts longer than seven days. The medical term for heavy menstrual bleeding is *menorrhagia*.

How much is 80 mL?

Unless you use a menstrual cup, you may never have measured the actual volume of your menstrual flow. You can estimate it by counting the number of menstrual products you have to use. For example, one soaked regular pad or tampon holds 5 mL or about one teaspoon, and a super tampon holds 10 mL. So 80 mL equates to sixteen fully soaked regular tampons or eight fully soaked super-tampons, spread over all the days of your period. If your menstrual product is not filled, simply adjust the count. For example, a half-filled regular tampon equates to about 2.5 mL.

In simple terms, you shouldn't need to change your pad or tampon more frequently than once every two hours during the day. And you shouldn't need to be up in the night changing a pad, because your flow should lighten during sleep.

If you're sitting there thinking, 'Wait, what? I lose way more than that', you're not alone. It's possible to lose far, far more than 80 mL, especially during perimenopause, when bleeding can progress to *flooding* – and you can lose more like 500 mL (2 cups) in a single period. Yes, 500 mL as opposed to 80 mL. If you're up in that territory, read the rest of this section and then see your doctor.

Bleeding for more than seven days or bleeding between periods

Prolonged bleeding is a problem because 1) it contributes to a greater loss of menstrual fluid and iron, and 2) it's a pretty good *indicator* that something is wrong, such as adenomyosis, fibroids, uterine polyps or anovulatory cycles – all of which we'll explore below.

Menstrual clots

Menstrual clots usually come with the territory of heavy flow because fast flow outpaces your body's ability to form natural anticoagulants. A few clots are fine, but if you regularly see clots larger than a 20 cent piece (about 2.5 cm), check with your doctor.

Iron deficiency

One of the biggest problems with heavy flow, especially very heavy flow, is that you will become deficient in iron. Symptoms include fatigue, breathlessness, hair loss and easy bruising. We'll discuss iron testing and treatment in this chapter.

SPECIAL TOPIC: CONSIDER A MENSTRUAL CUP

Menstrual cups are small, flexible cups made of silicone or latex that sit inside the vagina and collect menstrual fluid rather than absorbing it.

Depending on the size, a cup can collect up to 30 mL of fluid, which is at least double what a pad or super-tampon can hold. That makes cups a great option for heavy menstrual bleeding and, according to a recent review in *The Lancet* medical journal, cups are a safe and effective alternative to tampons or pads. They may even be safe with an IUD, but check with your doctor.

To insert a menstrual cup, simply fold it in half vertically and then insert so it can open up and seal against the vaginal wall. A cup sits lower in the vagina than a tampon.

For more information about cups, see the Resources section.

Signs that your period is too heavy include:

soaking through a pad or tampon in less than an hour
needing to double up pad plus tampon
waking in the night to change a pad
bleeding for more than seven days
clots larger than a 20 cent piece
restricting your activities due to heavy flow

symptoms of iron deficiency such as fatigue, hair loss and shortness of breath.

Pain

The second main period symptom of perimenopause you could encounter is pain, which could be ‘normal’ or ‘severe’, although technically, I would say that no amount of pain is *normal*.

Normal period pain is common period pain that is not caused by an underlying condition. It’s also called *primary dysmenorrhea*.
Severe period pain is caused by an underlying medical condition such as fibroids, endometriosis or adenomyosis. It’s also called *secondary dysmenorrhea*.

> **DYSMENORRHEA**
>
> Dysmenorrhea is the medical term for painful menstruation.

How can you tell the difference between normal and severe pain? Normal period pain is cramping in your lower pelvis or back in the day just before your period or on the first day or two of your period. It can be relieved by ibuprofen and does not interfere with your daily activities. Normal period pain should also disappear with the natural treatments discussed in the period pain section in this chapter; if it doesn’t, it’s not normal, it’s severe.

In contrast, severe period pain is throbbing, burning, searing, stabbing or shooting. It can last for many days and occur between periods and with sex. Severe period pain cannot be relieved by ibuprofen and can be so bad that you vomit and miss work.

> **TIP**
>
> Debilitating period pain is never normal.

If you have severe pain, read the following sections and then see your doctor.

Get a diagnosis

The heavy or painful periods of perimenopause are probably not something you can go alone. If you haven't already done so, see your doctor for an assessment. It's an important first step even if *you don't want the pill or hormonal IUD* they might offer. Why? Because proper assessment is how you will be able to weigh all your options, including the option of progesterone capsules, which your doctor may not immediately offer but which can be effective for many types of bleeding and pain.

When you see your doctor, they will likely order blood tests and an ultrasound, and perhaps do a pelvic exam. The possibilities they need to assess include one or more of the following:

primary dysmenorrhea
endometriosis
adenomyosis
fibroids
anovulatory bleeds (including endometrial hyperplasia and uterine polyps)
thyroid disease
a coagulation or bleeding disorder such as von Willebrand disease.

These are the most common causes of pain or bleeding and the ones we'll discuss throughout the rest of this chapter. Pain can also be caused by pelvic floor dysfunction or bladder problems, which we'll cover in the next chapter. Or by other conditions we won't cover such as infection, adhesions and *pelvic congestion syndrome* (PCS), which is the presence of varicose veins in the pelvis. Check with your doctor.

Just a word about *anovulatory bleeds* in case you don't recognise that term. We spoke about ovulatory versus anovulatory cycles in Chapter 4, and it's a crucial concept for this chapter. Anovulatory cycles are the situation in

which you make estrogen but no progesterone and they are, hands down, the *most likely explanation for your heavy periods*. Anovulatory cycles can also cause endometrial hyperplasia and uterine polyps (more on these soon).

Anovulatory cycles go by different names, which may assist your conversation with your doctor:

hormone imbalance
estrogen and progesterone imbalance
dysfunctional uterine bleeding
ovulatory dysfunction
unopposed estrogen
breakthrough bleeding
estrogen dominance.

How to speak with your doctor about assessment of period issues

Communicating with your doctor about heavy or painful periods means 1) making them aware of the severity of your situation, and 2) getting back from them as much information as you can, including the *exact name* of your diagnosis.

If your doctor had not previously mentioned the exact name of your diagnosis, it's because, from their point of view, the precise nature of your diagnosis does not alter the fact that they think you should use the hormonal IUD. That's a fair approach, and indeed, the hormonal IUD may be your best option, but as we'll see, the hormonal IUD is not your *only* option. Only by having all the information can you weigh up all your options.

Here are some basic things to say and ask. I'll provide additional suggestions throughout the chapter.

To make your doctor aware of your situation:

- 'I lose __ mL of menstrual fluid per cycle, which is more than the acceptable upper limit of 80 mL.'
- 'I bleed for __ days in a row.'

- ‘I bleed between periods.’
- ‘My pain is so bad I take __ painkillers per month.’
- ‘My pain is so bad I miss work.’
- ‘I experience pain between periods.’
- ‘I experience deep, stabbing pain with sex.’

To get the exact name of your diagnosis:

- ‘Is it possible I have endometriosis or adenomyosis? Should I have a referral to a gynecologist to discuss this possibility?’
- ‘Could this pain be cyclical pain associated with endometriosis, despite the fact that I don’t have a uterus?’
- ‘I’ve heard there’s a new specialised ultrasound technique to help to assess endometriosis.’ Print out a copy of the document ‘Noninvasive ultrasound diagnosis of endometriosis’ and show it to your doctor. See the Resources section for the full citation.
- ‘Do I have fibroids? Are they contributing to my bleeding? I’ve heard that most fibroids *don’t* cause heavy bleeding.’
- ‘Is it just primary dysmenorrhea, then? With no underlying pathology?’
- ‘When you say it’s “hormonal”, do you mean I’m having anovulatory bleeds?’
- ‘Is my endometrial hyperplasia due to anovulatory cycles?’
- ‘Are my uterine polyps due to anovulatory cycles?’
- ‘Have I been tested for thyroid disease? I understand it’s a common explanation for heavy periods.’
- ‘Could I have a coagulation disorder like von Willebrand disease? I understand it’s a common explanation for heavy periods.’

Ovarian cysts might arise as part of your assessment, so here’s a short explanation.

SPECIAL TOPIC: OVARIAN CYSTS

The term *ovarian cyst* just means a fluid-filled sac within the ovary, and there are many different types, all with different treatments.

Some so-called cysts are just follicles or eggs, which are normal for the ovary (see my discussion of polycystic ovaries in Chapter 4).

The most common type of ovarian cyst is a *functional cyst*, which is an enlarged version of the normal follicle or corpus luteum. A functional cyst is usually harmless but can grow large, so should be monitored by your doctor. Functional cysts are more frequent with the hormonal IUD.

Finally, some ovarian cysts are abnormal tissue rather than enlarged follicles. Examples include endometriomas (a type of endometriosis) and dermoid cysts (which can contain teeth or hair). Treatment for all types of ovarian cyst is beyond the scope of this book, but we'll discuss endometriosis in this chapter. Also note that correcting an iodine deficiency can help to prevent functional ovarian cysts. See Chapter 5 for a discussion of iodine safety.

Common period pain treatments

Before we move on to treatment recommendations for each condition, let's first survey a few treatments that will be mentioned again and again: the hormonal IUD, iron supplementation, progesterone treatment and a dairy-free diet.

Hormonal IUD (Mirena®)

We met the hormonal IUD in Chapter 3 as a type of birth control. It also has the rather impressive ability to improve pelvic pain and reduce menstrual flow by 90 per cent.

You may therefore encounter a situation for which the hormonal IUD is your best option, especially if your other alternative is surgery. As described previously, the hormonal IUD is different from other types of hormonal birth control in that it can permit natural ovulatory cycling and the production of progesterone. The medication released by the hormone IUD is the progestin levonorgestrel (not progesterone), which can cause ovarian cysts, hair loss and mood problems. It is possible to use *both* the hormonal IUD for bleeding and progesterone capsules for sleep or other symptoms.

Iron supplementation

Heavy periods from any cause can put you at risk of iron deficiency, which, in turn, can put you at risk of anemia, underactive thyroid, hair loss, fatigue and low immunity. By reducing blood viscosity, iron deficiency can also make your periods heavier which can lead to a vicious cycle of *heavy periods causing iron deficiency causing heavy periods*.

The first step is to have a blood test for stored iron. The test is called *serum ferritin* and a healthy level of serum ferritin is between 50 and 200 ng/mL.

Heavy menstrual flow is the most common cause of iron deficiency in women of reproductive age but it's not the only cause. Your doctor may need to investigate other factors.

How to speak with your doctor about iron testing

- 'I'm exhausted and I've been losing hair. Have I been tested for iron?'
- 'I lose about __ mL of menstrual fluid per cycle. Have I been tested for iron?'
- 'What is my actual ferritin reading? I've heard it should be greater than 50 ng/mL.'

TIP

Cannot get your iron up? It could be a sign of celiac disease or non-celiac gluten sensitivity (NGCS).

The best food source of iron is *heme iron* from red meat and, to a lesser extent, from chicken, eggs and fish. You can also get iron from legumes and leafy green vegetables, but it's non-heme iron and so harder to absorb. If you have very heavy periods, you are unlikely to be able to obtain enough iron from food and will need a supplement or iron infusion. Don't take iron unless you're sure you need it, because too much can be harmful.

Iron tablets or capsules

The conventional iron supplement is an iron salt such as ferrous fumarate, which is cheap and high dose, but unfortunately isn't absorbed well and can cause digestive side effects such as nausea, constipation, diarrhea, flatulence or black stools. A gentler approach is iron chelate, which is iron joined to an amino acid such as glycine. It's lower dose, but more absorbable and less likely to cause side effects.

Iron is best taken with your largest meal and away from tea, coffee, or calcium supplements. You can enhance absorption with vitamin C and by taking iron every second day rather than every day.

Even with the best iron supplement, it can take a couple of months to restore normal hemoglobin, and if you have very heavy periods, you may require an infusion.

> **HEMOGLOBIN**
>
> Hemoglobin is the oxygen-carrying protein in red blood cells. It contains iron.

Iron infusion

An iron infusion is a large dose of iron that is delivered directly into a vein and that can restore normal levels of hemoglobin within just a couple of weeks. There are usually no side effects but some of my patients have reported transient symptoms of inflammation such as a fever. Another option is an iron injection delivered into the buttock, but it's painful and can stain so I don't recommend it.

Progesterone

Progesterone capsules such as Prometrium® or Utrogestan® can be used to lighten flow or reduce pain. It's similar to using a progestin like Primolut® (norethisterone), but without the side effects or breast risks of progestins. Instead, progesterone can have several *side benefits* for breasts, mood and sleep.

As we saw in Chapter 6, progesterone may not be on your doctor's radar because it's currently approved only for menopausal hormone therapy and not for conditions such as heavy bleeding, endometriosis or adenomyosis. Yet, the consensus from gynecologists to whom I've spoken is that progesterone *can* be used for those conditions, with a few caveats:

real progesterone is gentler than a progestin so needs to be used at higher dose to have the same period-lightening effect
real progesterone may not be strong enough for certain conditions, such as endometrial hyperplasia
real progesterone is more expensive than a progestin.

Depending on the pharmacist, Prometrium or Utrogestan costs around 50 cents per day.

Progesterone can either be taken continuously (which can be necessary for adenomyosis or very heavy bleeding) or cyclically, which means two weeks on and two weeks off.

How to speak with your doctor about progesterone for heavy bleeding

- 'Could I try a few months of Prometrium (or Utrogestan) for heavy bleeding (or pain)? I understand it can work as well as a progestin to lighten flow (or help pain) but without the side effects. See this protocol by a Canadian endocrinology professor.' Print out the following document and take it to your appointment: 'For Healthcare providers: managing menorrhagia without surgery'. See the Resources section for the full citation. In particular, draw your doctor's attention to the paragraph that states: 'For heavy flow in a woman who already has anemia or who is in Very Early Perimenopause with regular cycles or in the Early Menopause Transition Phase with irregular cycles plus typical perimenopause experiences such as night sweats, new sleep problems and increased premenstrual concerns, full dose oral micronized progesterone (OMP, 300 mg at bedtime) must be given daily for a full three months'.

If your doctor expresses concern about the safety of progesterone, say:

- 'Actually, my understanding is that, when it comes to breast cancer risk, progesterone is safer than a progestin.' Print out the following document and have it ready: 'Body-identical hormone replacement therapy' by the WHRIA (Women's Health and Research Institute of Australia). See the Resources section for the full citation.

TIP

If your doctor is hesitant, offer to leave it with them and return for another appointment.

Dairy-free diet

My clinical observation is that stopping cow's dairy can improve pain and lighten periods. There's not a lot of research, unfortunately, but I've seen it again and again with my patients, such as Shirley on page 108. I believe the main mechanism is that dairy protein (A1 casein) can stimulate mast cells, which, as you may recall from Chapter 4, can cause the release of the prostaglandins and heparin that contribute to pain and heavy bleeding.

SPECIAL TOPIC: QUICK WAYS TO LIGHTEN FLOW

The natural treatments discussed throughout this chapter work to *prevent* heavy periods but cannot stop a heavy period once it's underway. If you need something *during* your flow, your doctor will probably recommend tranexamic acid or ibuprofen.

Tranexamic acid (Lysteda®) is an antifibrinolytic drug, which means it promotes blood clotting and can, therefore, slow bleeding. Possible side effects include nausea, headaches and muscle stiffness. Because it's a clotting agent, it's generally not recommended in combination with other medications that increase clotting risk, such as the pill.

NSAID (non-steroidal anti-inflammatory) medication such as ibuprofen (e.g. Nurofen®), mefenamic acid or naproxen can significantly lighten flow. Possible side

effects include stomach ulcers and high blood pressure, but usually only with daily use.

Either of these medications can be used *as needed* which means taking them only when you're bleeding or just before. They're a valuable back-up plan that can buy you time while you wait for the other treatments to work.

That was an overview of treatment strategies we'll touch on again and again, but they're not the *only* strategies. Let's now look at treatments for individual conditions.

Normal period pain

Primary dysmenorrhea is caused by prostaglandins, which are hormone-like compounds that have a variety of physiological effects, including the constriction of blood vessels. High histamine can also play a role in period pain.

Period pain in perimenopause

You may have suffered period pain as a teen, only to have it improve but then return with perimenopause. Period pain is common with both first and second puberty because that's when there is less progesterone to exert its beneficial prostaglandin-reducing effect.

Conventional treatment for normal period pain

NSAID (non-steroidal anti-inflammatory) medication such as ibuprofen (e.g. Nurofen), mefenamic acid or naproxen is the conventional treatment for normal period pain. It's a reasonable approach especially if it's only for a couple of days per month. It can also significantly lighten flow.

Hormonal birth control is another option but should not be necessary for normal period pain because normal period pain responds quickly and easily to the following natural treatments.

Diet and lifestyle for normal period pain

Try a dairy-free diet to reduce prostaglandins, mast cell activation and histamine. See Chapter 5.

Supplements for normal period pain

Zinc

Zinc is my favourite supplement for period pain, and it has performed well in a clinical trial.

How it works: It reduces prostaglandins and inflammation.

What else you need to know: The standard dose is 30 mg taken directly after food.

Magnesium

As for many conditions discussed throughout this book, magnesium is another supplement to consider.

How it works: It reduces prostaglandins and relaxes the uterus.

What else you need to know: Magnesium is both prevention and acute care for period pain. You can take magnesium throughout the month to lower prostaglandins. You can also take a higher dose during your period to relieve acute pain. I recommend 300 mg of magnesium glycinate.

Checklist for normal period pain

Take an NSAID if you need it.
Try avoiding cow's dairy.
Try zinc and magnesium.
If your pain doesn't improve, see your doctor for further assessment.

Endometriosis and adenomyosis

Endometriosis is an inflammatory condition in which tissue similar to the uterine lining (endometrial tissue) grows in places other than inside the uterus. The main symptom is pain, but endometriosis can also cause

bloating, digestive problems, bleeding between periods and infertility. The most common sites for endometriosis lesions are around the uterus and ovaries and on the fallopian tubes. When endometriosis occurs on the ovaries, the lesion is called an *endometrioma* or chocolate cyst.

Adenomyosis is a similar condition in which uterine lining (endometrial tissue) is present within the muscle wall of the uterus. The main symptom is heavy bleeding, but adenomyosis can also cause pain, bleeding between periods and infertility.

Both endometriosis and adenomyosis can also be associated with painful bladder symptoms including *interstitial cystitis* (chronic bladder inflammation) that should improve with the treatments provided overleaf.

Endometriosis and adenomyosis are separate conditions, but I'm discussing them together because they frequently occur together and respond to similar treatment.

Endometriosis and adenomyosis in perimenopause and menopause

You can develop either condition at any age, but with endometriosis, you likely first encountered symptoms in your teens or twenties. You may even have already been through one or more surgeries. With adenomyosis, you may not have encountered symptoms until your late thirties or forties. It's possible to have both conditions, starting with endometriosis when you were younger and then progressing to both endometriosis and adenomyosis.

Both conditions are driven by estrogen, so symptoms could worsen with perimenopause but then regress or disappear with menopause. In practice, that's not always what happens, and symptoms can persist past menopause as chronic pelvic pain, bladder pain and painful intercourse. In the case of endometriosis, pain can persist *even if you don't have a uterus*, because endometriosis is not a uterine disease. If your pain does persist past menopause, consider if you're being exposed to estrogen either from estrogen therapy or from insulin resistance causing high estrone.

Get a diagnosis

If you have endometriosis, it may have taken years to diagnose but hopefully should have been picked up by now. If you have adenomyosis, it may still be undetected.

Diagnosis of endometriosis

The current gold standard for diagnosis is laparoscopic surgery or laparoscopy, which is a type of keyhole operation performed in the abdomen or pelvis using small incisions and a camera.

Surgery may seem like an extreme measure just to get a diagnosis, but surgery can also be an opportunity to remove the lesions, and therefore improve the disease. Other routes to diagnosis include speaking with (and being examined by) an experienced gynecologist or undergoing a new specialised ultrasound technique. There may even one day be a blood test.

Diagnosis of adenomyosis

Adenomyosis can sometimes be seen on ultrasound but not always, and is often mistaken for fibroids, which we'll discuss below. A more accurate method of diagnosis is magnetic resonance imaging (MRI), which your doctor may decide to order. Risk factors for adenomyosis include being in your forties; having borne children; and a history of uterine surgery, such as a caesarean or fibroid removal.

How to speak with your doctor about endometriosis or adenomyosis

- 'Is it possible I have endometriosis or adenomyosis? Should I have a referral to a gynecologist to discuss this possibility?'
- 'Could this pain be cyclical pain associated with endometriosis, despite the fact that I don't have a uterus?'
- 'I've heard there's a new specialised ultrasound technique to help to assess endometriosis.' Print out a copy of the document 'Noninvasive ultrasound diagnosis of endometriosis' and show it to your doctor. See the Resources section for the full citation.

Conventional treatment for endometriosis and adenomyosis

There's no cure for endometriosis or adenomyosis, so treatment serves only to reduce symptoms until you can achieve menopause.

Laparoscopic surgery or keyhole surgery to physically remove endometriosis lesions, a small area of adenomyosis or the entire uterus (see the end of this section). For endometriosis, the long-term success of surgery depends on the skill and training of the surgeon and whether they manage to remove all the lesions. A type of surgery called *excision surgery* is usually more successful.

> **TIP**
>
> Surgery does not cure endometriosis but can reduce the severity of pain to the point that natural treatment can be effective.

Hormone suppression includes drugs such as the contraceptive pill, Depo-Provera® or Zoladex®. They work by suppressing estrogen, which can be helpful but, unfortunately, probably not as helpful as you'd like. According to the Cochrane Collaboration (an international authority of evidence-based medicine), there's no clear evidence that the pill works for endometriosis. Furthermore, suppressing estrogen can cause side effects such as depression and osteoporosis.

Progestins such as dienogest (Visanne®) and levonorgestrel (Mirena IUD) do not suppress estrogen but can still relieve symptoms to some extent. The hormonal IUD can also reduce menstrual flow by 90 per cent, which can be a lifesaver for adenomyosis.

Progesterone (Prometrium or Utrogestan) works in much the same way as a progestin but with fewer side effects. Refer to previous progesterone sections and know that adenomyosis may require a large dose of 300 mg.

Antihistamine medication can relieve symptoms for some women because of the role that histamine and mast cell activation play in the

pathogenesis of endometriosis. Antihistamines can also relieve pain and lighten flow.

Additional conventional treatments for adenomyosis

The following treatments apply only to adenomyosis, not endometriosis.

Endometrial ablation is the destruction of the uterine lining with one of several techniques, such as heat, electricity or freezing. It's only an option if adenomyosis hasn't penetrated too deeply into the uterine muscle and, unfortunately, even with the procedure, you may end up still requiring a hysterectomy. For more information about ablation, see the Anovulatory bleeding section in this chapter.

Uterine artery embolisation is a non-surgical procedure that attempts to shrink adenomyosis by cutting off its blood supply. The procedure carries a higher risk of complications for adenomyosis than it does for fibroids, the condition for which it's more commonly used. As with ablation, you may end up still requiring a hysterectomy.

Hysterectomy is the surgical removal of the entire uterus and can be done abdominally or laparoscopically with a procedure called *morcellation*, which breaks up the uterus into smaller pieces with a power morcellator, like a blender. Don't undergo morcellation if there's any chance of uterine cancer, because it could spread. Hysterectomy is a drastic alternative but can be the right choice, especially if you're still years from menopause and therefore years from natural regression of the disease. If you keep your ovaries, removal of your uterus does not put you into menopause.

SPECIAL TOPIC: LONG-TERM BENEFITS OF KEEPING YOUR UTERUS

The decision to have a hysterectomy is a conversation you'll have to have with your doctor, weighing up all the different aspects of your case. Here are a few things to keep in mind:

- A total hysterectomy that removes your uterus and ovaries will plunge you into surgical menopause, which, even with hormone therapy, can have many negative long-term effects, including osteoporosis, heart disease and dementia.

- A partial hysterectomy that removes only your uterus can also have long-term effects, because the uterus is important for the anatomical structure of your pelvis, your ability to orgasm, and even your brain. According to a recent animal study of the *uterus-ovary-brain system*, the uterus appears to somehow assist with spatial memory.
- Most of the conditions that lead to hysterectomy (heavy periods and adenomyosis) improve with menopause, so you just need to get through the next few years.

If you *can* hold onto your uterus, you will gain:

- improved bladder function
- healthier pelvic floor and reduced risk of prolapse
- enhanced ability to orgasm
- stronger bones
- lower risk of heart disease.

Hysterectomy is, of course, sometimes necessary, but also sometimes avoidable with progesterone and the following treatments.

Natural treatment for endometriosis and adenomyosis

To understand the natural approach to endometriosis and adenomyosis, we need to step back and think about the underlying *cause* of the conditions, which is not estrogen. Estrogen plays a role, for sure, because it's a major driver of the diseases once they exist. That's why the conventional medical approach is to suppress estrogen. Unfortunately, suppressing estrogen can have some serious downsides for mood and bone health, and suppressing estrogen is not something that can be accomplished with natural treatment. Instead, the best natural approach is to focus on correcting the *immune dysfunction* that underlies both conditions, especially endometriosis.

TIP

Endometriosis and adenomyosis are affected by estrogen but they're not *caused* by estrogen or 'estrogen dominance'.

What do I mean by immune dysfunction? I mean that women with endometriosis and adenomyosis have abnormal immune function, including

altered levels and behaviour of immune cells (especially mast cells), and a higher level of inflammatory cytokines and *auto-antibodies*, similar to what occurs with autoimmune disease. In fact, according to US reproductive immunologist Dr Jeffrey Braverman, most women with endometriosis have the genotype associated with autoimmune disease. Which does not mean that endometriosis *is* an autoimmune disease, only that it shares many features.

Research is finding that for both conditions, the problem is not so much the *presence* of the abnormal lesions in the pelvis or uterine muscle, but rather the immune system's abnormal response to those lesions. In other words, if the immune system was functioning normally, it should have been able to clean up the lesions and suppress their growth, as occurs for all the women who do not develop endometriosis or adenomyosis, despite *retrograde menstruation* (menstrual fluid flowing back through the fallopian tubes) and the movement of endometrial cells into the uterine wall.

With the immune dysfunction of endometriosis and adenomyosis, the immune system does not clean up the lesions but instead promotes their growth with inflammatory cytokines and other immune factors.

So what can you do to normalise immune function? Step one from a natural perspective is to start with the gut, because, as we saw in Chapter 5, there's a strong connection between the gut and the immune system.

The link with digestive problems

Both endometriosis and adenomyosis are strongly associated with digestive problems and the big question is 'why?'. The conventional explanation is that the coexistence of endometriosis and IBS is due to 1) *visceral hypersensitivity*, which is heightened pain perception in the pelvis and abdomen, and 2) the presence of endometriosis lesions or adhesions on the bowel.

ADHESIONS

Adhesions are bands of connective tissue or scar tissue that bind pelvic structures and cause pain. They can be the result of either endometriosis or the surgery used to treat it.

Another explanation is that IBS itself drives endometriosis and adenomyosis. In other words, that an underlying problem with the microbiome and/or intestinal permeability contributes directly to the inflammation and immune dysfunction of endometriosis and adenomyosis. Such an idea is supported by a recent review study that linked endometriosis with an imbalance of gut bacteria, and by some intriguing research into the *pelvic microbiome*, which are the bacteria living in the pelvis or peritoneum. According to 'the bacterial contamination hypothesis of endometriosis', women with endometriosis have intestinal permeability which causes gut bacteria to enter the pelvic cavity and release the toxin lipopolysaccharide (LPS), which we met in Chapter 5. LPS is highly inflammatory and can promote immune dysfunction. There are several lines of evidence that pelvic bacteria and LPS could drive endometriosis:

Women with a history of gynecological infection are twice as likely to develop endometriosis.
Antibiotics can relieve the symptoms of endometriosis.
Antibiotics were shown in a recent animal study to reduce the size of endometriosis lesions.

None of that means that bacteria directly *cause* endometriosis, only that bacterial toxins may drive or worsen immune dysfunction in combination with other factors, including genetics.

Diet and lifestyle for endometriosis and adenomyosis

Be fully nourished particularly with the nutrients zinc and preformed vitamin A, which are essential for the healthy functioning of both endometrial tissue and the immune system. Of note, both nutrients are low

in a vegan diet, so supplement if you need to, and remember that higher-dose vitamin A is not safe during pregnancy.

Correct intestinal permeability to shelter your immune system from unhealthy bacteria and the LPS toxin. Refer to the intestinal permeability and SIBO discussions in Chapters 5 and 8. For example, a short-term low-FODMAP diet can improve both gut problems and endometriosis. A long-term low-FODMAP diet is too restrictive, so you may also want to look at the SIBO treatments discussed on page 105, including berberine and other antimicrobial herbal medicines. Work with a clinician if you can.

Try a strictly gluten-free, **A1-casein-free diet** for at least three months. Both gluten and casein can drive (not cause) immune dysfunction, and a gluten-free diet has been found to significantly reduce the pain of endometriosis. Seek help from a clinician, because you might also need to consider other food sensitivities, such as soy or eggs. The red flag for possible egg sensitivity is a history of severe childhood eczema.

Try a low-histamine (dairy-free) diet (Chapter 5) because of the role of histamine and mast cell activation in endometriosis and adenomyosis. A low-histamine diet can also be helpful for interstitial cystitis (bladder pain).

Try a low-nickel diet but only if you have a nickel-sensitivity. See page 111 for a discussion of the possible role of nickel sensitivity in some cases of IBS and endometriosis.

If that feels like an overwhelming number of diets, know that it often boils down to avoiding wheat and dairy, which feature prominently on every list. With my patients, I usually begin with strictly wheat-free, dairy-free and see how we go.

FRANCINE – CRAMPS ALL MONTH AND HUGE CLOTS

'I have the worst case of adenomyosis my specialist has ever seen,' Francine told me. She then went on to describe pain all month, golf-ball-sized clots that were hard to flush, and a 'falling out' sensation in her pelvis.

'My doctor says the hormonal IUD or hysterectomy is my only option,' she concluded.

'Possibly,' I agreed, but Francine wanted to try other options.

To help Francine, I first needed to know *at what age* Francine's mother reached menopause. 'You'll likely be similar,' I explained. 'And we need to gauge for how much longer you could have symptoms.'

'My mum was 52,' Francine replied. 'I'm 49, so I guess about three more years of this.'

I learned further details about the health history of Francine's family, including the fact that her mum and two brothers all had autoimmune diseases of different types. Francine herself had the autoimmune disease Hashimoto's, and suffered the additional symptoms of acid reflux and chronic sinus congestion.

'Autoimmune disease strongly suggests an issue with gluten,' I said. 'So do reflux and sinus problems.'

Francine said she had been partially off gluten, but still had the occasional piece of sourdough bread. I recommended she *strictly* avoid gluten and A1 casein and take 200 mg of Prometrium. She continued taking Nurofen on her heavy flow days and the occasional iron infusion she had been receiving from her doctor. She also took the supplements selenium and calcium-d-glucarate, which is a supplement that assists healthy estrogen metabolism (discussed overleaf).

The first symptom to improve was the reflux, which was a good sign because, as you'll recall, a healthy digestive system supports a healthy immune system. Francine's pain and bleeding stayed about the same until three months into treatment, when her pain improved markedly and her flow reduced by half. She managed at that level for the next couple of years, until her periods finally stopped late in her fiftieth year.

An interesting detour in Francine's story was when she tried going back on gluten about a year into treatment and immediately experienced a return of reflux, pelvic pain and *body aches*.

'I didn't know you had body aches,' I said.

'Yes, I've always had them but thought they were a thyroid thing,' Francine said.

'The body aches probably are linked to autoimmune thyroid disease,' I replied, 'but are also linked to gluten and to the immune dysfunction that underlies adenomyosis.'

After that experiment, Francine stayed gluten-free as treatment for Hashimoto's, reflux, body aches and adenomyosis.

Adenomyosis is not caused by estrogen but it is strongly affected by it – as is almost every condition in the chapter. That's why it's important to have an understanding of healthy *estrogen metabolism* and how to promote it.

Estrogen metabolism

Estrogen metabolism – the healthy removal or detoxification of estrogen from the body – is a two-step process.

Step one is *conjugation* whereby estrogen is inactivated in the liver by the attachment of molecules such as glucuronic acid. Successful conjugation requires a good supply of nutrients, including folate, vitamin B6, vitamin B12, zinc, selenium, magnesium and protein. It also requires your liver to be relatively free of the toxic effects of endocrine-disrupting chemicals and alcohol. Impaired estrogen metabolism is how alcohol increases estrogen, and not in a good way.

Step two is removal of conjugated estrogens via the bowel – a process that is more efficient if you have healthy gut bacteria. Unhealthy gut bacteria interfere with estrogen metabolism (and cause estrogen excess) by making an enzyme called *beta-glucuronidase*, which de-conjugates or reactivates estrogen and causes it to be reabsorbed. The entire process is called *enterohepatic recirculation* or 'gut-liver recirculation'.

How to promote healthy estrogen metabolism

Understanding estrogen metabolism, and especially the role of gut bacteria, brings us to a few strategies for keeping estrogen low:

Reduce or eliminate alcohol.
Promote a healthy digestion and gut microbiome.
Eat phytoestrogens, which have a beneficial anti-estrogen effect (page 128), in part through supporting healthy estrogen metabolism.
Consider supplementing iodine, which can downregulate estrogen receptors.
Reduce exposure to endocrine-disrupting chemicals (EDCs), such as plastics and pesticides, which can impair estrogen metabolism.
Identify and reverse insulin resistance to prevent the high production of estrone that can occur in abdominal fat (Chapter 4).

Supplements for endometriosis and adenomyosis

Calcium-d-glucarate

Calcium-d-glucarate is the calcium salt of *D-glucaric acid*, which is derived from cruciferous vegetables. The active part is the glucarate, not the calcium.

How it works: It promotes healthy estrogen metabolism by inhibiting the bacterial enzyme beta-glucuronidase.

What else you need to know: The therapeutic dose is 1000 to 1500 mg and it's usually only helpful if you have clear signs of estrogen excess, such as heavy flow or breast pain. As adenomyosis is commonly associated with estrogen excess, calcium-d-glucarate can be helpful. It may be less helpful for endometriosis, which is often associated with a normal level of estrogen. One caution is that calcium-d-glucarate can reduce the effectiveness of certain medications by accelerating their metabolism and removal from the body.

Speak to your clinician or pharmacist about possible interactions.

Zinc

Zinc is so important for healthy immune function that zinc deficiency has been proposed as a factor in the immune dysfunction of endometriosis.

How it works: It repairs intestinal permeability, lowers inflammation and reduces pain.

What else you need to know: The therapeutic dose is 30 mg taken directly after food. Refer to previous zinc sections.

Berberine

Berberine, the phytonutrient we met in Chapter 5 for SIBO and Chapter 8 for insulin resistance, may also be beneficial for both endometriosis and adenomyosis. For example, a recent lab study concluded that 'berberine ameliorates the LPS-induced progression of adenomyosis'.

How it works: It's anti-inflammatory and antimicrobial, and reduces the level of unhealthy pelvic bacteria and LPS toxin. It can also help to repair intestinal permeability.

What else you need to know: Berberine is not safe during pregnancy and could interact with other medications. Refer to the Berberine section in Chapter 8 and check with your clinician.

Medicinal cannabis

We met medicinal cannabis in Chapter 7 as a treatment for perimenopausal insomnia; it can also relieve symptoms of endometriosis and adenomyosis. According to a recent Australian study, at least one in ten women with endometriosis use cannabis for pain, anxiety, digestive bloating and nausea.

How it works: It reduces pain and anxiety by interacting with the endocannabinoid system.

What else you need to know: CBD, or a mix of CBD and THC (page 168), is usually ingested as an oil, and takes effect after 30–120 minutes. At the time of writing, CBD oil is available only by prescription.

Iodine

Many of my endometriosis and adenomyosis patients improve with iodine supplementation, although, unfortunately, it has not yet been researched for either condition.

How it works: It downregulates estrogen receptors and supports healthy immune function.

What else you need to know: Too much iodine can harm your thyroid gland, so don't exceed 500 mcg (0.5 mg) daily except under professional advice. See Chapter 5.

Turmeric or curcumin

Curcumin is the active constituent in turmeric and has been investigated as a potential medicine for a wide range of inflammatory conditions including endometriosis.

How it works: It's anti-inflammatory and immune-regulating, and dials down aromatase, the enzyme that makes estrogen. It also calms mast cells and histamine, and inhibits angiogenesis, the development of new blood

vessels that feed the endometriosis lesions. Finally, by reducing prostaglandins, curcumin can directly lighten menstrual flow.

What else you need to know: Take curcumin with food for better absorption, but at a different time of day from your iron tablet because it can impair iron absorption. It's generally safe but can worsen symptoms of salicylate sensitivity (page 219) and is not safe if you have a coagulation or bleeding disorder.

SPECIAL TOPIC: THE ROLE OF COAGULATION DISORDERS IN HEAVY MENSTRUAL BLEEDING

A coagulation disorder is a condition that affects your blood's ability to clot. It can happen for different reasons, the most common being a genetic condition such as *hemophilia* or the more common *von Willebrand disease*.

If you've suffered heavy periods all your life, there's about a one in five chance you have von Willebrand disease so check with your doctor.

Symptoms of von Willebrand include:

- heavy menstrual bleeding since your periods started
- post-partum hemorrhage
- surgery-related bleeding
- bleeding with dental work
- easy bruising
- nose bleeds
- frequent gum bleeding
- family history of heavy periods or other bleeding symptoms.

Checklist for endometriosis and adenomyosis

Get a diagnosis.

Try strictly avoiding gluten and cow's dairy.

Consider progesterone capsules and curcumin.

Know that symptoms should improve with menopause but could worsen with estrogen therapy.

Fibroids

Uterine fibroids (also called *leiomyomas* or *myomas*) are benign growths of the uterine muscle. They're genetic to some extent so, depending on your family history, there's a good chance you'll have at least one fibroid by the age of 50. There's also a good chance it won't cause symptoms, and may not even make itself known unless it happens to be picked up by an ultrasound. Thus most fibroids are *incidental findings*, which means they are present but are actually *not* the cause of your bleeding or pain. Only a small proportion of fibroids are situated in such a way as to cause pain, heavy bleeding or other symptoms, such as a sense of fullness or urinary frequency due to pressure on the bladder.

How to speak with your doctor about fibroids

- 'How certain are you that this fibroid is the cause of my pain or heavy bleeding? I understand that most fibroids don't cause symptoms.'

  If your fibroid isn't causing symptoms, it does not require treatment.

Fibroids in menopause

Fibroids are driven by estrogen, so they should shrink with menopause. If they don't, it's probably because of an ongoing issue with insulin resistance causing a high level of estrone.

Conventional treatment for fibroids

NSAIDs or hormonal birth control such as the hormonal IUD are usually the first steps to manage the pain and/or bleeding of fibroids. The hormonal IUD, in particular, can be a good choice.

Hormone suppression with drugs such as Depo-Provera or Zoladex can shrink fibroids but are also associated with side effects such as depression and osteoporosis.

Be careful with the fibroid drug ulipristal acetate (Esmya®) because it has recently been recalled in the UK due to safety concerns.

Uterine ablation may be performed to reduce the heavy bleeding associated with some fibroids. For more information about ablation, see the Anovulatory bleeding section in this chapter.

Minimally invasive techniques to ablate or destroy a fibroid include: *forced ultrasound surgery (FUS)*, which uses high-energy sound waves; *myolysis*, which uses heat or an electric current; and *uterine artery embolisation*, which uses injected small particles to cut off the fibroid's blood supply. These procedures carry a small risk of infection and pain but are generally safer than myomectomy or hysterectomy.

Myomectomy is the surgical removal of a fibroid and can be done abdominally or laparoscopically. It's effective but fibroids can grow back.

Hysterectomy is the removal of the entire uterus. See the earlier discussion.

Diet and lifestyle for fibroids

There is no natural cure for fibroids. The best you can expect is to slow growth enough to get through to menopause, when fibroids should naturally reduce in size.

Reverse insulin resistance (Chapter 8) because insulin resistance drives fibroid growth.

Promote healthy estrogen metabolism (page 250) because high estrogen drives fibroid growth. The stimulating effect of estrogen is why there's a higher risk of fibroids associated with alcohol, endocrine-disrupting chemicals such as phthalates and the strong synthetic estrogens of the pill.

Supplements for fibroids

Supplements to consider include **magnesium** and **inositol** if you have insulin resistance and **calcium-d-glucarate** if you have symptoms of high estrogen. Beyond that, think about iodine and vitamin D.

Iodine

Iodine is my favourite supplement to slow and prevent the growth of fibroids. There's not a lot of research, unfortunately, except for one study that correlated fibroids with thyroid nodules and inferred iodine deficiency as a possible underlying reason for both conditions.

How it works: It downregulates estrogen receptors, thereby reducing estrogen stimulation of the uterine muscle.

What else you need to know: Iodine can be helpful for any condition that's driven by estrogen, which is why it's also helpful for endometriosis, adenomyosis and breast pain. See Chapter 5 for a discussion of safety.

Vitamin D3

Women with low vitamin D are significantly more likely to develop uterine fibroids, which may, in part, explain why fibroids are more common in women with darker skin, who can find it harder to get enough sunlight to make sufficient vitamin D.

How it works: There's early research to suggest that vitamin D inhibits fibroid cell growth.

What else you need to know: The recommended dose is 1000 to 3000 IU and, as we'll see in the next chapter, vitamin D works best when combined with vitamin K2. You probably don't need to supplement in summer or if you live in a tropical climate.

Checklist for fibroids

Know that fibroids naturally shrink with menopause.
Consider undergoing a minimally invasive method to ablate or destroy a fibroid.
Identify and reverse insulin resistance.
Take iodine and/or vitamin D.

Anovulatory bleeding

Don’t skip this section! If you’re not familiar with the term anovulatory bleeding, remember it just means hormone imbalance or estrogen dominance, and is the most common reason for heavy bleeding in your forties. Recall from Chapter 3 that you make lots of estrogen with anovulatory cycles but no progesterone. That means you make no progesterone to thin your uterine lining and the result can be irregular bleeding, heavy bleeding, or bleeding that goes on for days or weeks. Anovulatory cycling can also progress to the more serious situations of endometrial hyperplasia and/or uterine polyps.

Endometrial hyperplasia is a thickening of the uterine lining (endometrium) that can contain *atypical* cells. Occasionally, it can progress to cancer, so you should be under the care of your doctor.

Uterine polyps are abnormal growths of the uterine lining that can range in size from just a few millimetres to several centimetres. Like hyperplasia, polyps can progress to cancer so should be monitored or treated.

> **TIP**
>
> If you’re more than twelve months after your last period, any amount of bleeding is abnormal and could indicate endometrial hyperplasia. Check with your doctor.

Conventional treatment for anovulatory bleeding

Progestins thin the uterine lining and can be taken either orally or as the hormonal IUD. In many cases, progestins can be replaced by progesterone, but stronger progestins may be required for endometrial hyperplasia.

Progesterone is the most important treatment for anovulatory bleeding because progesterone deficiency is the main cause of the problem. Refer to How to speak with your doctor about progesterone for heavy bleeding on page 237.

Curettage or curette is minor surgery that involves dilating the cervix and then scraping out the uterine lining. The procedure used to be done as *treatment* for anovulatory bleeding, but was not effective in the long term because the uterine lining just grows back. These days, a curette is done

primarily as a diagnostic screen for endometrial hyperplasia, uterine polyps or uterine cancer.

Surgical removal of uterine polyps is necessary in some situations. At the same time, some polyps can go away on their own so ask your doctor if 'watching and waiting' is a possibility for you.

Endometrial ablation is the destruction of the uterine lining first described in the adenomyosis section. It can also be helpful for this kind of bleeding because, after ablation, you will bleed lightly or not at all even though you still cycle. The effect tends to last about five years, after which time the lining can grow back and you may require a repeat procedure or hysterectomy. Many women are happy with ablation but some report troubling side effects such as bleeding and severe labour-like cyclic pain.

Hysterectomy is another option but is rarely recommended for anovulatory bleeding. Refer to the special topic Long-term benefits of keeping your uterus on page 244.

Diet, lifestyle and supplements for anovulatory bleeding

Try a dairy-free diet to reduce the flow. See Shirley's patient story on page 108.

Reverse insulin resistance (Chapter 8) because insulin resistance can cause or worsen anovulation.

Identify and correct thyroid disease (Chapter 8) because hypothyroidism can cause or worsen anovulation.

Checklist for anovulatory bleeding

Take progesterone or a progestin.
If possible, identify and correct the obstacle to ovulation such as insulin resistance or thyroid disease.

SPECIAL TOPIC: THE ROLE OF THYROID DISEASE IN ANOVULATORY CYCLES AND HEAVY BLEEDING

Hypothyroidism has long been recognised as a cause of heavy menstrual bleeding and should always be ruled out. That's according to Dr Andrew Weeks, a senior doctor writing for the *British Medical Journal*, who says that 'all women with unexplained menorrhagia should be tested for thyroid'. A 2017 study made a similar recommendation, concluding that 'thyroid function should be considered in the evaluation of dysfunctional uterine bleeding' and doing so 'would also avoid unnecessary surgeries and exposure to hormones'.

Hypothyroidism causes heavy bleeding by 1) impairing ovulation and progesterone, 2) lowering SHBG thereby increasing free or active estrogen, 3) slowing estrogen metabolism, and 4) decreasing coagulation factors, which impairs the body's ability to slow blood flow.

The treatment for heavy periods caused by hypothyroidism is to take thyroid hormone and other treatments covered in Chapter 8. If your thyroid function has not been tested, ask your doctor: 'Can I be tested for thyroid? I understand it's a common explanation for heavy periods'.

Breast pain

Finally, we come to breast pain, which is usually caused by the same high estrogen and low progesterone discussed for other conditions in this chapter. Breast pain can also be the result of high prolactin, in which case refer to the Vitex section in Chapter 7.

Get a diagnosis

If you have breast pain or a breast lump, see your doctor who will likely do an examination and refer you for an imaging study. From that information, you will be provided with a diagnosis, which could be *fibrocystic breast disease* (lumpy breasts) or *mastalgia* (breast pain).

TIP

Most breast pain is not cancer.

Mastalgia can be *cyclical*, which means before your period, or *non-cyclical*, which means all the time and is usually the result of anovulatory cycles. In either case, the problem is high estrogen, which is strongly

stimulating to breast tissue. Progesterone, on the other hand, is calming to breast tissue and can relieve breast pain.

SASHA – BREAST PAIN USUALLY MEANS HIGH ESTROGEN

'My breasts are swollen all the time,' Sasha told me. 'They're so bad I have to hold them flat just to be able to walk down the steps from our building.'

Sasha had a long history of breast lumps, which had been investigated by her doctor and found to be benign.

She was 48 and assumed she was in menopause because of the hysterectomy she'd had five years earlier. 'My doctor gave me the Estradot® patch to help with vaginal discomfort, but I had to stop because it made my breast pain so much worse!'

'It would be unusual to have both vaginal dryness and breast pain,' I explained, 'because vaginal dryness is caused by low estrogen, and breast pain is caused by *high* estrogen. Is your doctor sure the vaginal discomfort is menopausal dryness?'

I suggested Sasha seek a second opinion about her vaginal discomfort, particularly because her FSH was only 12 mIU/L, and therefore in the 'non-menopausal range'. The discomfort turned out to be due to *scar tissue*, not dryness, which made a lot more sense.

Sasha did not go back on the estrogen patch but instead took 3 mg of molecular iodine, which we'll discuss shortly. After two months, her breast pain was entirely gone.

Conventional treatment for breast pain

Choose a bra that is supportive, well-fitted and with no underwire.

Try painkillers such as paracetamol or ibuprofen for occasional (not daily) use.

Avoid (if possible) medication that can cause breast pain, such as certain SSRI antidepressants, diuretics, the pill and spironolactone (Aldactone®). Check with your doctor.

Use progesterone, which can relieve breast pain as a nice side benefit if it's prescribed for something else. Your doctor is unlikely to prescribe progesterone for the purpose of treating breast pain, although it would be safe to do so.

Diet and lifestyle for breast pain

Try a dairy-free or low-histamine diet (Chapter 5) to reduce the histamine that can worsen breast pain.

Promote healthy estrogen metabolism (page 250) including the strategy of reducing or avoiding alcohol.

Eat phytoestrogens, such as those in seeds and legumes, because phytoestrogens can have a beneficial *anti-estrogen effect* and promote healthy estrogen metabolism.

Supplement for breast pain

Iodine

Iodine is the best treatment for breast pain. Research suggests it can treat fibrocystic breast disease and may even reduce the risk of breast cancer.

How it works: Iodine stabilises and downregulates estrogen receptors, which are abundant in breast tissue.

What else you need to know: The best type of iodine for breasts is molecular iodine (I2), which is available as the brand Violet®. Compared to iodide, I2 is absorbed more slowly into the thyroid and more quickly into the breasts, which makes it safer for thyroid and better for breast pain. Before taking iodine, ask for a test for *thyroid antibodies*, as discussed in Chapters 5 and 8. If you have thyroid antibodies, stay below a daily dose of 500 mcg (0.5 mg) except under professional supervision. If you don't have thyroid antibodies or any other problem with your thyroid, you can probably safely try the 3 mg that I prescribed for Sasha on page 261 and Mia on page 136.

Checklist for breast pain

Check with your doctor.
Try a dairy-free diet.
Take iodine if it's safe to do so.

🔍 SPECIAL TOPIC: RISK REDUCTION FOR BREAST CANCER

There are so many factors in breast cancer risk that it would require a book all its own. The best approach is to speak with your doctor about your individual risk factors and follow their advice.

Factors that increase your risk of breast cancer include:

- a family history of breast cancer or a genetic mutation linked to breast cancer
- being younger at first menstruation or older at menopause
- high alcohol intake
- smoking
- insulin resistance
- a history of hormonal birth control or estrogen or progestin therapy.

Factors that decrease your risk of breast cancer include:

- no family history of breast cancer
- less alcohol
- not smoking
- regular movement or exercise
- a history of breastfeeding
- phytoestrogens such as those in legumes and seeds
- sufficient iodine.

Some of these factors are within your control but many are not, which is why you can only reduce your risk of breast cancer, not entirely eliminate it. My top lifestyle recommendations for risk reduction are: 1) reducing alcohol, 2) identifying and correcting insulin resistance, 3) taking iodine if it's safe, and 4) maybe reducing your intake of cow's milk, according to the research I cited in Chapter 5.

I hope this chapter has provided you with a better understanding of your options for treating crazy heavy periods and breast pain. And if you've been having a rough time with periods, you could be quite looking forward to the end of periods and *what comes after* – the topic of the next and final chapter.

10

What comes after

This is the chapter for once you've *achieved* menopause. You've moved through the storm of perimenopause and now, to quote Professor Prior, you're entering the 'kinder and calmer phase of life appropriately called menopause'.

The perimenopausal symptoms that should be *behind* you include heavy periods, breast pain, mood problems, migraines and, hopefully, hot flushes and sleep disturbance. Both hot flushes and sleep disturbance tend to last, on average, about four years, which are usually the three years before the final period and one year after. Flushes could last longer by starting up to ten years before your final period and/or continuing for up to ten years after – which I hope is not your situation. If it is, revisit What if flushes don't end? on page 166, Tapering down estrogen on page 157 and Sleep on page 166. And keep in mind that sleep apnea can be an ongoing issue that may require you to identify and reverse insulin resistance.

The symptoms that could still be *ahead* of you include vaginal dryness, stress incontinence, bladder infections, low libido, pelvic floor problems,

prolapse, hair loss, facial hair and weight gain, along with a long-term risk of osteoporosis, heart disease and memory problems. Those are the topics of this chapter, starting with vaginal dryness and a whole set of symptoms called the *genitourinary syndrome of menopause*.

Genitourinary syndrome of menopause (GSM)

Genitourinary syndrome of menopause or GSM sounds complicated and like maybe it doesn't apply to you, but believe me, it probably does. There's a 50 per cent chance you'll have some GSM symptoms by the age of 60, and a 75 per cent chance by the age of 70. With treatment, GSM can improve dramatically; without treatment, symptoms are likely to progressively worsen.

GSM is the broad term for all the vagina, bladder and pelvic floor symptoms associated with the low-estrogen state. It used to be called *vulvovaginal atrophy* or *atrophic vaginitis*, referring to vaginal dryness, but was broadened to include all of the following:

vaginal dryness and loss of lubrication
burning, pain, dryness, irritation, itching or fissuring in the vulva
pain or bleeding with sex
painful urination
recurrent urinary tract infections (UTIs)
bladder urgency and stress incontinence (peeing when you cough)
loss of libido, arousal or orgasm
vaginal wall prolapse.

As you can see, GSM is about a lot more than just dryness and some of the symptoms can be debilitating. 'Does it hurt to sit down when you wear jeans?' asks Australian naturopath and vaginal health expert Moira Bradfield Strydom when gauging the severity of GSM. Or: 'do you avoid trousers and underwear to minimise vulval symptoms and irritation?' If you're experiencing pain or discomfort like that, please reach out to your doctor who will investigate other possible causes of your discomfort and

probably prescribe treatment for GSM, which we'll discuss shortly. And please know that your doctor sees these symptoms all the time so there's no reason to be shy.

Returning to the symptom list for a moment, most are self-explanatory, but *vaginal wall prolapse* may require a little more explanation.

SPECIAL TOPIC: PELVIC ORGAN PROLAPSE

Vaginal wall prolapse is part of GSM but also part of a broader set of problems called *pelvic organ prolapse*, which is when pelvic organs drop down, creating a bulge in the vagina or anus. For example, the bladder, uterus or rectum can prolapse into the vagina, or the rectum can prolapse into the anus. Symptoms of prolapse include pain or pressure in the pelvis or lower back, bladder problems (such as leakage), constipation, painful sex, and a feeling that something is falling out of your vagina.

Risk factors include menopause, fibroids, hysterectomy, smoking, obesity and a history of vaginal delivery, especially a complicated one.

There are several non-invasive treatment options for prolapse, including mechanical treatment with a vaginal pessary and exercises for the core, back and pelvic floor. According to Sydney physiotherapist Heba Shaheed, the goal is to build strength as well as coordination so you can learn to integrate the muscles of the core with the muscles of the whole body. 'In that way,' says Shaheed, 'the body can be optimised to improve function and compensate for the prolapse to the point that it does not limit you.'

There are also several surgical options to secure the pelvic organs back in place, sometimes with the help of synthetic material. Many of the surgical procedures are effective and safe but one (now discontinued) procedure used a polypropylene mesh that caused pain in some women and has since been the subject of a class-action lawsuit.

Vaginal estrogen can also be helpful for vaginal wall prolapse.

Conventional treatment for GSM

Vaginal estrogen is the number one treatment for GSM. As we saw in Chapter 6, it's available as either Vagifem Low® and Ovestin®, which are natural body identical estradiol and estriol. Vaginal estrogen helps all aspects of GSM, including dryness, low libido, recurrent bladder infections and prolapse, and is very safe. One of the only possible (but not common) side effects is vaginal yeast or thrush, because estrogen can promote the

growth of yeast. On the flip side, estrogen can help to *prevent* another type of vaginal imbalance called *bacterial vaginosis* or BV.

BACTERIAL VAGINOSIS (BV)

Vaginosis is an overgrowth of one or more species of normal vaginal bacteria. Symptoms include itching, burning and watery discharge.

Check with your doctor, and if you need help troubleshooting the problem consider this: if using vaginal estrogen causes symptoms, it's probably thrush. If *not* using it causes symptoms, it's probably BV.

One of the many advantages of vaginal estrogen is that it can help to prevent recurrent urinary tract infections or UTIs.

ANTONELLA – NO MORE ANTIBIOTICS

Antonella was having trouble losing weight now that she was three years past her final period. During our first consult together, she mentioned the almost ongoing antibiotics she required for recurrent UTIs.

'Ooh, that could be a problem for your metabolism,' I said. 'There's a link between antibiotic use and an inability to lose weight.'

'But what can I do?' she answered. 'I keep getting UTIs.'

I recommended Antonella speak to her GP about trying vaginal estrogen to prevent bladder infections. Six months later, she had not required a single course of antibiotics and was finally making some progress with weight loss.

Systemic estrogen therapy, such as a patch, can also help with GSM but not always. You may end up needing vaginal estrogen as well.

DHEA vaginal gel is also effective, and is available in other countries as the product Prasterone®. It's not yet available in Australia or New Zealand.

Testosterone is sometimes prescribed to boost libido or sexual desire. It can also help with pleasure, arousal and orgasm, but only if you also have enough estrogen, which usually means taking estrogen first, and then

adding testosterone if you need it. I raised some safety concerns about testosterone in Chapter 6, particularly about how testosterone can contribute to insulin resistance and abdominal weight gain, and at high doses can cause facial hair and hair loss. If you don't have insulin resistance and want to try a low-dose testosterone cream for libido, it's probably fine to do so. A cream or transdermal gel is safer than a tablet, injection or pellet.

Physiotherapy for the pelvic floor can relieve stress incontinence and prolapse. See the Resources section and speak to your GP for a referral to a pelvic physiotherapist.

Vaginal laser therapy uses beams of light to damage vaginal tissue and induce collagen production as it heals. It's expensive and has not yet been approved in Australia. It has also received several safety warnings from the US Food and Drug Administration (FDA). In my view, laser therapy is unlikely to be as beneficial for vaginal tissue as the zinc supplement we'll discuss in this chapter.

Personal lubricants, which are used at the time of sexual intercourse, can increase both your comfort and pleasure. They can be water- or silicone-based, or an oil such as olive, sweet almond or coconut.

In general, a silicone- or water-based lubricant is probably best for vaginal intercourse, but read the label to be sure it 1) does not contain irritating alcohol or preservatives, 2) has a vagina-friendly pH of 4.5, and 3) has an *osmolality* of less than 1200 mOsm/kg. (Osmolality is the number of dissolved particles per unit of solution. High-osmolality lubricants damage vaginal tissue but unfortunately, are still on the market.) One good brand is Yes®, which make water- and oil-based lubricants as well as a vaginal moisturiser.

Natural oils are great for foreplay, but please know that an oil or oil-based lubricant will destroy a latex condom, and oil (especially mineral oil) may promote bacterial vaginosis.

Vaginal moisturisers are used daily. Brands such as Yes and Replens® rehydrate vulval and vaginal tissue by increasing fluid content, mimicking vaginal secretions and lowering pH, which can help to maintain a healthy

vaginal microbiome. Like lubricants, moisturisers should be free of preservatives and have a low pH and osmolality.

A zinc-containing vaginal moisturising gel may soon come onto the market that was found in preliminary research to be superior to standard moisturisers for both dryness and atrophy. It works because zinc is beneficial for vaginal epithelial cells (see below).

A good moisturiser should relieve dryness and itchiness, but what if you're really, really itchy?

> 🔍 **SPECIAL TOPIC: TWO POSSIBLE CAUSES OF VULVA ITCHINESS: VULVAL DERMATITIS AND LICHEN SCLEROSUS**
>
> *Vulval dermatitis* is just what it sounds like: dermatitis or eczema of the vulva. It can cause severe itchiness, rawness, stinging, burning and even pain. Your first step is to immediately discontinue any soap, perfume or laundry soap that could be irritating your vulva. Next, speak to a gynecologist or gynecological dermatologist, who may recommend a short course of a steroid cream. Vaginal probiotics (discussed in the tip below) can also be helpful.
>
> *Lichen sclerosus* is a chronic inflammatory skin disease that causes white patches on the vulva. It's believed to be autoimmune and is often associated with autoimmune thyroid disease. Review the Autoimmune thyroid disease section in Chapter 8 and seek a referral to a gynecological dermatologist.

Diet and lifestyle for GSM

Natural treatment of GSM is primarily about maintaining the health of 1) the epithelial cells that line the vagina, and 2) the community of friendly bacteria that live in the vagina (*vaginal microbiome)*. In fact, maintaining a healthy vaginal microbiome has been found to prevent BV and UTIs, as well as improve GSM symptoms such as dryness, atrophy and pain.

> **TIP**
>
> Did you know? A healthy vaginal microbiome has low species diversity with predominantly *Lactobacillus* species. This is in contrast to a healthy gut microbiome, which has high species diversity.

There’s a close bi-directional relationship between epithelial cells and the vaginal microbiome. In one direction, healthy epithelial cells make the glycogen that feeds healthy vaginal bacteria; in the other direction, a healthy vaginal microbiome helps to support healthy epithelial cells.

Vaginal estrogen therapy is highly beneficial for both epithelial cells and the vaginal microbiome because it stimulates the glycogen that feeds vaginal bacteria. Beyond estrogen, diet and lifestyle strategies for GSM include:

Not using douches or wipes because they alter vaginal pH and damage the microbiome.
Not smoking because it lowers estrogen and damages the vaginal microbiome.
Avoiding, as much as possible, antibiotics, which can damage the microbiome.
Movement, especially strength-building exercises for the core and back, can assist with the restoration of normal pelvic floor function.
A **low-oxalate diet** is an additional treatment to consider for vulvodynia (unexplained vulval pain). It requires reducing your intake of high-oxalate plant foods such as spinach and silverbeet.
Be fully nourished with protein, vitamin A, essential fatty acids, and especially zinc.

Supplements for GSM

Zinc

Zinc helps to maintain the health of the vaginal epithelium. According to vaginal health expert Moira Bradfield Strydom, vaginal dryness can improve significantly after just a few weeks on an oral zinc supplement.

How it works: Zinc is an essential nutrient for tissue repair and integrity.

What else you need to know: The therapeutic dose is 30 mg taken directly after food. Refer to previous zinc sections.

Vaginal probiotic

A study of menopausal women found that supplementation with the bacterial strains *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14 relieved symptoms of BV. Probiotics can also help to prevent recurrent menopausal UTIs.

How it works: Vaginal strains of probiotics help to normalise the health and composition of the vaginal microbiome.

What else you need to know: Vaginal probiotics can be taken orally or inserted vaginally. One vaginal product (Gynoflor®) combines the probiotic strain *Lactobacillus acidophilus* KS400 with a low dose of estriol. It's not yet available in Australia or New Zealand.

D-mannose

D-mannose is a simple sugar supplement that can help to prevent UTIs.

How it works: It impedes *E. coli* bacteria and prevents them from adhering to the bladder wall.

What else you need to know: The therapeutic daily dose for UTI prevention is 2 grams and it's safe with no known side effects.

TIP

Magnesium can also help with bladder incontinence or frequency. It works by calming the bladder and enabling it to empty fully.

Sea buckthorn oil

Sea buckthorn oil did well in a clinical trial for GSM, with three months on an oral supplement being found to relieve vaginal dryness, itching and burning for some participants.

How it works: Like zinc, sea buckthorn improves the integrity of the vaginal epithelial cells.

What else you need to know: The dose used in the trial was 3 grams orally per day. It has no known side effects.

SPECIAL TOPIC: PLEASURE AND DESIRE

Have you lost your ability to enjoy sex or masturbation? Desire or libido *can* go down with menopause, but not always. In fact, for some women, desire stays the same or even goes up. That's because menopause is only one factor. Other factors include:

- stress or sleep disturbance
- fatigue or body pain
- thyroid disease
- medications such as antidepressants, antihistamines, antifungals, beta-blockers, oral contraceptives, spironolactone, cholesterol-lowering medications and stomach acid medications
- partner medical issues or relationship problems.

If your desire or pleasure is affected by one of these issues, the best strategy is to address *that* issue, which might mean speaking to your doctor about changing your medication or asking your partner to see his or her doctor.

The relationship side of things is particularly complex, as you can imagine. According to psychotherapist Esther Perel, author of the book *Mating in Captivity*, much of the decline of desire attributed to menopause is actually the result of boredom with a long-term relationship. She observes that 'desire [in women] may be driven to the same extent as it is in men by novelty and excitement' and recommends finding ways to re-establish romance and mystery.

On the menopause side of things, reasons for diminished pleasure include:

- sex that is painful or embarrassing due to dryness, prolapse or other GSM issue
- decreased elasticity of the vagina
- decreased sensitivity of the vagina and/or clitoris (so you feel less sensation).

If your desire or pleasure is affected by one of these issues, the best strategy is vaginal estrogen and/or other treatment provided above.

Checklist for GSM

Talk to your doctor about your symptoms. Don't be shy!

Consider vaginal estrogen.

Ask for a referral to a physiotherapist.

Try zinc.

Consider if any of your medications could be impairing pleasure and/or desire.

Facial hair and hair loss

With menopause, you could find yourself growing new coarse hairs on your chin or upper lip, and at the same time losing hair on your head. The two things are connected in that they can both be the result of the menopausal *relative androgen* excess described in Chapter 4.

The first step is to check with your doctor to determine if your symptoms are the result of menopause or something else. For example, severe facial hair could be a sign of a hormonal problem, and hair loss could be due to thyroid disease, stress, autoimmune disease, fungal infection, or medications for depression, and blood pressure, cholesterol or stomach acid. Hair loss can also indicate iron deficiency but don't take iron unless you're certain you need it.

If your facial hair and hair loss are indeed the result of menopause, your doctor may give you the diagnosis of *androgenic alopecia*, *androgenetic alopecia* or *female pattern hair loss*, which just means hormonal hair loss caused by relative androgen excess.

Conventional treatment for facial hair and hair loss

Minoxidil® is the only medication approved for menopausal female pattern hair loss. It's actually a blood pressure drug repurposed as a topical medicine to stimulate hair growth, possibly by increasing the blood supply to hair follicles. Side effects include temporary hair loss and facial hair.

Estrogen and progesterone both have a beneficial anti-androgen effect. Under current guidelines, hormone therapy is not prescribed for hirsutism or hair loss, but if you take hormone therapy for something else, you could notice an improvement in androgen symptoms as a side benefit.

Spironolactone (Aldactone®) is an anti-androgen drug that some doctors prescribe for menopausal hair loss and hirsutism. Side effects can include depressed mood and reduced libido.

Hair-removal techniques such as waxing and laser are effective and simple solutions.

Diet and lifestyle for facial hair and hair loss

Reversing insulin resistance is an important strategy for improving facial hair and female pattern hair loss, because *androgen excess causes insulin resistance* and *insulin resistance worsens androgen excess*. As we saw in Chapter 4, insulin resistance contributes to androgen excess both by directly increasing ovarian testosterone production and by lowering SHBG.

> 🔍 **SPECIAL TOPIC: THE ANDROGEN-LOWERING EFFECT OF SHBG**
>
> SHBG or sex hormone-binding globulin is a protein that binds and inactivates testosterone, thereby making it less available. Having adequate levels of SHBG can, therefore, help to ease testosterone-dominant symptoms such as weight gain, hair loss and facial hair. You can increase SHBG by eating phytoestrogens and correcting an underlying problem with insulin resistance and/or hypothyroidism.

Supplements for facial hair and hair loss

The main supplements for insulin resistance are **magnesium** and **inositol**, discussed in Chapter 8.

You can also think about zinc.

Zinc

Zinc is my go-to supplement for the androgen excess of PCOS and menopause. In one small clinical trial for PCOS it was found to improve symptoms of both hair loss and hirsutism.

How it works: Zinc shelters the body from excess androgens and nourishes hair follicles.

What else you need to know: Zinc is also my top pick for vaginal dryness, so we're developing a bit of a theme. Refer to previous zinc sections.

Results will be slow

Hair loss and facial hair are stubborn symptoms and improvement (if it happens at all) can take at least six months. One situation when you may

unfortunately not be able to improve hair loss is if you had years of untreated androgen excess (PCOS) and thus developed permanent *miniaturisation* or shrinkage of your hair follicles. To gauge whether you will be able to recover from hair loss, ask your dermatologist if miniaturisation has occurred.

Checklist for facial hair and hair loss

Get a diagnosis and consider whether any of your medications could be causing hair loss.
Identify and reverse insulin resistance.
Take zinc.

Maintaining a healthy weight

If you're finding it harder to stay slim, it's thanks (in part) to a 15 per cent drop in *resting metabolic rate* (calories burned while at rest). Some of the menopausal drop in metabolic rate is due to a reduced ability to hang onto muscle, because less muscle means a slower resting metabolic rate. A larger part of the drop is due to androgen excess (Chapter 4) and the shift to *insulin resistance*, which we've discussed again and again. To get anywhere with maintaining a healthy weight, you first need to know *if* you have insulin resistance, then work to reverse it. Refer to previous Insulin Resistance sections, especially the part about testing on page 102. A test for glucose is not a test for insulin resistance.

There are, of course, many other factors in maintaining a healthy weight, some of which we'll explore, but I invite you to use insulin sensitivity as your metric of success, rather than body shape or weight on a scale. By maintaining a healthy insulin sensitivity (normal insulin levels), you both reduce your risk of heart disease and dementia, and cultivate a long-term ability to lose fat. Conversely, if you have insulin resistance, you will find it very difficult (maybe impossible) to maintain a healthy weight in the long term.

Conventional treatment for maintaining a healthy weight

Diet and exercise are the standard recommendations for weight loss and are not without merit. After all, you require fewer calories with menopause, so it makes sense to reduce your calorie intake and/or increase your energy expenditure. Such an approach is the classic 'calories in versus calories out', which is somewhat valid but also far too simplistic.

SPECIAL TOPIC: THE TROUBLE WITH CALORIES IN, CALORIES OUT

The first problem with calories in versus calories out is that different *types* of calories have vastly different effects on metabolism and weight. The best example is protein, which, as we saw in Chapter 5, promotes fat loss because it's satiating and builds muscle. The opposite is true for high-dose fructose, which promotes abdominal weight gain because it causes or worsens insulin resistance. Finally, there are all the foods like dark chocolate and avocado, which are high in calories but provide valuable polyphenols for the mitochondrial aspect of metabolism we'll discuss shortly.

The second problem with calories in versus calories out is that exercise increases appetite and food intake, and so is unlikely to function as an effective 'calories out' part of the equation. That's not to say you shouldn't engage in movement, because you absolutely should. The main benefit of movement is not to burn calories but instead to build muscle, enhance insulin sensitivity and stimulate *mitochondrial biogenesis*, the manufacture of new mitochondria.

The final problem with calories in versus calories out is that it's hard to do. In other words, if you're hungry, you'll find it hard (even impossible) to limit calories on an ongoing basis. Eventually, you'll eat something that derails your diet and may then experience what New Zealand dietitian Sara Widdowson calls the 'F-it effect', which is binge-eating because nothing works anyway. A better strategy is to shift the focus to *feeling satisfied* like Mandy did on page 203. Feeling satisfied with protein will result in a lower overall intake of calories – even without counting calories.

Estrogen plus progesterone therapy can increase metabolic rate but is unlikely to be prescribed for that purpose. If you do take hormone therapy, try to avoid testosterone and androgenic progestins such as norethindrone, which can cause weight gain.

Avoid (if possible) medications that cause weight gain including antihistamines, antipsychotics, the pill, gabapentin, amitriptyline, and some types of antidepressants or blood pressure medication.

Diet and lifestyle for maintaining a healthy weight

Build muscle, which requires eating sufficient protein and regularly moving your body. By building muscle, you can increase your metabolic rate, and if you build enough, you may even be able to pull yourself back up to the higher metabolic rate you enjoyed before menopause.

> **TIP**
>
> Ditch your scales, because muscle *weighs* more than fat. Instead, gauge your progress by how your clothes fit.

Eat sufficient protein, not just to build muscle but for satiety.

Identify and correct Hashimoto's thyroid disease as described in Chapter 8.

Identify and reverse insulin resistance as described in Chapter 8.

A **keto or low-carb diet** is one of the stronger approaches to reversing insulin resistance, and although I don't recommend it as a long-term strategy, it can be helpful in the short term. As with every strategy that promotes metabolic flexibility (movement, reducing high-dose fructose and intermittent fasting), a keto diet works to support healthy functioning of the mitochondria.

> **SPECIAL TOPIC: THE ROLE OF MITOCHONDRIA**
>
> Mitochondria are little cellular factories that turn food into energy and keep everything going. Ninety per cent of the energy you use to move, think, digest, make hormones and exist is made by mitochondria so the more you have, the better you'll feel. (Fortunately, you have *quadrillions* – thousands of trillions – of them.) Think of mitochondria like the 'gears' of metabolism and know that by supporting their function and biogenesis, you can increase your resting metabolic rate.
>
> Ways to support mitochondria include:
>
> - maintaining a healthy level of insulin, estrogen, progesterone, melatonin and thyroid hormone
> - movement, intermittent fasting, maintaining a healthy circadian rhythm and getting enough sleep

- magnesium, taurine, zinc, selenium, and phytonutrients, especially polyphenols from coffee or cocoa.

The surest way to damage mitochondria, on the other hand, is to overeat, especially fructose. According to mitochondrial medicine expert Dr Bruce H. Cohen, 'The main mitochondrial toxins in our diets are excessive free (refined) sugars, like high fructose corn syrup and table sugar, and excess carbohydrates in general'. He explains that when mitochondria are forced to deal with high doses of fructose, they produce a high level of free radicals, which create damage. 'In many cases,' he says, 'that leads to type 2 diabetes', which of course is preceded by insulin resistance.

Other mitochondrial toxins include alcohol, smoking, phthalates, pesticides, and medications such as statins (cholesterol-lowering medication), paracetamol and antibiotics.

Supplements for maintaining a healthy weight

You won't be surprised when I say there's no one supplement that can guarantee weight loss; if there were, you would surely have heard of it by now.

Instead, there are supplements to support the many processes that underlie metabolic health, including healthy mitochondria, insulin sensitivity, circadian rhythm, thyroid health and more. My top three picks include **magnesium** and **taurine** for insulin sensitivity and mitochondria, and **selenium** for thyroid and mitochondria.

Checklist for maintaining a healthy weight

Identify and reverse insulin resistance.
Eat enough protein, especially in the morning.
Move your body to build muscle.
Avoid high-dose fructose.

And remember that maintaining a healthy weight can also help to reduce the long-term risk reduction of osteoporosis, heart disease and dementia – our final three topics.

SPECIAL TOPIC: RISK REDUCTION VERSUS PREVENTION

I speak of ‘risk reduction’ rather than prevention because although ‘prevention’ sounds like a harmless enough word, it also portrays the inherent, not so subtle suggestion that if you do end up with one of the following conditions, it’s because of something you did wrong.

I don’t want you to feel that way, so I invite you to work to reduce your risk with the following strategies but at the same time, accept that no diet, lifestyle, supplement or medication can reduce your risk to zero.

Risk reduction for osteoporosis

Osteoporosis, which means ‘porous bone’, is the condition of having bones that have become thin and brittle. It’s linked with the very real problem of fractures in the elderly, but there’s controversy about the exact nature of that link and, more precisely, about how both osteoporosis and fracture risk should be assessed. One of the leading critics of the current approach is orthopedic surgeon and researcher Teppo Järvinen, who believes that osteoporosis is over-diagnosed because, according to one interviewer, ‘medicine started down the wrong path about twenty years ago when it set levels of bone mineral density as a definition or a diagnosis for osteoporosis’. He doesn’t mean that osteoporosis is not real, which of course it is; he means only that we shouldn’t be trying to gauge risk with *bone mineral density testing*.

Bone mineral density testing

A bone mineral density test (also called dual-energy X-ray absorptiometry or the DEXA test) uses X-rays to measure the mineralisation or calcification of bone. Results are usually expressed as a T-score, which is your bone mineral density compared to the *peak bone mass* of a healthy 30-year-old.

SPECIAL TOPIC: PEAK BONE MASS

Around the age of 30, you had the strongest bones you were ever going to have. It was your peak bone mass or bone density and would have been greater if you were healthy, didn’t smoke and managed to have regular ovulatory cycles, thus making a

regular dose of estrogen and progesterone. Your peak bone mass would have been lower if you had health problems, smoked, took hormonal birth control or lost your period due to undereating.

Since then, you have been losing bone, but slowly, so if you managed to reach a fairly high peak bone mass, you should have enough reserve to maintain healthy bones for a few more decades. Your rate of bone loss accelerates temporarily during the first five years of menopause, which is why we're talking about it.

The main problem with bone mineral testing is that it's normal to have less dense bones at 50 than you did at 30. Furthermore, a result of low density on a DEXA scan doesn't correlate well with eventual fracture risk, and can, in fact, predict fewer than 30 per cent of fractures. That makes a DEXA result less predictive of fractures than the simple question of 'Do you have impaired balance?', which predicts 40 per cent. There are even situations, such as type 2 diabetes, when *high* bone density on a DEXA scan is paradoxically linked with increased fracture risk.

So DEXA diagnosis is arguably not that meaningful for the diagnosis of osteoporosis. It's even *less* meaningful for the diagnosis of the so-called condition of *osteopenia*, which just means having *slightly* lower bone density than a 30-year-old. If you're 50, having slightly lower bone density does not mean 'pre-osteoporosis' but is really just an observation of aging, like wrinkles or grey hair. According to osteoporosis researcher Dr Steven R. Cummings, 'when a clinician sees the word "osteopenia" on a report, they think it's a disease. It's not'.

Of course, you still want to take steps to reduce your long-term risk of fracture, because you have about a 9 per cent chance of fracturing your hip at some point in your remaining years, most likely in your late seventies or eighties. If you do fracture a hip, it will be painful and could lead to surgery, blood clots and even death. A vertebral fracture is less serious but more than one can lead to a gradual loss of height and a stooped appearance.

We'll explore strategies to *reduce fracture risk*, which is a different approach from taking a drug to *improve bone density*, because bone density is only a *surrogate marker*.

SPECIAL TOPIC: THE PROBLEM WITH SURROGATE MARKERS

A surrogate marker (or surrogate endpoint) is a measure of effect from a treatment (such as a drug) that may or *may not* correlate with an actual *clinical* endpoint or 'patient-relevant outcome'. To use osteoporosis as an example, a drug that improves bone density (surrogate endpoint) may or may not reduce the actual risk of fracture (patient-relevant outcome). Another example is a statin medication to lower cholesterol (surrogate endpoint) that may or may not reduce the risk of heart attack (patient-relevant outcome), which we'll discuss in this chapter.

Big picture, I encourage you to look beyond surrogate endpoints such as bone density and cholesterol, and instead think more broadly about how you can reduce your long-term risk of fracture and heart attack.

Bone is living tissue

Bone is not a static repository of calcium. Indeed, as we'll see below, taking calcium does little (if anything) to reduce the risk of osteoporosis.

Instead, bone is dynamic, living tissue, which is connected to almost every other aspect of physiology, including, for example, the nervous system. New research has discovered that the bone hormone *osteocalcin* also helps to modulate the HPA axis or stress-response system, which I personally find fascinating, because it shows how much there still is to learn about the body. Bone health is also intimately connected with immune health, to the point that there's an entire field of research (osteoimmunology) that looks at shared bone–immune molecular pathways and *osteoclasts*, which are bone cells and immune cells. The tight relationship between bone health and immune health could be why 1) some osteoporosis drugs cause immune side effects, and 2) chronic inflammation contributes to bone loss.

By understanding bone as living tissue, you can start to see that maintaining healthy bones is not just about calcium or osteoclast-impairing drugs but is instead about all the ways you can *improve general health for the sake of your bones*. For example, if you smoke or drink heavily, you need to stop for the sake of your bones. If you have chronic inflammation or insulin resistance, you need to reverse these conditions for the sake of your bones. Finally, if you have an autoimmune disease, you may need to avoid

gluten for the sake of your bones. That's not to suggest that gluten is always bad for bones – it's not. Gluten is fine *unless* you have a problem with autoimmunity or gluten sensitivity (Chapter 5), in which case, avoiding gluten is probably the main thing you need to do.

If your bone density is exceptionally low, check with your doctor about gluten and medications.

How to speak with your doctor about osteoporosis risk factors

- 'I understand that bone density can be affected by celiac disease. Have I been screened for that?'
- 'Could any of my medications be having a negative effect on my bones?'

Medications that can contribute to bone loss include corticosteroids, SSRI antidepressants, anticonvulsants, statins, aromatase inhibitors and stomach acid medication, the last possibly due to a negative effect on collagen. Medications that can contribute to dizziness and therefore to falls and fractures include sleeping tablets, statins and beta-blockers.

Other factors that contribute to a heightened risk of fracture include smoking, heavy alcohol use, and early or surgical menopause.

Conventional treatment to reduce fracture risk

Estrogen therapy slows bone resorption, supports collagen and tensile bone strength, and significantly reduces the risk of fracture. It's particularly important if you entered menopause before the age of 45 or have other risk factors, such as smoking or a history of amenorrhea (lack of periods). In fact, reduction of fracture risk is one of only three official indications for estrogen therapy, the other two being hot flushes and GSM. If your doctor recommends estrogen to reduce the risk of long-term fracture, you should probably take it. It will work best if you start it as soon as possible after the final period and continue it for at least ten years.

Progesterone is another option, either as a companion for estrogen (even if you don't have a uterus) or on its own if you cannot take estrogen. That's according to research from Professor Prior, who found that progesterone has unique bone-building properties.

How to speak with your doctor about progesterone for bone health

- 'I understand I officially don't need a progestin because I don't have a uterus, but could I take micronised progesterone anyway? Here's some research showing that progesterone improves bone health.' Print out the following study and take it to your appointment: 'Progesterone for the prevention and treatment of osteoporosis in women'. See the Resources section for the full citation.
- 'I understand I can't take estrogen, but could I try micronised progesterone? Here is some research showing that progesterone improves bone health.' Print out the study mentioned in the previous point and take it to your appointment.

SPECIAL TOPIC: WHAT IS TENSILE BONE STRENGTH?

Did you notice my mention of *tensile bone strength* when I was describing the benefits of estrogen? Tensile strength is the measure of the force required to bend bone to the point where it snaps. Examples of good tensile strength include a green tree branch that can bend without breaking or the bones of a healthy child.

Osteoporosis is a condition of *low tensile strength* due to reduced levels of collagen. It's entirely different from osteomalacia (rickets), which is a condition of *high tensile strength* but soft, bendy bones due to insufficient calcium.

Two more things to understand about tensile strength:

- Tensile strength cannot be gauged with a bone density scan, which is probably why scans are bad at predicting fracture risk.
- Tensile strength cannot be improved with calcium, which is probably why calcium supplements have not been proven to prevent osteoporotic fracture.

Calcium supplements are frequently recommended, but they shouldn't be because there's very little evidence they work and they can have the unfortunate side effect of increasing the risk of heart disease. You do need a daily dose of approximately 600 mg of dietary calcium, which can be obtained from seeds, bony fish, green vegetables, and dairy if you can tolerate it. Don't force yourself to eat cow's dairy, however, because high dairy consumption has never been shown to prevent fracture in menopausal women. In fact, according to Harvard nutrition scientist Walter Willett, 'To suggest even a weak link between dairy consumption and improved bone health really misrepresents the literature'.

Tibolone (Livial®) is a hormone-like drug we met briefly in Chapter 6. It's sometimes prescribed for bone health, but unfortunately carries an increased risk of endometrial cancer, breast cancer and cardiovascular events.

Bisphosphonates (Fosamax® and Actonel®) are drugs that work by impairing osteoclasts, the bone-remodelling cells. They increase bone density (surrogate marker) but damage bone *microstructure*, which, by some measures, may make bones weaker, not stronger, and can lead to serious bone side effects such as jaw osteonecrosis (bone death) and atypical fractures of the femur. Teppo Järvinen says, 'Taking a drug because of concern about fracture risk from osteoporosis, only to find it could cause the spontaneous snapping of the largest bone in one's body, is enough to make many people think twice'.

Denosumab (Prolia®) is a human monoclonal antibody (laboratory-produced antibody) that works by impairing the osteoclasts. It also carries a small risk of osteonecrosis of the jaw and atypical femoral fracture, and can cause immune side effects such as allergies and skin conditions.

I'm not saying don't take Fosamax or Prolia if you really need them; I'm only suggesting to first have a careful think about whether, in your case, the benefits outweigh the potential risks. The benefits *would* outweigh the risks if, for example, you're in the dire situation of catastrophic bone loss from cancer treatment, high-dose prednisone or Paget's bone disease. The benefits would probably not outweigh the risks if, on the other hand, your

situation is only that you had a bad DEXA scan result but no fractures or other obvious risk factors. In that case, you may want to wait or seek a second opinion.

Diet and lifestyle to reduce fracture risk

As described in the Bone is living tissue section, the best way to maintain strong bones is to first, speak to your doctor about coming off any bone-damaging medication; and second, identify and correct an underlying *general health issue*, such as smoking, excessive alcohol intake, gluten sensitivity, digestive problems, nutrient deficiencies or chronic inflammation. Beyond that, you need to:

Build muscle as the single best way to prevent the future fall that could ultimately be the cause of a future fracture. Muscle also improves insulin sensitivity and directly supports healthy bone remodelling. By strengthening muscle, you strengthen bones.

> **TIP**
>
> Don't let an osteoporosis diagnosis scare you away from activity. Check with your doctor, of course, but in many cases, movement – even vigorous movement – is exactly what you need.

Identify and reverse insulin resistance because insulin resistance increases fracture risk, despite sometimes being associated with a higher than normal bone density result.

Support a healthy circadian rhythm (Chapter 5) because 'adequate sleep timed appropriately during the circadian night' has been found to improve bone health.

Supplements to reduce fracture risk

Because of the strong link between general health and bone health, any supplement that improves general health will also improve bone health. For example, if you have insulin resistance, you could be helped by **magnesium**

and **taurine**, both for reversing insulin resistance and for their direct benefit on bones. The same is true for many of the other supplements we've already covered, including zinc, iodine, selenium and vitamin B12. A nutritional approach to support collagen (including vitamin C and a collagen supplement) may also be helpful.

Vitamins D3 and K2 (MK-7)

Vitamin D3 promotes the healthy absorption of calcium, but to reduce fracture risk, vitamin D needs to be combined with a version of vitamin K2 called *menaquinone-7* or MK-7, which works so well for reduction of fracture risk that one Canadian researcher says it 'rivals bisphosphonate therapy' but without the toxicity.

How it works: Vitamins D3 and K2 work in tandem to absorb calcium and put it where it's supposed to be, which is into bones and not blood vessels. By preventing unhealthy blood vessel calcification, MK-7 can also help to reduce the risk of heart disease.

What else you need to know: The recommended dose is 1000 to 3000 IU of vitamin D3 and 75 mcg of MK-7, although some studies used much higher doses of MK-7. Too much vitamin D3 without MK-7 could cause hypercalcemia (high blood levels of calcium) and calcification of blood vessels, contributing to atherosclerosis and heart disease.

Food sources of vitamin D3 include egg yolks, salmon and other fatty fish, but most of your vitamin D3 will need to come from sun exposure or a supplement. Food sources of MK-7 include hard cheeses like cheddar and gouda, as well as fermented foods like natto, sauerkraut and kimchi. Take care with fermented foods if you have a problem with histamine or mast cell activation.

You can test vitamin D levels with a blood test, but understand that a stubbornly low vitamin D reading could simply be an indication of chronic inflammation and/or magnesium deficiency, and not a sign that you need to take more vitamin D.

Melatonin

Melatonin can improve markers of bone turnover (decreased bone resorption, increased bone formation) in perimenopausal women, suggesting it could reduce long-term fracture risk. Reduction of osteoporosis risk is probably not a reason to take melatonin, but if you take it anyway for sleep or for migraine prevention, bone health could be a nice side benefit.

How it works: Melatonin promotes osteoblasts, the cells that build bone.

What else you need to know: The dose used in the clinical trial was 3 mg per day over six months, which is higher than the 1 mg usually recommended for sleep. Refer to previous melatonin sections.

Checklist for reduction of fracture risk

Understand that bone health is an expression of general health.
When assessing risk, don't rely solely on a bone density scan, but instead consider risk factors such as smoking or surgical menopause.
Don't smoke or drink heavily.
Build muscle.
Consider estrogen plus progesterone therapy.
Take vitamins D3 and K2.

Risk reduction for heart disease and stroke

Menopause does not *cause* heart disease but can increase your long-term risk. It's really more that estrogen and progesterone shielded you from risk and now you've lost that protection. For example, before menopause, your risk of heart attack was lower than that of a man your age. By ten years into menopause, your risk will be more in line with a man's and possibly even a little higher. Part of the risk is due to the relative androgen excess described in Chapter 4.

There are, of course, several types of cardiovascular disease, most of which are beyond the scope of this book. We're going to focus only on risk

reduction for coronary artery disease (CAD) and stroke, the two conditions associated with *atherosclerosis*.

ATHEROSCLEROSIS

Atherosclerosis is the process of progressive build-up of lesions, or plaques, within the walls of the arteries. Plaques consist of oxidised sterols, lipids, cholesterol, macrophages, fibrin, calcium and other cellular materials.

SPECIAL TOPIC: HEART ATTACK SYMPTOMS ARE DIFFERENT FOR WOMEN

Heart attacks in women often do not present as the clutching chest pain you see in movies. Instead, they can feel more like pressure or discomfort in the chest, back, neck, jaw or arm, together with nausea, fatigue, dizziness, shortness of breath, or what feels like a strained muscle in the chest or upper back.

If you experience such symptoms for the first time and are unsure what's going on, immediately ring your doctor or go to hospital. And when you're with the doctor ask, 'Could this be a heart attack?' A troubling study from the *Journal of the American Heart Association* found that women in Sweden are up to *three times more likely to die* following a serious heart attack due to not being investigated or diagnosed properly.

Assessing risk of heart attack and stroke

The following discussion is only for *primary prevention*, which is if you have personally never had a heart attack or stroke. If you *have* had a heart attack, you are in the situation of *secondary prevention* and should be under the care of a cardiologist.

Starting in your forties, your doctor will probably start to screen you for the following seven cardiovascular risk factors:

family history of a heart attack or stroke
smoking
high blood pressure
high non-HDL cholesterol

high triglycerides
insulin resistance or type 2 diabetes
high coronary artery calcium (CAC) score.

The first two factors should be fairly self-evident. Let's quickly review the final five.

High blood pressure or hypertension, measured by your doctor with a blood pressure cuff, is a strong long-term risk factor. This is not to say that a few readings put you at imminent risk of a heart attack or stroke; only that, over time, consistently high blood pressure increases your risk.

Non-HDL cholesterol is the so-called 'bad' cholesterol and includes all the potentially atherosclerosis-promoting lipid particles such as VLDL, LDL and lipoprotein(a). You don't need to learn the names of all the particles; just know that high non-HDL cholesterol is a risk, but high *total* cholesterol is not.

> **TIP**
>
> High cholesterol can be a symptom of thyroid disease, so make sure your doctor has ruled out a thyroid problem.

Triglycerides are a type of lipid manufactured by the liver. High triglycerides can be a sign of high fructose intake and/or insulin resistance.

Insulin resistance and type 2 diabetes are strong risk factors for cardiovascular disease and probably the main underlying driver of high triglycerides and high non-HDL cholesterol.

Coronary artery calcium (CAC) scoring, also called a coronary calcium scan, is a test that uses a computed tomography (CT) scan to measure the amount of calcium build-up in the atherosclerotic plaques of the heart's arteries. It's currently recognised as the best way to identify an increased risk of heart disease.

You'll probably only be referred for CAC score testing if you already have a higher risk of heart attack or diabetes due to your family history. You

may also want to request the test if you're being pressured to take a statin. Put it this way: if you're high enough risk to warrant a statin, then you're high enough risk to warrant a CAC scan, which, according to Sydney cardiologist Ross Walker, is 'the best predictive test for heart disease risk' and far more useful than a cholesterol test.

As a side note, remember the *surrogate endpoint* discussion earlier in this chapter? Well, blood cholesterol is just such a surrogate endpoint that may not mean much in terms of your long-term 'patient-relevant outcome' or risk of a heart attack.

Conventional treatment to reduce risk of heart attack and stroke

Diet and lifestyle changes feature quite prominently in conventional risk reduction and many of the recommendations are similar (but not the same) to those we'll discuss in the diet and lifestyle section on page 298.

Quit smoking. This first conventional recommendation is a good one. Find a way to quit, whether that's with patches, counselling, hypnosis or a stop-smoking program. Speak to your doctor.

Avoid junk food. This is also excellent advice. Reduce your intake of ultra-processed food, including those containing high-dose fructose and trans fat.

Exercise is another excellent recommendation. It reduces heart disease risk by lowering blood pressure and helping to reverse insulin resistance.

Avoid dietary cholesterol and saturated fat. This conventional recommendation has, unfortunately, not worked out well, and may soon fade into the annals of medical history. Most organisations (including the Australian Heart Foundation) no longer recommend avoiding dietary cholesterol, and even the advice to avoid saturated fat is wavering given there is *no consistent evidence* that doing so reduces the risk of heart attack. If you had previously tried a low-fat diet to lower cholesterol but didn't get results, you might want to give diet another go; only this time, try avoiding sugar to reverse insulin resistance, as we'll discuss in this chapter.

Try estrogen therapy. This conventional recommendation has swung in and out of favour over the decades. For example, 'estrogen for heart disease

prevention' was popular in the 1990s but was then dropped after the controversial 2001 Women's Health Initiative study. Twenty years later, estrogen is making a bit of a comeback, with some experts now claiming it can help with primary (not secondary) prevention of heart disease, especially for women who underwent early menopause. It's a complex topic, because estrogen has both positive and negative effects on the cardiovascular system. Its positive effect is that it promotes healthy arterial flexibility, but only if started within the first ten years of menopause. Its negative effect is that it can promote blood clots, especially if there's a history of migraines. Estrogen is more likely to promote blood clots when taken orally and/or combined with an androgenic (testosterone-like) progestin. The safest type of hormone therapy for the cardiovascular system is transdermal estrogen with oral micronised progesterone rather than a progestin.

Blood pressure medication comes in different types, all with different mechanisms and potential side effects. *Diuretics* work by flushing out water and sodium, and can cause frequent urination, weakness or leg cramps. *Beta-blockers* work by slowing your heart rate and can cause fatigue, depression, and cold hands and feet. *Angiotensin-converting enzyme (ACE) inhibitors* inhibit a hormone involved in blood vessel narrowing and can cause a dry, hacking cough. Finally, *calcium channel blockers* block calcium from the heart muscle and blood vessel cells, and can cause constipation, dizziness, headache and palpitations. Please take blood pressure medication if you need it, but keep in mind that other treatments such as movement and magnesium can also help to lower blood pressure. I've had several patients who were resigned to taking blood pressure medication only to discover they didn't need it after they started magnesium.

Daily aspirin was once recommended as primary prevention, but new research suggests it does more harm than good. According to Professor John McNeil from Monash University, there's 'no evidence that aspirin [does] healthy people any good in terms of living longer, remaining free of disability for longer, or preventing cardiovascular disease'.

Statins (cholesterol-lowering medications) such as atorvastatin (Lipitor®) and rosuvastatin (Crestor®) are a common recommendation for heart disease prevention. The drugs are also highly controversial, with some experts saying they should be routinely prescribed as primary prevention, and others arguing that the risks outweigh the benefits.

SPECIAL TOPIC: WHAT YOU NEED TO KNOW ABOUT STATINS

A full discussion of the 'statin wars' is beyond the scope of this book, but here are the broad strokes:

- There's reasonable evidence that statins help with *secondary* prevention, which, remember, is the prevention of a second heart attack after you've already had one.
- There's less evidence that statins help with primary prevention, and according to some estimates, have a *number needed to treat* (NNT) as high as 400. 'Number needed to treat' is the number of people who need to take a drug to prevent one bad outcome. In the case of statins, 400 healthy people would need to take the drug for five years to prevent one heart attack.
- Women are more likely to experience statin side effects, such as muscle pain, insulin resistance, type 2 diabetes, fatigue, memory loss and insomnia.

RUTH – STATIN INSOMNIA

Ruth couldn't sleep. It had been going on for about five years, since she was 52, and she had assumed it was menopause.

'Although it was a bit weird,' she said, 'that my sleep problems started three years after my periods had already stopped.'

'Yes, that is a bit weird,' I agreed and asked Ruth what else had changed around that time. She couldn't remember anything, so we continued our discussion until I noticed she had listed Crestor on her list of medications.

'You take a statin,' I observed. 'When did you start that?'

Ruth looked at me in silence for a moment. 'Do you think it could be that?' she finally asked.

I told her it was a possibility, so Ruth checked her records to see when she had started the medication. 'I started it about three months before I started having trouble with sleep,' she told me.

'Speak to your doctor,' I recommended, 'and say you're wondering if the Crestor might be affecting your sleep. See if she agrees it could be prudent to try a three-

month break.'

Ruth's doctor thought a few months off the statin was a reasonable course of action and not a significant risk. After two months, Ruth's sleep improved, and she wanted to stay off the drug.

'Speak to your doctor,' I again recommended, 'and see if your need for a statin can be re-assessed.'

Ruth underwent further assessment, including a CAC scan to more accurately gauge her risk. As it turned out, Ruth's arteries looked healthy, which was good. She had normal insulin sensitivity and no family history of heart disease, so her only 'symptom' was high blood cholesterol, which her doctor agreed was not a reason to take a statin.

How to speak with your doctor about cholesterol and a statin medication

- 'I've noticed insomnia/fatigue/muscle pain and I'm wondering if it's the statin. Could I trial three months off it just to see?'
- 'Has my thyroid been tested?' (Because hypothyroidism is a common cause of high cholesterol.)
- 'I don't have any family history of heart disease and I'm wondering if this statin is really necessary. Can I please be referred to a cardiologist?'
- 'I understand that a coronary calcium (CAC) scan is the best way to assess risk. Is that suitable for me?'

And remember, these are questions for if you're in the position of *primary* (not secondary) prevention. If you've already had one heart attack and your cardiologist has prescribed a statin, you should take it.

Diet and lifestyle to reduce the risk of heart attack and stroke

Employ all the conventional diet and lifestyle strategies, such as **stopping smoking**, **avoiding junk food**, and **moving your body**. You can probably ignore the 'avoid saturated fat' recommendation, and instead focus on reversing insulin resistance.

Reverse insulin resistance. There's growing evidence that insulin resistance is a major driver of heart disease and, fortunately, we've already spent a good part of this book discussing how to reverse it. As we saw earlier, top strategies include: avoiding high-dose fructose, especially from desserts and sugar-sweetened beverages; eating whole, unprocessed foods, including vegetables to sustain a healthy microbiome; supporting a healthy circadian rhythm with morning light and protein; trying intermittent fasting; and moving your body to build muscle.

Movement of any type is beneficial for cardiovascular health, with strength training once again looking to be particularly helpful. According to a 2019 study, just one hour per week of strength training can reduce the risk of heart attack or stroke by up to 70 per cent. As we saw in Chapter 5, you can use your own body weight in simple exercises such as lunges and planks.

Supplements to reduce the risk of heart attack and stroke

We've discussed the duo of magnesium and taurine several times already. They're also helpful here.

Magnesium

Magnesium is a super-star for heart health and was the subject of a large 2018 review study in the *British Medical Journal* called 'Magnesium for the prevention and treatment of cardiovascular disease'. The study concluded that 1) magnesium deficiency is common, 2) magnesium deficiency is associated with a higher risk of heart disease, and 3) supplementation with magnesium improves blood pressure, and reduces the risk of heart attack and stroke. You may recall from the osteoporosis section that calcium supplements *increase* cardiovascular risk. That's because taking calcium without magnesium can cause magnesium deficiency.

How it works: It lowers blood pressure, supports mitochondria, reduces inflammation, and helps to reverse insulin resistance.

What else you need to know: There's no blood test for magnesium deficiency, so you just need to try it and see if it improves your blood pressure. Unless you have pre-existing kidney disease, magnesium is safe for long-term use.

Taurine

Taurine is an excellent companion to magnesium because it lowers blood pressure and, according to research, people with a good level of taurine are significantly less likely to die from heart disease.

How it works: It supports healthy mitochondria, regulates intracellular levels of calcium, and has antioxidant and anti-inflammatory properties.

What else you need to know: Taurine is found only in animal food such as fish, meat and dairy. The therapeutic dose is 3000 mg or 3 grams, and it has no known side effects. See Suggested supplements brands on page 308 for brands that contain both magnesium and taurine.

Vitamins D3 and K2 (MK-7)

Recall from the osteoporosis section that vitamin K2 (MK-7) helps to prevent unhealthy calcification of blood vessels. That makes it an important nutrient for heart health, and there's a growing body of evidence that, together, vitamins D3 and K2 have a beneficial effect on both cardiovascular and dementia risk, discussed opposite.

How they work: Vitamin K2 helps to prevent calcification of atherosclerotic plaques and, together with vitamin D3, helps to lower inflammation.

What else you need to know: The therapeutic dose is 1000 to 3000 IU of vitamin D3 and 75 mcg of MK-7. Too much vitamin D without vitamin K2 can increase the risk of heart disease.

> **TIP**
>
> Vitamin K2 can also help varicose veins.

Fish oil

According to an authoritative new meta-analysis study, supplementation with EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) omega-3 is effective for reducing the risk of coronary heart disease. ‘Whatever patients are getting through the diet,’ said one of the lead authors, ‘they likely need more.’

How it works: Omega-3 helps to lower inflammation, blood pressure and triglcyerides.

What else you need to know: I recommend a fish oil supplement that provides at least 720 mg of EPA, which usually equates to 2000 mg of total fish oil. Some of the studies in the meta-analysis used up to 5500 mg of fish oil. If you take blood-thinning medication, check with your doctor.

Checklist for risk reduction of heart attack and stroke

Identify and reverse insulin resistance.
Take magnesium and taurine.
Assess your risk and weigh all your options before taking a statin.

Risk reduction for dementia

As we saw in Chapter 7, menopause causes a drop in brain energy that necessitates a recalibration of your brain’s entire energy system. It’s a critical window or tipping point, because if you can recalibrate successfully, menopause will not be a long-term problem for your brain; if you cannot recalibrate, menopause could put you on the road to dementia later in life.

If you have a family history of dementia, I encourage you to take a look at neuroscientist Lisa Mosconi’s book *The XX Brain: the groundbreaking science empowering women to maximize cognitive health and prevent Alzheimer’s disease*. In the book, Mosconi explores genetic testing for dementia risk and provides strategies for preventing normal menopause-related cognitive impairment from turning into Alzheimer’s or other types of dementia (of which there are several).

Beyond that book, here are some of my recommendations:

Be careful with *anticholinergic* **medication**, which can interfere with the neurotransmitter acetylcholine. Anticholinergics include the antidepressant Paxil® as well as sleeping tablets like Ambien®, benzodiazepines, and antihistamines such as diphenhydramine and doxylamine. Short-term use is fine, but chronic use of anticholinergics can *quadruple* your risk of dementia.

Ask your doctor to screen for underlying medical conditions that impair memory, such as thyroid disease and vitamin B12 deficiency.

Avoid a hysterectomy if you can, because it can increase the risk of dementia.

Don't smoke, and consider reducing or quitting alcohol, because both smoking and alcohol cause brain shrinkage.

Eat foods that provide brain nutrients such as protein, zinc, choline and omega-3 fatty acids.

Employ the basic action plan for brain health (page 161), which includes soothing your nervous system, normalising circadian rhythm and getting enough sleep.

Move your body and build muscle because muscle is good for brain health.

Identify and reverse insulin resistance because that's how you'll achieve metabolic flexibility and keep your brain in a steady supply of ketones.

Estrogen therapy is another consideration for dementia risk reduction, but it really depends on your situation. If you underwent early menopause or had your ovaries removed, you may want to consider taking estrogen plus progesterone for at least five years. In that context, estrogen is likely to reduce the risk of both heart disease and dementia. If you underwent menopause at about the age of 50 and are within the first five years after your last period, estrogen plus progesterone may have the side benefit of dementia risk reduction but are unlikely to be prescribed for that reason. If you're older than 60 or more than five years after your last period, do not start estrogen, because it could increase your risk of dementia.

For **supplements**, review the Supplements for healthy cognition section in Chapter 7, where I list magnesium, taurine, vitamin B12, zinc, choline and MCT oil.

SPECIAL TOPIC: KETONES TO REDUCE THE RISK OF DEMENTIA

One of the key features of Alzheimer's is a drop in glucose metabolic rate, similar to the drop that occurs with menopause. The solution to low brain glucose is to improve the brain's ability to use ketones as an alternative energy source, thus improving brain energy, increasing nerve cell growth factors and reducing brain inflammation.

Ketones are so beneficial for brain health that a ketogenic diet has been traditionally prescribed for epilepsy, migraines and traumatic brain injury. It may also help dementia with one small study finding that both dietary ketosis and MCT oil supplements can help to stabilise functional brain networks.

A keto diet or keto supplement is more likely to be helpful if you have moderate or severe insulin resistance. In fact, the link between insulin resistance and Alzheimer's is so strong that some researchers refer to Alzheimer's as 'type 3 diabetes'. Check with your clinician.

A final word about what comes after

You're going to spend the next three, possibly four, decades in menopause, so you might as well settle in. And know that you're joining a global community of menopausal women, which by 2030, will be 1.2 billion of us – more than ever before. The deeper I move into menopause myself, the more I feel a camaraderie with other older women and a growing sense that we can be a force for good.

I want to finish with the menopause soliloquy from the TV show *Fleabag* delivered by Kristin Scott Thomas. Kristin's character Belinda is 58 and is speaking to the much younger character Fleabag.

> Belinda: The menopause comes, the f***ing menopause comes, and it is the most wonderful f***ing thing in the world. And yes, your entire pelvic floor crumbles and you get f***ing hot and no one cares. But then you're free, no longer a slave, no longer a machine with parts, you're just a person, in business.

Fleabag: I was told it was horrendous.

Belinda: It is horrendous, but then it’s magnificent. Something to look forward to.

Resources

Author's blog

- Lara Briden – The Period Revolutionary: larabriden.com

Contraception

Fertility awareness methods (FAM)

- Australasian Institute for Restorative Reproductive Medicine (AIRRM): airrm.org.au
- Australian Council of Natural Family Planning: acnfp.com.au/home.php
- Justisse: justisse.ca
- Natural Fertility New Zealand: naturalfertility.co.nz
- Sympto: sympto.org
- *Taking Charge of Your Fertility* by Toni Weschler

Other contraceptive methods

- HEX condoms: lelo.com/hex-condoms-original
- myONE Perfect Fit from ONE Condoms: myonecondoms.com

Perimenopause and menopause

- Australasian Menopause Society: menopause.org.au
- Centre for Menstrual Cycle and Ovulation Research (CeMCOR): cemcor.ca
- Daily Perimenopause Diary, Centre for Menstrual Cycle and Ovulation Research (CeMCOR): cemcor.ca/resources/daily-perimenopause-diary

- *Estrogen's Storm Season: stories of perimenopause* (2nd edn, 2018) by Professor Jerilynn Prior Jean Hailes for Women's Health: jeanhailes.org.au/health-a-z/menopause

Early menopause

- Daisy Network: daisynetwork.org
- NZ Early Menopause Support Group: earlymenopause.org.nz

How to speak with your doctor citations

Here are the full citations for the How to speak with your doctor sections. If you cannot access an article via your search engine, check your library or find the links at www.larabriden.com.

Progesterone therapy

- 'Body-identical hormone replacement therapy' by the Women's Health and Research Institute of Australia (WHRIA): whria.com.au/for-patients/hormones/menopause-2
- 'Cyclic progesterone therapy': cemcor.ca/resources/topics/cyclic-progesterone-therapy
- 'For healthcare providers: managing menorrhagia without surgery', by Professor Jerilynn Prior, Centre for Menstrual Cycle and Ovulation Research, 4 October 2017, cemcor.ca/resources/healthcare-providersmanaging-menorrhagia-without-surgery
- 'Oral micronized progesterone beneficial for perimenopausal hot flushes/flashes and night sweats' summarised as 'Oral micronized progesterone may decrease perimenopausal vasomotor symptoms': endocrinologyadvisor.com/home/conference-highlights/endo-2018/oral-micronized-progesterone-may-decrease-perimenopausal-vasomotor-symptoms
- 'Oral micronized progesterone for vasomotor symptoms – a placebo-controlled randomized trial in healthy postmenopausal women': pubmed.ncbi.nlm.nih.gov/22453200
- 'Progesterone for the prevention and treatment of osteoporosis in women': pubmed.ncbi.nlm.nih.gov/29962257
- 'Progesterone prevents sleep disturbances and modulates GH, TSH, and melatonin secretion in postmenopausal women': pubmed.ncbi.nlm.nih.gov/21289261

Thyroid treatment

- 'The swinging pendulum in treatment for hypothyroidism: from (and toward?) combination therapy': pubmed.ncbi.nlm.nih.gov/31354624

Endometriosis diagnosis

- 'Noninvasive ultrasound diagnosis of endometriosis': contemporaryobgyn.net/view/noninvasive-ultrasound-diagnosis-endometriosis

Endometriosis and adenomyosis

- Endometriosis Australia: endometriosisaustralia.org
- QENDO: qendo.org.au
- Endometriosis New Zealand: nzendo.org.nz

Additional resources

- Environmental Working Group (EWG): ewg.org
- 7-minute Workout: webmd.com/fitness-exercise/a-z/seven-minute-workout
- The Pelvic Expert: thepelvicexpert.com
- Menstrual Cups Australia Online: menstrualcupsaustraliaonline.com.au/shop
- My Cup New Zealand: mycup.co.nz

Suggested supplements brands

Here are some suggested brands as a *starting point*, not as an exhaustive list; other brands may be equally suitable. Except where indicated, all of the products are available without a prescription. When I refer to ‘overseas dispensaries’, I mean sites such as Amazon.

I ask that you speak with your doctor or pharmacist about possible interactions with your medical conditions or medications, or if you are pregnant or breastfeeding. Always cross-check the labels or packaging for precautions and dosage instructions.

How to speak with your doctor or pharmacist about supplements

- ‘I want to try this supplement for my [condition]. Are you aware of any interactions with my medication?’
- ‘I want to try this supplement for my [condition]. Are you aware of any reason that it would not be suitable for me?’

The goal is not necessarily to convince your doctor or pharmacist that the supplement could be helpful for your condition; only that it is safe to try.

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Berberine	Insulin resistance, endometriosis, adenomyosis	350–500 mg twice daily or a larger dose of a berberine-containing herb such as phellodendron	MediHerb Phellodendron Forte Metagenics Bactrex Designs for Health Berb-Evail	Berberine has several contraindications, so review Chapter 7 and seek medical advice. You may need to speak to a pharmacist or naturopath to obtain Metagenics or MediHerb brands. Berberine is also available from overseas dispensaries.
Calcium-d-glucarate	Endometriosis, adenomyosis, heavy periods	1000–1500 mg	Metagenics Calcium D-Glucarate RN Labs Cal-D-Glucarate Powder	You may need to speak to a pharmacist or naturopath to obtain Metagenics or RN Labs brands. Calcium-d-glucarate is also available from overseas dispensaries.
Choline	Memory problems, risk of dementia	500 mg	Metagenics MetaCholine	Choline can also be obtained from phosphatidylcholine, the ingredient in any 'liposomal' formula of vitamin C or other nutrients. Activated choline in the form of CDP-choline (citicoline) or alpha-GPC (L-Alpha glycerylphosphorylcholine) can be obtained from overseas dispensaries. You may need to speak to a pharmacist or naturopath to obtain Metagenics brand.

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Curcumin or turmeric	Endometriosis, adenomyosis, heavy periods	As directed	BioCeuticals Theracurmin Triple Ethical Nutrients Curcumin Plus MediHerb Curcuma Active	The spice turmeric can also be added to food but is unlikely to provide a therapeutic effect at that dose. You may need to speak to a pharmacist or naturopath to obtain MediHerb brand.
D-mannose	Recurrent urinary tract infection (UTIs)	2 grams	RN Labs D-Mannose Powder Clinicians Bladder Support Powder	You may need to speak to a pharmacist or naturopath to obtain RN Labs brand
Estrogen (prescription-only)	Hot flushes, mood, sleep, osteoporosis, genitourinary syndrome of menopause (GSM)	10–50 mcg transdermal dose		Estrogen in any form is prescription-only so speak to your doctor
Fish oil	Mood symptoms, risk of heart disease	Enough oil to provide at least 720 mg of the omega-3 fatty acid eicosapentaenoic acid (EPA), which usually equates to 2000 mg of total fish oil	Nordic Naturals Omega-3 liquid BioCeuticals UltraClean EPA/DHA Plus Metagenics MetaPure EPA/DHA Clinicians Omega-3 Fish Oil	You may need to speak to a pharmacist or naturopath to obtain Metagenics brand

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Glycine	Sleep problems, detoxification, insulin resistance	3 grams	HealthWise Glycine powder Orthoplex Blue Glycine powder RN Labs Glycine Powder	A smaller amount of glycine is naturally part of magnesium glycinate formulas. Glycine is also available from overseas dispensaries. You may need to speak to a pharmacist or naturopath to obtain Orthoplex or RN Labs brand.
Iodine	Breast pain, endometriosis, adenomyosis, uterine fibroids, ovarian cyst prevention, mood symptoms	200–3000 mcg (0.2–3 mg)	Pure Innovations Iodine capsules Metagenics Liquid Iodine Clinicians Iodine Oral Drops	My favourite iodine is Violet Daily (3 mg) which can only be obtained from overseas. *Always* consult your clinician before taking iodine, because too much can harm the thyroid. You may need to speak to a pharmacist or naturopath to obtain Metagenics brand.
Inositol	Insulin resistance	2–6 grams	HealthWise Myo Inositol RN Labs Inositol Powder	You may need to speak to a pharmacist or naturopath to obtain RN Labs brand
Iron	Migraines, heavy periods	15–50 mg	Ethical Nutrients Megazorb Mega Iron BioCeuticals Iron Sustain Clinicians Iron Boost Orthoplex Blue Iron BioMedica BioHeme	Do not take an iron supplement unless you have confirmed iron deficiency with a blood test. If you're very deficient, check with your doctor about the possibility of an iron infusion (Chapter 9). You may need to speak to a pharmacist or naturopath to obtain Orthoplex or BioMedica brands.

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Magnesium	Mood symptoms, hot flushes, sleep, insulin resistance, migraines	300–350 mg elemental magnesium	The listed brands contain magnesium glycinate combined with 3 grams of taurine: Ethical Nutrients Mega Magnesium powder Metagenics CardioX powder Orthoplex White MagTaur Xcell	You may need to speak to a pharmacist or naturopath to obtain Metagenics or Orthoplex brands
MCT oil (medium-chain triglycerides)	Memory problems, risk of dementia	15 mL	BioCeuticals MCT Activ	
Medicinal cannabis (prescription-only)	Sleep problems, endometriosis, adenomyosis	as prescribed		
Melatonin (prescription or overseas)	Sleep problems, migraines, acid reflux, fibromyalgia, osteoporosis	0.5–3 mg		Melatonin cannot be sold over the counter in Australia or New Zealand so the 'melatonin' products in your local supplement shop are highly diluted or homeopathic melatonin, which will not deliver the same benefits. You can either obtain a prescription for Circadin from your doctor, or purchase melatonin (any brand) from an overseas dispensary.

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
N-acetyl cysteine	Mood symptoms	500–2000 mg	HealthWise NAC N-Acetyl-L-Cysteine BioMedica N-Acetyl-Cysteine powder MediHerb N-acetylcysteine	You may need to speak to a pharmacist or naturopath to obtain BioMedica or MediHerb brands
Progesterone (prescription or overseas)	PCOS, hirsutism, PMS, migraines, heavy periods, endometriosis, adenomyosis, perimenopause	20–300 mg		Progesterone cannot be sold over the counter in Australia or New Zealand. You can either obtain a prescription from your doctor for Prometrium (Australia) or Utrogestan (New Zealand) capsules, or buy a progesterone cream (any brand) from an overseas dispensary.
Quercetin	Perimenopausal allergies	300–600 mg	BioCeuticals Quercetain BioCeuticals Allergy Care Metagenics Alergeze Clinicians Vitamin C & Quercetin Liposomal	You may need to speak to a pharmacist or naturopath to obtain Metagenics brand
S-adenosylmeth-ionine (SAM-e)	Mood symptoms	100–200 mg	BioCeuticals NuroSAMe Plus Orthoplex White SAMe 200 mg Nutrition Care SAMe 200 Complex	*Do not* combine with other antidepressants except under medical advice. You may need to speak to a pharmacist or naturopath to obtain Orthoplex brand.

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Sea buckthorn oil	Genitourinary syndrome of menopause (GSM)	3 grams	BioCeuticals Alpha EFA	
Selenium	Autoimmune thyroid disease	Up to 150 mcg	BioCeuticals Selenium Drops Eagle Seleno Forte Clinicians Selenium Oral Drops	
St John's wort	Mood symptoms	300–600 mg	Flordis Remotiv	
Taurine	Insulin resistance, mood, hot flushes, osteoporosis, risk of heart disease	3 grams	The listed brands contain magnesium glycinate combined with 3 grams of taurine: Ethical Nutrients Mega Magnesium powder Metagenics CardioX powder Orthoplex White MagTaur Xcell	You may need to speak to a pharmacist or naturopath to obtain Metagenics or Orthoplex brands
Vaginal probiotic	Genitourinary syndrome of menopause (GSM)	1–2 capsules	Blackmores Probiotics+ Womens Flora Balance BioMedica Femex Forte Clinicians Flora Restore	You may need to speak to a pharmacist or naturopath to obtain BioMedica brand
Vitamin B2 (riboflavin)	Migraines	Up to 400 mg	BioCeuticals Migraine Care Blackmores REME-D for Migraine-Headache	

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Vitamin B6 (pyridoxal-5-phosphate or P5P)	Mood symptoms, histamine intolerance, perimenopausal allergy symptoms	10–100 mg	BioCeuticals Ultra Muscleze P5P RN Labs Active B6	Choose pyridoxal-5-phosphate or P5P, which is a safer form of vitamin B6, and do not exceed a daily dose of 100 mg. You may need to speak to a pharmacist or naturopath to obtain RN Labs brand.
Vitamin B12 (methylcobalamin or cyanocobalamin)	Mood symptoms, memory problems, vegan diet, metformin-induced deficiency	500–1000 mcg	BioCeuticals B12 Spray Eagle Sublingual B12 Clinicians Vitamin B12 Liposomal	If your vitamin B12 is low on a blood test (Chapter 7), another option is to speak to your doctor about a B12 injection
Vitamin D3	Uterine fibroids, osteoporosis	1000–3000 IU	BioCeuticals D3 + K2 Spray Clinicians Sunshine Vit D3 1000IU with Vitamin K2	For maximum benefit, D3 should be combined with vitamin K2. Vitamins D3 + K2 combinations are also available from overseas dispensaries.
Vitamin K2 (MK-7)	Osteoporosis, atherosclerosis	75 mcg	BioCeuticals D3 + K2 Spray Clinicians Sunshine Vit D3 1000IU with Vitamin K2	Vitamins D3 + K2 combinations are also available from overseas dispensaries
Vitex	Mood symptoms	200–2000 mg	Flordis Premular MediHerb Chaste Tree tablets	You may need to speak to a pharmacist or naturopath to obtain MediHerb brand

Supplement	Useful for	Daily dose (unless otherwise indicated)	Australia and NZ brand and product name(s)	What else you need to know
Zinc	HPA axis dysfunction, vegetarian or vegan diet, hirsutism, mood symptoms, period pain, endometriosis, adenomyosis, genitourinary syndrome of menopause (GSM), hair loss, memory problems, osteoporosis	20–50 mg	Ethical Nutrients Mega Zinc Oriental Botanicals Zinc Excel Blackmores Bio Zinc BioCeuticals Zinc Sustain	Don't take zinc on an empty stomach or it could cause nausea
Ziziphus	Sleep problems	3 grams	Ethical Nutrients Triple Action Sleep Support BioCeuticals Sleep Complex Clinicians Sleep Science Metagenics NeuroCalm Orthoplex White Anxioton	You may need to speak to a pharmacist or naturopath to obtain Metagenics or Orthoplex brands

Glossary

A1 casein
A1 is a potentially inflammatory casein, and is contained in dairy products from Holstein cows.

adenomyosis
Adenomyosis is a gynecological condition in which uterine lining tissue grows within the muscle of the uterine wall. It can cause pain and heavy periods.

adhesions
Adhesions are bands of connective tissue or scar tissue that bind together pelvic structures and cause pain. They can be the result of either endometriosis or the surgery used to treat it.

amenorrhea
Amenorrhea means no menstruation or no periods.

androgen
An androgen is a hormone that promotes male characteristics. Examples include testosterone and the adrenal hormone DHEA (dehydroepiandrosterone).

anovulatory cycle
An anovulatory cycle is a menstrual cycle in which ovulation does not occur, and progesterone is not made.

anti-androgen
Anti-androgens (also known as androgen antagonists or testosterone blockers) are drugs or supplements that reduce androgens or block their effects.

aromatase
Aromatase is an enzyme that converts androgens to estrogens.

atherosclerosis

Atherosclerosis is the process of progressive build-up of lesions, or plaques, within the walls of the arteries. Plaques consist of oxidised sterols, lipids, cholesterol, macrophages, fibrin, calcium and other cellular materials.

bacterial vaginosis (BV)

Vaginosis is an overgrowth of one or more species of normal vaginal bacteria. Symptoms include itching, burning and watery discharge.

body identical hormone

A body identical hormone is a synthetic hormone that is structurally identical to your own human hormone.

corpus luteum

The corpus luteum is a temporary endocrine gland that forms from the emptied ovarian follicle after ovulation.

cytokines

Inflammatory cytokines are chemical messengers that your body uses to fight infection. They are part of your body's inflammatory response.

DHEAS (dehydroepiandrosterone sulfate)

DHEA**S** is a steroid hormone made by the adrenal glands. It's often high with PCOS and low with HPA axis dysfunction. DHEA declines naturally with age.

dysmenorrhea

Dysmenorrhea is the medical term for painful menstruation.

endocrine-disrupting chemicals (EDCs)

EDCs are substances that cause adverse health effects by altering the function of the endocrine or hormonal system. They include pesticides, metals, industrial pollutants, solvents, food additives and personal care products.

endometriosis

Endometriosis is an inflammatory condition in which tissue similar to the uterine lining (endometrial tissue) grows in places other than inside the uterus.

estradiol

Estradiol is the type of estrogen made by the ovarian follicles.

estrogen metabolism

Estrogen metabolism is the healthy removal or detoxification of estrogen from the body.

estrone

Estrone is the type of estrogen made by abdominal adipose tissue.

fibromyalgia

Fibromyalgia is the condition of unexplained chronic widespread pain and heightened pain response to pressure. It typically affects women aged 40–60.

FODMAPs

Fermentable, oligo-, di-, mono-saccharides and polyols (FODMAPs) are types of carbohydrates found in many foods, such as bread and fruit. They can cause IBS in some people.

follicle-stimulating hormone (FSH)

FSH is a pituitary hormone that stimulates ovarian follicles to grow.

food sensitivity

Food sensitivity is a broad category of adverse reactions to food. It is often a delayed reaction that involves inflammatory cytokines. Food sensitivity is different from a true food allergy.

gamma-aminobutyric acid (GABA)

GABA is a neurotransmitter that promotes relaxation and enhances sleep.

glucose tolerance test with insulin

A two-hour glucose tolerance test with insulin is similar to a glucose tolerance test, but it tests insulin as well as glucose. It involves multiple blood samples taken over a few hours following a sweet drink.

glutathione

Glutathione is a natural antioxidant made by your body.

gluten

Gluten is a protein found in grains such as wheat, rye and barley.

hemoglobin

Hemoglobin is the oxygen-carrying protein in the red blood cells. It contains iron.

hirsutism

Hirsutism is excessive growth of hair on the face and body.

histamine intolerance

Histamine intolerance is the condition of having too much histamine in your system. It can cause or worsen headaches, anxiety, insomnia, brain fog, hives and nasal congestion, as well as cause or worsen period symptoms such as acne, PMS and period pain.

hormonal birth control

Hormonal birth control is the general term for all tablets, patches, IUDs and injections that deliver steroid drugs to suppress ovarian function. The pill is the most popular type.

hormone receptor

A hormone receptor is a docking station for hormones such as estrogen or progesterone. They exist in every type of cell and transmit hormonal messages deep into the cell.

hyperthyroidism

Hyperthyroidism, or overactive thyroid, means too much thyroid hormone.

hypothalamic amenorrhea (HA)
HA is the absence of menstruation when no medical diagnosis can be found.

hypothalamic-pituitary-adrenal (HPA) axis dysfunction
HPA axis dysfunction refers to a pattern of chronic stress that results in abnormal levels of cortisol, the stress hormone.

hypothalamus
The hypothalamus is the part of the brain that sends messages to the pituitary gland.

hypothyroidism
Hypothyroidism, or underactive thyroid, means insufficient thyroid hormone.

hysterectomy
Hysterectomy is the surgical removal of the uterus. Surgical removal of both the uterus and the cervix and possibly the ovaries is called total hysterectomy. Surgical removal of the uterus, but not the cervix or the ovaries, is called partial hysterectomy.

inflammatory cytokines
Inflammatory cytokines are chemical messengers that your body uses to fight infection. They are part of your body's inflammatory response.

insulin
Insulin is a hormone made by your pancreas. It stimulates your liver and muscles to take up sugar and convert it to energy.

insulin resistance
Insulin resistance is the condition of reduced sensitivity of the body to the hormone insulin, leading to chronically elevated insulin levels. It's also called hyperinsulinemia, metabolic syndrome or prediabetes, and is a major player in abdominal weight gain and many other menopausal symptoms.

intermittent fasting
Intermittent fasting is daily cycling between periods of fasting and eating.

intestinal permeability
Intestinal permeability is a condition in which tiny microscopic leaks form between the cells of your intestinal wall.

intracrinology
Intracrinology is the production of estrogen by cells throughout the body from androgens, with the help of aromatase.

IUD An intrauterine device, also known as a coil, is a small, usually T-shaped, birth control device inserted into the uterus to prevent pregnancy or lighten flow.

ketosis

Nutritional ketosis is a metabolic state in which your body switches to using more fat and ketones (fat metabolites) rather than glucose as its main fuel source. It's different from *ketoacidosis*, which is a dangerous complication of type 1 diabetes.

laparoscopic surgery

Laparoscopic surgery or laparoscopy is a type of keyhole operation performed in the abdomen or pelvis using small incisions and with the aid of a camera.

luteal phase

The luteal phase is the ideally two-week-long time between ovulation and the first day of menstrual flow. It's named after the *corpus luteum*, which is a temporary ovarian gland that makes progesterone, and is the only time in the cycle when you make any significant amount of progesterone.

macronutrients

Macronutrients are substances that you require in relatively large amounts and must be obtained from food.

mastalgia

Mastalgia is the medical term for breast pain.

melatonin

Melatonin is a hormone made by the pineal gland at the top of your brain.

menopause

Menopause means the cessation of menstruation. It's the life phase that begins one year after your last period.

meta-analysis

A meta-analysis uses statistical methods to combine the results of many different studies in order to determine wider trends.

microbiome

The community of microorganisms in a particular environment, such as the body or a part of the body.

micronised progesterone

Micronised progesterone is a form of replacement hormone. It is a natural or body identical progesterone rather than a synthetic progestin.

neurosteroid change sensitivity

A change in the brain's sensitivity to certain hormones. In women it can contribute to both premenstrual *and* perimenopausal mood symptoms.

ovarian follicle

An ovarian follicle is a sac within the ovary that contains one egg or oocyte.

perimenopause

Perimenopause means ‘around menopause’, and refers to the hormonal changes (such as increased estrogen and decreased progesterone) that occur during the two to twelve years before menopause.

phytoestrogen
Phytoestrogens are a special group of phytonutrients that exert a weak estrogen-like effect.

phytonutrient
Phytonutrients are naturally occurring plant chemicals that have beneficial effects on the human body.

pituitary gland
The pituitary gland is a small endocrine gland attached to the base of the brain.

platelets
Platelets are blood cells whose function is to arrest bleeding.

polycystic ovary syndrome (PCOS)
PCOS is a common hormonal condition characterised by excess male hormones (androgens) in women.

premenstrual dysphoric disorder (PMDD)
Premenstrual dysphoric disorder (PMDD) is a condition of severe premenstrual depression, irritability or anxiety. It affects about one in twenty women.

progesterone
Progesterone is a steroid hormone made by the ovary after ovulation.

progestin
Progestin is a general term for a group of drugs that are similar to the hormone progesterone.

prolactin
Prolactin is a pituitary hormone that plays an important role in breastfeeding but, when high, can suppress ovulation.

prolactinoma
Prolactinoma is a benign tumour in the pituitary gland that releases prolactin.

prostaglandins
Prostaglandins are hormone-like compounds with a variety of physiological effects, such as the constriction and dilation of blood vessels.

sarcopenia
The medical term for loss of muscle, Latin for ‘lack of flesh’. It’s defined as the degenerative loss of skeletal muscle mass, quality and strength, and the replacement of muscle fibres with fat.

secondary dysmenorrhea
The medical term for severe period pain caused by an underlying medical condition such as fibroids, endometriosis or adenomyosis.

serotonin
Serotonin is a neurotransmitter that promotes feelings of wellbeing and happiness.

serum ferritin
Serum ferritin is the blood test for stored iron.

sex hormone binding globulin (SHBG)
SHBG is a protein made by your liver. It binds to testosterone and estrogen.

sleep apnea
Sleep apnea, also called obstructive sleep apnea (OSA), is a potentially serious sleep disorder in which breathing repeatedly stops and starts during the night. Without treatment, it can increase the risk of heart disease, stroke and type 2 diabetes.

small intestinal bacterial overgrowth (SIBO)
SIBO is the overgrowth of normal gut bacteria in your small intestine.

thyroid antibodies
Thyroid antibodies are autoimmune antibodies that your immune system makes against your thyroid.

trans fat
Trans fat is a type of fat created by the processing or hydrogenation of vegetable oil.

TSH Thyroid stimulating hormone (TSH) is a pituitary hormone that stimulates your thyroid gland. It can be tested for thyroid dysfunction and should be between 0.5 and 4 mIU/L.

ultrasound
A pelvic ultrasound is an imaging study that your doctor may order to view your ovaries and uterus. The ultrasound wand (transducer) will be applied to your lower belly and/or inserted into your vagina.

uterine polyps
Uterine polyps or endometrial polyps are outgrowths from the uterine lining (endometrium). They are usually benign or non-cancerous.

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About Lara Briden

Lara Briden is a naturopath with more than twenty years' experience in women's health. She currently has consulting rooms in Christchurch, New Zealand, where she treats women with PCOS, PMS, endometriosis, perimenopause and many other hormone- and period-related health problems. She is the author of *Period Repair Manual*. *Hormone Repair Manual* is Lara's second book.

You can find Lara's The Period Revolutionary blog at www.larabriden.com, and can follow her on Twitter, Instagram and Facebook: @LaraBriden.

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