

# FROM TABOO TO WELLNESS: THE FACTS BEHIND MENOPAUSE

**Peter Hollands**

**Bentham Books**



# **Medicine Demystified**

*(Volume 3)*

## ***From Taboo to Wellness: The Facts behind Menopause***

Authored By

**Professor Peter Hollands**

*Freelance Consultant Clinical Scientist  
Huntingdon, Cambs PE261LB  
UK*

## **Medicine Demystified**

*(Volume 3)*

*From Taboo to Wellness: The Facts behind Menopause*

Author: Peter Hollands

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## PREFACE

This book is inspired by my own experiences as a Clinical Embryologist helping patients through fertility treatments and as a Clinical Scientist helping patients through treatment using stem cell technology for various diseases. This book is not easy to read in many places. I do not apologise for this because to understand and cope with anything properly, the hard facts must be known, understood and accepted. This book is neither complicated nor does it use terminology which is unknown to the reader (there is also a comprehensive glossary). The book is tough to read because you may see statements and ideas which really hit home, and we all feel this at some point in our lives. Try to stick with it, it might be tough and even upsetting, but afterwards, you will hopefully feel empowered to manage your menopause and feel better. The more you learn, the more you can be pro-active in the treatment and management of your menopause instead of remaining a 'victim' of it.

The purpose of the 'Medicine Demystified' series of books (a total of 10 books) is to take difficult or complex areas of medicine and to provide clear, unambiguous and factual information on these subjects. Most patients feel vulnerable and frightened at some point in their medical treatment (whatever that might be) and are often 'too scared' to ask vital questions. If patients have a better understanding and can ask the right questions to the right people at the right time, then a lot of anxiety, stress and worry will be taken away. This 'empowerment' of patients is extremely important to me, and I have worked to achieve it throughout my whole career. A domineering 'don't ask me' healthcare professional is neither useful nor effective. We all know that many healthcare professionals operate under enormous stress. Despite this, a few moments taken to actually listen to the patient can be priceless to the eventual outcome for that patient.

My own experience in menopause comes not only from family members (I am sure that everyone knows someone who has been through menopause) but also from the thousands of fertility patients I have seen over the years. Fertility patients often first appear for treatment at fertility clinics when they are, in fact, starting, or even well into, the perimenopause. This is a 'double stress' situation. Not only are the patients dealing with perimenopause, but they are also dealing with the fact that their fertility is rapidly declining, and their chances of success with fertility treatment are declining by the day. There are two problems that result in this common situation:

1. Poor education about the perimenopause/menopause and its' implications
2. Poor understanding about the ongoing decline in female fertility with age and to the limits of current fertility treatments.

This book deals with problem number 1, and my second book in this series, 'The Fertility Promise,' deals with every aspect of infertility and fertility treatment.

I have tried to be as factual, understanding, supportive and compassionate as possible throughout this book. I have talked about 'routine' matters relating to menopause and exciting, cutting-edge ideas which could one day even delay or 'reverse' menopause. I hope that you find the book useful, empowering, and most of all, enjoyable.

### CONSENT FOR PUBLICATION

Not applicable.

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## **CONFLICT OF INTEREST**

The author declares no conflict of interest, financial or otherwise.

## **ACKNOWLEDGEMENT**

Declared none.

**Peter Hollands**  
Freelance Consultant Clinical Scientist  
Huntingdon, Cambs PE261LB  
UK

## **DEDICATION**

*This book is dedicated to my wife, Louise Barrett, for her love, dedication and support. I must also thank my cardiac surgeon Mr. Ian Wilson and everyone at Liverpool Heart and Chest Hospital, without whom none of this would be possible!*

## CHAPTER 1

### A Bit of History

(An Overview of the Historical Development of the Recognition and Understanding of Menopause.)

*"It is fairly brutal, and you go through all the accompanying side effects: hot flushes, weight gain, a sense of mourning for lost youth, sexiness, and somehow the point in anything. I became depressed, which I ended up getting help with."*

*Jennifer Saunders*

#### 'THE CHANGE'

Before we make a start on this book, I want to make it clear that there is no such thing as 'the change'. This is an expression often wrongly used instead of perimenopause/menopause, which probably dates back to the 1950's or even earlier when discussions of such medical matters were 'taboo' and often whispered about in quiet groups. There are, in fact, millions of 'changes' in the human body every few seconds. The brain processes and reacts to millions of electrical inputs, and the other organs in the body carry out millions of chemical reactions. Air moves in and out of the lungs to take in oxygen and remove carbon dioxide. The kidneys remove waste products and toxins. The liver carries out some of the most amazing biochemistry on Earth every second. The heart pumps blood through the body at three feet per second. The red cells in our blood fly through our veins, carrying oxygen to, and carbon dioxide away, from our organs and tissues. White cells in our blood fight infection and manufacture antibodies, e.g., antibodies in response to the COVID-19 vaccine or any other type of vaccine. Platelets in our blood stop us from bleeding to death. Reproductive organs are constantly (up to the perimenopause) producing gametes which, when brought together, can form a new human! Stem cells replace and renew many tissue types in the body daily. The body we had a minute ago is different from the body that we have a minute later. Change is constant and natural; without it, we would all die in a few minutes. The living human body is not a static piece of tissue, it may seem so, but it most definitely is not. If you read around about perimenopause/menopause, you will no doubt find reference to 'the change' in some older references, and if you do, then please mentally delete it and replace it with perimenopause/menopause. You may also find reference to something called the 'climacteric'. This is the medical term for menopause and will not be used in

Peter Hollands

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this book because it will just lead to further confusion. Let's keep it simple, perimenopause and menopause are perimenopause and menopause. No more, no less.

## **INTRODUCTION**

There are approximately 3.7 billion women on Earth, and around 1.9 billion of these women are of reproductive age (15-49 years old). This means that there are approximately 1.9 billion women who, in the next 34 years, will go into menopause. As the global population increases, so will the incidence and suffering related to menopause. Those women in developing countries with poor or even non-existent healthcare will suffer the most. Nevertheless, those women in highly developed countries are far from immune to the symptoms and suffering brought by the menopause. The term menopause was first introduced in 1821 by Dr. Charles Negrier, and he characterised it as 'depression, hot flushes and irregular periods to problems of the uterus.' Over two hundred years later, the problems associated with menopause still exist, and the interest to help women suffering from the menopause has, until very recent times, been of little interest to the medical profession. Other notable events in 1821 include the death of Emperor Napoleon I in exile on the island of St. Helena, the Coronation of George IV, and the United States taking possession of Florida from Spain.

It took another hundred years before scientists started to link the reduction in female hormone production to the symptoms of menopause. Following this, in 1942, the first commercial hormone treatment (made from pregnant mare urine) became available. This early hormonal therapy was unreliable and often prescribed only for a short time which meant that any benefit women might have enjoyed quickly disappeared. As a result, many women resorted to alcohol or even drugs, such as Laudanum, to try to block out the symptoms of desperate women.

It then took until 1963 (the year of the Great Train Robbery and the assassination of John F. Kennedy, amongst other things) for a serious medical publication to be written by Robert Wilson and his wife, which highlighted the plight of women suffering the symptoms of menopause. They demanded the development of better, safe, and more effective treatments for menopause. This resulted in the development of Hormone Replacement Therapy (HRT) which remains the mainstay of menopause treatment today. Nevertheless, HRT does not 'suit' all women, and other therapeutic approaches are constantly being assessed.

## **The Four Stages of Menopause**

The following description of the different phases and symptoms of menopause may be very difficult reading for some people. If so, please accept my apologies at this stage, my aim is to be clear and helpful and not to add to the already considerable stress and confusion of menopause.

It is extremely important to clearly understand the different stages of menopause as these can often be the most worrying to most women because they fear other diseases and, in fact, what is happening is the menopause. The four stages of menopause are:

### ***1. Premature Menopause or Premature Ovarian Insufficiency (POI)***

Some women will undergo menopause at a young age, and this is known as premature menopause or premature ovarian insufficiency (POI). There are several possible causes of premature menopause (POI), such as:

- Hysterectomy (surgical removal of the uterus) in a young woman. This may be for a variety of reasons, but one consequence is the possibility of premature menopause.
- Oophorectomy (surgical removal of both of the ovaries) in a young woman for various reasons. In this case, the symptoms of menopause will begin immediately.
- Premature Ovarian Failure (POF). This may happen for unexplained or unknown reasons (known medically as idiopathic) in an otherwise healthy woman. POF may have a genetic base; it may be related to other abdominal surgery and will result from cancer treatments, such as radiation or chemotherapy. There is some evidence to suggest that some women may produce insufficient or abnormal follicles in their ovaries, resulting in poor quality or immature eggs which are unable to be fertilised.

Whatever the reason, this is a devastating, life-changing diagnosis for a young woman, and anyone feeling that they might be undergoing premature menopause should seek medical advice immediately.

### ***2. Perimenopause***

This can be a period of 3 to 5 years (it may, of course, be shorter or longer for some women) where the production of the female hormone called oestrogen starts to fall. On average, perimenopause starts when the woman is in her late 40's and results in many worrying symptoms, such as:

---

## The Menopausal Women

(The Fears, Hopes, Wishes and Prayers of Menopausal Women)

*The freedom of patient speech is necessary if the doctor is to get clues about the medical enigma before him. If the patient is inhibited, cut off prematurely, or constrained into one path of discussion, then the doctor may not be told something vital. Observers have noticed that, on average, physicians interrupt patients within eighteen seconds of when they begin telling their stories.*

*Jerome Groopman*

It is perhaps a silly understatement to say that menopausal women worry. The reason for this is not that menopausal women are in some way different, but they are showing a normal response common to all humans. If someone gets blood in the urine, cannot shift a persistent cough, or has a headache that will just not go away, then everyone will worry. Any unusual symptoms suffered by a male or a female will almost certainly result in worry. This worry will often result in sleepless nights, and as the dreaded ‘consultation’ with a physician looms up, the worry increases even more. The patient worries that they will be told that they have a few weeks to live, or that major surgery is needed, or that a long, painful treatment regime will have to start, which may fail. They may, of course, be told that taking a course of antibiotics or undergoing some physiotherapy will cure the problem. Whatever the outcome, worry always precedes the diagnosis and treatment; it is human nature.

In the case of the perimenopausal woman, it is true to say that this worry may be even more severe. Is it cancer? Will I see my grandchildren grow up? Is it Alzheimer’s disease? The symptoms are so wide-ranging and can be so intense that any eventuality could be imagined.

The first port of call for a perimenopausal woman is most often the General Practitioner (GP) or Family Physician (FP). This is a great first step, but of course these physicians do not specialise in menopause and may even just pick up on the anxiety and depression side of menopause and prescribe anti-depressants. Such an approach may help with the depression and anxiety being experienced but will have no great impact on the menopause itself.

Peter Hollands

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## **NEXT STEPS**

The next step may be a referral to an endocrinologist who specialises in diseases of the glands in the body and the hormones they produce, *e.g.*, the pancreas and diabetes. Such a physician will have excellent knowledge within the field of endocrinology. Menopause is caused by the declining function of the ovaries, which are certainly endocrine glands producing hormones. The endocrinologist will therefore pinpoint the diagnosis of perimenopause or menopause very easily, and this may be of some comfort to the patient who now has a clear diagnosis and perhaps can see a way forward. The treatments which may follow for menopause are described in subsequent chapters, but the basic premise of all current treatments is to simply ‘replace’ the missing hormones and therefore remove the debilitating symptoms of menopause. This works for some patients, but it may not be so successful for others.

## **FEAR**

Some women going through perimenopause and menopause can develop levels of fear which can be life-changing in some cases. These fears can be many and varied, and once again, no generalisations can be made. Despite this, there have been reports of women who fear socialising, leaving the house, or even just meeting new people. There may be work pressures, such as deadlines or targets, which for the menopausal woman, can transform into all-encompassing fear. A very common fear is a fear of driving. Very competent and experienced women drivers may develop this fear and it might be related to the fear of losing concentration (perhaps due to ‘brain fog’) and potentially crashing or hurting someone else. In the extreme, the fears may become deep-seated and irrational, resulting in a block between the fear and reality. This can be extremely frightening for anyone but especially an already vulnerable woman who has previously been confident and outgoing. The fears may extend to the family members, whereas the menopausal woman may honestly fear that something bad is going to happen to a family member. This fear can become disruptive and all-consuming for some menopausal women but may not even be noticed by other women.

## **WHAT IS CAUSING FEAR?**

The key cause of fear in menopause is due to low oestrogen levels, which in turn cause significant changes in the brain and in how we think and rationalise on a daily basis. Prior to menopause, this is ‘automatic,’ and governed by oestrogen, but when oestrogen control is lost, then the worst aspects of fear can arise. The part of the brain which is regulated by oestrogen controls, such things as survival, food, life and reproduction. This means that when oestrogen levels fall, the

menopausal woman may experience fears of imminent danger, a threat to life, a lack of food or an inability to obtain food, and the fear of being no longer able to reproduce. These are very basic fears which threaten life and survival and are deeply set within each persons' consciousness. When these fears are amplified by the lack of oestrogen in menopause, the results can be very frightening and seem very real.

## **MYTHS**

There are many myths surrounding menopause which can, in some cases, increase the levels of anxiety. There are approximately 13 million in the UK alone suffering from menopause, so clear, unbiased and most importantly, true information will help literally millions of people in the UK alone; globally, this will be billions. The following are common myths and must be ignored by anyone approaching or going through menopause:

- Menopause will happen at 50. This is a myth because menopause is a natural ageing process that can take many years and does not happen when the candles are blown out on the 50th birthday cake! Indeed, the average age when a woman will reach the menopause in the UK is 51. Despite this, menopause is a complex and slow process that usually occurs across a wide age range, such as 45-55. It must also be remembered that there is also the occurrence (about 1 in 100 women) of premature menopause, usually defined as menopause occurring before the age of 40. The basic message here is that women should not fear that menopause will one-day 'switch on', it is a long process with many stages, as described in Chapter 1.
- Menopause is a single event. This is clearly a myth. Menopause does not just 'happen'. The stages of menopause have been carefully described in Chapter 1 and clearly show that menopause is a long process (in everyone) that may take place over many years. There may be certain 'events' within the menopause process that may seem significant, but menopause itself is not a single event; it is a complex combination of many physiological changes.
- The experience of menopause is the same for all women. This is partially true because women may experience similar symptoms when going through menopause, but in physiological terms, the reaction of the body to menopause will vary greatly from woman to woman. Oestrogen levels reduce in menopause, but many other hormones, such as progesterone and testosterone, also decline, resulting in very complex physiological changes which cannot be standardised. It might be surprising to see that testosterone (the classic male hormone) is important in female physiology. Testosterone, at levels much lower than those in the male, is, in fact, very important in female physiology in terms of the

## CHAPTER 3

# The Diagnosis and Standard Treatment of Menopause

(Hormone Replacement Therapy, HRT)

*The 'Science' behind hormone replacement therapy has put women on a medically engineered, press-fueled, big pharma-funded roller coaster.*

*Willow Bay*

## INTRODUCTION

In this chapter, I will explain firstly how the menopause is diagnosed (this is more complicated than you might think) and then the standard treatment of the menopause, which is Hormone Replacement Therapy (HRT). It is most important for any woman going through the menopause to understand both the diagnosis and standard treatment of the menopause. This will help to reduce the anxiety often felt during the diagnosis phase and the medication she may be asked to take.

## DIAGNOSIS OF MENOPAUSE

It is important to remember that menopause can happen across a very wide age range, from aged 40 to 60 years. For this reason, it is essential that you consult a GP or Family Physician about your symptoms as soon as they arise. This will ensure that any other diseases are excluded in the diagnostic process to come to a clear diagnosis of the menopause. The healthcare professional will be able to assess you as a patient and prescribe Hormone Replacement Therapy (HRT) if it is safe and effective to do so. Please note that HRT is not appropriate for everyone. The diagnosis of the menopause (or perimenopause) is most commonly based on your age, your symptoms (*e.g.*, hot flushes, night sweats as described in Chapter 1), and how often you have periods. Most women are unlikely to need further tests. The diagnosis can be more difficult if you are already taking any hormonal medication, which is often used in the treatment of heavy periods.

A blood test to assess the levels of Follicle Stimulating Hormone (FSH), which will be requested by your physician, may be required if:

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- You are aged between 40 and 45 and have menopausal symptoms along with changes in the regularity of your periods.
- You are aged under 40 and there may be a possibility of premature menopause or premature ovarian insufficiency (POI).

FSH in the blood is at higher levels when a woman is in the menopause. Nevertheless, caution, knowledge and experience must be used by the healthcare professional in interpreting the levels of FSH in the blood, especially if:

- You are about to ovulate.
- You are taking a contraceptive containing progestogen, oestrogen or high-dose progestogen.

The reasons for this are that FSH rises just before normal ovulation, and the contraceptives may cause changes in your natural FSH levels. Both of these may easily be misinterpreted as the menopause by unwary healthcare professionals.

### **‘Do It Yourself’ Menopause Diagnostic Kits**

At the time of writing, an ‘over-the-counter menopause diagnostic kit’ was available in the UK and USA. These can be purchased and used without the supervision of a physician. These menopause ‘diagnostic’ test kits will only give a qualitative estimate of your current FSH level in your urine at the time of the test. In contrast, the FSH blood test, ordered by a physician, gives an accurate quantitative FSH result. The qualitative ‘menopause diagnostic kit’ will, therefore, only indicate if your FSH levels are raised. There are numerous causes of this, including natural ovulation! The risk, therefore, is that if these over-the-counter tests are carried out without the supervision of a physician, then the interpretation of the test result may be completely wrong.

The accuracy of the over-the-counter’ menopause diagnostic kits is agreed to be around 9 out of 10 (90%). This sounds good, but it still means that 10% of the test results are meaningless. That could mean many people receiving incorrect results. The accuracy of the FSH blood test is 100%.

It must also be remembered that as you grow older, your FSH levels may fluctuate both up and down during your menstrual cycle. During this time, the ovaries will continue to release eggs, and pregnancy is still possible. The accuracy of ‘over-the-counter’ menopause tests is also reduced (meaning that false negatives may be obtained) by the following factors:

- Whether or not the test was carried out on the first-morning urine.
- Whether or not you drank large amounts (2-3L) of water before carrying out the test. This dilutes the urine, which in turn dilutes the level of FSH in the urine.
- Whether or not you use, or have recently stopped using, oral or patch contraceptives, HRT, or oestrogen supplements.

If you carry out an ‘over-the-counter’ menopause test and get a ‘positive’ result, then this means that you may be in a stage of the menopause. The next step, especially if you have any menopausal symptoms, is to see your GP or Family Physician. It is absolutely essential that you do not stop taking any contraceptives based on the result of a ‘positive over-the-counter’ menopause test. Doing so may risk an unwanted pregnancy.

If you carry out an ‘over-the-counter’ menopause test and get a ‘negative’ result, but you still have menopausal symptoms, then you still may well be in the perimenopause or menopause. Please do not assume that you have not reached the menopause because there could be many other reasons for a negative result, as described above. The key message here is that if you choose to use an ‘over-the-counter’ menopause testing kit, then do not assume that the result it gives confirms or refutes whether or not you have the menopause. Simply put, these ‘over-the-counter’ tests are effectively meaningless and a waste of money. If you have menopausal symptoms and are worried about consulting a physician, this is the only safe and effective way to proceed. One final note on the ‘over-the-counter’ menopause tests is that they must not be used to assess your fertility as, once again, an unwanted pregnancy may result.

### **Hormone Replacement Therapy (HRT)**

The concept behind HRT is to replace the hormones which are no longer being produced during the menopause so that these hormones will reduce or remove the symptoms of menopause. On first sight, this makes sense, but it is not as simple as that.

There are 2 main hormones used in HRT, and these are:

1. Oestrogen, which may include oestradiol, oestrone and oestriol.
2. Progestogens are synthetic versions of progesterone (*e.g.*, medroxyprogesterone, dydrogesterone, levonorgestrel norethisterone). There is also a version known as micronised progesterone (sometimes called body identical or natural) that is chemically identical to the human hormone. The choice of which hormones and which combinations are suitable for you, will be made by your healthcare professional.

**CHAPTER 4****The Alternative Treatments of Menopause**

(Some Different Ideas)

*Often what feels like a terrible change, is really just a pathway to a far better place.*

*Karen Salmansohn*

**INTRODUCTION**

The previous chapter explored HRT, which is considered the ‘standard’ treatment for menopause across the world. Nevertheless, there are options for the treatment of the menopause which are worth exploring and may be very beneficial for some women (but once again, not for all). These alternatives may interest those women who cannot take HRT for medical reasons or simply decide that HRT is not for them. You are allowed to make this decision. No one has to take any medication unless they are ‘sectioned’ under the Mental Health Act (2007). HRT is not compulsory; it is your choice whether or not to take it following advice and support from your healthcare professional. Some women manage perfectly well without it. At the same time, some women would suffer unbearable symptoms without taking HRT.

**LIFESTYLE**

The concept about changing the course or occurrence of disease by life-style changes is very popular, effective, and certainly worth further exploration. Lifestyle can mean many different things to many different people. The areas described below are considered possible lifestyle changes which may help to control the symptoms of the menopause. It should be remembered that menopause is not a disease; it is a natural biological process. Despite this, the menopause can produce some nasty symptoms, which may in part respond to lifestyle changes. It is those symptoms that, if present, need controlling by either HRT or some other intervention.

**EXERCISE**

Perhaps the most obvious lifestyle change is to introduce some sort of regular exercise into your life (if this does not already exist). This does not mean a personal trainer and an expensive gym membership. The exercise involved can be as simple as a regular walk of at least 1 mile. This might be part of your commute, or much nicer, it could be through parkland, woodland, hills or coastal areas. One

of the nicest long walks I know is around Grafham water in Cambridgeshire. This walk is 11 miles long, but the water and the scenery make it all worthwhile. Despite this, if your first regular walk is half-a-mile long, then this is a great start on which to build. Regular exercise can reduce hot-flushes and improve sleep (being physically tired at the end of the day is a great way to achieve better sleep). Exercise is also well known to improve the overall mood, such as feelings of anxiousness, irritability or depression, which are very common in the menopause. There are of course many other types of exercise to many and varied to mention here. Weight-bearing exercises, for example, can be very beneficial to maintaining bone density and thus reducing the risk of osteoporosis or weak and brittle bones.

## **DIET**

We are much more diet-conscious today than we used to be, even when I was growing up in the 1960's. The health risks of fatty, salty, processed, and sweet foodstuff are very well described elsewhere, and the benefits of reducing or removing these food items are very clear. Obesity accentuates the symptoms and seriousness of every single disease known, and whilst menopause is not a disease, obesity will accentuate the symptoms. If you are unsure how to improve your diet, many websites and books are available. I would suggest using 'medically based' information, such as that found in the NHS in the UK or the Office of Disease Prevention and Health Promotion in the USA.

## **BE COOL**

One of the most distressing symptoms of the menopause is 'hot flushes'. These often happen at night (often called night sweats), so one way to minimize hot flushes is to wear loose and light nightclothes (or none at all!) and ensure that your bedroom is cool and well-ventilated. The recommended temperature for the bedroom is 15.6 to 19.4° C (60 to 67° F). Please also bear in mind that a winter duvet in the summer months will make matters worse. Please ensure you switch to a summer duvet when the ambient temperature outside rises. Those homes with air conditioning (rare in the UK but common in N. America) will also help control night-time temperature.

## **FOOD**

The importance of a good diet has already been mentioned, but in the context of hot flushes, it is also recommended to reduce or remove caffeine from your diet (decaffeinated tea and coffee are readily available in most countries). Alcohol should also be avoided or taken in moderation (1 glass of wine, or equivalent, per day maximum). Alcohol has many unwelcome physiological effects on your body

and increases and trigger hot flushes. It is also best to avoid spicy food if possible, as this has also been linked to triggering hot flushes.

## **STRESS**

Menopause is a source of stress which results in severe symptoms in some women, which comes along with mood swings that can be unpredictable and damaging to relationships. There is no 'magic bullet' for this stress, but it is well known that good sleep and regular exercise, as described above, can be very beneficial for some women. Other activities which involve focussed relaxation, such as Tai Chi or yoga, may be very beneficial in reducing stress. There are, of course, pharmacological options for the treatment of stress, but if the problem can be handled by other means this is much better in the long term. It is also important that your partner, family friends, and friends understand the stressful impact of the menopause so that they can support you in the correct way.

## **SMOKING AND VAPING**

Every healthcare professional will advocate stopping smoking for all patients. The smoking habit in all healthcare professionals stands at around 21%, which is a little ironic but perhaps reflects the stress they are exposed to. Vaping is also not recommended. Nicotine intake is the same as cigarettes, and other side effects are also likely when vaping. Giving up smoking and vaping has been shown to help to reduce hot flushes and of course, the other benefits, such as a reduction in the risk of heart disease, cancer and stroke, are an added bonus. If you need help to stop smoking and vaping, then there is a lot of information on the internet, and of course, your GP or Family Physician will be very happy to help.

## **VAGINAL DRYNESS**

This distressing symptom of the menopause has already been mentioned earlier, but it also fits into the life-style changes which may help the symptoms of the menopause. It is possible to buy vaginal lubricants and moisturisers from most pharmacies (without a prescription), and these products can be extremely effective. It may take a little time to get used to using such products during sexual intercourse, but they will certainly make the whole process much more enjoyable.

## **PHARMACEUTICALS**

There are other pharmaceuticals available, most often by prescription only, which may help those women who find standard HRT either unwelcome or unpleasant. All of these products must be taken under medical supervision, and it is also important to note that some of these pharmaceuticals are not licensed for the



## The Male Menopause

(Fact or Fiction?)

*Acting feels different. I'm not sure exactly what that is, but it used to mean a lot more. Maybe that sounds like I'm throwing it away, and I'm not, I'll still do the best damn job I can, but it doesn't mean the same thing. I'm going to get the answer for myself one of these days. It's the male menopause, that's what it is.*

*Mel Gibson*

### INTRODUCTION

There is no such thing as the male menopause. You may feel from this statement that this is going to be a very short chapter. If the male menopause is to exist, then it has to be called the male andropause. This at least makes sense of the terminology. Many things happen in the male body as it ages, but there is no male analogy to female menopause. Despite this, men do undergo physiological and biochemical changes when ageing, which may explain why some may feel that they might be suffering from ‘menopause’.

### MALE AND FEMALE BIOLOGY

The reason why the ‘male menopause’ does not exist can be found in basic biology. The female is born with a finite number of eggs. From puberty, some of these eggs are recruited every month to mature to the point where they may be fertilised. If fertilisation does not take place, then these eggs die. This means that every month the reserve of eggs a woman holds slowly decreases, and eventually (at menopause), no more eggs are available, and the ovaries stop functioning. This process results in the menopause symptoms described earlier in this book.

The reproductive mechanisms of the male are very different biologically from the female. The male produces sperm in the testes from puberty. These sperm are created from special stem cells called spermatogonia. This process of sperm production takes about 64 days, and because it is driven by self-replicating stem cells, the testicles never run out of sperm and function for the whole life of a man. This is why a man can father children in old age whilst a woman cannot become pregnant in old age. The biological changes which a woman undergoes are there-

fore not replicated in any way in a man making the term 'male menopause' terminology which does not make any sense.

## **THE MALE ANDROPAUSE**

Male andropause is a condition that is becoming mainstream in current medical thinking, and it all relates to the hormone testosterone. Testosterone in a man is a hormone responsible for muscle mass, facial and body hair, and of course, the lower voice of the male. The production of testosterone from the testicles (under control by the brain) starts at puberty, and the physical effects can be seen very easily as a boy develops into a man. Despite this, as men get older, the levels of testosterone in the blood slowly decrease, which sometimes results in fewer sperm being produced (but sperm production does not stop) and some physical and psychological changes. Testosterone levels decrease at about 10% every decade from the age of 30, and this is part of the natural male ageing process.

The key point about male andropause is that the decrease in testosterone is gradual, whereas the decline in hormones in female menopause is rapid. It is estimated that 30% of men in their 50's may develop symptoms of the andropause.

## **MECHANISM OF THE MALE ANDROPAUSE**

To understand the mechanism or mode of action of the male andropause requires more understanding of male hormone interactions. It has already been established that the male hormone, testosterone, is constantly declining from about the age of 30. In parallel to this, another hormone called sex hormone bonding globulin (SHBG) begins to rise. The action of SHBG binds to testosterone in the blood, and bound testosterone is inactive. This means that less biologically active testosterone, known as bioavailable (or free) testosterone, is available to use in the body. The overall effect is that testosterone levels fall. It has been clearly shown that men who experience the symptoms related to andropause have low levels of bioavailable testosterone in their blood. The tissues in the body which rely on testosterone for their normal activity receive less and less testosterone, and it is this which is proposed to cause the physical and possibly mental changes in an andropausal man.

## **THE 'MID-LIFE CRISIS'**

Some men undergo what has become known as the 'mid-life crisis'. The main symptoms of this seem to be an irresistible urge to buy a two-seater sports car or, worse, a high-power motorbike. There is also an increased chance of such a man seeking an affair with a younger woman. No one understands this behaviour, least

of all the men involved, but it may be part of the andropause, which is influencing changes in the brain and the resultant poor decision-making. Official statistics in the UK show that male motorbike riders aged between 41 and 55, riding a motorbike with an engine size of 500cc and over account for 41% of fatalities and serious injuries. This spike in motorbike fatalities and serious injuries coincides with the 'mid-life crisis'. Whether or not the 'mid-life crisis' exists, and if it has some form of physiological basis making it part of the andropause is unknown. More research is needed but in the meantime, steer clear of grey-haired bikers riding powerful motorbikes with a young woman on the back!

### **SYMPTOMS AND COMPLICATIONS OF THE ANDROPAUSE**

As with the menopause, the symptoms of the andropause will vary greatly from person to person. In general, the symptoms are all related to the ongoing decrease in testosterone and include the following:

- General tiredness
- Low libido
- Erectile problems
- Mood swings
- Depression
- Loss of muscle mass
- Body fat increase
- Hot flushes

These symptoms may look familiar. Some of them, such as erectile dysfunction and a loss of muscle mass, are clearly male orientated but the rest could easily be found on a list of the symptoms of the menopause. This is because both andropause and menopause result from a significant change in the levels of key hormones (known as the sex hormones). The similarities between the symptoms of the menopause and andropause are reflected in this underlying cause. The complications which are associated with the andropause include an increased risk of cardiovascular disease and osteoporosis, which are once again similar to the menopause.

### **DIAGNOSIS OF THE ANDROPAUSE**

The primary problem with the diagnosis of the andropause is the reluctance of older men to visit their GP or Family Physician. This raises problems not only for the diagnosis of the andropause but for other unrelated diseases which may be either life-changing or life-threatening. The reasons for this reluctance of older males to consult with primary healthcare professionals are unknown, but there are

**CHAPTER 6****Regenerative Medicine and the Menopause**

(The potential use of stem cell technology to alleviate the menopause)

*The regenerative medicine revolution is upon us. Like iron and steel to the industrial revolution, like the microchip to the tech revolution. Stem cells will be the driving force of this next revolution.*

*Cade Hildreth*

**INTRODUCTION**

Regenerative Medicine is now recognised as a branch of medical research and practice, and in fact, I am a Professor of Regenerative Medicine based in Cambridge, UK. The process of Regenerative Medicine involves the use of stem cells (to be explained below) to repair or regenerate tissues within the body. The process of Regenerative Medicine is, in fact, going on naturally every day in the bodies of all of us. For example, stem cells in the bone marrow are constantly replacing dead or ‘worn-out’ blood cells to keep our blood healthy. In addition, stem cells in the skin are constantly repairing dead or ‘worn-out’ skin cells. The process of regenerative medicine can be seen most dramatically when the skin repairs itself following a traumatic or surgical injury. Sometimes a scar is left behind where the injury or surgery was, but other than that, the skin has been perfectly repaired (regenerated) by stem cells. I did promise to explain what stem cells are, so here goes: Stem cells are specialised cells found throughout the body of everyone, which when they divide into 2 (which all cells do many times during their lifetime), one of those cells is a ‘new’ stem cell identical to the mother cell and the other cell is a cell which can go on and repair or replace damaged or old tissue. The important thing about this statement is that the stem cells, when they divide, produce another stem cell; in scientific terms, this is called self-replication. Self-replication means that stem cells can continue to repair the tissues in our bodies for our whole life span. It is true that these stem cells in our bodies will age as the rest of the body ages and may be less capable of repairing tissue in ‘old age’. This could be the basis of ageing in humans which, once again, we can see only too clearly in the skin as a person gets older. This quick summary of Regenerative Medicine gives the basic points, but if you wish to learn more ab-

**Peter Hollands**

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out Regenerative Medicine, then you might like to read my book ‘The Regeneration Promise’, which is in the suggested reading list at the end of this book.

## **STEM CELLS AND TREATMENT OF THE MENOPAUSE**

At present, possibly the most researched stem cells in terms of using them as a potential treatment for the menopause are known as Mesenchymal Stem Cells (MSC). These MSC are found in many tissues of the body, including fat tissue, bone marrow and the umbilical cord, which provides a link between the baby and the mother during pregnancy. They are even to be found inside teeth! MSC are interesting in that they are known to be able to repair certain tissue tissues such as bone, fat, and connective tissue (*e.g.*, tendons), and they may be able to repair nerve tissue. MSC have been used the most to treat inflammatory diseases such as arthritis and to repair damaged joints. The MSC technology in this context does seem safe and effective. In this particular example, the MSC are injected directly into the joint. A useful advantage of MSC is that they can be donated from one person for use in another person without the risk of rejection; this is because the MSC does not carry the molecules on their surface (Class II HLA), which induces rejection. The MSC can also be collected, processed and frozen for later use if required. The problems with MSC as a source of stem cells for the treatment of menopause are:

- The collection of MSC for use is invasive for either the patient or the donor. For example, fat is obtained by abdominal liposuction, which whilst not too unpleasant (a needle is introduced into the abdomen and the fat is sucked out), is an invasive procedure with all the usual risks of infection and bleeding. Bone marrow collection (by introducing a very sharp surgical steel needle into the pelvic bone) is even more invasive and unpleasant.
- The processing of MSC is different in different laboratories, and as such, the process cannot be standardised for clinical use. When any treatment is used clinically, then the production of that treatment must be standardised, reliable and reproducible. The is to ensure the safety of the patients receiving the treatment.
- MSCs are derived from a wide range of sources, and each MSC type has slightly different properties, so identifying the ‘best’ MSC to treat menopause will be a long and expensive process.
- The laboratory technology, expertise and regulatory licensing required to use MSC clinically are very expensive.
- The way in which the MSCs are given to the patient is invasive (often by an injection directly into the ovaries), and the dose required (*i.e.*, the number of

stem cells needed for effective treatment) is currently left to either availability or guesswork!

In summary, MSC has some potential in the future treatment of the menopause, but there is still a lot of time-consuming and expensive work to do if they are to become a standard treatment for the menopause. The worry is that this time and investment may lead nowhere in the treatment of the menopause because of cost and technical difficulties.

### **Very Small Embryonic-like (VSEL) Stem Cells In The Treatment Of The Menopause**

Please try to stick with the section because it contains information that may have an impact on every menopausal woman in the world. It is arguably the most important section of this book. What I will discuss here is potentially life-changing for billions of women. It has some science along the way, but I will explain it as we go, so please do not feel daunted to continue reading. The science is actually easy, and the implications are enormous.

Before I proceed with a description of this concept (which is based on a long collaboration between myself and my dear colleague and friend Dr. Todd Ovokaitys in Carlsbad, California, USA), there are two extremely important points to make:

1. VSEL stem cells are very small. They are, in fact, around 2-4  $\mu\text{m}$  (microns) in diameter (a micron is one-millionth of a metre). This means that they can easily cross the blood-brain barrier, which is a biological barrier protecting the brain from the rest of the body. The result of this is that VSEL stem cells can very easily pass from the blood into the brain and can therefore be active within the brain. All other stem cells are too large to do this, and if needed in the brain, then they have to be directly injected into the brain (not much fun for everyone involved). In addition, VSEL stem cells can cross the blood-testes barrier, a similar biological barrier protecting the testes from the rest of the body. Once again, this means that VSEL stem cells can easily enter the testes and carry out the repair if required. VSEL stem cells can also cross the blood-follicle barrier, which is a biological barrier in the ovaries. This means that the VSEL stem cells can easily get into every biological part of the ovary and carry out the repair if needed. These facts will help to understand the proposed mechanism of action of VSEL stem cells which I will describe below.

2. VSEL stem cells are ‘embryonic-like’. This does **not** mean that VSEL stem cells are embryonic stem cells. They are simply ‘like’ embryonic stem cells because they carry some of the same molecules on their surface as embryonic

**CHAPTER 7****The Psychology of Premature Menopause, Perimenopause and Menopause**

(Mind over Matter)

*A woman must wait for her ovaries to die before she can get her rightful personality back. Post-menstrual is the same as pre-menstrual; I am once again what I was before the age of twelve: a female human being who knows that a month has thirty days, not twenty-five, and who can spend every one of them free of the shackles of that defect of body and mind known as femininity.*

*Florence King*

**INTRODUCTION**

Menopause is a natural process that all women will experience at some stage in their life. The menopause produces many unwelcome physical symptoms in most women, and at present, we manage these physical symptoms by using Hormone Replacement Therapy (HRT). In the future, we might even have safe and effective stem cell-based treatments for the treatment of menopause some of which might even be capable of ‘reversing’ the menopause. There may even be plant-based ‘cosmeceuticals’ that could help the symptoms of the menopause. If this comes to fruition, then the management of the physical symptoms of the menopause will change beyond all recognition. Whatever therapeutic approach we seek to follow, at present, the focus is on removing or reducing the physical symptoms of the menopause to enable the menopausal woman to enjoy a better quality of life. This is an admirable goal which I fully support. Despite this, women who go through the menopause not only suffer physical symptoms, but some also suffer psychological symptoms. These psychological symptoms may be severe enough to damage the long-term mental health of the menopausal woman. This subject of the psychology of menopause will be explored in this Chapter to try to better understand this critical component of the menopause, and where possible, to offer help and advice to menopausal patients suffering psychological symptoms.

**‘THE LUCKY ONES’**

In any disease, or biological state, there are always ‘the lucky ones’. These are the people who, when diagnosed with a serious disease, undergo treatment, respond

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brilliantly, get well very quickly, and rapidly return to their former quality of life. Such patients sometimes develop a brighter or more positive outlook on life and may even get involved in fundraising for research into the disease from which they suffered. A classic example of this is cancer. Some cancer patients respond very well to treatment and seem to 'glide' through the whole treatment process without any undue stress. For other cancer patients, the experience is sadly less pleasant.

The same principles apply to the menopause. Some women 'glide' through the menopause, do not require any treatment at all, and continue to enjoy an excellent quality of life with no symptoms. From a scientific viewpoint, we do not have the slightest clue how these women enjoy very easy menopause. Despite this, I am exceptionally pleased with each and every one of them. Future research may help us to explain this 'easy' menopause experience which may even benefit other menopausal patients with more severe symptoms. They are truly the 'lucky ones' in the menopause world. We need much further and deeper research into why some people are 'the lucky ones' when it comes to disease and the menopause. The answer is likely to have a genetic basis, but there will be many other reasons we have not even thought about.

The next category is those women who develop menopausal symptoms but, by taking HRT or using alternative therapies, manage to remove or at least reduce the physical symptoms and therefore return to a good quality of life. They are perhaps 'the fairly lucky ones'. This group seems to be the majority of menopausal women. The final category of menopausal women who suffer severe physical and psychological symptoms, and do not respond well to HRT or alternative therapies. The situation becomes so severe that the mental health of these women also begins to deteriorate, and these women are certainly not 'the lucky ones'.

### **The Psychology of Premature Menopause or Premature Ovarian Insufficiency (POI)**

The diagnosis of premature menopause or premature ovarian insufficiency is a life-changing diagnosis for a young woman. One of the most common causes of premature menopause is the removal of the ovaries and Fallopian tubes, usually because of cancer. Whilst this is a life-saving procedure, such women (once the cancer is clear) may suffer adverse long-term effects, including coronary artery disease, Parkinson's disease, mood disorders, sexual dysfunction and osteoporosis. If any of these complications do occur (and they are not necessarily going to happen to everyone), they also accompany psychological stress.

The second type of menopause in this section is premature ovarian insufficiency (POI), where ovarian function is lost before the natural age of menopause (40-60



years old). Approximately 1% of women will enter the menopause before the age of 40. The reasons for this may be immune problems, genetic disorders, surgery, and chemotherapy or radiation therapy. In some women, the cause is unknown. From a psychological viewpoint, perhaps the unknown causes patients to suffer the worst as they will constantly wonder if it was 'something they did' that caused premature menopause. This form of 'self-blame' needs urgent support from psychological counsellors, and once again, help can be found initially at your GP or Family Physician.

Sadly, the time to diagnose premature menopause can be very long. The COVID-19 pandemic has exacerbated this, but even before that event, patients often waited months, or even years, before they understood what was happening to them. This is, of course, unacceptable because this long diagnosis time means that advice (such as psychological support) and treatment (such as HRT) are seriously delayed resulting in even more psychological stress for the patient. There is no 'instant cure' for this problem, and there might not even be a long-term cure. Unfortunately, the onus is currently on the patient to drive forward the diagnostic and therapeutic process, which is a sad reflection on the current healthcare provision for premature menopause in most countries.

### **Mental Health**

The menopause, when it occurs at the expected age, can bring many mental health challenges. The premature menopause, which can sometimes arise in women as young as 20, brings even greater challenges to mental health. The primary worry and anxiety is that such a young woman may probably not be able to have children in the future. I say 'may probably not' because the rapidly improving technology in *in vitro* fertilisation or 'test-tube babies' may in the future enable women who suffer premature menopause to still have children. Other psychological aspects, which are particularly common and unwelcome in premature menopause, include difficulty in coping with the altered self-image, the potential loss of fertility and sometimes sexual dysfunction. These are all life-changing events, and the psychological impact of these on the patient must not be underestimated. Advice and support can be found from a psychologist or sex therapist, and once again, your GP or Family Physician will be able to help with such referrals. Organisations such as the Daisy Network provide excellent information, support and resources for women undergoing POI.

### **The Psychology of the Perimenopause and Menopause**

The cause and the physical symptoms of the perimenopause and menopause have been described earlier in this book. I would like to spend a little time exploring the psychological side of the perimenopause and menopause. When the first signs

**CHAPTER 8****The Media, Celebrities and Menopause**

(Help or Hinderence?)

*When it's down and dark, small things become ridiculous; when you don't find joy in life, it's probably when you are in the menopause, or you may be seriously depressed for other reasons; it's tiring and worrisome to be seen as old, odd or cranky and not fitting into society. Facing the fact that you no longer can have children is sad. The way forward is to realise it is a phase, unavoidable, and to share it is incredibly empowering*

*Helen Lederer*

**INTRODUCTION**

The media and the internet are constantly present in our daily lives, driving astonishing levels of marketing to the global population on a 24/7 basis. When I was born in 1958, none of this existed; Some may say this was a good thing. Others may say that information and knowledge are empowerment and critical component of modern life. I perhaps sit somewhere between the two opinions. Every person on the globe seems to have a phone in their hands and 'checks' it sometimes hundreds of times per day. In our 'connected' world, wars and disasters are reported in graphic detail, and the latest 'fad' or 'must have' is presented to everyone on a regular basis through multiple formats. This results in people 'wanting' things that they may not actually 'need', especially in developed countries. The marketing industry which drives this information barrage is currently estimated to be worth \$1.7 trillion and growing. The 'perfect life' is portrayed in a way that does not actually reflect the life or experiences of most of the population on planet Earth. Health issues are not exempt from this information and marketing barrage. Discussions about specific diseases, treatments (often at high cost), and advice are common, and are often, at best unwelcome and, at worst, potentially dangerous. The positive side of all this interaction is that it will at least get people talking and thinking globally about disease and treatment, which would have been very unlikely before the 'information revolution'. The solution to this problem (as in many things in life) is quality, not quantity. One page of accurate, clear information is much more valuable (in information, not in money) than a thousand pages of misleading, incorrect and potentially dangerous information. Everyone has a Duty of Care and a Duty of Candour from the healthcare professionals who carry out their diagnosis of treatment. Duty of Care

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means that nothing must be done which will harm the patient. The duty of candour means that all healthcare professionals must speak the truth when talking to patients. Some media people will not even know that such standards exist and would do well to consider opting for such open, clear and honest behaviour.

### **THE MEDIA AND THE MENOPAUSE**

The general attitude to the menopause in society is in a very slow process of change. In some populations, it is, for some strange reason, a taboo subject. This may be due to fear from patients and an overall poor understanding of what the menopause really means. Despite all of this, menopausal patients are slowly being managed in a better way by healthcare professionals, and the information available about menopause is increasing, and in general, terms is reliable. There is no doubt that there has been a steady increase in the frequency of articles about menopause (online and in hard copy) not only in medical journals but in general books (such as this), websites and magazines. This is a good thing. Nevertheless, the media still has some way to become more effective and clear in promoting the understanding and empathetic mindset needed in menopause. Improvements could be made in the following:

- The increased discussion of the menopause in the media is to be encouraged, but sadly some of this information is minimal and sometimes insufficient, leaving the menopausal women themselves thirsting for more information. One way to improve this situation would be for better collaboration between the media, the experts in menopause, the relevant menopause charities, and the menopausal women themselves. This would result in more accurate information and much greater empathy in the discussions.
- The media often portray the menopause as a disease and a negative experience in a woman's life, or sometimes a taboo subject not for discussion at all. Some even suggest that the menopause is a disease that needs medical treatment in the same way as heart disease, for example. Menopause is not a disease; it is a natural, normal physiological process. Equally, it is not (hopefully) a negative experience, but sadly for many women, the menopause can be a very negative experience. The symptoms of menopause suffered by some women are certainly unpleasant and unwelcome and need treatment where possible. The negativity promoted by some areas of the media simply makes menopausal women feel worse, and this is unacceptable in a modern democratic society. Imagine the harm done if the same attitude was taken to stroke, heart disease or cancer! Menopausal women need information from the media, which is helpful and supportive, and there is no reason why this cannot be achieved.

- The media may sometimes get the description of the menopause wrong and the treatment advice incorrect. This is simply down to poor research, and collaborations, as suggested above, would solve this problem immediately.
- The discussion of the factors associated with a ‘good’ and a ‘bad’ menopause is often misrepresented. Important factors, such as exercise and diet, race and ethnicity, stress and lifestyle, are often ignored or trivialized. These are critical components of the menopause and, where possible, may minimise symptoms if managed correctly.

Menopause is rarely mentioned in the media, and when it is then, it is usually in an over-censored or controlled way. A feeling of fear (probably based on poor understanding) underlies such information, which needs to change to help all menopausal women. A menopausal woman is most definitely *not* ‘past it’ or ‘over the top’ or has ‘suffered the change’, and the subject of the menopause must not be discussed in whispered or frightened language. The subject of menstruation is often discussed in the media in a factual and honest way; why cannot this be the same for the menopause, which is the natural progression from menstruation? There may be an opportunity here for better education at secondary and higher levels. When I was in school (admittedly a long time ago), there was a slight nod to menstruation in biology lessons and nothing on menopause. When I studied at Cambridge University, there was considerable information provided on all aspects of female reproductive physiology but not a great deal on the menopause. When I was lucky enough to join the team who developed *in vitro* fertilisation (test-tube babies) at Bourn Hall Clinic, menstruation was our daily work! Equally, during these times, there was little mention of the menopause apart from saying that if the patient was perimenopausal, then IVF would be extremely unlikely to work. This is an opinion which sadly still stands today. Our research described in Chapter 6 might change this in the future.

The media could, in fact, play an important role in highlighting treatments for menopause which could make some patients realise that the treatment they are on may not be right for them. The media clearly has a powerful influence on the behaviour, attitude and beliefs of social groups and individuals in any context. Such an influence might be very powerful in educating and informing about the menopause if it is used correctly. Media bosses, please take note!

### **Celebrities and The Menopause**

The power and impact of female celebrities openly and honestly talking about their menopause experience is a powerful and extremely important part of menopause education. Such celebrities are generally ‘well known,’ and people relate to them on many levels. Female celebrities, from actresses to television

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## Family, Friends and Work

(Menopause Support)

*The family is one of nature's masterpieces.*

*George Santayana*

### INTRODUCTION

When someone suffers from any disease or condition, then that person always benefits greatly from the support they get from their family, friends and work colleagues. This is no different in the case of menopause, and the support received from these key people will make a massive positive difference to the women undergoing the menopause. These human-to-human interactions are often taken for granted, but in times of stress (be it medical or psychological), they are critical to a good outcome for the patient.

### FAMILY AND FRIENDS

Families and friends can be extremely diverse in geographical context; some live on the same street, and others, like my family, are spread across the UK and Canada. My friends and colleagues can be found across the globe, from the USA to India. This diversity of how friends and families are placed geographically makes it difficult to generalise the role of family and friends in supporting women undergoing the menopause. Simple time and distance may make simple and effective communication difficult. There are, of course, numerous meeting platforms on the internet, which I use almost every day, but I must admit this is mostly for business. These are a great way to stay in touch with family, especially on a global scale, but they can never be a substitute for a hug from someone you love. We all discovered this during the COVID-19 pandemic.

In terms of the menopause, the support of family and friends, to help and reassure you, may be just as important as the medication or other treatment you receive. The peace of mind from knowing that someone loves you, and will support you no matter what, is an extremely powerful thing to have in any form of adversity or

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stress. The menopause is no exception. These interactions with friends and family are not only about support, but they may also result in new ideas or methods in which you can reduce the symptoms of the menopause. To be effective in their support, family and friends need to make an effort to truly understand and appreciate what you are going through during the menopause. This might be tough for some people, but a little effort could make a big difference to your family member or friend going through the menopause. There are some key things that family and friends can do to help anyone going through the menopause, these include

- Finding out about the menopause and the symptoms it can produce. The more you understand what is happening to your family member or friend then, the more helpful you can be. This knowledge can be found in books such as this or by using our old friend ‘the internet’. If you do choose to use the internet to find out about the menopause, then please make sure that you look at reliable sources such as those from menopause support groups or those written by physicians.
- Perhaps the most useful thing a friend or family member can do to help a menopausal woman is to talk to her (using the knowledge you have gained above). This will show her that you understand, that you love her and that you will do your very best to take care of her. This simple conversation could be life-changing for a menopausal woman. All patients need love and support during any illness or accident, and the menopause is no different. Menopause is not taboo, it is as important as the help you would give to someone with heart disease or cancer.
- The most difficult aspect of the menopause for friends and family is the raw emotions that can be shown by a menopausal woman. She may be depressed, she may be sad, she may even be angry, she could even be suicidal. Handling these emotions requires very high levels of patience from friends and family. In the case of severe depression (as described earlier in this book), which may or may not include suicidal thoughts, healthcare professionals must be consulted immediately. This is a life-threatening situation in the same way as severe trauma, a heart attack or a stroke. Please contact the emergency services and get help as soon as possible. This rapid and effective action by those supporting the patient is needed to ensure that she remains safe. The words which are used by friends and family are equally important: ‘Pull yourself together’ will not work, neither will ‘see how you are in the morning’. Some menopausal patients in this extreme situation might not make it until the morning. For the less stressed menopausal woman, who is nevertheless suffering, words such as ‘this is not going to last forever’ may provide some comfort as she may realise that this is just a stage in her life and not a permanent change. Throughout all of these interactions, family and friends will need to have very high levels of patience.

The menopausal woman may seem irrational or ‘not like she used to be,’ but with patience and love, you will all get through this difficult life change unscathed.

- Most menopausal women will have moments of extreme upset. This may materialise as sadness, anger or frustration. This upset may be triggered by what may appear to be trivial matters in the eyes of friends and family, but they are very stressful to the menopausal woman. If it is possible, friends and family need to try not to ‘mirror’ these emotions as this will lead to conflict between you and further unnecessary suffering. The best advice to friends and family here is to listen to the what the menopausal woman is saying without getting angry, sad or frustrated. Being calm and listening without criticism or unwanted emotional involvement will be enormously beneficial to the menopausal woman who finds herself in this situation. This is a difficult thing to ask of friends and family, but if it can be implemented, then great benefit and support will be achieved.
- The menopausal woman can often feel fragile to the point where she may not even ‘recognise’ herself because of the turmoil the menopause brings. She may say that she is ‘doing her best’ and it is important for friends and family to support this notion. This is because the menopausal woman is actually doing her best. This might not be what she did before the menopause, but if friends and family believe in her and say ‘yes, you are doing your best and we all appreciate your efforts’ then this will be very re-assuring to the menopausal women. Show love, show understanding, show compassion and the transition through menopause and beyond will be very much smoother.
- The menopausal woman will often feel overwhelmed by the daily tasks, jobs and chores she has to do on a daily basis. This may be housework; it might be driving, it might be an employment-related task or even something such as making dinner or organising a birthday party. The key thing friends and family can do here is offer help. The menopausal woman may reject this offer of help, but if she does, then re-emphasise the offer because your help may be extremely useful in relieving the feelings of pressure and lethargy suffered by many menopausal women.
- Good quality sleep is essential for everyone, but in the menopause, insomnia is a very common symptom. If the insomnia is severe (*i.e.*, getting less than 8 hours sleep per night), then medical help is needed immediately. Short-term sleeping tablets or relaxants may be prescribed. Most menopausal women find that the insomnia can be reduced by making sure that the bedroom is well-ventilated and at the correct temperature (16-19°C), and that the lighting is optimal (a black-out blind is often useful when the dawn is in the early hours of the morning) and perhaps most importantly the bed and pillows are comfortable. Most people have beds that are very old and uncomfortable. This does not help anyone

## Lesbians

(Menopause and the Lesbian Woman)

*My feelings for Ellen overrode all of my fear about being out as a lesbian. I had to be with her, and I just figured I'd deal with the other stuff later.*

*Portia de Rossi*

### INTRODUCTION

The biological process of the menopause in a lesbian woman is exactly-the-same as the menopause in a bi-sexual woman, or in the menopause in a heterosexual (straight) woman. This statement, once again, makes this chapter look like it is going to be very brief. In actual-fact, there is quite a lot to say about the menopause in lesbian women, which can easily be seen from the general literature and the medical and scientific literature. This is a serious subject about which all relevant healthcare professionals should be aware. For example, when comparing lesbian and straight women in terms of the menopause, it is necessary to consider the age at menopause, the ethnic origin of the women and the education of the women. As in all scientific comparisons, it is important to compare 'apples-with-apples' and to have one variable which is under investigation. In this case, we need to compare a group of women who have the same overall characteristics and then compare the variable between the two groups, which is their sexuality. This approach will allow a sound scientific basis for comparing whether-or-not sexual orientation has an impact on the menopause and any aspect of women's health. Sadly, such studies are currently few and far between.

### THE MENOPAUSE IN LESBIAN WOMEN

As described earlier in this book, the menopause is very much 'individual' to each woman, whether-or-not she is lesbian or straight. Generalisations in this context (often based on straight relationships and not on lesbian relationships) are unhelpful and can indeed make some people feel worse or even develop fears which were, in fact, never there.

Lesbian menopausal women may also think that their feelings and views go unheard in the 'general debate' about the menopause. It is absolutely essential that

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the lesbian couple, when going through menopause especially, maintain clear understanding and supportive communication between themselves. This communication may be very different in heterosexual couples where the male partner has no ‘understanding’ of the feelings, emotions and physical symptoms of the menopause (unless he has read this book!). He cannot relate to the menopausal woman with perhaps the same love, understanding and compassion, which lesbian couple may be able to provide. Another big difference is that a menopausal lesbian couple may undergo the menopause at roughly the same time with roughly the same symptoms. This is the perfect situation, as mutual support will be much easier. Equally, each lesbian partner may quite likely experience the menopause at very different times with very different symptoms. If such an ‘imbalance’ occurs in the menopause in each lesbian partner, then it may put considerable strain on a lesbian relationship. One partner may feel relatively well whilst the other might feel relatively awful. This is a time when great understanding, love and tolerance is needed by both lesbian partners to ensure the sustainability and stability of their relationship.

### **Associated Risks of the Menopause in Lesbian Women**

Earlier in this book, the risks associated with the menopause have been described, and at that point, I was considering only straight women. There are subtle differences in the risks when considering lesbian menopausal women. Some authors have suggested that lesbian women may be more prone to cardio-vascular disease and some types of cancer. The biological reason for this is unclear, but part of the reason may be due to life-style choices in lesbian women. This assumption about life-style has been confirmed by the Women’s Health Initiative (WHI), which found that there is a higher incidence of risk factors such as alcohol consumption, smoking and obesity in lesbian women. These additional risk factors present in lesbian women may increase the incidence of menopause-related diseases such as cardio-vascular disease.

It has also been suggested that lesbian women are less likely to use healthcare services when compared to their straight counterparts. The reasons for this lack of trust in the healthcare system by lesbian women are worrying because this may mean that lesbian women might not be receiving the primary care they deserve. Some lesbian women may feel a possible lack of confidentiality or sensitivity by healthcare workers to lesbian women. If this is true, then there is clearly a very poor level of understanding of the menopause in lesbian women by some healthcare professionals. This can easily be resolved by re-training of healthcare professionals on this subject and more discussion of the subject in medical conferences and publications. If there is ever a lack of understanding and communication between the patient and healthcare provider, then this is a recipe

for confusion (and even possibly disaster) in the treatment. This may apply especially to the treatment of lesbian menopausal women.

### **Common Misunderstandings in the Sexual Health of Lesbians**

Some inaccurate reports show lesbian women have been exposed to the less sexual transmitted disease (STD) than their straight counterparts. This is incorrect and could contribute in part to the overall poor care of menopausal women. STD is a problem for all women and men. The incidence of cervical cancer, for example, is the same in lesbian women as it is in straight women. It is known that the majority of cervical cancer (in any woman) is caused by a virus called the Human Papilloma Virus (HPV). HPV is spread through sexual contact (homosexual or heterosexual) with a person who already has the virus. Being positive for HPV (in all women) does not always mean that cervical cancer will follow in fact, in some women, HPV infection results in genital warts. The risk factor for developing cervical cancer following HPV infection is increased by factors such as:

- Having sex at an early age.
- Multiple sexual partners.
- Smoking (in any context reducing or stopping smoking is a great benefit to the overall health of anyone).
- Infection with other STD's such as syphilis, gonorrhoea, HIV/AIDS, or the very common STD called chlamydia.

In addition, if a lesbian woman (or a straight woman) has never been pregnant then she may be at increased risk of developing breast cancer or ovarian cancer.

### **Domestic Violence and Anxiety**

Domestic violence was on the increase at the time of writing, with approximately 23% of heterosexual females being assaulted by their partners at least once in their lifetime. This has been exacerbated by the COVID-19 'lockdowns'. These 'lockdowns' resulted in millions of vulnerable people being forced to stay with their partner all the time, increasing their risk. This risk applies to both heterosexual men and women. It is interesting to note, however that domestic violence is less likely to occur in homosexual relationships, especially in lesbian relationships. It is reported that physical aggression does occur in lesbian relationships, but physical violence is much less common when compared to heterosexual relationships. Despite this, lesbian women do experience homophobic abuse, which can cause considerable anxiety. Such homophobic abuse is totally unacceptable at any time, but most of all during the menopause.

**CHAPTER 11****Advice to Menopausal Patients**

(Keeping Positive)

*Keep Buggering On!*

*Winston Churchill*

**INTRODUCTION**

The whole of this book contains advice which may or may not be useful to the reader. I hope that it has at least been useful to at least some people. In such a complex and diverse subject as menopause, it is impossible to generalise or to say that any patient will ‘definitely suffer’ a range of symptoms. This means that it is equally difficult to give ‘general’ advice. Arguably the most important factor is education and understanding not only by the menopausal woman by women but also by the rest of society. There are approximately 1 billion women suffering perimenopause or menopausal symptoms at any time, making this education process enormous. In the UK alone, it is estimated that there are 13 million women suffering from perimenopause or menopause. The cost of providing adequate support and education from healthcare professionals in the UK alone would currently be prohibitive and, on a global scale, impossible.

There is actually very little formal teaching for women and girls about the menopause and even less for the general population on a global scale. The result of this is that the average woman has very little awareness and understanding of the menopause, which is a life-changing phase of female life. It must also be kept in mind that this menopausal life-changing event comes at approximately the time of half of the lifespan of a woman in developed countries. This leaves a very long time in which most women will have to cope with and live with menopause. This lack of understanding also extends to some healthcare professionals who do not receive adequate training to correctly and safely manage the menopause. This means that the onus is often on the woman undergoing the menopause to seek her own information and support. Our society is ‘information heavy’ because of the internet, which has transformed the availability of ‘instant information’ to everyone everyone. Sadly, all of the information on the internet is incorrect or valid and might even very often be deliberately misleading or harmful. This probl-

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is worse in some internet ‘chat rooms’ where ‘expert’ opinions and ‘advice’ is especially erratic. If a woman seeks further information, then it is recommended to only look at professional websites, most of which are listed at the end of this book. Please do not get involved in any discussions or random ‘advice’ on the internet, as this may only increase your anxiety which is already at a heightened level.

It is interesting to note that the medical literature suggests that women *and* healthcare professionals may have an inadequate understanding of how the hormonal changes and the biological and psychological changes seen in the menopause relate to each other. This is particularly worrying if it truly applies to healthcare professionals. It is also true that most women do not understand the symptoms and consequences of the biological changes which take place during perimenopause, menopause and beyond. This may mean that some women may not seek the medical advice and support they so badly need.

### **THE FEMALE EXPERIENCE OF THE MENOPAUSE**

It is known that in the UK education system, there is currently no formal education provided to girls about the menopause. This is in contrast to other diseases, such as sexually transmitted diseases and, more recently, COVID-19, where educational material is freely and widely available. This means that a high proportion of women fear the menopause because they have no basic understanding of what it means, what physical changes will happen to their bodies and perhaps most importantly, what psychological changes may occur, such as ‘brain fog’ and depression. In general terms, the media present a negative view of the menopause, but once again, this may be because of a simple lack of thorough research on their part. If clear and correct education relating to the menopause can be introduced in the UK (and in all other Countries), then when the perimenopause begins, then women will feel far less frightened and more in control of the situation. This should be a priority both for Government and Educationalists on a global scale. It should be remembered that not all of the symptoms which may appear around the time of the perimenopause will necessarily be caused by the perimenopause. Some could be totally unrelated, for example, aching legs after a long walk in perimenopausal women is not a symptom of perimenopause it is a symptom of tired muscles following a long walk. Some ‘common sense’ is needed here, but that common sense is harder to apply if the basic knowledge is either low or non-existent.

The basic symptoms of perimenopause and menopause have been described earlier in this book. What is clear is that any, or all, of these symptoms, can have a big effect on the quality of life of women, including their family life, sexual

relations, and careers, if they are not managed properly. There is even sometimes the very unfortunate situation of the children of a perimenopausal woman undergoing puberty at the same time. The symptoms of puberty are similar to perimenopause, and the clashes resulting could make the perimenopausal woman and pubertal child feel worse. In such a situation, the perimenopausal woman and the pubertal child should seek medical advice and support, ideally together. This will help better understand both people involved and a much more relaxed family life.

Not surprisingly, most women suffer a loss of libido during the menopause, often related to vaginal dryness. This was covered earlier in this book in the symptoms of the menopause. This can cause relationship problems and can be an extremely damaging aspect of the menopause. Once again, medical advice and medication may be able to resolve this problem.

It is interesting that many women who are suffering perimenopausal symptoms do not realise that the symptoms they are suffering are due to the perimenopause. This causes considerable anxiety and stress, especially if the symptoms are typed into 'Dr Google', who may return with a horrific 'diagnosis' which just causes more stress and anxiety. It has also been reported that many women experience anger about how little they know about perimenopausal and menopausal symptoms. The healthcare systems are clearly letting these women down and action is needed to correct this very real problem. Some women even think that the symptoms of menopause cannot be treated. This means that they just 'suffer in silence', which should not be happening in the 21<sup>st</sup> Century. The current situation can only lead to the conclusion that at present, the quality of life of women is severely reduced by the perimenopause and menopause and that healthcare providers are in general terms, not prepared or educated to help these patients safely and effectively. This need not be the case, and I would urge all women, of all ages, to press for better education and support for the menopause. The resultant decrease in both physical and psychological suffering would be enormous and be a global benefit to society.

### **Female and Male Education**

As in all aspects of life, education often increases the quality of life. If a person is well educated, then they are better placed to understand what is happening around them and make the best decisions to optimise their lifestyle and quality of life. This does not mean that everyone needs a Ph.D in Reproductive Physiology from Cambridge University to understand the menopause, far from it. The additional education needed to enable women, on a global scale, to better understand the menopause can be delivered at the school level in the same way that teenage girls

## A Final Thought

(Some Possible Conclusions)

*Every thought you create in your mind creates your future.*

*Nitin Namdeo*

### INTRODUCTION

This book has been full of thoughts. Some of them were unpleasant, some of them possibly helpful, and some of them even possibly a bit frightening. My aim was to bring more clarity and understanding to the subject of the menopause, and I hope that I have made a useful, if modest, contribution. This book does not claim to be comprehensive, and it does not claim to present any ‘magic bullet’. It does not offer, or even begin to offer, all of the solutions, but it might suggest a few possibilities. The real purpose of the book is to try to reduce anxiety and fear in menopausal women and to optimise the treatment and support they receive. This is a simple aim that will be extremely difficult to achieve. The philosophy of high-quality care applies to all other diseases, so why not the menopause? Is it money? Is it that only women are affected by the menopause? Would it be different if a man lost his fertility in his mid to late forties and developed severe stress and anxiety? Why do we live beyond our reproductive years? Is there ‘life after the menopause?’ I could pose these questions endlessly and still not come to a clear conclusion. I can conclude that menopause is a complex condition; it is currently poorly managed and supported in most countries, and we could certainly all do a lot better!

### MENOPAUSE AND THE ANIMAL WORLD

In the human world, menopause is generally looked at as a negative thing because the menopausal woman can no longer reproduce. This is quite the opposite in some areas of the animal world. I am no David Attenborough, but I would like to give a few thoughts on the menopause in the animal world. It has long been known that fertility in animals decreases slowly as age increases; this is known as reproductive senescence. Despite this, in parts of the animal world, fertility does exist even at old age and death, but it is at a decreased level. It is very interesting

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note that humans are the only primates who do not die shortly after fertility ceases. This does not mean that humans simply have better healthcare and therefore survive post-fertility much better than animals. Studies of humans where healthcare is either very basic or sometimes non-existent still show that humans survive long after losing their fertility. It is, of course, very difficult (even impossible) to measure hormone status and ovulation in wild animals making it very difficult to properly understand the menopause process in wild animals.

When I was working on my 'A' level biology project I decided to study a very pretty and colourful (at least the male is colourful) type of freshwater tropical fish called guppies. These little fish can be seen at most aquaria and garden centres and have the distinction of being a group of fish that 'give birth' to live young (most fish lay eggs). I found this fascinating, leading partly to my life-long interest in science and medicine. It appears that female guppies do, in fact, go through a 'fish menopause' and lose their fertility for the last 14% of their lives. This is interesting, but it is still astonishing that these little female fish remain fertile for 86% of their lives, whereas female human remains fertile for approximately 50% of their lives. Similar observations have been made in other fish, mammals and invertebrates (animals without a back-bone). Despite all of this, there are still many unknowns. For example, some people think that the 'menopause' observation in guppies occurs only in relation to guppies in captivity. It is, of course, impossible to prove this hypothesis because studying guppies in the wild is currently impossible. Such are the problems that animal biologists face!

### **SLIGHTLY MORE CONVINCING EXAMPLES OF FEMALE ANIMAL MENOPAUSE**

Whilst I am fond of guppies, there have been more convincing studies on larger aquatic mammals, such as whales which can be tagged and traced relatively easily. This is, nevertheless still a very specialised (and potentially dangerous to the scientists) branch of science. One thing to take into account is that observations such as these in the wild can never be 'controlled' in the way that laboratory observations can be 'controlled'. This means we do not know if any other extrinsic factors are contributing to what we see. For example, there could be unseen illness in the wild animal being studied, it may have been in a fight and have internal injuries, and it may be being poisoned by the many plastics and other toxins in our oceans. There are so many unknown variables that it is difficult to be fully confident in any data we collect. Despite all of this, it appears that female 'toothed whales' seem to live significantly after menopause. Equally, the magnificent killer whale seems to be fertile between the ages of 12 and 40 but has shown to be capable of living up to the age of 90. Similarly, short-finned pilot

whales are fertile between the ages of 7 and 35 but very commonly live to age 60 and perhaps beyond.

At the other end of the scale, there is a tiny aphid with the Latin name *Quadrartus yoshinomiya* in which post-menopausal females take up an important role in defending the colony. No one understands why this may be.

### **THE GRANDMOTHER HYPOTHESIS**

On the face of it, the menopause seems to be a pretty silly thing to do from an evolutionary basis. Charles Darwin (who was based at Cambridge University) developed his Theory of Evolution through Natural Selection when travelling around the world on his ship, The Beagle, and observing the vast diversity of life on planet Earth. His basic conclusion was ‘survival of the fittest’, *i.e.*, if an animal is born with a feature that enhances survival (resulting from a slight change in genes), then this feature will be retained in future generations as an evolutionary advantage. The reason that menopause seems to go against the Theory of Evolution is that it would make sense for any individual creature (human or animal) to have a strategy to pass on their genes for as long as possible during their lifetime to optimise ‘survival of the fittest’.

In order to try to explain this anomaly, it is necessary to use something which has become known as the ‘Grandmother Hypothesis’. Please note that this is an ‘hypothesis’, not a ‘theory’, which means that it is currently just an idea that has yet to have formal proof. Nevertheless, the Grandmother Hypothesis proposes that females lose their fertility early to help their children and grandchildren reproduce. In the killer whale population, for example, there is some evidence to support this hypothesis because the older menopausal females have considerable knowledge built up over their years of experience, especially in where to find food, which they pass on to younger members of the pod. In this way, mothers increase the survival rate of their adult sons, which means more genes are passed on by fit adult males.

### **ELEPHANTS**

Elephants are a fascinating species that are threatened with extinction in some parts of the world by the illegal trade in ivory. An adult elephant, weighing several tons, is often shot, and just the tusks are removed. The enormous carcass is just left to rot. This is an extremely sad example of human behaviour, but it is driven by the ‘black market’ value of ivory. Ivory cannot, in legal circumstances, be traded, but this still does not stop elephant poachers. A similar problem exists in rhinos where the horn is removed. Another example would be the removal of a shark’s fin and the rest of the dead animal discarded. We must stop this kind of



## USEFUL LINKS

<https://aestheticmanagementpartners.com/exo-e/>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/447673/motorecyclist-casualties-2013-data.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/447673/motorecyclist-casualties-2013-data.pdf)

<https://www.atcm.co.uk/acupuncture-has-been-recommended-as-one-of-the-favourable-nonpharmacologic-treatments-for-low-back-pain-by-american-college-of-physicians#:~:text=Acupuncture%20as%20a%20treatment%20for%20lower%20back%20pain,Qaseem%20et%20al.%2C%202017%20made%20this%20recommendation.%20recommen>  
dation.

<https://www.balance-menopause.com/>

<https://www.cellr4.org/article/2990> (The action of the QiLaser on VSEL stem cells).

<https://www.cellr4.org/article/3201> (The mechanism of action of the QiLaser on VSEL stem cells using concepts from Quantum Physics).

<https://www.cellr4.org/article/3280> (The use of QiLaser activated cord blood MSC and VSEL stem cells in the treatment of end-stage heart failure).

<https://www.cellr4.org/article/3304> (A comprehensive review of the origins and properties of VSEL stem cells).

<https://e-cigreviews.org.uk/vaping-side-effects/>

<https://www.cipd.co.uk/knowledge/culture/well-being/menopause/people-professionals-guidance>

[https://www.cipd.co.uk/Images/menopause-people-professionals-top-tips\\_tcm18-55428.pdf](https://www.cipd.co.uk/Images/menopause-people-professionals-top-tips_tcm18-55428.pdf)

[https://www.cipd.co.uk/Images/menopause-guide-web\\_tcm18-55426.pdf](https://www.cipd.co.uk/Images/menopause-guide-web_tcm18-55426.pdf)

[https://www.cipd.co.uk/Images/menopause-manifesto-roll-fold\\_tcm18-99975.pdf](https://www.cipd.co.uk/Images/menopause-manifesto-roll-fold_tcm18-99975.pdf)

<https://www.daisynetwork.org/>

<https://www.healthline.com/nutrition/bmi-for-women>

<https://health.gov/our-work/nutrition-physical-activity/dietary-guidelines>

<https://www.gov.uk/government/publications/personal-social-health-and-economic-education-pshe>

<https://healthtalk.org/menopause/overview>

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<https://www.heart.org/en/healthy-living/healthy-lifestyle/quit-smoking-tobacco/5-steps-to-quit-smoking>

<https://menopausefriendly.co.uk/>

<https://www.nhs.uk/conditions/menopause/>

<https://www.nice.org.uk/guidance/ng23/ifp/chapter/About-this-information>

<https://nimh.org.uk/herbal-resources/herbal-support-for-menopause/>

<https://thebms.org.uk/>

<https://www.menopause.org/>

<https://www.menopause-exchange.co.uk/index.htm>

<https://www.nhs.uk/live-well/eat-well/how-to-eat-a-balanced-diet/eight-tips-for-healthy-eating/>

<https://qigenix.com/>

<https://www.samaritans.org/>

<https://www.whi.org/>

<https://www.youtube.com/watch?v=ahTQ6g7A5bM>

<https://www.youtube.com/watch?v=OUJ1Enik3yk>

### **SUGGESTED FURTHER READING**

[http://www.eurekaselect.com/ebook\\_volume/2925](http://www.eurekaselect.com/ebook_volume/2925)

[https://www.amazon.com/Menopause-Manifesto-Health-Facts-Feminism/dp/0806540664/ref=sr\\_1\\_1?crid=IOL3FYVPVU9ZI&keywords=menopause&qid=1653571333&s=books&spre fix=menopause%2Cstripbooks-intl-ship%2C134&sr=1-1](https://www.amazon.com/Menopause-Manifesto-Health-Facts-Feminism/dp/0806540664/ref=sr_1_1?crid=IOL3FYVPVU9ZI&keywords=menopause&qid=1653571333&s=books&spre fix=menopause%2Cstripbooks-intl-ship%2C134&sr=1-1)

[https://www.amazon.com/Menopause-Your-Management-Rest-Life/dp/1732884862/ref=sr\\_1\\_3?crid=IOL3FYVPVU9ZI&keywords=menopause&qid=1653571418&s=books&spre fix=menopause%2Cstripbooks-intl-ship%2C134&sr=1-3](https://www.amazon.com/Menopause-Your-Management-Rest-Life/dp/1732884862/ref=sr_1_3?crid=IOL3FYVPVU9ZI&keywords=menopause&qid=1653571418&s=books&spre fix=menopause%2Cstripbooks-intl-ship%2C134&sr=1-3)

## I NQUUCT[ 'QHVGTOU

**Allogeneic:** Cells or tissues which are genetically dissimilar and hence immunologically incompatible. These cells or tissues are always from individuals of the same species. Examples are heart and kidney transplants or allogeneic cell therapy such as a donor bone marrow transplant.

**Antibodies:** A blood protein produced in response to, and counteracting, a specific antigen. Antibodies combine chemically with substances which the body recognizes as alien, such as bacteria, viruses, and foreign substances in the blood.

**Antigen:** A toxin or other foreign substance which induces an immune response in the body, especially the production of antibodies.

**Aphid:** A small insect which feeds by sucking sap from plants; a blackfly or greenfly. Aphids reproduce rapidly, sometimes producing live young without mating, and large numbers can cause extensive damage to plants.

**Autologous:** Cells or tissues obtained from the same individual which may also be returned to that same individual. An example of this would be autologous QiLaser activated VSEL stem cell treatment as described in this book.

**Autonomic Nervous System:** The part of the nervous system responsible for control of the bodily functions not consciously directed, such as breathing, the heartbeat, and digestive processes.

**Biological Age:** This is a concept often used in current 'anti-aging' discussions to describe a shortfall between a population cohort average life expectancy and the perceived life expectancy of an individual of the same age. An example would be someone with a chronological age of 60 years and a biological age of 50 years. Such a person may be considered to have a greater likelihood of a longer 'healthspan'. This has yet to be proven. Many biomarkers are used to define biological age and they decline roughly linearly with age with a slope of <1% per annum. The general understanding of longevity and 'anti-aging' is in its' infancy (pardon the pun).

**Biomarker:** A naturally occurring molecule, gene, or characteristic by which a particular pathological or physiological process may be identified or defined.

**Blood-Brain Barrier (BBB):** This is layer of cells which keeps the brain safe from pathogens and other toxins or some medication. It is composed of brain cells and blood vessel cells. It plays a crucial role in protecting the most important organ in the body: the brain.

**Blood-Follicle Barrier (BFB):** The blood-follicle barrier (BFB) is one of the blood-tissue barriers in mammalian body found in developing follicles in the ovary. It protects the contents of the follicle which is follicular fluid and the developing human egg (proper term oocyte) from any possibly damaging molecules or toxins in the female body.

**Blood Proteins:** A broad term encompassing numerous proteins, including haemoglobin, albumin, globulins, the acute-phase proteins, transport molecules and many others.

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**Blood-Testes Barrier (BTB):** The blood-testis barrier is a biological barrier separating the blood from the developing sperm in the testis. Damage to the BTB (chemical or physical) can result in damage to developing sperm and in turn to male infertility.

**Carbohydrate:** A large group of organic (carbon based) compounds occurring in foods and living tissues and including sugars, starch, and cellulose. Carbohydrates contain hydrogen and oxygen in the same ratio as water (2:1, i.e. H<sub>2</sub>O) and typically can be broken down to release energy in the body.

**Chronological Age:** The number of years a person has lived, especially when used as a standard against which to measure behaviour and intelligence.

**Class II HLA:** These molecules, sometimes known as Class II MHC (Major Histocompatibility Complex) are usually only found on immune cells which 'present' antigen to the immune system.

**Clinical Trial:** A scientifically controlled study of the safety and effectiveness of a therapeutic agent (such as a drug or vaccine or cell therapy) using consenting human subjects.

**Continued Professional Development (CPD):** The process of tracking and documenting the skills, knowledge and experience that a person gains, both formally and informally, as they work, beyond any initial training. The process of CPD keeps healthcare professionals 'up-to-date' in how they manage and treat patients.

**Cosmeceutical:** A cosmetic that has, or is claimed to have, medicinal properties.

**Cytokines:** Any of a number of molecules, such as interferon, interleukins, and growth factors, which are secreted by certain cells of the immune system and have an effect on other cells.

**DNA:** A self-replicating molecule that is present in nearly all living organisms as the main constituent of chromosomes. It is the carrier of genetic information (genes).

**Electrolyte:** The ionized or ionizable (e.g. sodium and potassium) constituents of a living cell, blood, or other organic matter.

**Evidence Based:** An approach to medicine, education, and other disciplines that emphasizes the practical application of the findings of the best available current research.

**Exosomes:** Tiny particles produced and released by most types of animal and plant cells. These exosomes are thought to be involved in 'cell-to cell' communication and cell regulation in normal and disease states.

**Evolution:** The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth.

**Fallopian Tubes:** A pair of tubes that carry the egg from the ovary to the uterus (womb). Natural fertilisation of the egg takes place in the Fallopian tubes.

**Follicle Stimulating Hormone (FSH):** A hormone secreted by the pituitary gland (at the base of the brain) which promotes the formation of eggs or sperm.

**Genes:** A specific sequence of molecules in DNA and RNA that is located on a chromosome and that is the functional unit of inheritance controlling the transmission and expression of one or more traits. This is achieved by the gene by specifying the structure of a particular protein or controlling the function of other genetic material.

**GP:** General Practitioner or Family Physician (Primary Care Provider)

**Growth Factors:** A substance, such as a vitamin or hormone, which is required for the stimulation of growth in living cells.

**Healthspan:** The part of a person's life during which they are generally in good health

**Hippocampus:** Ridges on the base of the brain, thought to be the centre of emotion, memory, and the autonomic nervous system.

**HLA:** A set of genes on chromosome 6 in humans which direct the production of cell-surface proteins responsible for the regulation of the immune system.

**HLA Typing:** Tests to determine if a patient has antibodies against a potential donor's HLA. The presence of antibodies means that a particular graft will be quickly rejected. HLA typing can also be used to establish paternity and in forensic medicine.

**Hypothesis:** A supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.

**Idiopathic:** Relating to or denoting any disease or condition which arises spontaneously or for which the cause is unknown.

**Inbreeding:** The breeding of closely related people or animals, especially over many generations.

**Incontinence:** The inability of the body to either control urination or defaecation.

**Insomnia:** Prolonged and usually abnormal inability to get enough sleep especially due to trouble falling asleep or staying asleep.

**Introspective:** Characterized by examination of one's own thoughts and feelings, thoughtfully reflective

**Intravenous Line:** A tube used for the administration of fluids into a vein by means of a steel needle and a plastic catheter. The plastic catheter remains in place in the vein during fluid administration.

**Libido:** Sexual drive.

**Liposuction:** The surgical collection of fat, usually from the abdomen, which can be used to prepare Mesenchymal Stem Cells (MSC).

**Liquid Nitrogen:** Liquid nitrogen is supercool at  $-196^{\circ}\text{C}$ . It is used for cryopreservation, cryosurgery, and cryomedicine.

**Low Fat:** Denoting or relating to food or a diet that is low or relatively low in fat, especially saturated fat.

**Matriarch:** A woman (or another female animal e.g. an elephant) who is the head of a family, tribe or herd.

**Menopause:** The end of menstruation by a gradual process. Menopause is a natural life transition.

**Mental Health Act 2007:** This is an Act of the Parliament of the United Kingdom. It amended the Mental Health Act 1983 and the Mental Capacity Act 2005. It applies to people residing in England and Wales.

**Mesenchymal Stem Cell (MSC):** A stem cell found in connective tissue such as fat capable of producing connective tissue (tendons, ligaments), bone and fat cells.

**Natural Selection:** The process whereby organisms better adapted to their environment tend to survive and produce more offspring. The theory of its action was first fully expounded by Charles Darwin, and it is now regarded as be the main process that brings about evolution.

**Neuroticism:** A tendency toward anxiety, depression, self-doubt, and other negative feelings.

**Neurotransmitter:** A chemical substance which is released at the end of a nerve fibre by the arrival of a nerve impulse and, by diffusing across the synapse or junction, effects the transfer of the impulse to another nerve fibre, a muscle fibre, or some other structure.

**Oestrogen:** Any of a group of steroid hormones which promote the development and maintenance of female characteristics of the body. Such hormones are also produced artificially for use in oral contraceptives or to treat menopausal and menstrual disorders

**Optimism:** Hopefulness and confidence about the future or the success of something

**Osteoporosis:** The literal meaning of this term is ‘porous bones’. It is caused by a loss of protein and minerals from the bone, especially calcium. Bone mass and therefore bone strength is reduced making the bones fragile and much more likely to break.

**Perimenopause:** Perimenopause means “around menopause” and refers to the time during which your body makes the natural transition to menopause, marking the end of the reproductive years. Perimenopause is also called the menopausal transition.

**Personalised Medicine:** A type of medical care in which treatment is customized for an individual patient

**Pessimism:** A tendency to see the worst aspect of things or believe that the worst will happen.

**Placebo Controlled Clinical Trial:** This is a clinical trial in which there are two (or more)

groups. One group gets the active treatment, the other gets the placebo. Everything else is held the same between the two groups, so that any difference in their outcome can be attributed to the active treatment.

**Placebo:** A substance that has no therapeutic effect, used as a control in testing new drugs and technologies.

**Platelet:** A small colourless disc-shaped cell fragment without a nucleus, found in large numbers in blood and involved in blood clotting

**Platelet Rich Plasma (PRP):** Blood that contains more platelets than normal. To create platelet-rich plasma, a blood sample is taken from the patient and placed into a device called a centrifuge that rapidly spins the blood, separating out the other components of the blood from the platelets and concentrating them within the plasma (the clear fluid component of the blood).

**Pluripotent:** The property of a stem cell capable of giving rise to all of the different cell types in the body, e.g. a VSEL stem cell.

**Premature Menopause:** Menopause in young women (aged less than 40) often with an unexplained cause

**Primate:** In zoology, any mammal of the group that includes lemurs, lorises, tarsiers, monkeys, apes and humans.

**Premature Ovarian Insufficiency (POI):** Primary ovarian insufficiency, also called premature ovarian failure, occurs when the ovaries stop functioning normally before age 40. When this happens, the ovaries do not produce normal amounts of the hormone oestrogen or release eggs regularly. This condition often leads to infertility.

**Primary Healthcare Professional:** These people work on caring for people rather than specific diseases. This means that professionals working in general practice are generalists, dealing with a broad range of physical, psychological and social problems, rather than specialists in a particular disease area.

**Progesterone:** A steroid hormone released by the ovary following ovulation that stimulates the uterus to prepare for pregnancy.

**Progesterone Intolerance:** Progesterone intolerance is when patients are particularly sensitive to the hormone progesterone or quite often the synthetic form, progestogen. The body reacts to the progesterone or progestogen, causing symptoms that can be similar to premenstrual syndrome.

**Progestogen:** A natural or synthetic steroid hormone, such as progesterone, that maintains pregnancy and prevents further ovulation during pregnancy.

**Puberty:** The period during which adolescents reach sexual maturity and become capable of reproduction

**Qualitative:** Relating to, measuring, or measured by the quality of something rather than its quantity.

**Quantitative:** Relating to, measuring, or measured by the quantity of something rather than its quality

**Red Blood Cells:** Any of the haemoglobin-containing cells that carry oxygen to the tissues and carbon dioxide away from the tissues. In mammals these are typically biconcave disk in shape, lack a nucleus and are formed from stem cells in the bone marrow.

**Reproductive Senescence:** This is an age-associated decline in reproductive performance, which often arises as a trade-off between current and future reproduction. Given that mortality is inevitable, increased allocation into current reproduction is favoured despite costs paid later in life.

**RNA:** Ribonucleic acid, is a nucleic acid present in all living cells. Its principal role is to act as a messenger carrying instructions from DNA for controlling the synthesis of proteins, although in some viruses RNA rather than DNA carries the genetic information.

**Secondary Health Care Professional:** This is the specialist treatment and support provided by doctors and other health professionals for patients who have been referred to them for specific expert care, most often provided in hospitals.

**Sectioned:** Being 'sectioned' means that a patient is kept in hospital under the Mental Health Act. There are different types of sections, each with different rules to keep you in hospital. The length of time that you can be kept in hospital depends on which section you are detained under.

**Senescence:** The condition or process of deterioration with age.

**Sex Hormone:** A hormone, such as oestrogen or testosterone, affecting sexual development or reproduction.

**Sexually Transmitted Diseases:** Sexually transmitted diseases (STDs) are infections transmitted from an infected person to an uninfected person through sexual contact. STDs can be caused by bacteria, viruses, or parasites. Examples include gonorrhoea, genital herpes, human papillomavirus infection, HIV/AIDS, chlamydia, and syphilis.

**Spermatogonia:** A stem cell in these testes which produces sperm.

**Stem Cell Homing:** In stem cell science, the word “homing” describes stem cells' ability to find their destination, or “niche.” Identification of specific cues that steer stem cells to their niche and increase the efficiency of the homing process is an area of intense research.

**Testosterone:** A steroid hormone that stimulates development of male secondary sexual characteristics, produced mainly in the testes, but also in the ovaries and adrenal glands.

**Type II Diabetes:** This is a serious condition where the insulin made by the pancreas cannot work properly, or the pancreas cannot make enough insulin. This means that the blood



glucose (sugar) levels keep rising if no treatment is started. It is common in obese patients.

**Uterus:** The organ in the lower body of a woman or female mammal where offspring are conceived and in which they gestate before birth; the womb.

**Very Small Embryonic Like (VSEL) Stem Cell:** These stem cells express several markers associated with a pluripotent state, including CXCR4, Oct-4, Nanog, SSEA-1, Rex-1, Rif-1, and give rise into cells from all three germ layers (the basic layers of the developing embryo).

**Vitamin D:** Any of a group of vitamins found in liver and fish oils, essential for the absorption of calcium and the prevention of rickets in children and bone disease in adults. They include calciferol (Vitamin D2) and cholecalciferol (Vitamin D3).

**White Blood Cells:** A type of blood cell that is made in the bone marrow and found in the blood and lymph tissue. White blood cells are part of the body's immune system. They help the body to fight infection and other diseases.

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**Peter Hollands**

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Peter was trained at Cambridge University, at Churchill College, and completed his Ph.D. under the supervision of Professor Sir Bob Edwards, FRS who was awarded the Nobel Prize for his work on IVF. Bob Edwards, a pioneer in stem cell technology, was the key inspiration for Peter to work in the field of stem cell technology. Peter has worked at Bourn Hall, the first-ever IVF clinic, and has worked on both IVF and Regenerative Medicine for over 40 years in the private and public sector. He has also been working at several UK Universities carrying out undergraduate and postgraduate teaching and research on stem cell technology. Peter has also worked in the UK, Europe, Canada, and Nigeria and holds a visiting Chair in Regenerative Medicine from the University of West Bengal in recognition of his work with colleagues in Calcutta. He now lives in rural Cambridgeshire.